

GDDM-PGF



Interactive Chart Utility

Version 2 Release 1.3

GDDM-PGF



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Note!

Before using this information and the product it supports, be sure to read the general information under "Notices" on page xix.

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Preface

Start with “Background information,” an introduction to charts, and using panels.

Then try “Getting your chart.” You may find that the well-constructed charts you create this way are the only ones you need.

Learn to add extra features to your charts with “The five steps of chart drawing.”

Finally, explore the full ICU with “Making the most of the ICU”: information on the advanced features of the ICU.

Start wherever seems appropriate to you (we suggest the beginning) and skip the things you already know.

Got a particular chart to draw?

Go to Chapter 4, “Learning 3 – The five steps of chart drawing” on page 39. If you are new to this sort of thing, it will probably pay you to work through “Background information” and “Getting your chart.” It should not take more than an hour.

Want to know what is new and different in Version 2?

Look in Appendix C, “What is new for Version 2” on page 237.

Want to know what the ICU can do?

If you have a terminal to use, look at some of the “Ready-made charts.” If not, skim through Chapter 6, “Chart types” on page 105, to get an idea of how much the ICU can do.

Stuck over something?

1. Cannot work out how to do something?

To answer quick questions like “Where do I go to make the legend box red”? Look up “legend” in the index. It will tell you the topics to see in this book and the panel to use at your terminal.

2. Cannot understand a message?

Message explanations are given in Appendix B, ICU messages, topic 209. If your message is not listed, see the section at the start of the Appendix.

3. The ICU does something silly?

See the “Traps” under the particular chart you are using, in the “Chart types” section.

Installing or programming with the ICU?

- Appendix D, How to become the local expert points you in the right direction, but you will need other books:

Installing

- *GDDM Program Directory* for your system.
- *GDDM System Customization and Administration*.

Programming

- *GDDM Base Application Programming Guide*.
- *GDDM-PGF Programming Reference* book.
- *GDDM Base Application Programming Reference* book.

Cannot remember the name of something?

Try the Illustrated glossary, 261. Use it when you do not understand a technical term.

Anything else?

Try the Contents list in the next topic (topics listed in the order they appear) or the Index on 275. If it is not in this book, see “GDDM publications” on page 273.

Special note for online users

The pictures in this book may differ from those in the online version because of the characteristics of your graphics display. In the online version, the pictures show the colors described in the text. The representations of line types, shading patterns, and symbols vary depending on your graphic display, but they are usually more accurate in the online version than in this book.

Part 1. Introduction

Chapter 1. Introducing the Interactive Chart Utility

The Interactive Chart Utility, known as the ICU for short, is a computer program that lets you create charts on terminals.

The ICU can be used by people with no computer experience. By using panels and pictures, you can produce business and other charts very quickly and effectively. These are the chart types that are available:

- Bar charts
- Histograms
- Indexed charts
- Line graphs and scatter plots
- Mixed charts
- Multiple charts
- Pie charts
- Polar charts
- Presentation material
- Surface charts
- Table charts
- Tower charts
- Venn diagrams

You can also use the ICU to produce presentation materials for overhead projectors.

Examples of what can be done are shown in “Chart examples” on page 4.

The hardware you need

The ICU runs on most IBM graphics terminals attached to a host computer and the graphics versions of the IBM 3270 Personal Computer. The most common terminals are the 3279, 3278, 3290, 3179-G, the 3270 Personal Computer/G and /GX, and the 5550 family. Printing can be done on 3287, 3268, and 4224 printers. Plotting can be done with the plotters that can be attached to the 3179-G, and 3270-PC/G and /GX. The ICU can produce output for later printing on the 4250 and 3800 Model 3 printers. For details, see the *GDDM General Information* book.

The software you need

The ICU is part of the GDDM-PGF (Graphical Data Display Manager-Presentation Graphics Facility) family of programs.

The help you need

You need to find the name of your “local expert.” This person will be able to answer the questions in “Get these answers before you start” on page 25 and to help you if you ever have difficulties with the ICU.

If you want to become the local expert, look at Appendix D, How to become the local expert. It contains lots of information that will help you to help others.

Chart examples

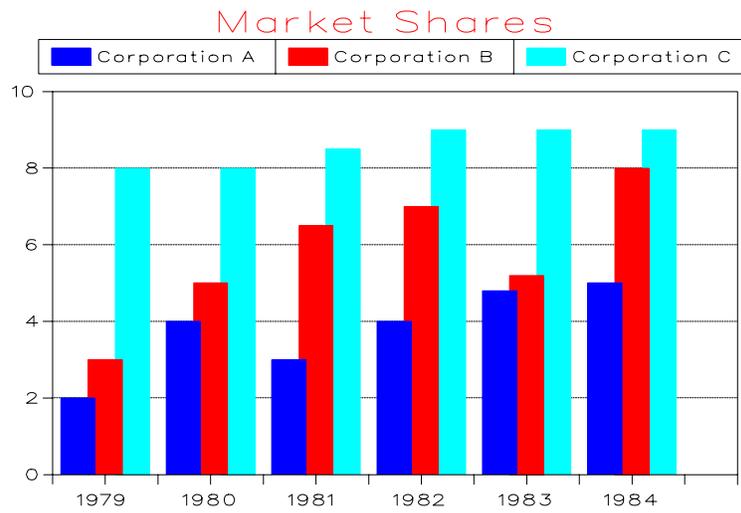


Figure 1. Bar Chart Example

Bar charts are the most versatile type of comparison chart.

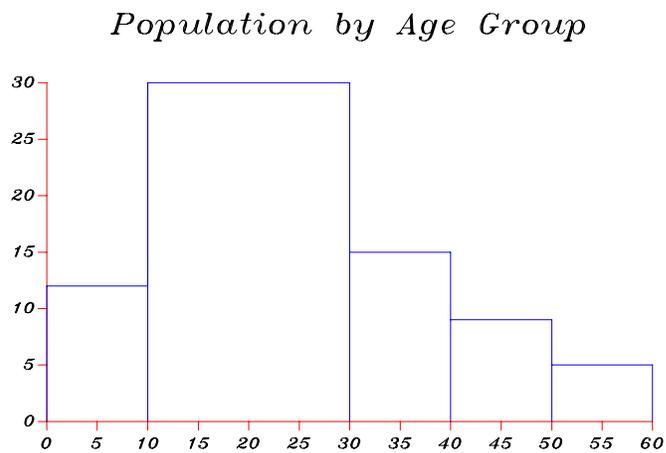


Figure 2. Histogram Example

Histograms show things broken into ranges (ages, shoe sizes, income groups).

Market Trends

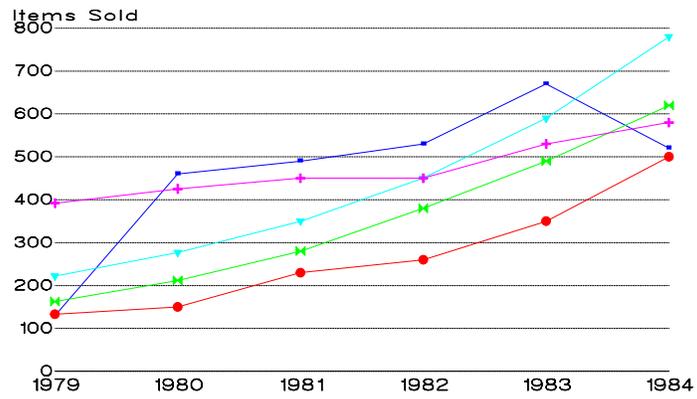


Figure 3. Line Graph Example

Line Graphs show accurate comparisons and trends.

Exports of CPUs

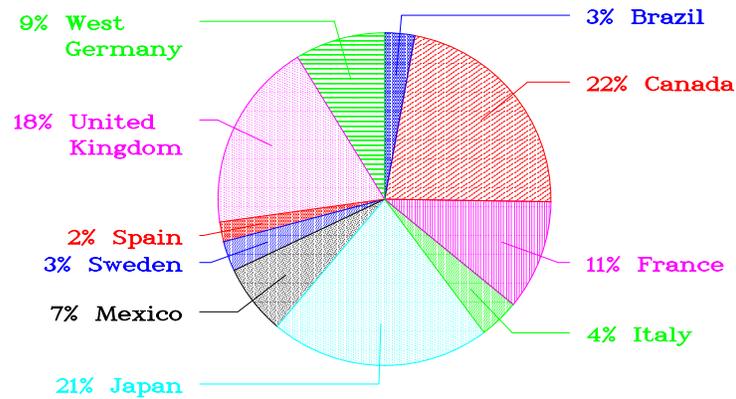


Figure 4. Pie Chart Example

Pie charts show proportions used.

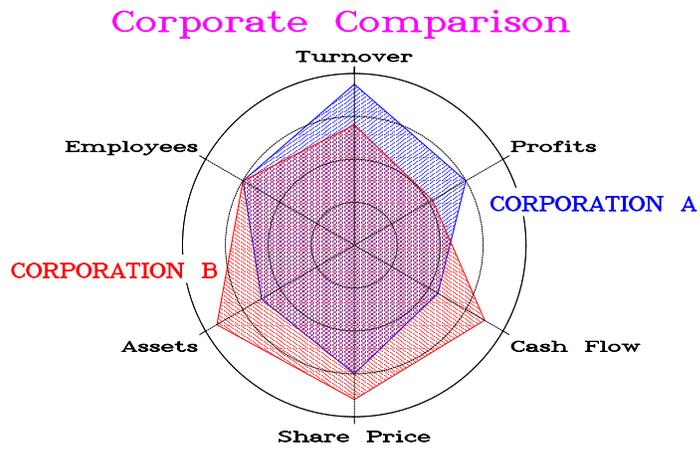


Figure 5. Polar Chart Example

Polar charts show comparisons (companies, currencies, machines).

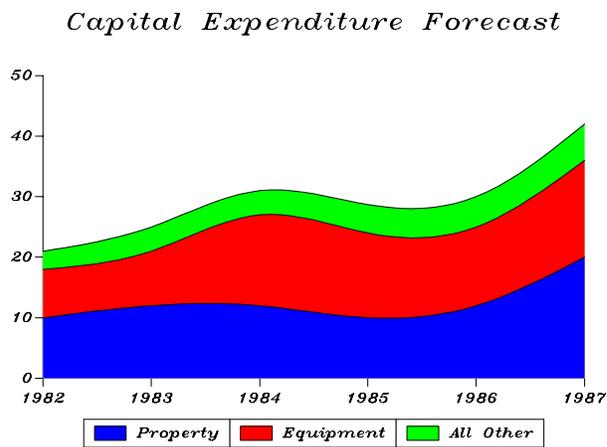


Figure 6. Surface Chart Example

Surface charts show changes of proportion over time.

Sales	Spring	Summer	Fall	Winter
1983	15	54	32	17
1984	12	62	35	21
1985	11	47	40	19
1986	13	51	38	13

Figure 7. Table Chart Example

Table charts show colorful displays of your figures.

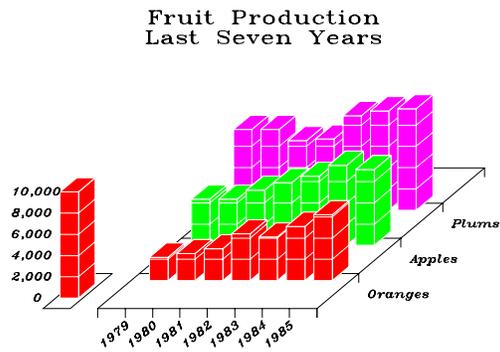


Figure 8. Tower Chart Example

Tower charts give 3D emphasis to complex data.

chart examples

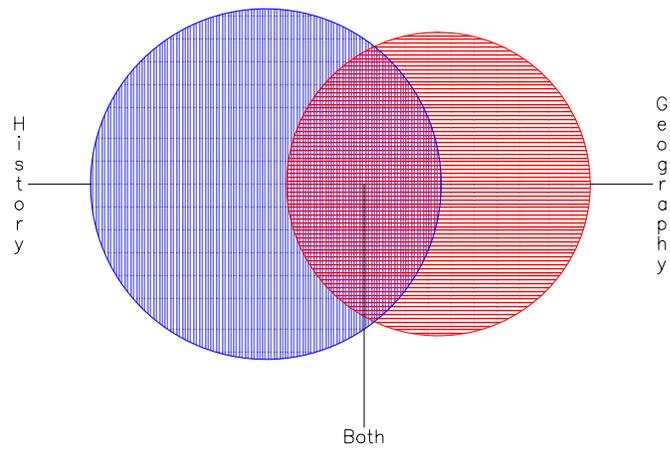


Figure 9. Venn Diagram Example

Venn diagrams show proportions of two groups that have something in common.

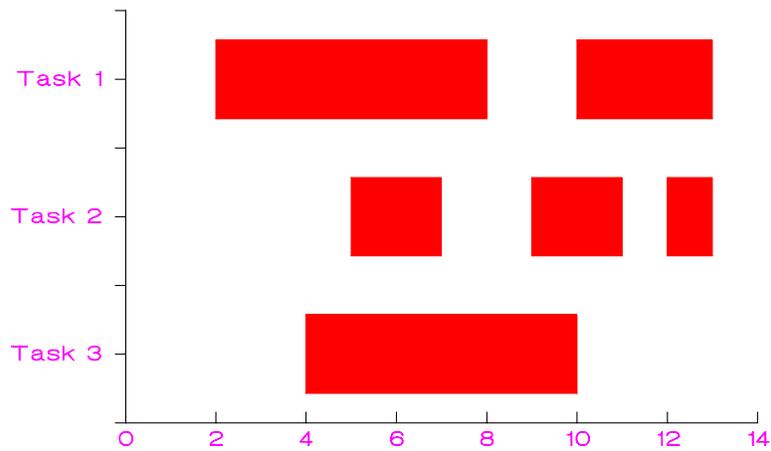


Figure 10. Schedule Chart Example

Schedule charts show who does what, and when.

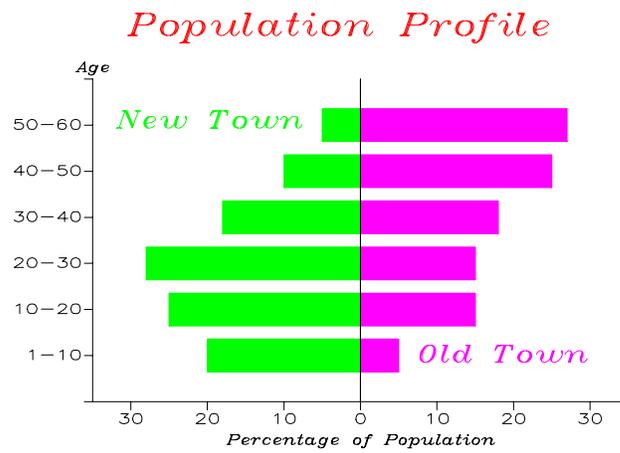


Figure 11. Profile Chart Example

Profile charts compare the shape of two sets of data.

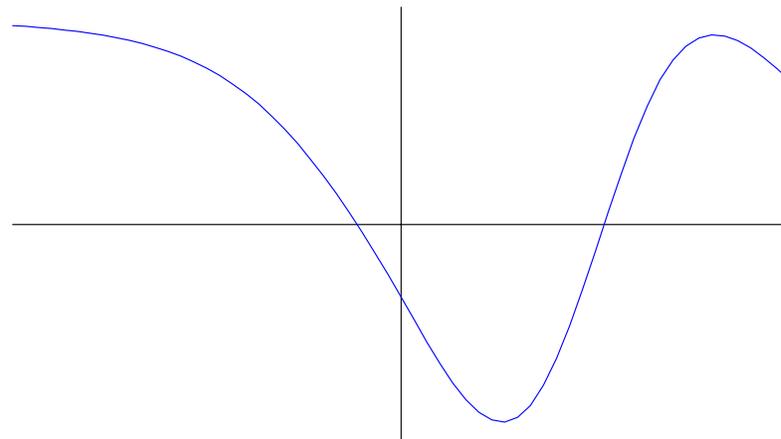


Figure 12. Intersecting-Axes Chart Example

Intersecting-axes charts show positive and negative data.

chart examples

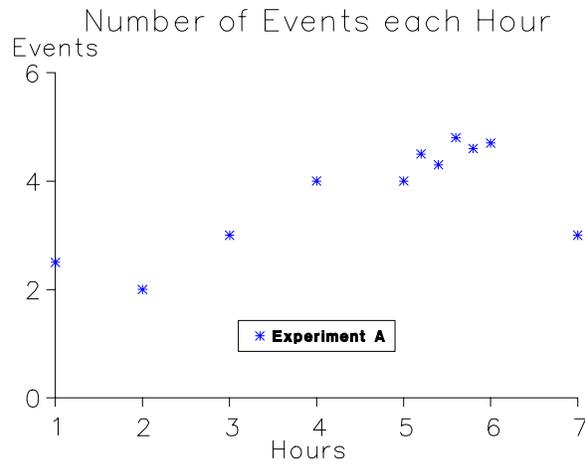


Figure 13. Scatter Plot Example

Scatter plots collect data for visual interpretation and regression analysis using the ICU.

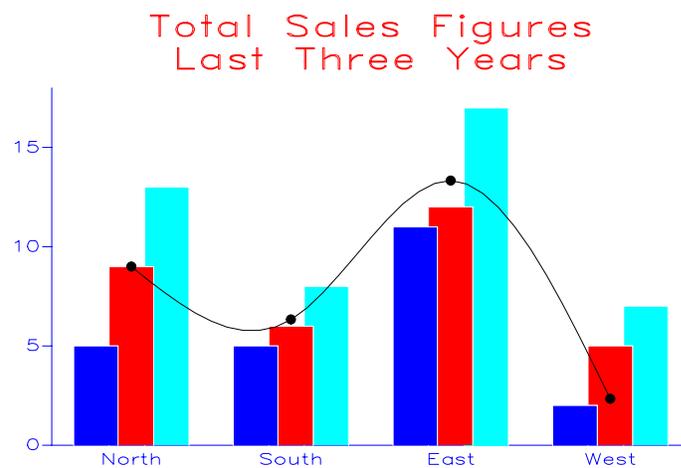


Figure 14. Mixed Chart Example

Mixed charts show two chart types on a set of axes.

Total Expenditure

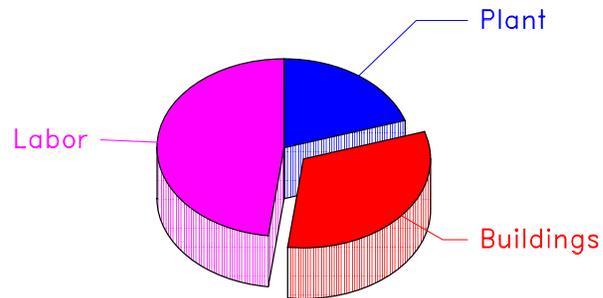


Figure 15. Exploded Pie Chart Example

Exploded pie charts emphasize elements and the parts they play.

Broaden Your Horizons!

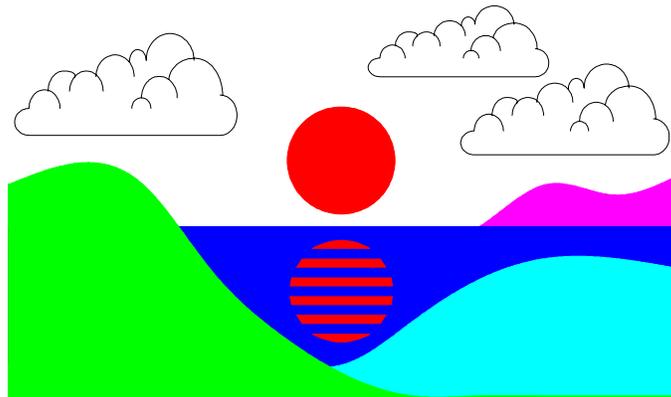


Figure 16. Presentation Material Example

Presentation material provides well-arranged text and graphics for presentations.

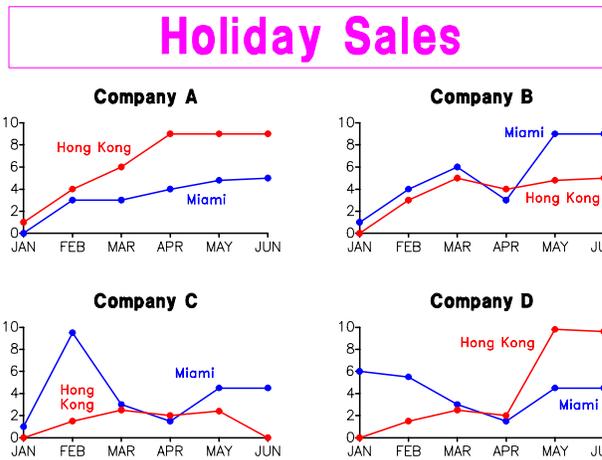


Figure 17. Multiple Charts Example

Multiple charts place several separate charts on one screen or piece of paper.

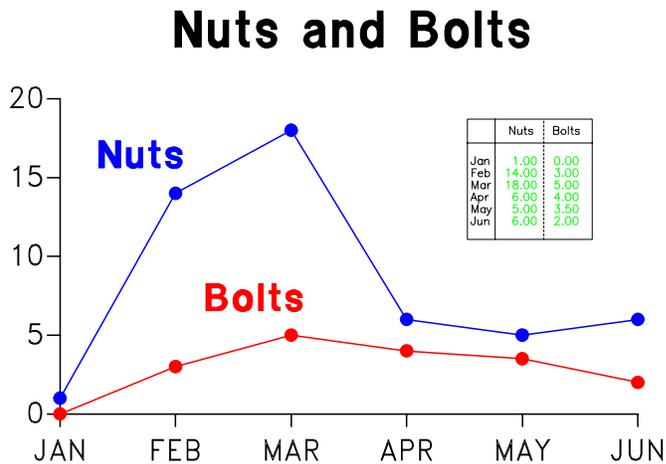


Figure 18. Superimposed Charts Example

Superimposed charts put one chart on top of another.

Part 2. Learning to use the ICU

This book teaches you to use the ICU in four stages:

1. Background information.

Leads you through the things you must know before you start. It introduces charts, and the ICU panels you will use to create them.

This stage starts on the next page.

2. Getting your chart.

Shows you two ways of creating a chart:

- Ready-made charts: pick a complete chart style from just two picture menus.
- Step-by-step charts: design a chart a step at a time using a series of picture menus.

Choose the way that suits you and the complexity of chart you need.

This stage starts at Chapter 3, “Learning 2 – Getting your chart” on page 25.

3. The five steps of chart drawing.

Shows you how to develop your first charts. This is a “cookbook” that you can follow to produce the sort of chart you want from any set of data. Producing any one chart should take less than 30 minutes.

This stage starts at Chapter 4, “Learning 3 – The five steps of chart drawing” on page 39.

4. Making the most of the ICU.

This gives you an introduction to the skills you need to become an expert user of the ICU. This stage contains a lot of information. The first stage, “Guided tour” on page 50, will take you about an hour. Other stages are more for reading or reference than for working through, though it will help if you use the ICU as you read the book.

This stage starts at Chapter 5, “Learning 4 – Making the most of the ICU” on page 49.

Turn to the stage you want now, or, if you want to skip learning altogether, turn to Chapter 6, “Chart types” on page 105.

Chapter 2. Learning 1 – Background information

Here's where we introduce the basic concepts of charts and the ICU. If you feel that you know a lot about charts, and the terminology associated with them, skip straight through to "Background to ICU panels" on page 18.

Background to charts

Here, we introduce charts, by looking at what they are, how you read them, and what the elements of a chart are.

What is a chart?

A chart is a way of showing information as a picture.

The sort of chart that the ICU produces shows information like sales figures or the results of experiments. It helps business people and scientists decide what to do, and can be used to give everyone useful and interesting information.

The chart and the table

Below is a chart (Figure 19) and on the next page is a table. They both show how long the sun shines per day, on average, in Hong Kong and Miami between January and June.

Understanding either the chart or the table is a skill that people have to learn. If you understand them already, skip to the next page. If you do not, you can learn in a few minutes.

Reading the chart

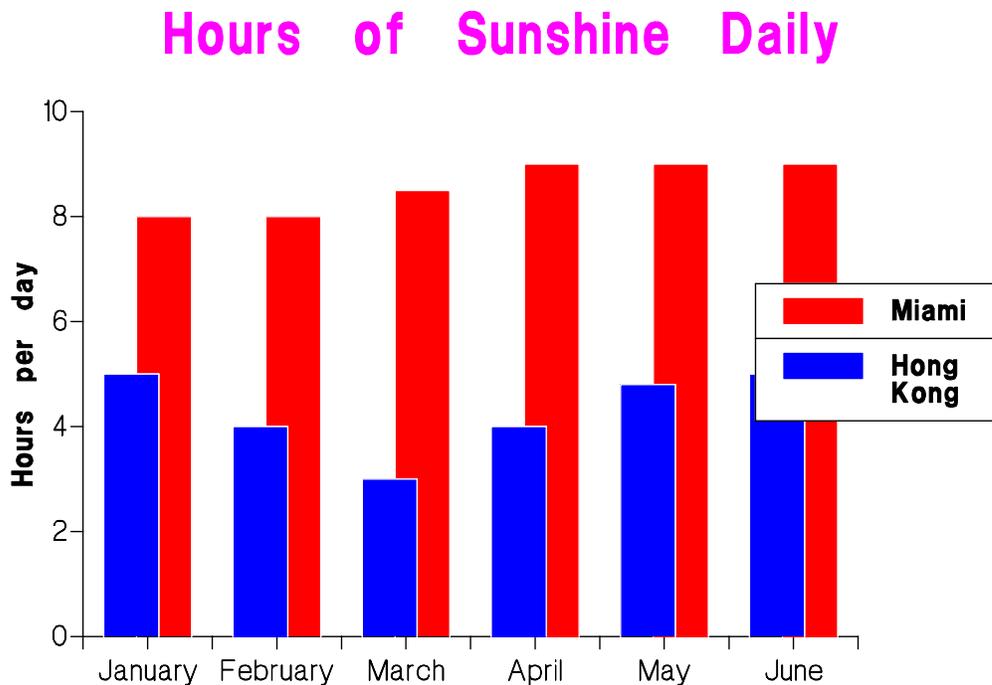


Figure 19. Example of bar chart

background information

To get information from the chart (on the previous page), look at the top of the chart to see what the information is about. Then look along the lines at the left and the bottom to see what they show. You will see that the bottom line (called the x axis) shows the month, and the left-hand line (called the y axis) shows the hours.

When you know this, you can see that Miami usually has about 8 or 9 hours per day, that Hong Kong has less sunshine, and that the amount of sunshine in Hong Kong changes a lot during these months.

Reading the table

Hours of Sunshine Daily

Month	Hong Kong	Miami
January	5 hours	8 hours
February	4 hours	8 hours
March	3 hours	8.5 hours
April	4 hours	9 hours
May	4.8 hours	9 hours
June	5 hours	9 hours

To get information from the table, look at the top to see what the information is about. Then look down the first column (“Month”) to find the month you are interested in. Look along the row to find, for example, that in June Hong Kong has 5 hours of sunshine a day, and Miami 9.

How to draw a chart

Most of us started drawing charts at school, using a ruler and pencil. You measured along one axis, then measured along the other, and drew in the bars. To get more attractive charts, you could use different colored pencils, or add your own pictures.

Charts with a computer

With the ICU, the computer does all the pencil and paper work for you. You get a table of data, then choose the sort of chart you want and that is it.

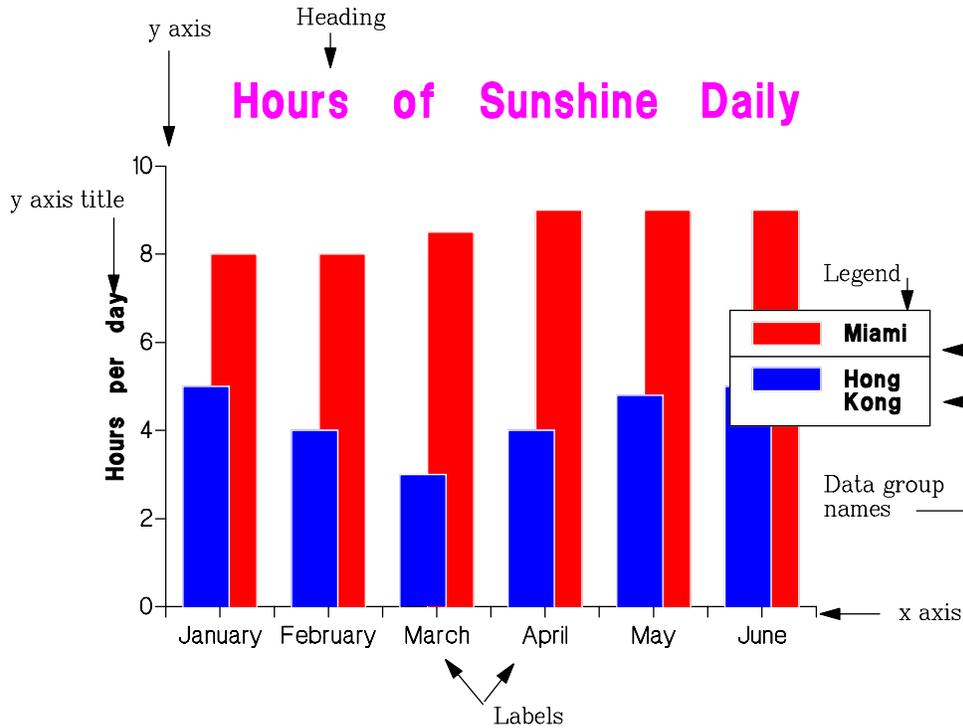
Once the computer has the table of data and knows the sort of chart you want, it draws it, and you can look at it.

Then you can add the finishing touches to make it look the way you want it. For example, you might add a heading and change the color of the x or y axis.

Names to remember

To use the ICU, you need to know the names of parts of the chart, so you can tell the ICU which bits you want to change. There are also names for parts of the table. The important names are shown in Figure 20 on page 17, and described in the list that follows it.

Names of parts of the chart



Names of parts of the table

Month	Hong Kong	Miami
January	5 hrs	8 hrs
February	4 hrs	8 hrs
March	3 hrs	8.5 hrs
April	4 hrs	9 hrs
May	4.8 hrs	9 hrs
June	5 hrs	9 hrs

Figure 20. A chart and a table

Names of parts of the chart

X Axis The bottom line on the chart.

Y Axis The left-hand line.

Heading The title at the top.

Labels The numbers and words along the x axis and the y axis.

Legend The little box that shows that the blue bars are for Hong Kong and the red bars for Miami.

Data Group Names

The names that refer to the bars. Here they are Hong Kong and Miami.

background information

Axis Titles

The name beside an axis that indicates the units you are using. Here only the y axis has a title: Hours per day.

Names of parts of the table

Data Words or numbers in a table.

Row Data in a table going left to right.

Column Data in a table going up and down.

Data

You cannot make charts without data. Usually, the ICU will not do anything until you give it some data to work with. Occasionally, the ICU will create a chart when you have not given it any data. It has probably picked up data that you have forgotten to clear away. In this case, the chart you get is unlikely to be the one you want.

If you always get your data first, you should have few problems.

You can get data in lots of ways:

- Sets of sample data are provided with the ICU.
There is one set that is suitable for all chart types. Other sets are particularly suitable for one chart type only. Appendix H, "Sample data" on page 267 shows the sample sets.
- Type in your own data.
If you are not sure what goes where, get a sample set and use it as a guide. (You cannot harm the sample set.)
- Get the data from one chart and create a different chart with it.
- Use data someone else typed in.
- Import data from a file on your host computer.
- Import data from a file on an IBM PC.

Background to ICU panels

Here, we give you your first real glimpse of the ICU, by introducing the panels that drive it.

How to use the ICU

The previous section told you about charts. This section introduces you to the ICU. The Interactive Chart Utility, or the ICU for short, is a computer program.

The first thing you have to do is get in touch with the computer and tell it that the ICU is the program you want to use.

When you switch the computer on, it may say almost anything on the screen but, whatever it says, what it means is "Would you like to start"? To start, you have to tell it who you are and give it a password to show that you are allowed to use it. As soon as the computer has accepted you as a legitimate user, you can ask for the ICU.

Do not try and do it yet! Just read about it at the moment.

Using the ICU panels

When you are in the ICU, things start to get easy.

The ICU shows you **panels** that list the choices you can make and lets you make a choice by typing in a number or a letter. Here is an example of how to use the ICU panels.

When you start the ICU, you will see the Home Panel. The screen looks like this:

```

INTERACTIVE CHART UTILITY - HOME PANEL

* Either choose the following to make a chart by selecting from pictures:
  0 - Chart by Example

* Or choose from the following to make or change a chart by setting options:
  1 - Chart Type
  2 - Data Entry and Import
  3 - Chart Notes
  4 - Axis Options
  5 - Heading, Legend, and Layout
  6 - Multiple Charts
  M - Menu Control
    and Preview Chart
  S - Save, Load, List,
    Delete, Reset Chart

* Type the number or letter of the choice you want =====> 0
* Press ENTER to continue.

Use PF12 (Home) to return directly to this panel from other panels.
Use PF1 (Help) on any panel to get more information about what to do.

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PF: 1=Help 2=Save/Load 4=Print 5=Display 9=Exit 11=Edit

```

Figure 21. The ICU home panel

Now imagine you are going to do something. One of the things you can do when you are using the ICU is to have a little chart at the bottom of the screen. This little chart is called the Preview Chart. Suppose that you want to turn it on.

background information

Look at the screen: it gives you a list of numbered things. You choose the number of the thing you want, type it in, and press ENTER. Looking down the list, you'll see "M Menu Control and Preview Chart," which looks like the thing you're looking for. Type M, press ENTER, and the screen changes to look like the one this:

```
MENU CONTROL

Preview Chart on Panels ==> 1      1 - No
                                   2 - Yes, except for Data Entry Panels
                                   3 - Yes, including Data Entry Panels
                                   (Some panels never show the Preview Chart)

Preview Chart Position:           (in Screen Rows)
  First Row ==> 23                (numbered from the top)
  Last Row ==> 3                  (numbered from the bottom)

Text Highlighting ==> 1           1 - None
                                   2 - Reverse Video

Text String Contents ==> 1        1 - Latin Characters Only
                                   2 or 3 - Mixed Latin and DBCS Characters
                                   (see Help for explanation)

Usage of Directory Panel ==> 1    1 - Standard Mode
                                   2 - Advanced Mode

(Panels will not use the space after this line except for the PF key list)

PF: 1=Help 2=Save/Load 3=End 4=Print 5=Display 12=Home
```

Figure 22. The ICU menu control panel

This is a different sort of panel. It shows you the choices that the ICU has made for you, and lets you change them.

What you want is the preview chart, the first choice on the panel. You probably do not know whether you want "except for Data Entry Panels" (2), or "including Data Entry Panels" (2), so you might choose either. Change the first 1 on the screen to 2 or 3 (3 is best for the beginner) and press ENTER. A small rectangle appears at the bottom of the screen. This will show a small version of your chart when you have typed in some data.

For the moment, **don't** change any of the other values. It's always sensible to keep things as simple as possible. ICU is designed so that you have to make as few changes as possible.

So what do you do next? Well, if you read the line at the bottom of the screen, you can see that it is a list of PF keys. The last few words on the line are "12=Home." Press PF12 to go back to the Home Panel where you can do other things.

Here is the Home Panel again:

```

INTERACTIVE CHART UTILITY - HOME PANEL

* Either choose the following to make a chart by selecting from pictures:
  0 - Chart by Example

* Or choose from the following to make or change a chart by setting options:
  1 - Chart Type
  2 - Data Entry and Import
  3 - Chart Notes
  4 - Axis Options
  5 - Heading, Legend, and Layout
  6 - Multiple Charts
  M - Menu Control
  and Preview Chart
  S - Save, Load, List,
  Delete, Reset Chart

* Type the number or letter of the choice you want =====> 0
* Press ENTER to continue.

Use PF12 (Home) to return directly to this panel from other panels.
Use PF1 (Help) on any panel to get more information about what to do.

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PF: 1=Help 2=Save/Load 4=Print 5=Display 9=Exit 11=Edit

```

Figure 23. The ICU home panel

This time you might select “1 – Chart Type,” to choose a type of chart, or “2 – Data,” to type in your data, or any of the other choices depending on what you wanted to do.

That is how you use the ICU. Start at the Home Panel, look for the thing you want to do. Go to another panel to do it, then go back to the Home Panel to do something else. This way you build up the chart you want.

How to fill in panels

The ICU makes it as easy as possible for you to fill in panels, by putting the cursor at the place you are most likely to want to type. Normally, you just have to type in a number and press ENTER. If you want to move the cursor to another item, move it with a cursor tab key.

After you press ENTER, give the computer time before you type in the next thing. Look below the line near the bottom of the screen for the cross if nothing seems to be happening.

Traps to avoid

There are three traps: the typematic or repeat action keys, the jumping cursor, and the uppercase shift.

When you get used to typematic keys and the jumping cursor they will help you, but at the beginning it is easy to get confused by them.

The Index at the back of the book lists all the topics in the book in alphabetical order. It gives the number of the page where information about the subject is given. It also tells you what panel to use to do that job. Use it when you are looking for information on a specific subject.

The Glossary explains the meaning of the technical terms used in the book.

When to read the screen, and when to read the book

You are learning to use a computer program from a book and you will often find yourself wondering whether you should read what is in the book or what is on the screen. Before long, you will find that you do not need the book at all. But at first it is better to work through the book.

Getting by without the book

Sometimes this book may not be available when you have a problem. If this happens, press PF1 (the Help key). You will see one or more panels of explanation about the topic you are working on. Use PF7 and PF8 to go backwards and forwards through the explanation. When you have found out what you need to know, press PF3 to return to the panel you were working on.

If you press PF1 when you are inside the explanation, you will see the Help index. This tells you what panel to use for each ICU function.

What to do next

You have read about charts and ICU panels, and about reading computer manuals. Now you have all the background information you need to start using the ICU.

But before you start, talk to your local expert and find out the answers to the questions on the next page. Then as soon as you can, get to a terminal and start using the ICU.

background information

Chapter 3. Learning 2 – Getting your chart

You're about to start work on your first chart, but pause, just for a few moments, to make sure that you're ready.

Get these answers before you start

There are some things this book cannot tell you, so make sure your local expert answers these questions for you. (If there is no local expert, you may have to become the local expert yourself. In that case, see Appendix D, "How to become the local expert" on page 243.)

1. Have you got the right sort of terminal?

The ICU can be used only on graphics terminals. The most common ones are the graphics versions of the 3179, 3279, 3270 Personal Computer, (3270-PC/G or /GX), and the 5550 family.

.....

2. How do you log on?

(Logging on means starting to use the computer.)

.....

3. Which subsystem are you using?

Make sure you find out and note the subsystem used:

- CICS
- IMS
- TSO
- VM/CMS

4. How do you start the ICU?

Write down the answer below.

.....

.....

Standard ways are:

CICS

ADMC

IMS

ADM CHART

TSO

CALL "data-set-name(ADMCHART)"

"data set name" names the data set that holds the ICU. You must find out what it is.

VM/CMS

ADMCHART

your first charts

5. If TSO, are your DATA and FORMAT data sets initialized?

This is important.

.....

6. What are the printer/plotter names?

Write the answer down.

.....

.....

7. VM/CMS only: is printing automatic?

If not, what do you do after ending the ICU?

.....

8. What are the symbol set names that you can use?

.....

.....

.....

.....

.....

.....

9. What is the name and extension of the local expert?

.....

Your first chart

This is the second stage of learning, when you reassure yourself that you can produce charts using the ICU.

By the end of this section, you will have produced two charts, just by choosing from sets of pictures.

Log on and start the ICU

The things you need to know are shown. When you have found them out, log on and start the ICU as soon as you can.

When the screen on your terminal looks like Figure 24, go to “Ready-made charts” on page 28 and follow the instructions. If you get really stuck, turn back and read “Do not read this unless you get stuck.”

```

INTERACTIVE CHART UTILITY - HOME PANEL

* Either choose the following to make a chart by selecting from pictures:
  0 - Chart by Example

* Or choose from the following to make or change a chart by setting options:
  1 - Chart Type
  2 - Data Entry and Import          M - Menu Control
  3 - Chart Notes                    and Preview Chart
  4 - Axis Options                   S - Save, Load, List,
  5 - Heading, Legend, and Layout     Delete, Reset Chart
  6 - Multiple Charts

* Type the number or letter of the choice you want =====> 0
* Press ENTER to continue.

Use PF12 (Home) to return directly to this panel from other panels.
Use PF1 (Help) on any panel to get more information about what to do.

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PF: 1=Help 2=Save/Load 4=Print 5=Display 9=Exit 11=Edit

```

Figure 24. The ICU home panel

Do not read this unless you get stuck

If things have gone wrong in the sessions over the page, do the following:

1. Press the RESET key (at bottom left of most keyboards).
2. Press PF1 and wait until the screen changes.
3. Press PF12 and wait until you return to the Home Panel.
4. Start again from the beginning. (If you do, some of the things will be filled in already, but this does not matter.)

If you want to leave the ICU, follow the list above, but instead of restarting, press PF9 twice to exit from the ICU.

Ready-made charts

1. Press PF12 to get to the Home Panel if you're not there already.
2. Type in the numbers or words shown in the picture caption on each of the panel displays that follow.
3. Check that the panel on your screen looks like the picture in this book, then press ENTER.
4. Start with the first picture now. Type in 0 and press ENTER.

Just work steadily through the panels shown on the following pages, and you should have your first chart in five minutes or less.

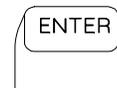
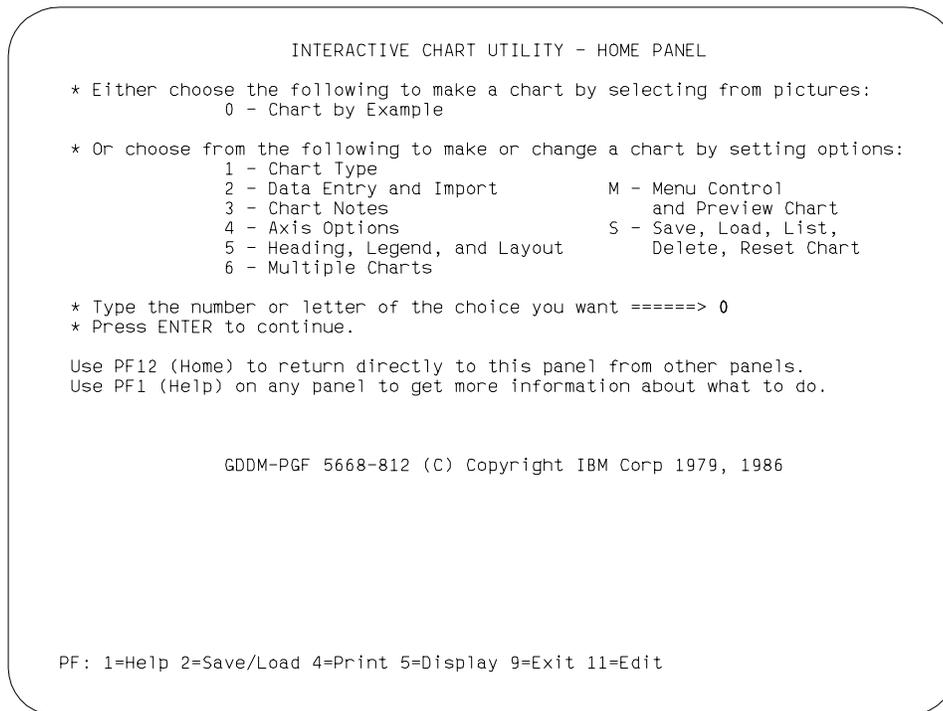


Figure 25. Selecting from the ICU home panel

On the next chart you can select some data for your chart. Type in 1 and press ENTER.

```

0                                CHART BY EXAMPLE

* You will need some data for your chart.  Choose the following to get some:

    1 - Get data, heading, and titles for your chart

* Choose one of the following to make your chart:

    2 - From a ready-made chart using your data
    3 - A step at a time using your data
    4 - Exclude data values to make a text-only chart

* You may need the following when you have finished your chart:

    5 - Save your chart in a file
    6 - Reset everything except your data, ready to start again

* Type the number of the choice you want =====> 1
* Press ENTER to continue.

```



Figure 26. Selecting from the Chart By Example panel

We will use the general purpose data. Type in 1 and press ENTER.

```

0.1                              CHART BY EXAMPLE - DATA

* Either choose from the following to get various sorts of sample data, to
  use as a basis for typing your own data:
    1 - General purpose
    2 - Planned against Actual
    3 - Comparison over time
    4 - Parts of a whole, for a Pie Chart                (Choices 4 through 7
    5 - Ranges, for a Histogram                          also set your chart
    6 - Cyclic (daily, yearly), for a Polar Chart        type to match your
    7 - Schedule, for a horizontal Bar Chart             chosen sample data)

* Or choose from the following to get or type in your own data:
    8 - Load data from a file created by the ICU
    9 - Import data from a file created by another program
    10 - Type in your own data                          (Choices 10 and 11 can also be used
    11 - Type in your chart heading                      to change data got by other choices)
    12 - Type in your X-axis title
    13 - Type in your Y-axis title

* Type the number of the choice you want =====> 1
* Press ENTER to continue.  Press PF3 (End) to return to Chart by Example.

PF: 1=Help 3=End 4=Print 5=Display 12=Home

```



Figure 27. Selecting from the Chart By Example – Data panel

We will use the vertical bar chart to display our data. Select it by entering 2.

0.2 READY-MADE CHARTS

Variations of Chart Type

1 Chart so far 2 Vertical Bar Chart 3 Pie Chart 4 Surface Chart

5 Table Chart 6 Line Graph 7 Tower Chart 8 More ...

Type the number of the chart you want =====> 2
 (Never mind if your data makes some look identical, unsuitable or wrong.)
 Press ENTER to make your choice, or PF5 (Display) to see your chart full size.

PF: 1=Help 3=End 4=Print 5=Display 6=Suppress Charts 12=Home

ENTER

Figure 30. Charts on the Ready Made Chart panel

The ICU offers a further choice of variations on the selected bar chart style. Enter a 2 to select vertical, separated, side-by-side bars.

0.2 READY-MADE CHARTS

Variations of Vertical Bar Chart

1 Chart so far 2 Side By Side 3 Overlapping

4 Stacked 5 Floating 6 Percentage

Type the number of the chart you want =====> 2
 (Never mind if your data makes some look identical, unsuitable or wrong.)
 Press ENTER to make your choice, or PF5 (Display) to see your chart full size.

PF: 1=Help 3=End 4=Print 5=Display 6=Suppress Charts 7=Back 12=Home

ENTER

Figure 31. Variations of vertical bar charts on the Ready Made Chart panel

your first charts

You can see the chart that you have selected. Press PF3 to return to the Chart by Example panel.

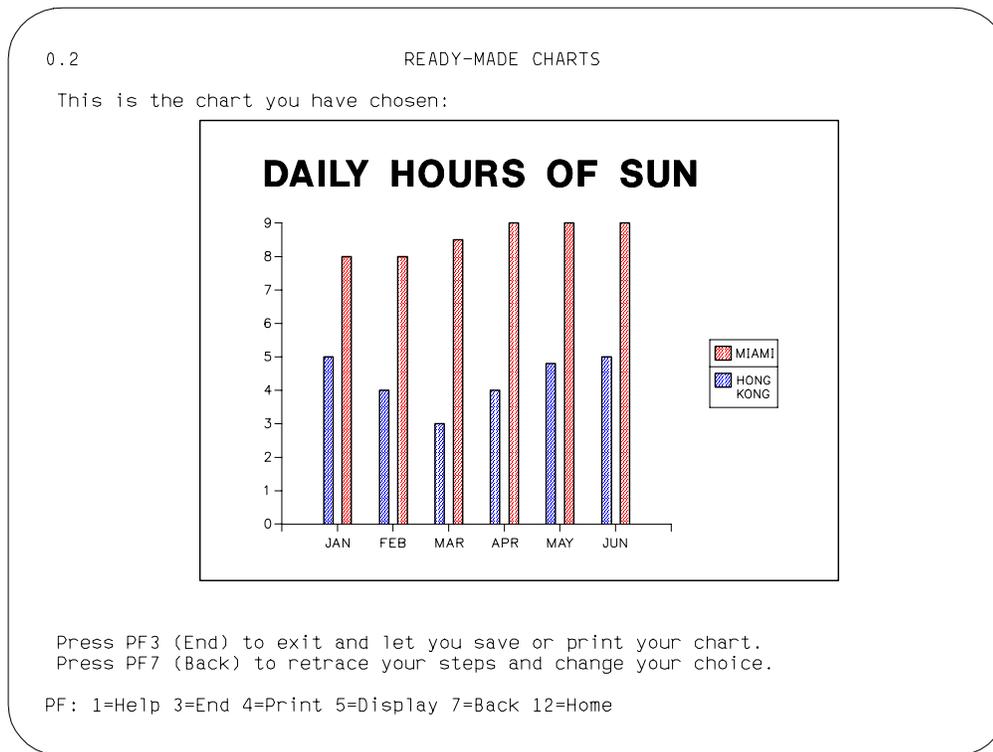


Figure 32. Your chosen chart on the Ready Made Chart panel

Now save your first chart.

On the Chart by Example panel, enter a 5 to move to the save and Load Chart panel.

0 CHART BY EXAMPLE

- * You will need some data for your chart. Choose the following to get some:
 - 1 - Get data, heading, and titles for your chart
- * Choose one of the following to make your chart:
 - 2 - From a ready-made chart using your data
 - 3 - A step at a time using your data
 - 4 - Exclude data values to make a text-only chart
- * You may need the following when you have finished your chart:
 - 5 - Save your chart in a file
 - 6 - Reset everything except your data, ready to start again

* Type the number of the choice you want =====> 5
* Press ENTER to continue.



Figure 33. Saving your chart from the Chart By Example panel

On this panel you must supply the name that will be used to save your chart data and format. The example shows that we are saving both the Format and Data files and that we have selected the name AACH1, and added a descriptive comment to the name.

```

                                SAVE AND LOAD CHART
ADM1207 I TYPE IN NAMES OF FILES TO SAVE YOUR CHART FORMAT AND DATA. PRESS PF3
What do you want to do? ==> 3      1 - Load from a File
                                      2 - Reset to initial defaults
                                      3 - Save in a File
                                      4 - List Files, to pick or delete

Which part of chart? ==> 3        1 - Format
                                      2 - Data
                                      3 - Both Format and Data
                                      4 - Whole chart as Graphic Data Format (GDF)
                                          (not for Load or Reset)

Replace ? NO      (Type YES for Load or Reset to replace your
                  current chart even if it has unsaved changes,
                  or for Save to replace an existing file)

Format ==> aach1      File name      Description of file
Data   ==> =         =              =
GDF    ==>          (May be '=' meaning the same as the Format name or description)

PF: 1=Help 3=End 4=Print 5=Display 12=Home

```



Figure 34. The Save and Load Chart panel

This is what happened

The exercise you have just done produced a chart because you told the ICU what to do. You filled in the answer in each panel and pressed the right key.

What you did

First, you selected Chart by Example and told the ICU that you wanted to use the sample data.

Then you chose Ready-made charts and saw seven different charts. You chose a chart type from those you saw.

Finally you saw several variations of the type of chart that you had chosen. Again you selected one of them. You returned to the Chart by Example panel to save it.

What you did not do

To create your ready-made chart, you did not need to use words to tell the ICU what you wanted. There is a technical description for each of the charts that you saw, but you do not need to know it before you can use the chart.

What to do next

There are several things you can do with a Ready-made chart:

- Print or plot it.
- Go to the Home Panel and use the full ICU to add any extra touches that you need.
- Start another ready-made chart with the same or different data.
- Alter your ready-made chart using Step-by-Step charts.

Going to try step-by-step charts?

If you are ready to try step-by-step charts, choose 6 from the Chart by Example panel now. This will reset the ICU in preparation for a new chart. You will get a message asking you to confirm your choice. Press ENTER.

Your second chart

To prepare your second chart, you use the step-by-step process within Chart by Example.

Step-by-step charts

1. Get to the Chart By Example panel, if you're not there already, by selecting 0 on the Home Panel.
2. Type in the numbers or words shown in the captions on each of the panel displays that follow, or follow the text.
3. Check that the panel on your screen looks like the picture in this book, then press ENTER.
4. Start with the first picture now. Type in 1 and press ENTER.

Just work steadily through the panels shown on the following pages, and you should have a new chart in ten minutes or less.

First, enter 1 on the Chart by Example panel to get some data.

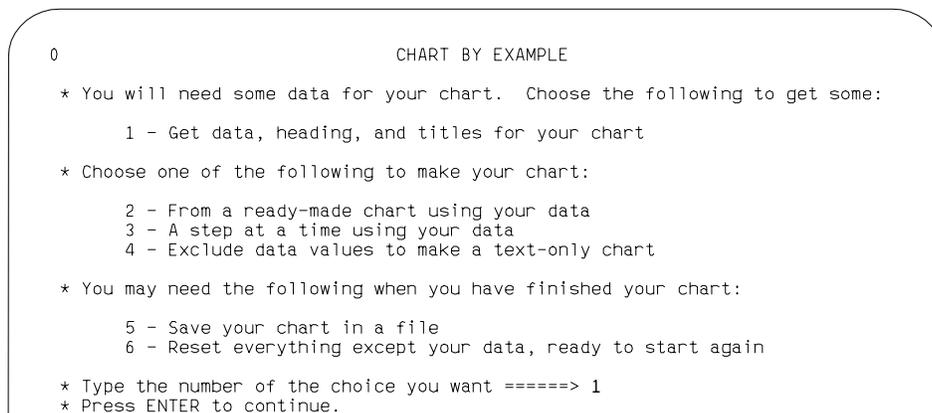


Figure 35. Getting data from the Chart By Example panel

For this second chart, select data for a pie chart by entering 4.

```

0.1                                CHART BY EXAMPLE - DATA

* Either choose from the following to get various sorts of sample data, to
  use as a basis for typing your own data:
  1 - General purpose
  2 - Planned against Actual
  3 - Comparison over time
  4 - Parts of a whole, for a Pie Chart
  5 - Ranges, for a Histogram
  6 - Cyclic (daily, yearly), for a Polar Chart
  7 - Schedule, for a horizontal Bar Chart

      (Choices 4 through 7
      also set your chart
      type to match your
      chosen sample data)

* Or choose from the following to get or type in your own data:
  8 - Load data from a file created by the ICU
  9 - Import data from a file created by another program
 10 - Type in your own data
 11 - Type in your chart heading
 12 - Type in your X-axis title
 13 - Type in your Y-axis title

      (Choices 10 and 11 can also be used
      to change data got by other choices)

* Type the number of the choice you want =====> 4
* Press ENTER to continue. Press PF3 (End) to return to Chart by Example.
    
```



Figure 36. Selecting a pie chart from the Chart By Example panel

The selected data is now displayed. Press PF3 twice to return to the Chart by Example panel.

```

2.1                                DATA ENTRY
ADM1201 I HERE IS YOUR CHOSEN SAMPLE DATA
You may type in your data, over any data shown. Press PF3 (End) to return.
Command ==>
Data Group Names -----> 1985
X Values   X Labels   Y1      Y2      Y3      Y4
1          EDUCATION  35      .       .       .
2          HEALTH    12      .       .       .
3          BUILDING  5       .       .       .
4          PLANNING  4.5    .       .       .
.          .         .       .       .       .
    
```



Figure 37. The sample data on the Data Entry panel

your first charts

For this second chart, we will build it up step-by-step. Enter 3.

0 CHART BY EXAMPLE

* You will need some data for your chart. Choose the following to get some:

- 1 - Get data, heading, and titles for your chart

* Choose one of the following to make your chart:

- 2 - From a ready-made chart using your data
- 3 - A step at a time using your data
- 4 - Exclude data values to make a text-only chart

* You may need the following when you have finished your chart:

- 5 - Save your chart in a file
- 6 - Reset everything except your data, ready to start again

* Type the number of the choice you want =====> 3



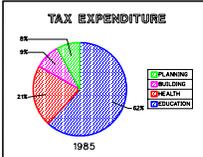
Figure 38. Selecting "step-by-step" from the Chart By Example panel

A panel is displayed showing the attributes that can be applied to the selected chart type.

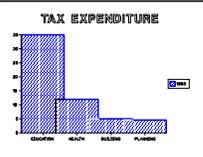
0.3 STEP BY STEP CHARTS

Variations of Chart Type

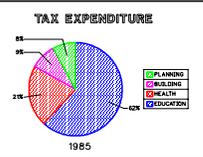
1 Chart so far 2 Vertical Bar Chart 3 Pie Chart 4 Surface Chart



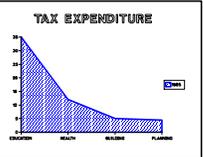
1985



1985



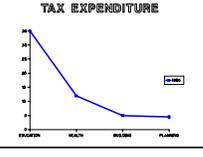
1985



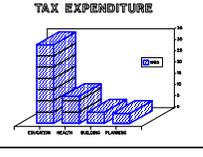
1985



	1985
EDUCATION	25.00
HEALTH	2.00
SAVING	5.00
PLANNING	4.50



1985



1985

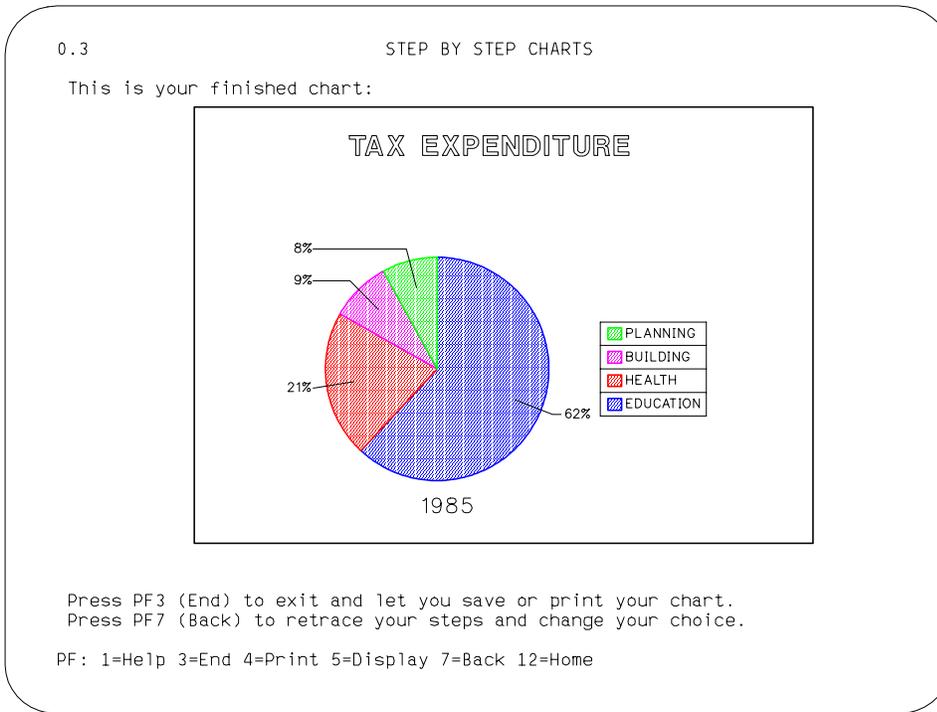
8 More ...

Type the number of the chart you prefer =====> 1



Figure 39. Display of chart types on the Step By Step Charts panel

After you have selected an attribute, further possibilities will be offered until, eventually, you arrive at a large display of the chart that may resemble that shown in the next picture. However, if you select different attributes, your chart may differ from the example we show.



Finally, you will see a panel with just one large chart. It will look something like this:



Figure 40. Your finished chart on the Step By Step Charts panel

Now save your second chart.

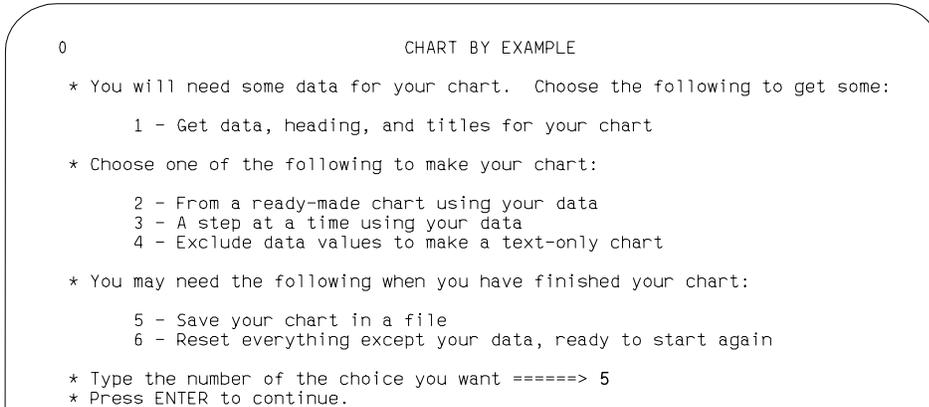


Figure 41. Selecting save on the Chart By Example panel

your first charts

```

                                SAVE AND LOAD CHART
ADM1207 I TYPE IN NAMES OF FILES TO SAVE YOUR CHART FORMAT AND DATA. PRESS PF3
What do you want to do? ==> 3      1 - Load from a File
                                    2 - Reset to initial defaults
                                    3 - Save in a File
                                    4 - List Files, to pick or delete

Which part of chart? ==> 3      1 - Format
                                    2 - Data
                                    3 - Both Format and Data
                                    4 - Whole chart as Graphic Data Format (GDF)
                                       (not for Load or Reset)

Replace ? NO      (Type YES for Load or Reset to replace your
                  current chart even if it has unsaved changes,
                  or for Save to replace an existing file)

Format ==> aach2      Description of file
Data ==> =           My second chart
GDF ==> =
(May be '=' meaning the same as the Format name or description)

PF: 1=Help 3=End 4=Print 5=Display 12=Home
```



Figure 42. Saving on the Save And Load Chart panel

This is what happened

The exercise you have just done produced a chart because you told the ICU what to do. You filled in an answer in each panel and then pressed the right key.

What you did

You probably noticed that each time you pressed ENTER you were given another set of charts to choose from. At the end, there were no more selections to make, so your chart was complete. You then returned to the Chart by Example panel to save it.

You may have noticed that on each set of charts, one chart had a solid white line round it. This is your chart so far. It is the chart you would be left with if you made no further selections.

What you did not do

In some of the panels you saw, there were probably titles on the boxes that you did not understand. As you learn more about the ICU, you will understand more of the words. In the meantime, if you want to see what any option would do to your chart, type in the option number and then press PF5. You should be able to see its effect in the large chart. Press PF3 to remove the large chart, and if you did not like what you saw, make another selection.

Chapter 4. Learning 3 – The five steps of chart drawing

If you have tried the previous section, you should be ready now to produce more involved charts. When you start, you will probably want to follow a set of steps. That is what this section is about.

Coping with errors

The ICU will always try to do what you ask it, but sometimes it can't. It may be that you have entered a number that is too large or put a letter where a number is needed.

When errors like this happen, the ICU puts a message on the second line of the screen. If this happens while you are creating your chart, look at "Getting over mistakes" on page 65.

Sometimes the ICU puts up a message just to let you know that it has done what you asked. These messages are in white and there is no need to look up an explanation for them.

Got lost?

If you get lost at any time or anywhere in the ICU, press PF12 to get to the Home Panel and start again.

How to use this section

This list shows how a chart is drawn using five steps. Read through it so that you have a general idea of what to do. Then follow the detailed version of the steps one by one.

1. Choose Chart by Example
2. Get data and edit it
3. Make the choices in Step by Step or Ready Made
4. Add the finishing touches
5. Save the chart

Step 1: Choose Chart By Example

Press PF12 to get to the Home Panel if you are not there already. Type 0 for Chart By Example and press ENTER.

You go to a new panel called Chart By Example.

Step 2: Get some data and change it

In the Chart By Example panel, type 1 for Data and press ENTER.

You go to a new panel called Chart By Example – Data.

Look down the list of samples to see which one looks closest to what you need. If you are not sure what to choose, look at Appendix H, “Sample data” on page 267. There you will see each set of sample data and a plot of the chart it produces.

Select one of the samples and type in its number. Press ENTER.

You go to a new panel called Data Entry and you can see the numbers and words you have chosen.

Changing the data

Change the sample data to the data you need by putting in the words and numbers you want and removing any that you don't want. Move around the screen using the cursor tab keys.

The table below explains how to get over any problems that you may have.

Problem	Solution
Too much data in sample.	Remove with ERASE EOF key.
Old words or numbers too long.	Remove unwanted bits with ERASE EOF key.
Need more columns.	PF11 to get them; PF10 to get back.
Need more rows.	PF8 to get them; PF7 to get back.
Not enough room for words.	Type what you can. (Then look at the box below.)
Decimal numbers.	Type them in with a decimal point (like 1.5).
Something turns red.	You did something wrong. You probably typed a letter where a number is needed.

If there is enough room for all your words, skip this next box.

Problem	Solution
Need longer column headings?	Type 2.3 on the green dashed Command line. You go to a new panel called Data Group Names. Type in the ends of the words. Don't make them too long or they may not fit on the chart. Type 2.1 on any green dashed line. You go back to your data on the Data Entry panel.
Need longer x labels?	Type 2.4 on the green dashed Command line. You go to a new panel called Data Labels. Type in the ends of the words. Don't make them too long or they may not fit on the chart. Type 2.1 on any green dashed line. You go back to your data on the Data Entry panel.
Note:	When you get back to the Data Entry panel, you will not see the ends of the headings or labels that you typed in, but they are there.

When the data looks correct, press PF3. **You go back to the Chart By Example Data panel.**

Type in 11. **You go to the Chart Heading panel.**

Type the heading you want over the top of what is already there. If you do not want a heading, press ERASE EOF. If the heading that is there is too long, press ERASE EOF to get rid of the extra letters.

Press PF3 twice. **You go back to the Chart By Example panel.**

Now you are ready to compose your chart by selecting from the little charts in ready-made or step-by-step charts.

Step 3: Ready-made or step-by-step

Decide which one you want. Ready-made lets you choose between complete charts and gives you a finished chart after two choices. Step-by-step gives you about nine choices depending on the type of chart you select. Each choice you make in step-by-step sets one aspect of your chart (title position, shading type, or use of legend, for example).

Pick ready-made if you want a good chart quickly. Pick step-by-step if you want the best chart and are not in a rush.

Type 2 for ready-made or 3 for step-by-step. Whichever you choose, you see a first panel of lots of different chart types. The last box is empty and is labeled "8 More" If you can't see the chart you want, choose 8 and look at the second set of charts.

Choose the chart you like best and type in its number. If you have problems, look at the box below. Most of the solutions are there.

You get a new set of charts to choose from. Don't worry too much about the choices you make. You can always go back (PF7) or start again (PF3 twice) if you are unhappy with the result.

When the ICU tells you "This is the chart you have chosen," press PF5 to see the chart full size.

You may see that the chart is exactly what you want, or you may decide that you need to make small adjustments. The next step tells you how to make changes, if you want to. If your chart is already as you want it, skip Step 4.

Problem	Solution
One box has a red line round it.	Don't choose it, it will not work.
Several charts look the same.	They probably are. If you like them, choose one of them.
You chose 8 to see "More ... ," but want to go back to the first set.	PF7 will take you back.
Would like to see them big.	PF5 ... but press PF3 to get back: pressing anything else will take you off course.
Changed your mind.	Press PF7 to go back a step. PF3 twice to scrap that chart and start again.
Too slow.	Turn off the pictures with PF6 and use the descriptions instead. (PF6 again to get the pictures back.)
Gone completely wrong.	Press PF12, type 0 for Chart By Example and choose ready-made or step-by-step again. No need to get data again unless that was wrong too.

Step 4: Add the finishing touches

Chart by Example gives you a good general chart, which in many cases will be satisfactory for you. However, it cannot offer you every possible choice. Many choices depend on the data you are using and what you want the chart for.

Adding some finishing touches can make the chart come alive. For example, you might add a note or move the legend. But there are lots of other changes you could make.

As a safety measure, save your chart before you make any changes. Look at “Step 5: Save the chart so you can load it later” on page 47 for instructions on saving.

Suppose that when you add the finishing touches you make a mistake; rather than try to put the error right, you can restore the saved chart and have another go. You can restore the chart as often as you like.

When you save a chart, you don't lose it from the screen: you can continue working on it.

Before adding the finishing touches, turn on the preview chart. Press PF12 to get to the Home Panel if you are not there already. Type in M (for Menu Control and Preview Chart) and press ENTER. When the Menu Control panel appears, set Preview Chart on Panels to 3. Press ENTER and you will see a small rectangle at the bottom of the screen. Press PF12 to get back to the Home Panel.

To understand how to add the finishing touches, you need to know how to find the panel you want to solve a particular problem. You will also need to follow some simple examples.

Example 1: Removing tick marks using the panels

It is finding out which panel you use that is a problem when you add the finishing touches to a chart. There are two ways: using what is on the screen or looking in the book.

This first example shows you how to use the panels.

The tick marks on an axis indicate values on the axis. In this example you are shown how to use the panels to remove the tick marks.

1. Make sure you are in the Home Panel. (It says INTERACTIVE CHART UTILITY – HOME PANEL at the top.) If you are not, press PF12.
2. As the tick marks are on an axis, select 4, Axis Options.
3. Another choice of options is presented. Number 5, Markings, is the choice to make. Enter 5.
4. On this panel, you are presented with various tick options for your chart. Select 1 to remove them.
5. Finally, press PF5 for a full size display of your chart. If you are satisfied with it, save it for further use.

the five steps of chart drawing

You can pick your way through the panels to produce the chart you want. In the next example you will see a different technique to remove the tick marks.

Example 2: Removing tick marks using the indexes

It is finding out which panel you use that is a problem when you add the finishing touches to a chart. There are two ways: using what is on the screen or looking in the book.

This first example shows you how to use the panels.

The tick marks on an axis indicate values on the axis. In this example you are shown how to use the panels to remove the tick marks.

1. Make sure you are in the Home Panel. (It says INTERACTIVE CHART UTILITY – HOME PANEL at the top.) If you are not, press PF12.
2. As the tick marks are on an axis, select 4, Axis Options.
3. Another choice of options is presented. Number 5, Markings, is the choice to make. Enter 5.
4. On this panel, you are presented with various tick options for your chart. Select 1 to remove them.
5. Finally, press PF5 for a full size display of your chart. If you are satisfied with it, save it for further use.

Example 3: Moving the legend

1. Make sure you are in the Home Panel. (It says INTERACTIVE CHART UTILITY – HOME PANEL at the top.) If you are not, press PF12.
2. Type in 5 for Heading, Legend and Layout. Press ENTER. Wait for the panel to change.
3. There are three basic ways to stop the legend interfering with the chart.
 - a. Move the legend out of the way of the data.
 - b. Change the shape of the legend.
 - c. Increase the margin size so the chart is smaller and all of the legend fits in the margin.

The first two are done in panel 5.3, Legend Position And Format, the third is done in panel 5.4, Chart Dimensions.

4. Decide which method you are using and type in either 3 for Legend Position And Format or 4 for Margins. Press ENTER.

Moving or changing shape

To move the legend a little way use the Vertical Offset field about half way down the panel. (“Offset” means a distance moved from a starting point.) 2 will move it up two lines on the screen; -2 will move it down two lines. Try various values until it looks as if it fits on the preview chart, then look at it full size with PF5. Back with PF3 to move again if necessary.

To change the shape, set Legend Base Position to 4. This will make it a long line at the top of the screen. You can move this line with Horizontal and Vertical Offsets.

Leave the other fields on the panel until you have read and understood all the associated Help Panels.

Altering the margins

Look to see which margin your legend is in (probably the right). Count the letters in the longest word in the legend and add 5. Set the margin to this number and see if it looks as if it fits on the preview chart, then look at it full size with PF5. Back with PF3 to change it again, if necessary.

Example 4: Getting the shape right

1. Make sure you are in the Home Panel. (It says INTERACTIVE CHART UTILITY – HOME PANEL at the top.) If you are not, press PF12.
2. Type in 5 for Heading, Legend And Layout. Press ENTER. Wait for the panel to change.
3. In the new panel, type in 4 for Chart Dimensions and press ENTER. Wait for the panel to change to Chart Dimensions.

This is the same panel that you used to change the chart margins.

The ICU assumes that you want to print or plot your chart on a piece of paper 8.5 inches wide by 11 inches deep (216 mm x 279 mm) and it will make your chart as large as possible inside this area. If your paper is not this size or you don't want your chart to take up the whole page, change the horizontal and vertical proportions.

If you don't know the paper size that you will be using, change the horizontal proportion to "★". Your chart will then be stretched to cover the paper and its shape will be different from that shown on the screen. Because this method stretches your chart, don't use it if your chart has notes or labels that are not horizontal.

What goes where on the page

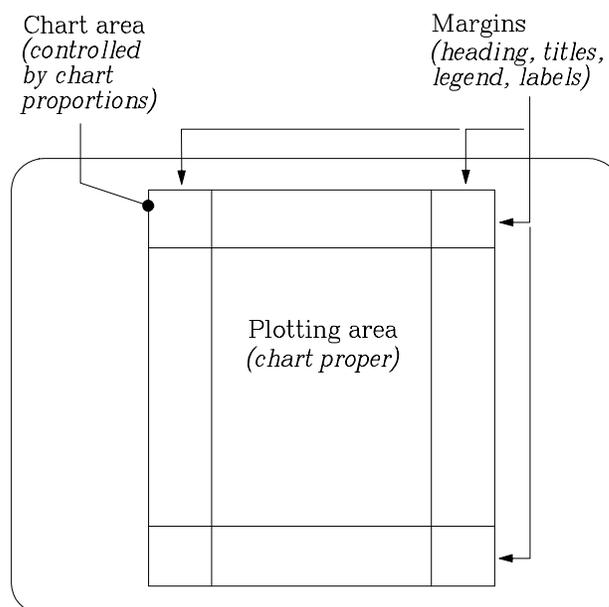


Figure 43. The plotting page

Example 5: Changing the color of the lines or bars

2.6 DATA ATTRIBUTES

Each row in this table refers to a Data Group, Pie Slice, or Venn Diagram circle. The first row corresponds to the first selected Data Group, and so on. Each column describes the appearance of the data in some way, for example, its color. Change any value in the table to change the way the data is displayed. See Help for the meaning of the numbers.

Commands	Colors			Lines		Markers		Chart Type	Explode Slice
	Shading	Text, Line	Shading Pattern	Type	Width	Type	Scale		
***	1	*	1	7	1	1	1	4	NO
001	1	*	1	7	1	1	1	4	NO
002	2	*	2	7	1	2	1	1	NO
003	3	*	3	7	1	3	1	2	NO
004	4	*	4	7	1	4	1	3	NO
005	5	*	5	7	1	5	1	4	NO
006	6	*	6	7	1	6	1	1	NO
007	1	*	7	7	1	7	1	2	NO
008	2	*	8	7	1	8	1	3	NO
009	3	*	1	7	1	1	1	4	NO
010	4	*	2	7	1	2	1	1	NO
011	5	*	3	7	1	3	1	2	NO
012	6	*	4	7	1	4	1	3	NO

Commands: I (Insert) D (Delete) R (Repeat) M (Move) A (After) B (Before)
/ (Scroll Here)

PF: 1=Help 2=Save/Load 3=End 4=Print 5=Display 7=Up 8=Down 12=Home

Figure 44. Changing colors

1. Make sure you are in the Home Panel. (It says INTERACTIVE CHART UTILITY – HOME PANEL at the top.) If you are not, press PF12.
2. Type in 2 for Data. Press ENTER. Wait for the panel to change to Data Entry (Routing).
3. Type in 6 for Data Attributes. Press ENTER.
4. The Data Attributes Panel consists of a table. The picture highlights the bits that are important to you.

By changing the green numbers, you can change the look of the chart. For example, if you have a line graph and you change the “1” to the right of “001” to “6,” the first line of your line graph will turn yellow. By changing other values in the 001 line you can change other aspects of that line.

The colors are 1 blue, 2 red, 3 pink, 4 green, 5 turquoise (light blue), 6 yellow, 7 white and 8 black. For the meanings of numbers in other columns, see Appendix F, Colors, markers, line types, shading patterns, type styles, or use the Help panels. An asterisk makes the line the same color as everything else. By changing it, you can have a different colored line round your bars or pies, or different colored markers to your lines.

5. Change the numbers to get the effect you require. You should set the preview chart on, see page 20, and change the numbers one at a time to prevent confusion.
6. When the preview chart looks correct, press PF5 to see the chart full size. If you need to make further changes, press PF3 to return to the Data Attributes panel.

Step 5: Save the chart so you can load it later

```

                                SAVE AND LOAD CHART
What do you want to do? ==> 3    1 - Load from a File
                                2 - Reset to initial defaults
                                3 - Save in a File
                                4 - List Files, to pick or delete

Which part of chart? ==> 3     1 - Format
                                2 - Data
                                3 - Both Format and Data
                                4 - Whole chart as Graphic Data Format (GDF)
                                  (not for Load or Reset)

Replace ? NO                    (Type YES for Load or Reset to replace your
                                current chart even if it has unsaved changes,
                                or for Save to replace an existing file)

Format ==> NMCHART1             Description of file
Data   ==> =                    =
GDF    ==>                      =
                                (May be '=' meaning the same as the Format name or description)

PF: 1=Help 3=End 4=Print 5=Display 12=Home

```

Figure 45. The Save And Load Chart panel

1. Press PF2. You can do this from almost any panel, but if you get a message saying **PF2 does nothing**, press PF12 for the Home Panel, then try again.
2. Set **What do you want to do** to 3.

If it is a new version of an old chart and you want to replace the old one, change **Replace** to Yes.
3. Set **Which part of chart** to 3.
4. Type in a name for the chart format. It can have up to 8 characters, for example, NMCHART1.
5. Put in a description to remind you of what it was.
6. Press ENTER. You should get a message saying 'SAVE' SUCCESSFUL FOR CHART FORMAT AND DATA. If you do not, try another name.
7. When you have got the 'SAVE' SUCCESSFUL message, press PF12 for the Home Panel. Unless you want to draw another chart, press PF9 to exit from the ICU.

To learn about loading charts that you have saved and deleting those you no longer need, see “Loading and deleting charts” on page 94.

the five steps of chart drawing

Chapter 5. Learning 4 – Making the most of the ICU

By now you should be able to use the ICU to produce a simple chart.

The next few pages can start you on the road to becoming an expert user. You can read through them, use them for reference, or work through them at a terminal as you wish.

If possible, you should work through the Guided Tour section to get an idea of what you can do with the ICU.

This part contains:

1. Guided tour of the ICU
2. Getting over mistakes
3. Data entry—which panel to use
4. Data import
5. Data manipulation and spreadsheet functions
6. Words on your chart
7. Notes and interactive editing
8. Printing and plotting
9. Saving, loading, and deleting charts
10. Listing your charts, symbol sets, and GDF

Before you start, set the preview chart on in Menu Control (panel M), then go to Data Entry (panel 2.1), type SAMPLE on the command line, and press ENTER. Then go back to the Home Panel by pressing PF12.

Guided tour

This tour round the choices in the Home Panel will show what can be done with the ICU.

Home Panel, Help and Help Index

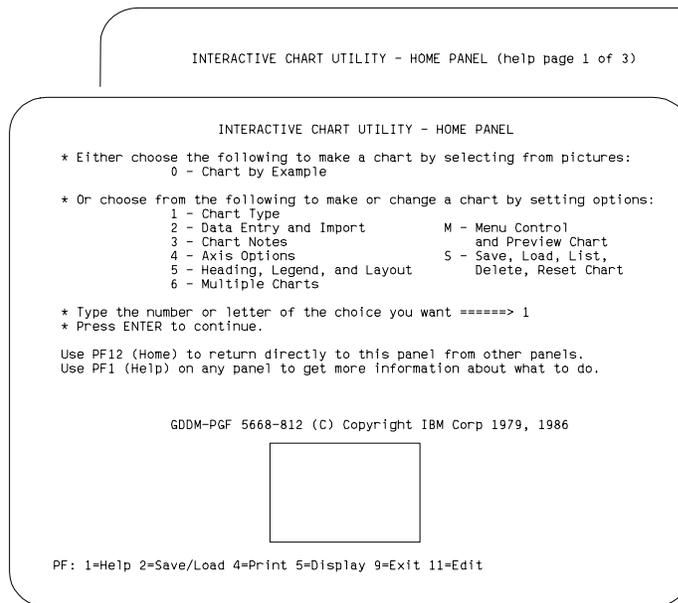


Figure 46. The Home Panel

Look at the Home Panel. On the bottom you will see a list of the PF keys you can use. It is on every panel. Press PF1 for help and read the first page to get the flavor. Press PF1 again to get to the help index. This tells you the panel to use for each ICU function. Press PF8 for the next Help Page, then PF12 to get back to the Home Panel. Help is always there to tell you more about the panel you are working on.

From the Home Panel you can go directly to any of the other panels, provided you know their number. So, if you want to go to Heading Text Attributes (panel 5.1.1), you can type in 5.1.1 and press ENTER.

You have already used choice 0. Now take the next choice. Type in 1 and press ENTER.

Chart Type

```

1
                                CHART TYPE
                                Chart Type ==> 5
                                1 - Line Graph (or Scatter Plot)
                                2 - Surface Chart
                                3 - Histogram
                                4 - Bar Chart
                                5 - Pie Chart
                                6 - Venn Diagram
                                7 - Polar Chart
                                8 - Tower Chart
                                9 - Table Chart

                                Chart Type Mixing ==> 1
                                1 - Single Chart Type (as above)
                                2 - Mixed Chart Types (see panel 2.6)

                                Would you like to define the
                                above Chart Type in more detail ? NO (defaults are provided)

                                [ ]

                                PF: 1=Help 2=Save/Load 3=End 4=Print 5=Display 12=Home
  
```

Figure 47. The Chart Type panel

In the Chart Type panel (panel 1) there are three green values filled in for you. These are **defaults** (the values that the ICU puts in for you if you do not specify your own values). The first green value controls the chart type. Change it to 2 and press ENTER. The preview chart changes to a new type. PF5 will display it full size. (PF3 for the Chart Type panel again.)

Try some or all of the chart types, 1 to 9.

Define the Tower Chart (8) in more detail: change NO to YES and press ENTER. Try putting in a scale tower by changing NO to YES in the last item of the panel. PF3 to return to the Chart Type panel. Every chart type has a similar panel where you can change details of the appearance.

Set Chart Type Mixing to 2 and see the result. (Chapter 11, “Mixed charts” on page 141 tells you more.)

Set Mixing to 1 and Chart Type to 9 and press ENTER. You now have a table chart in the preview chart.

Finally, reset Chart Type to 1. Press ENTER and make sure you have a line graph in the preview chart. If you do not, either Chart Type or Mixing is not set to 1.

graph the other way round. Transpose the chart back again with another TR. Try X (exclude) on the command line below "Miami." The Miami line will disappear in the preview chart. You will select it (get it back again) later.

2.3: Long Data Group Names

DAILY HOURS OF SUN

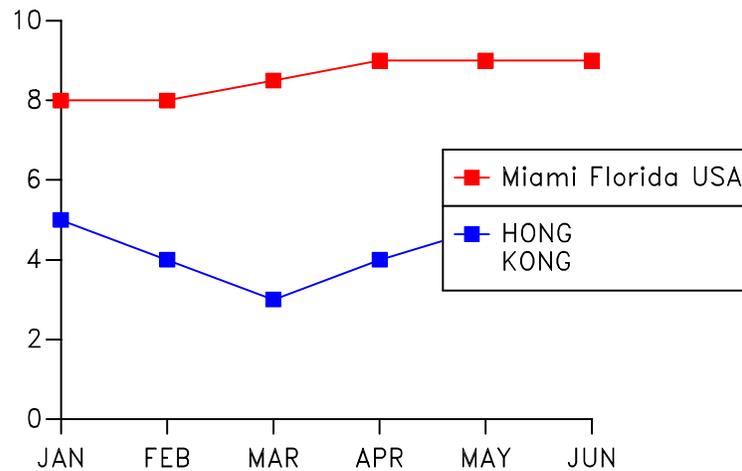


Figure 50. Manipulating data group names

Put S (select) against Miami and see it reappear on the preview chart. Excluded columns can best be re-included (selected) in this panel because you will be able to see all of the data groups at once, although you can also do it from panel 2.2.

The other use for this panel is to put in longer names. Make the Miami line read "Miami Florida USA." Shorten the name to Miami using ERASE EOF. Do not use the space bar. If you do, the ICU thinks you want blanks so the name stays just as long.

2.4: Data Labels

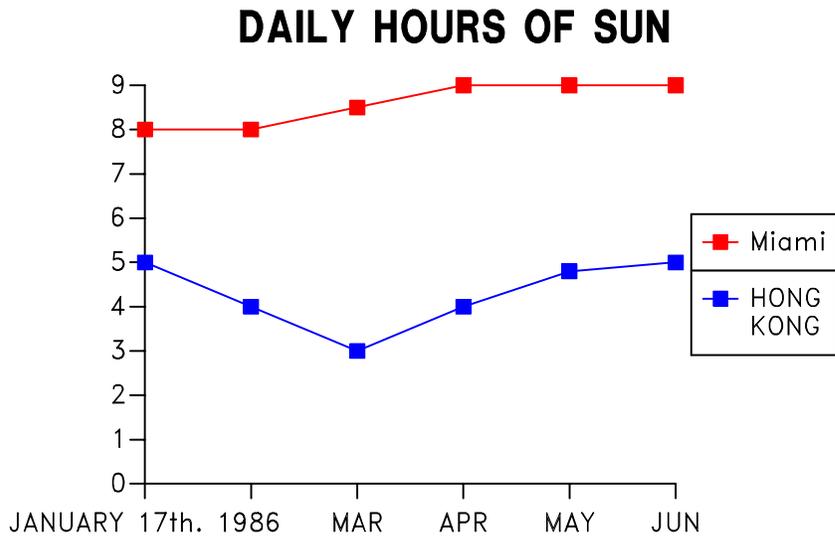


Figure 51. Changing data labels

This panel lets you change the data labels that you typed in panel 2.1 or 2.2. You can also use it to create very long labels. Try changing JAN to JANUARY 17th. 1986.

2.5: Data Interpretation

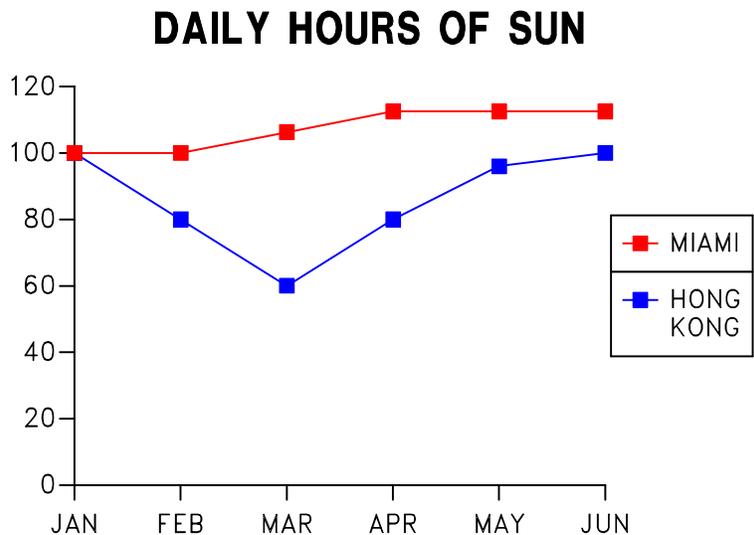


Figure 52. Indexing

Panel 2.5 has two main uses:

1. "Indexing" to produce charts that take account of special factors such as inflation or fluctuations in market size
2. Special effects for polar and tower charts which are described in the same place as the charts themselves

Try indexing now. Set Y values displayed to 2 and the indexing type 3 to get the result shown in the picture. If the chart showed the cost of living over several

years, it would be useful to compare Miami and Hong Kong as if they had both started at the same point. More on indexing in Chapter 9, “Indexed charts” on page 127.

Reset Y values displayed to 1.

2.6: Data Attributes

This controls the appearance of your lines, bars, shaded areas, and so on. The line numbered 001 refers to the first data group (the blue line on the chart). The line numbered 002 refers to the red line.

The meanings of the columns of green numbers are:

Column	Meaning
1	Color of bars, pie slices, anything shaded, and markers.
2	Color of text, lines, if different from shading or markers. Leave as * for same color. Change all to 7 for a smart outline on pies and bars.
3	Shading pattern, see Appendix F, “Colors, markers, line types, shading patterns, type styles” on page 257.
4	Type of line (dotted, solid, and so on, see Appendix F, “Colors, markers, line types, shading patterns, type styles” on page 257).
5	Width of line (1 thin, 2 thick.)
6	Type of markers, see Appendix F, “Colors, markers, line types, shading patterns, type styles” on page 257.
7	Scale of markers (1 small, 2 twice as big, and so on.)
8	Type of chart. Only works if Mixed Charts is set in panel 1.
9	Pie slice exploded yes or no. Has no effect if explosion distance is set to 0 in panel 1.5.

DAILY HOURS OF SUN

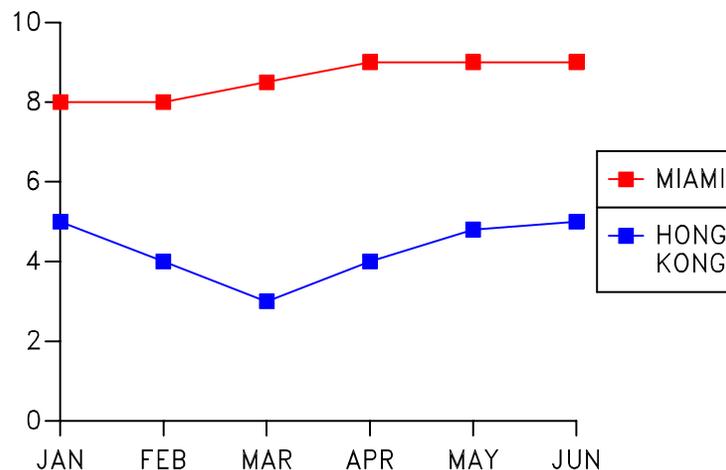


Figure 53. Changing data attributes

Using Appendix F, “Colors, markers, line types, shading patterns, type styles” on page 257 as a guide, change the first five values in the top row one at a time and look at the results. Some of the changes are difficult to see on the preview chart. So press PF5 to see result full size, then return with PF3. Have fun.

When you have had enough, press PF3 for Data Entry (Routing) and try choice 7.

2.7: Data Group Name Attributes

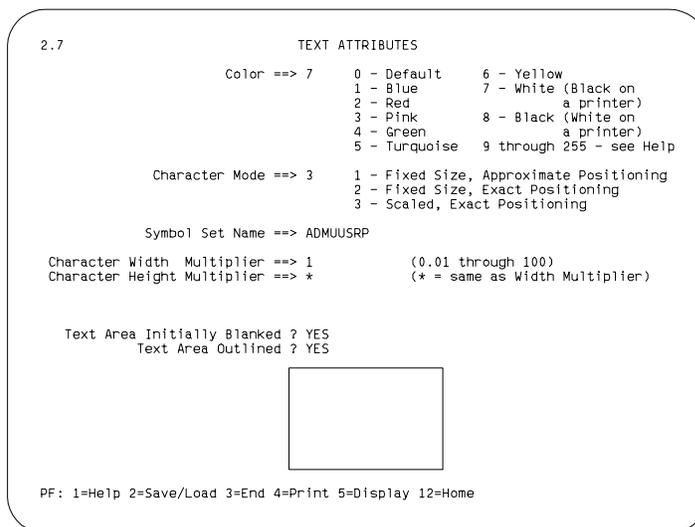


Figure 54. Text Attributes panel

Use this panel to change the look of the words in the legend. Try making the words pink by setting the color to 3. You could also use a different symbol set. The Help panels tell you what symbol sets are available.

2.8: Data Label Attributes

This panel looks very similar to 2.7. Use it to change the look of the data labels. Set the character width multiplier to .5 and the text rotation angle to 45 to accommodate the long data label.

2.9: Data Import

If you produce reports that contain rows or columns of figures using an IBM PC or the host computer, you can use this panel to bring those numbers into the ICU without having to retype them. The ICU provides you with a sample report to experiment with. Have a look at the examples in “Data import” on page 71 and you will see how to use this powerful feature.

Press PF12 to get back to the Home Panel.

Chart Notes

To the right of "001" (use Tab to get there) type "Acrobatic Note." Press PF6 and change the Color column (try 2 for red) and perhaps a symbol set (ADMUUTRP).

DAILY HOURS OF SUN

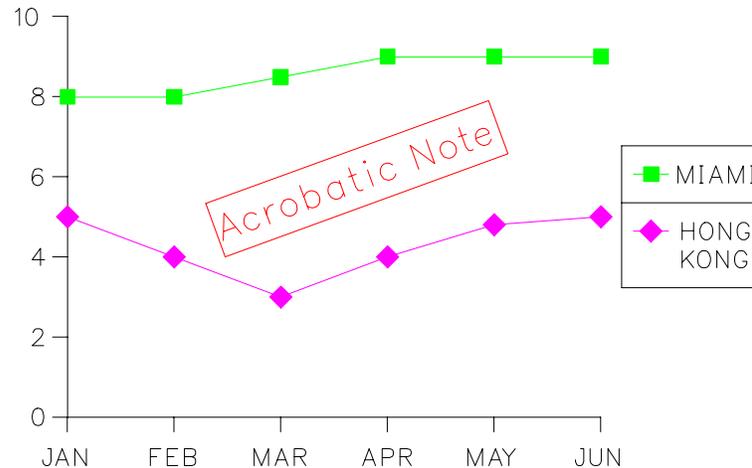


Figure 55. Creating chart notes

PF11 takes you to a panel where you can change a note's appearance. To move the note, press PF10. Move the cursor by using the mouse, puck, stylus, or cursor control keys so that the cursor overlaps the note. Press PF2. Move the cursor to where you want the note and press PF2 again. The note jumps to the cursor.

If you select the wrong note, or change your mind when making a change, press PF4.

Other PF keys allow you to change a note's size, height, width, and angle. Follow the prompts to see what to do.

Try PF6 to get rid of the prompts at the top of the screen and ENTER to remove the PF key line. Press the key again to get the words back.

PF12 to get back to the Home Panel.

Axis Options

First press PF6 a few times, and see the title change from X AXIS to Y AXIS and back again. Always check the title before changing this panel. You don't want to change the wrong one.

Try choice 1 – Title. Put in an x-axis title of “First Six Months,” then PF6 and a y-axis title of “Hours of Sunshine.”

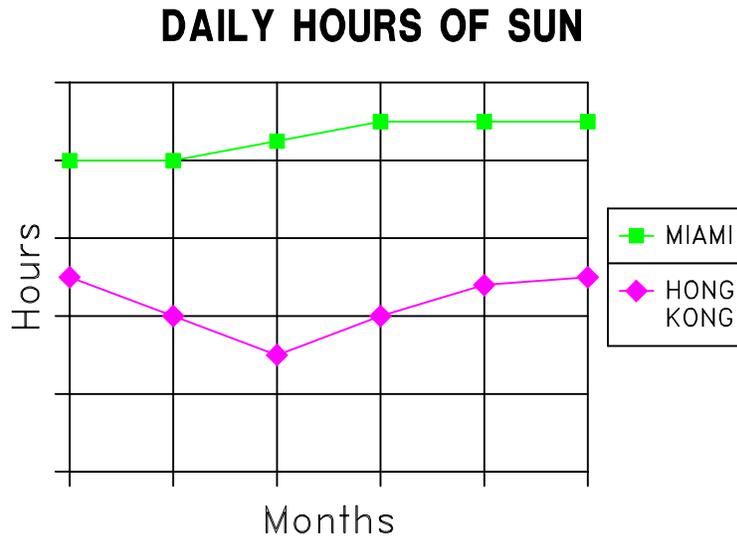


Figure 56. Adding axis titles

Other choices are:

- 2 Axis thickness and color
- 3 Logarithmic or linear, start and end values, intersection point
- 4 Labels on the axes, and their color
- 5 Where the labels are placed
- 6 Grid lines
- 7/8 Lines to highlight particular values

Try setting grid lines as shown in the picture.

PF12 to get back to the Home Panel.

Heading, Legend and Layout

Before you try this, change to a bar chart in the Chart Type panel to show the changes better. When you have done that, return to the Home Panel and take choice 5.

On the routing Panel, take choice 1 – Chart Heading, and in the new panel type YES to change the attributes. Make the type style italic by changing the Symbol Set Name to ADMUUTIP. Set the Character Width Multiplier to 3.

Go back to the routing panel with PF3 (twice) and take choice 2. Set the Chart Orientation to 2 for a horizontal bar chart. Return using PF3.

Next try choice 3 to move the legend to the top right-hand corner. Set Placement within Margin to 2.

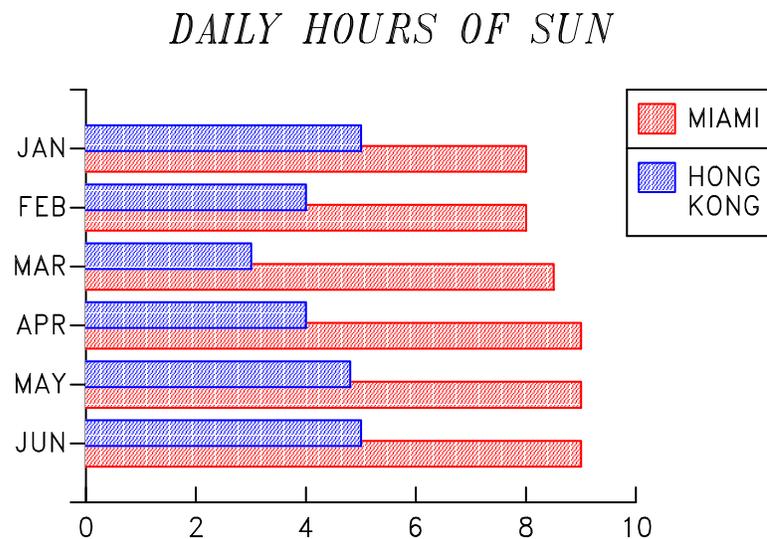


Figure 57. Changing legend and orientation on a bar chart

Finally, try choice 4 to set the shape of your chart. Labels, titles, heading, and legend go in the margin. You can alter the margin settings so that they are large enough for the text. Do not alter the character grid size. But you can alter the chart proportions to make your chart fit a different size paper.

Return Home with PF12.

Multiple Charts

```

6                                MULTIPLE CHARTS

Type in the format and data names of the charts you want, and the positions
and attributes of the areas in which you want the charts to appear.
You position a chart by giving the distance of each of its edges from the
lower left corner of the master chart (the chart that you are editing at the
moment). Express the distance as a percentage of the size of the master chart.
Charts may overlap. Use PF6 to switch between positions and attributes.

Chart Name      Chart Position
Commands Format  Data   Left   Right  Bottom Top
***
001 *MASTER* *CHART*  0      100   0      100
002                10     45    55     90
003                55     90    55     90
004                10     45    10     45
005                55     90    10     45

Commands: I (Insert) D (Delete) R (Repeat) M (Move) A (After) B (Before)
          / (Scroll Here) S (Select) X (Exclude)

PF: 1=Help 2=Save/Load 3=End 4=Print 5=Display 6=Show Attributes 7=Up 8=Down
     11=Edit 12=Home
    
```

Figure 58. The Multiple Charts panel

This facility lets you put several charts on one piece of paper. Usually, you have a master chart (the chart you are working on at present) and one or more subcharts. Any other chart that you have created can be a subchart. You can put a subchart anywhere on the page by changing its position numbers. You can also use interactive edit (PF11) to move subcharts around.

In the preview chart and in interactive edit, there are no details of the subcharts; only outline boxes.

You can create and save a multiple chart, then use it as a subchart on another multiple chart.

Printing

```

PRINTER/PLOTTER OUTPUT

Printer/Plotter Name ==>

Number of Copies ==> 1      (1 through 99. Queued output only)
Header page preceding output ? YES (Queued output only)
Userid and time on output ? NO

Size and position on the output area:
Width ==> *                (See Help for the definition of
Depth ==> *                'area', and the default action
Offset from left of area ==> * shown by '*')
Offset from top of area ==> *
Units for size and position ==> 1      1 - Percentage of area depth/width
                                         2 - Inches
                                         3 - Centimeters
                                         4 - Rows/columns (for printers
                                         only: see Help)

Press ENTER to start output.
Press PF6 (Start Series), if shown below, to output a series of charts or
graphic data formats (GDFs).



PF: 1=Help 3=End 6=Start Series 12=Home

```

Figure 59. The Printer/Plotter Output panel

Press PF4 for the Print panel. Fill in the Printer/Plotter Name (decided in “Get these answers before you start” on page 25) and press ENTER. This will print your chart full size. If your subsystem is VM (again see “Get these answers before you start” on page 25), you may need to take action after you end the ICU. See “Printing and plotting” on page 91 for hints.

PF12 for the Home Panel.

Save, Load, List, Delete, Reset

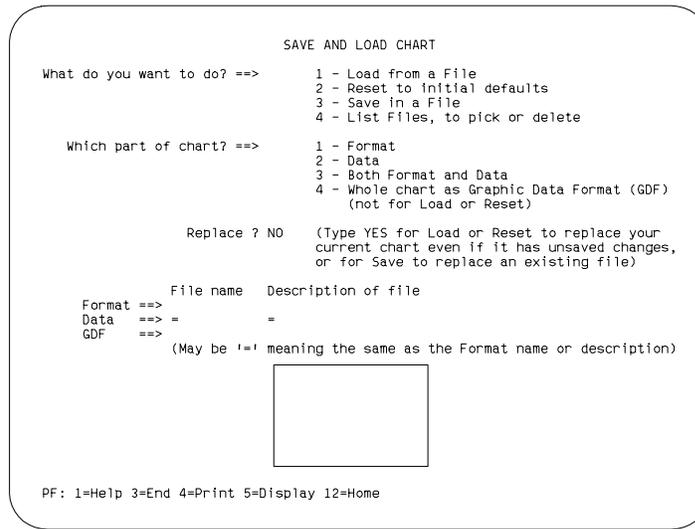


Figure 60. The Save And Load Chart panel

You have already saved some charts. Use the same method to load a chart.

“Getting it back – loading the chart” on page 94 shows you how to load and delete charts.

To reset the ICU, select 2 (Reset), set Replace to Yes and Which part of chart to 3. Use this when you have finished one chart, saved it, and want to start afresh with a new chart.

Menu Control

```

MENU CONTROL

Preview Chart on Panels ==> 1      1 - No
                                   2 - Yes, except for Data Entry Panels
                                   3 - Yes, including Data Entry Panels
                                   (Some panels never show the Preview Chart)

Preview Chart Position:           (in Screen Rows)
  First Row ==> 23                (numbered from the top)
  Last Row ==> 3                  (numbered from the bottom)

Text Highlighting ==> 1           1 - None
                                   2 - Reverse Video

Text String Contents ==> 1        1 - Latin Characters Only
                                   2 or 3 - Mixed Latin and DBCS Characters
                                   (see Help for explanation)

Usage of Directory Panel ==> 1    1 - Standard Mode
                                   2 - Advanced Mode

(Panels will not use the space after this line except for the PF key list)

```

```

PF: 1=Help 2=Save/Load 3=End 4=Print 5=Display 12=Home

```

Figure 61. The Menu Control panel

This lets you turn the Preview Chart on and off, control the color of the Data Entry Panels, indicate whether you want to use DBCS. (If you do not know what it is, you do not want to use it!) Finally, it lets you control the way you list your charts.

Advanced Directory

```

ADM1042 I 6 ITEM(S) LISTED          DIRECTORY
Commands Name      Type      Mode Date and Time      Description
                               Last Written
*** AACH*
001 AACH1  FORMAT  A1  02 APR 1986 12:42 PM My first chart
002 AACH1  DATA  A1  02 APR 1986 12:42 PM My first chart
003 AACH2  FORMAT  A1  02 APR 1986 12:53 PM My second chart
004 AACH2  DATA  A1  02 APR 1986 12:53 PM My second chart
005 AACH3  FORMAT  A1  17 FEB 1986  1:13 PM My third chart
006 AACH3  DATA  A1  17 FEB 1986  1:13 PM My third chart

Commands: R (Restore (Load)) D (Delete) P (Pick Name) C (Copy From)
          / (Scroll Here) SH (Show GDF File) PR (Print GDF File)
*** 1line only: L (List) S (Save) U (Update) T (Copy To)

PF: 1=Help 3=End 4=Print 5=Display 6=Show Description 7=Up 8=Down 12=Home
    
```

Figure 62. The Directory panel

Set the last value, Usage of Directory Panel, to 2 and press PF2 for the directory. This suppresses the Save/Load Panel (S on the Home Panel). There are more functions available from the Advanced Directory than there are from the Save/Load Panel.

Type L in the top line and press ENTER to list all your charts. From here you can load them, save them, and more.

Type R against a format and data of the same name and press ENTER. If you changed the chart you are working on, you will get a message reminding you that you may want to save it. You probably do not want to save it, if you don't, press ENTER again and get the new chart.

Finally, PF12 for the Home Panel and PF9 to exit from the ICU.

Getting over mistakes

Learning to get over mistakes is an essential part of becoming an effective user of the ICU.

Understanding the messages

Usually, when you make a mistake the ICU displays a message on the second line of the screen. The message is in three parts:

1. Some letters and numbers, for example **ADM1107**.
2. A letter:
 - I** Information
 - W** Warning
 - E** Error
 - S** Severe error
3. Some explanatory text, for example **PLEASE ENTER A WHOLE NUMBER**.

The message is color-coded, as follows:

Blue

The first two parts.

White

Information text, telling you the ICU has done what you asked.

Yellow

Warning text. It appears when the ICU can do what you want but it is probably not a good idea to do it.

Red Error text, telling you the ICU cannot do what you have asked.

The text for severe errors is also red. You see these very rarely. If they do appear, it is unlikely that it is your fault, so talk to your local expert.

Mistakes on the panels

The most common errors are just typing errors, mostly typing the wrong thing, or the right thing in the wrong place. These are the common typing errors:

1. Typing on a panel where you are not allowed to type at all.

This produces the stick man at the bottom of the screen. You cannot type on Help panels or panels that display the chart. The cure is to press RESET and not to type again. Leave the panel, using PF12 or PF3.

2. Typing a letter where you should type a number. You'll get a message like this:

```
ADM1005 E PLEASE ENTER A WHOLE NUMBER IN THE RANGE 1 TO 8
```

The ICU recognizes this, turns the thing that is wrong red, and gives you a message telling you what to do.

3. Getting a number wrong. You'll get a message like this:

```
ADM1107 E PLEASE ENTER A NUMBER
```

The ICU gives you a message here as well. But you can get caught if you type in something like 1,00 because the ICU does not recognize it as a number. The safest way is to leave out all punctuation except the decimal point.

4. Putting something funny in a command line

If you type in a number on a command line, the ICU thinks it is a panel number and goes to that panel if it can. This is a bit surprising if you typed the number by mistake. If the number is not a panel number, the ICU gives you a message telling you so, again this can be a surprise if you were trying to type something else. If you just mis-type a command, the ICU gives you a message telling you what you do.

You'll see a message like this:

```
ADM1015 E COMMAND IS NOT LISTED. SEE HELP PANEL FOR A COMPLETE LIST
```

The commands you can use are listed at the bottom of the screen if the preview chart is not set on, and also on the first Help screen.

5. Not knowing how to get the old value back.

If you type something that the ICU does not like, and then cannot find anything that the ICU will accept, you can return to the last value you had by pressing either the CLEAR key, or PF1 followed by PF3.

Mistakes on the chart

Asking for values that cannot be plotted as a chart causes error messages when the chart is displayed.

Early warning – the Preview Chart goes red

If the Preview Chart is on, its border will turn red if you make a mistake. Display the chart (PF5) to see the message.

1. **The chart is not there at all** – your data is wrong. You'll get a message like this:

```
ADM0540 E PIE CHART CANNOT BE DRAWN IN AVAILABLE CHART AREA
```

You have asked for an impossible chart, too many pie charts on a screen or a Venn diagram where the overlap is bigger than the population. Read the message or messages to see if they help. If not, look in this book: either under the message in Appendix B, ICU messages or under "Traps" for the chart type involved.

2. **Messages but chart (more or less) OK** – probably not enough room. You'll get a message like this:

```
ADM0514 W LABEL(S) OMITTED ON X AXIS
```

The ICU cannot draw one of the details of your chart. Most likely there is not enough room. Look carefully at the message. If the problem is labels, the best answer is to shorten them, see "Words on your chart" on page 83. Look for mis-typings in axis or data values.

Bypass: Pressing PF6 removes the messages.

3. **A funny looking chart but no messages.**

This is probably the hardest problem. Check that your data values and axis lengths are correct. Check that you are not using logarithmic axes (panel 4.3), check for indexing in panel 2.5 and axis orientation in panel 5.2. Look in this book at the "Traps" section for the chart you are drawing.

Messages about files and other gobbledygook messages

Sometimes you get messages that seem completely incomprehensible to you, for example:

```
ADM0310 E SUBSYSTEM 'FSWRITE' ERROR 12 ON 'CHART1 ADMCFORM H'
```

You have upset something deep in the ICU. Most likely you have tried to save a chart somewhere you should not (that causes the example message) or asked for a symbol set that is not there. Or you have asked for something so complicated that the computer will not let you do it. Or there is something wrong with the computer system.

Check that you have not typed something wrong (symbol set name, or library information in the directory). Then read the explanation of the message in Appendix B, ICU messages of this book (209). Look at the start of Appendix B, ICU messages to find out what to do if a message is not in the book.

If the message stops you doing something you want to, talk to your local expert.

Data entry

Here, we describe the various ways of getting and manipulating data for your charts.

Which panel to use

Use these 12 panels to handle the values, appearance, and interpretation of your data.

Panel 2.1: Data Entry and Initialization – for beginners

This is a simple data entry panel with only a single command line. It is for beginners. Unless you need 4 columns of data, you should use 2.2 for its extra editing power.

Panel 2.2: Data Entry and Manipulation – for the experienced

Lets you enter three columns of data, and gives you a full set of editing commands and “spreadsheet” functions. (See “Data manipulation” on page 79 for details.)

Panel 2.3: Long Data Group Names

Use when the data group names are too long to fit on 2.1 or 2.2. Also use it to change the order of data groups using M (MOVE) and B (BEFORE) or A (AFTER) and to exclude them with the X command and select them again with the S command. Change the order to improve surface charts or stacked bar charts or to change the legend order. Exclude to highlight particular lines.

Panel 2.4: Long Data Labels

Use when the Data Labels are too long to fit on 2.1 or 2.2. (You can only get about 40 letters along the x axis, so only use long labels if they are essential, see “Words on your chart” on page 83.)

Panel 2.5: Data Interpretation – “indexing” and axis problems

Indexing is a way of showing a chart of things that are always changing. You would use indexing, for example, to show wage comparisons irrespective of inflation (more in Chapter 9, “Indexed charts” on page 127).

Problems with the x axis are caused by line graphs often having plotted points unequally spaced on the x axis, whereas bar, polar, and tower charts usually have them at equal intervals.

If you want all polar chart labels to show, or if you have changed from a line to a bar or tower chart and want your bars or towers equally spaced, set Y values positioned as 2, at equal X intervals.

Other problems occur in tower charts, associated with the z axis. If you get a message about “unordered z values” when you are using tower charts, this can be solved by setting Y values positioned as 2, at equal Z intervals.

Panel 2.6: Data Attributes – the look of the lines and bars

This lets you change the color of your lines, bars, pie slices, or whatever the chart uses to show the data. Also shading pattern, marker size, line type, and more. See page 55 for more information.

Panel 2.7: Data Group Name Attributes – the look of the legend

This lets you change the color, size, and type style of Data Group Names (the contents of the legend, except for pie charts and tower charts where Attribute selection is set to 2 in panel 1.8.)

Panel 2.8: Data Label Attributes – the look of the x labels

This lets you change the color, size, and type style of Data Labels used as x axis labels (except for pie charts).

Panel 2.9: Data Import

This lets you use data not created by the ICU.

Panel 2.9.1: File view and data definition

Lets you look at data in a sequential file, or some types of file created on an IBM PC, and select data to be used by the ICU. Your selection and instructions are called a data definition.

Panel 2.9.2: Data import control

This allows you to control how your data will be imported.

Panel 2.9.4: Save and load data

Is like the ordinary Save/load panel but you can only use it for data definitions.

Data import

This section tells you how to import data. It is divided into short topics:

1. General information that applies to both host and PC files
2. Tips
3. Traps
4. Example of getting data from a host file
5. Advanced techniques.

Begin by just reading the General information, Tips, and Traps; then try the example.

General information

You can only use data import on VM/CMS and MVS/TSO.

If you already produce reports based on data held in your host computer or in your IBM PC, you can use that data to produce charts. This means that you can show data both as a printed document and as a chart **without** retyping the figures.

The stages of data import

1. Create a data definition (panel 2.9 option 1). You'll learn how in a minute.
2. Import the data (panel 2.9 option 3). You'll learn about this too.
3. Look at the chart (PF5). If it looks correct, carry on; if not go back to stage 1 and amend the data definition.
4. Save the data definition (panel 2.9 option 4).
5. Tidy up your chart. "Step-by-step" is a quick and easy way to make these amendments.
6. Save the chart format and data (PF2).

Suitable data

If you are not sure whether the data you want to use is suitable for the ICU, ask your local expert or look in Appendix D, "How to become the local expert" on page 243.

Telling the ICU what you want

So, you have a report that your local expert says is suitable, what next? You need to tell the ICU which bits of the report to use and how to use them. Suppose your report looks like this:

5/4/86	Workforce	Page 156
The company's workforce is employed at three factories:		
		Number employed
North		319
South		567
Central		182

You know that you need some numbers to make a chart with. There are lots of numbers in this report. The ICU needs to be told which ones to use: not the date or the page number, but the column of figures (319, 567, 182).

You may want to tell the ICU to use the word “Workforce” for the chart heading. You could tell it to use “North,” “South,” and “Central” as x-axis labels.

Telling the ICU what to use is called creating a **data definition**.

What is a data definition?

A data definition is a set of instructions telling the ICU how to interpret your report. You can save data definitions on the host computer and reuse them with any report that is the same shape.

What is an item?

The ICU recognizes 6 items that can appear on a chart and indicates each one by a different color on the screen:

1. Heading – blue
2. Data labels (x-axis labels) – pink
3. Data group names (for legend) – green
4. Data groups (y values) – turquoise
5. X values (x-axis labels) – yellow
6. Notes – white

If, for example, you select “North” to be an x-axis label, the background to the word changes to pink to match the item type.

The chart below shows the “Workforce” report as a bar chart. In this example, each type of item is shown in the color used on the screen. This means that the data groups become the bars on the chart and they have been colored turquoise.

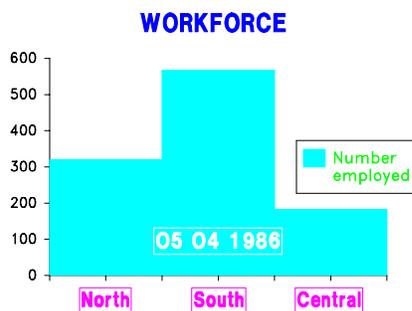


Figure 64. Coloring of items in a chart

Selecting an item

If the item you want is a word, phrase or figure:

1. Select an item-type by answering the “Which type of item?” question.
2. Move the cursor to the start of the word or figure you want.
3. Press PF4.
4. Move the cursor to the end of the word or figure you want.
5. Press PF5.

If the item you want is a column of data:

1. Select an item-type by answering the “Which type of item?” question.
2. Move the cursor to the start of the **first** word or figure you want.
3. Press PF4.
4. Move the cursor to the end of the **last** word or figure you want.
5. Press PF5.

Everything within the colored rectangle will be included in the item.

Importing the data

You have told the ICU what items you want in your data definition, now you must tell it to use those items to draw the chart. This is called importing the data.

You import data by selecting option 3 from panel 2.9. You should see a message that says:

```
DATA SUCCESSFULLY IMPORTED FROM FILE
```

Sometimes, you may get the “CONVERTED TO MISSING” message. Usually there is no problem, so carry on.

Tips

Here are some things to help you when you’re setting up your data.

Defining items

Imagine that you have six colored highlighter pens. Each one marks a different type of data. You only get things that are inside a rectangle of color.

Long items

Check that your rectangle is big enough to contain the longest line that you need to include before you press PF5.

Using PF4 and PF5 with data interchange format files

Because this type of data is held in a grid of cells you can put the cursor *anywhere* in the cell you want to select and press the PF key.

Displaying the chart

Go back to 2.9 at any time (PF3), import what you have selected so far, and look at the chart (PF5). Do this to check that you are selecting the correct items.

Checking and changing the data

Once you have imported the data, you can look at it by going to the appropriate panel. For example, check what you have selected as the heading by going to panel 5.1 and then change its color in panel 5.1.1.

Messages

Data import panels give you lots of messages to help you keep track of your selections. Take notice of them; they are there to help you.

Long columns

When the end of the report is beyond the bottom of the screen, and you want to select all the lines to the end of the report, put the cursor on the line that says “(Use PF5 with the cursor ...)” and press PF5. The complete column will be selected.

Traps

Here are some of the pitfalls in setting up your data—and how to avoid them.

Missing parts of numbers?

Check that the column you marked was wide enough. This can happen if the numbers at the end of a column are much bigger than those at the beginning.

Fewer data group names than you expected?

Use PF4 and PF5 for *each* name and increase the data group number each time.

Picked the wrong thing?

Set the item type to match the field that is wrong, put the cursor on the field, and press PF9.

In a muddle?

If you get confused, clear the data definition and start again. If you are using the Save/load panel, select 4 from panel 2.9, and select Reset. If you are using the Advanced Directory, press PF2 and load (R) *.

Odd characters appearing?

If you are using data that is normally only printed, you may find characters such as “+,” “-,” and “0” at the start of lines. Do not select them, you do not need them to produce your chart.

Getting values from a sequential file

Let's use an example to show how you do this. Suppose you run a travel agency and each month you produce a report like the one shown below.

JULY 1986		WEATHER IN HONG KONG AND MIAMI		PAGE 1	
THE AVERAGE AMOUNT OF SUNSHINE DAILY THIS YEAR HAS BEEN:					
MONTH	HONG KONG		MIAMI		
JANUARY	5	HOURS	8	HOURS	
FEBRUARY	4	HOURS	8	HOURS	
MARCH	3	HOURS	8.5	HOURS	
APRIL	3	HOURS	9	HOURS	
MAY	4.8	HOURS	9	HOURS	
JUNE	5	HOURS	9	HOURS	
PLEASE USE THESE FIGURES IN ALL YOUR HOLIDAY PROMOTION LITERATURE.					

The file that produces this report is provided with the ICU.

1. Go to panel 2.9.
2. Select option 1, type in the name of the file (ADMUCSIM DATA on VM/CMS or ADMUCSIM in GDDMSAM on TSO) and set Type of file to 1. Press ENTER.
3. Set Which type of item to 1. Put the cursor under the W of WEATHER and press PF4. Put the cursor under the R of WEATHER and press PF5. This makes "WEATHER" the heading.
4. Set Which type of item to 2. Put the cursor under the J of JANUARY and press PF4. Put the cursor on the MAY line but under the Y of FEBRUARY and press PF5. This makes the month names the data labels.
5. Set Which type of item to 3. Put the cursor under the H of HONG and press PF4. Put the cursor under the G of KONG and press PF5. Change the data group number to 2. Repeat the process for Miami. This makes the two cities the data group names.
6. Set Which type of item to 4. Change the Group number to 1. Put the cursor under the 5 in the first column and press PF4. Put the cursor on the last line of the column (the one with another 5 in it) under the 8 of 4.8 and press PF5. This makes these figures the first data group.
7. Change the data group number to 2. Repeat the process to select all the figures in the second column. This makes these figures the second data group.
8. Set Which type of item to 6. Change the data group number to 1. Select "AVERAGE AMOUNT OF SUNSHINE" using PF4 and PF5. This makes "AVERAGE AMOUNT OF SUNSHINE" a chart note.

The panel should now look like the one following.

```

2.9.1 FILE VIEW AND DATA DEFINITION
Use PF4 (Mark Start) and PF5 (Mark End) to define each chosen item.
Which type of item? ==> 6      1 - Heading          4 - Data Groups (Y values)
                                2 - Data labels      5 - X values
                                3 - Data Group names 6 - Notes
Data Group or Note ==> 1      (ignored for this item) -1
Part ==> 1                    (ignored for this item) -1

|----- File: ADMUCSIM DATA -----|
| Record ==> 1 of 14 Column ==> 1 of 80 |
JULY 1986 WEATHER IN HONG KONG AND MIAMI PAGE 1

THE AVERAGE AMOUNT OF SUNSHINE DAILY THIS YEAR HAS BEEN:

MONTH      HONG KONG      MIAMI
JANUARY    5 HOURS        8 HOURS
FEBRUARY   4 HOURS        8 HOURS
MARCH      3 HOURS        8.5 HOURS
APRIL      3 HOURS        9 HOURS
MAY        4.8 HOURS      9 HOURS
JUNE       5 HOURS        9 HOURS

PLEASE USE THESE FIGURES IN ALL YOUR HOLIDAY PROMOTION LITERATURE.

| (Use PF5 with the cursor on this line to extend an item to End of File) |
PF: 1=Help 2=Next Part 3=End 4=Mark Start 5=Mark End 6=Next Data Group/Note
7=Up 8=Down 9=Unmark 10=Left 11=Right 12=Home
    
```

Figure 65. File View And Data Definition panel for the travel agent example

9. Press PF3 and choose option 3 to import your data. Press ENTER.
10. Press PF5 to look at your chart. It should look something like this.

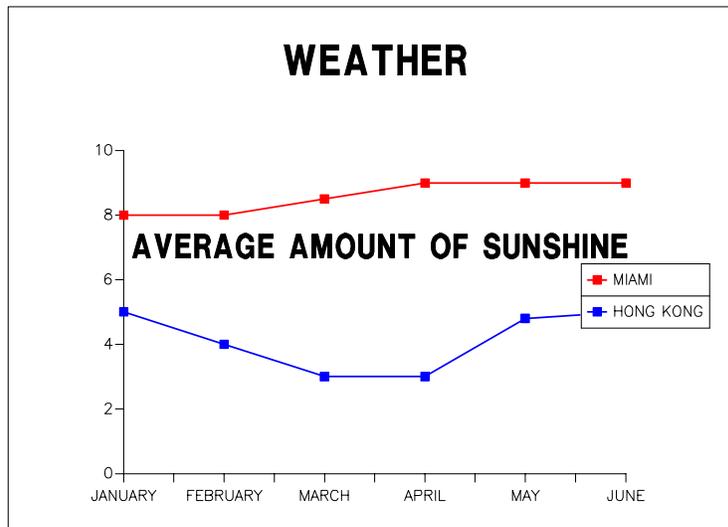


Figure 66. Chart produced by the data file in the travel agent example

11. Press PF3 and choose option 4 to save the data definition that you have created.

You can now use the ICU to improve this chart by adding axis labels, moving the note, or perhaps changing the chart type.

When you are happy with the chart, save the format and data as usual.

Getting values from a data interchange format file

You can create charts from data in data interchange format (DIF) files. These files are usually created by spreadsheet programs on an IBM PC. To use a DIF file, you must first send the file from your IBM PC to your host computer. The documentation for the spreadsheet program should tell you how to do this.

Once the file has been sent to the host:

1. Go to panel 2.9.
2. Select option 1, type in the name of the file you have just sent, and set Type of file to 2. Press ENTER.
3. Select items and import data as you did in the example above.

Advanced techniques

Finally, in this data import section, here are some techniques to use when you're familiar with the basics.

Missing out lines

If the column of data that you want to select is interrupted, perhaps by headings for a new page, use Part like this:

1. Set Data Group as usual.
2. Check that Part is set to 1.
3. Select the column as far as the lines that interrupt it with PF4 and PF5 as usual.
4. Set Part to 2 and select the column as far as the next interruption.
5. Keep increasing the Part number and selecting columns until you have selected everything you need.
6. When you increase the Data Group number or change Which type of item, Part will be set back to 1.

Joining columns

You can use Part to create a data group from several columns or parts of columns. Use the same method as for "Missing out lines."

Adding to an existing imported file

Normally, when you import data it replaces any that is already there. If you want to add the imported data groups or notes to those already there, change "... to be placed" to * in panel 2.9.2.

If you want to replace only some of the data groups or notes, change "... to be placed" to the number of the first one to be replaced.

Reusing a data definition

Once you have created a data definition, you can use it with any report that has the same layout as the original.

For example, you have created a data definition from a report of items sold in different shops. You have saved the data definition, created a bar chart with the

imported data, and then saved the chart format and data. To produce a similar bar chart each month with that month's data:

PF2 Reset everything. Load the bar chart format.

2.9.4 Load the data definition file.

2.9 Type name of file that contains the monthly figures.

2.9.1 Just to check that the format of the report has not changed since last time.

2.9 Import the new data.

PF2 Save the new chart.

Transposing data

It is easy to define data groups from **columns** of numbers in a report. This is a typical example of a report with data groups as columns:

MONTH	HONG KONG	MIAMI
JANUARY	5	8
FEBRUARY	4	8
MARCH	3	8.5
APRIL	3	9
MAY	4.8	9

Sometimes, however, the report may be arranged so that the data groups appear as **rows**, for example:

	Jan	Feb	Mar	Apr
Brown	15	2	3	5
Smith	6	5	8	6
Jones	8	0	4	10

You want the data groups to represent monthly sales achieved by Brown, Smith, and Jones. In this case, you should still define the data groups as columns with the data group names Jan, Feb, Mar, and Apr, and the x labels Brown, Smith, and Jones. But in panel 2.9.2, set Transpose to Yes.

The data groups will be imported as rows instead of columns and the data group names and x labels will be interchanged.

This only works if you replace **all** the data when you import it.

Data manipulation

The Data Manipulation Panel 2.2 has command lines for every row and column. This gives you more power to:

1. Edit your data
2. Highlight aspects of your chart
3. Carry out arithmetic.

You type in the commands on the green, underscored lines around the top and left of the data.

Editing commands

The editing commands are:

- D** Delete
- R** Repeat
- M** Move
- A** After
- B** Before
- I** Insert
- CLEAR** Clear data

To copy, you use Repeat and Move.

Editing example

Use I (insert) to put in a new value between existing values:

2.2		DATA MANIPULATION				
		Data Group Names ----->				
		Data Group (Z) Values --> 1 2 3				
	i	*** X Values	X Labels	Y1	Y2	Y3
		001 1	1970	3	27	14
		002 2	1980	6	43	11
		X .	.	.	.	.
		X .	.	.	.	.
		X .	.	.	.	.

Figure 67. Inserting a new value (before)

Becomes:

2.2		DATA MANIPULATION				
		Data Group Names ----->				
		Data Group (Z) Values --> 1 2 3				
		*** X Values	X Labels	Y1	Y2	Y3
		001 1	1970	3	27	14
		002 1.5	.	.	.	.
		003 2	1980	6	43	11
		X .	.	.	.	.
		X .	.	.	.	.
		X .	.	.	.	.

Figure 68. Inserting a new value (after)

Also try – All other commands on both rows and columns of data. Get sample data by using the SAMPLE command before experimenting.

editing commands

Note: If you want to move a row or column to a place that is not on the screen at present, you need to use a combination of moving (M) and scrolling(/). These are explained on page 70.

Highlighting commands

The commands to highlight aspects of your chart are:

- X** Exclude
- S** Select
- TR** Transpose
- EX** Exchange rows and columns
- SAMPLE** Get sample data
- CONVERT** Change free data to tied data with missing values

Highlighting example

Using TR (transpose) to produce a useful pie chart from a time series line graph:

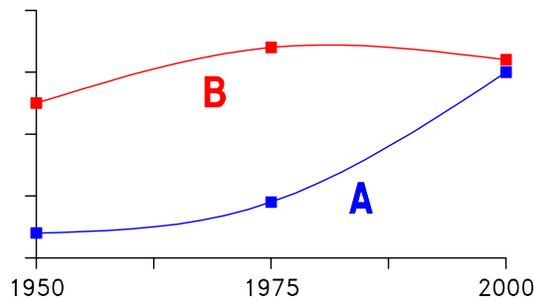


Figure 69. Market share line graph.

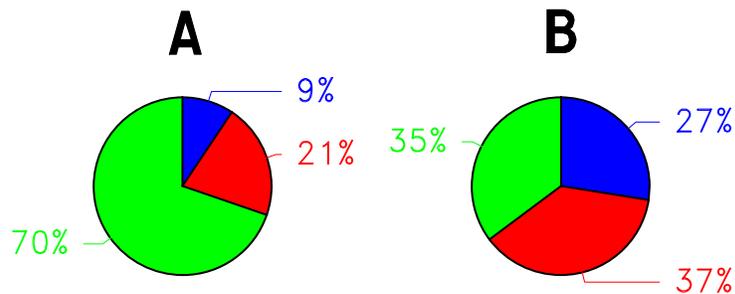


Figure 70. Change to pies in panel 1.

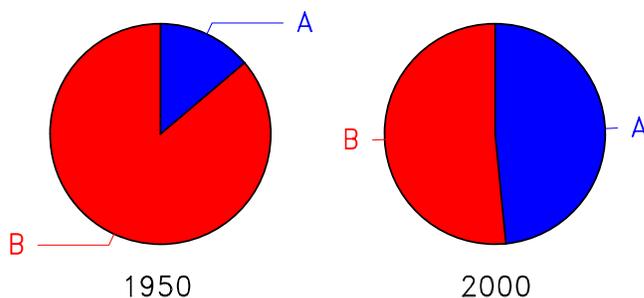


Figure 71. Transpose and exclude 1975 (panel 2.2) for useful pies.

Also try – X (exclude) to show only some lines of chart and S (select) to get them back. Notice that the line color changes if an early data group is excluded. The attributes (panel 2.6) are applied to selected groups only. Also note that excluded groups should be selected in panel 2.3. Rows are excluded by erasing their X Data Value (or setting it to “.”). Columns are excluded using their Data Group Value.

Arithmetic commands

The arithmetic commands are:

FIT Add fitted line
SORT Sort ascending
SORTD Sort descending
+ arg Add
- number Subtract
*** number** Multiply
/ number Divide
= number Assign

Notes on arithmetic

Number can be either a constant value (3) or equivalent value in other rows or columns. (+Y1 in the Y2 column adds the values of the Y1 column to the Y2 column and leaves result in Y2 column. Similarly +X1 in the X2 row adds the values of the X1 row to the X2 row and leaves result in X2 row.)

Multiple operations have to be done one at a time. For example, add one value and then divide by another.

Arithmetic example

Producing a Profits column from Sales and Costs columns.

Assign Sales to a third column, subtract Costs, and give the result the heading “Profits.” (The resulting column is excluded unless it is given a heading or a Data Group Value.)

2.2		DATA MANIPULATION			
		Data Group Names ----->	Costs	Sales	
		Data Group (Z) Values -->	1	2	
					=Y2
***	X Values	X Labels	Y1	Y2	Y3
X	.		3	27	.
X	.		5	37	.
X	.		.	.	.
X	.		.	.	.

Figure 72. Add a third column with the same values as sales

```

2.2                                DATA MANIPULATION
                                Data Group Names -----> Costs      Sales
                                Data Group (Z) Values --> 1              2
*** X Values      X Labels      Y1      Y2      -Y1
X .                .            3       27     Y3
X .                .            5       37     27
X .                .            .       .     37
X .                .            .       .     .
X .                .            .       .     .
    
```

Figure 73. Subtract the values in costs

```

2.2                                DATA MANIPULATION
                                Data Group Names -----> Costs      Sales      Profits
                                Data Group (Z) Values --> 1              2              .
*** X Values      X Labels      Y1      Y2      Y3
001 1             .            3       27     24
002 2             .            5       37     32
X .                .            .       .     .
X .                .            .       .     .
    
```

Figure 74. Give the resulting column the heading Profits

Also try – Working out a mean, producing a column to show a total, sorting values to improve the look of bar or tower charts.

Words on your chart

The wording on your chart can make all the difference to its appearance. The table below shows the panels where the words are typed in, and where the attributes (color, size, and type style) and position are set.

Splitting lines

All wording can be put on separate lines by using of a semicolon (;). (Use two semicolons if you really want one.)

Wording Type	Where Typed In	Attributes	Positioning
Axis Titles	Panel 4.1	Panel 4.1.1	Panel 4.1
Chart Notes	Panel 3	Panel 3 then T command or PF6	Panel 3 then P command or PF11
Heading	Panel 5.1	Panel 5.1.1	Panel 5.2
Legend	Panel 2.1, 2.2, 2.3, or 2.4	Panel 2.7 or 2.8	Panel 5.3
X Axis Labels	Panel 2.1, 2.2, 2.4, automatic or 4.4.1	Panel 2.8 or 4.4.2	Panel 4.4 and 4.5
Y Axis Labels	Automatic or Panel 4.4.1	Panel 4.4.2	Panel 4.4 and 4.5

Control how the words look using Text Attributes panels

The meaning of the fields in the Text Attributes panels is shown below:

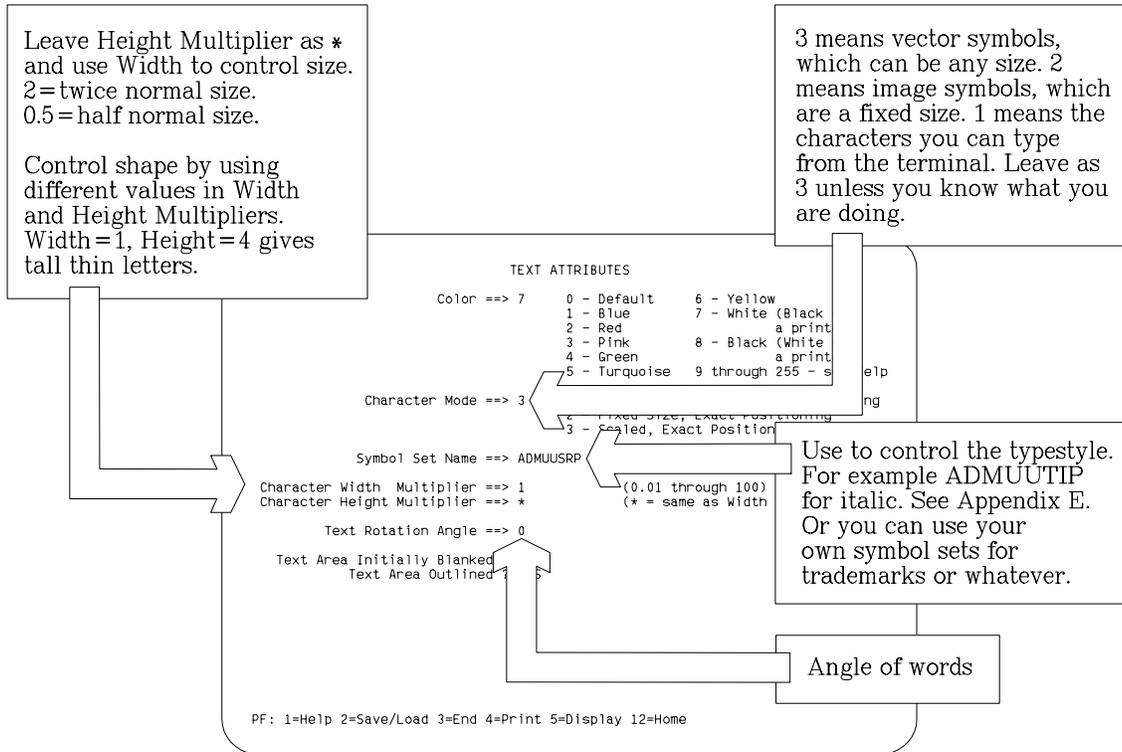


Figure 75. Fields in Text Attribute panels

Legend

The items in the legend depend on the chart type. Normally they are the data group names. For Pie charts they are the x labels, for Tower charts they are data group names if attribute selection is set to 1 in panel 1.8, and x labels if it is set to 2. Table charts do not have a legend.

The legend box is always the same color and style as the x axis.

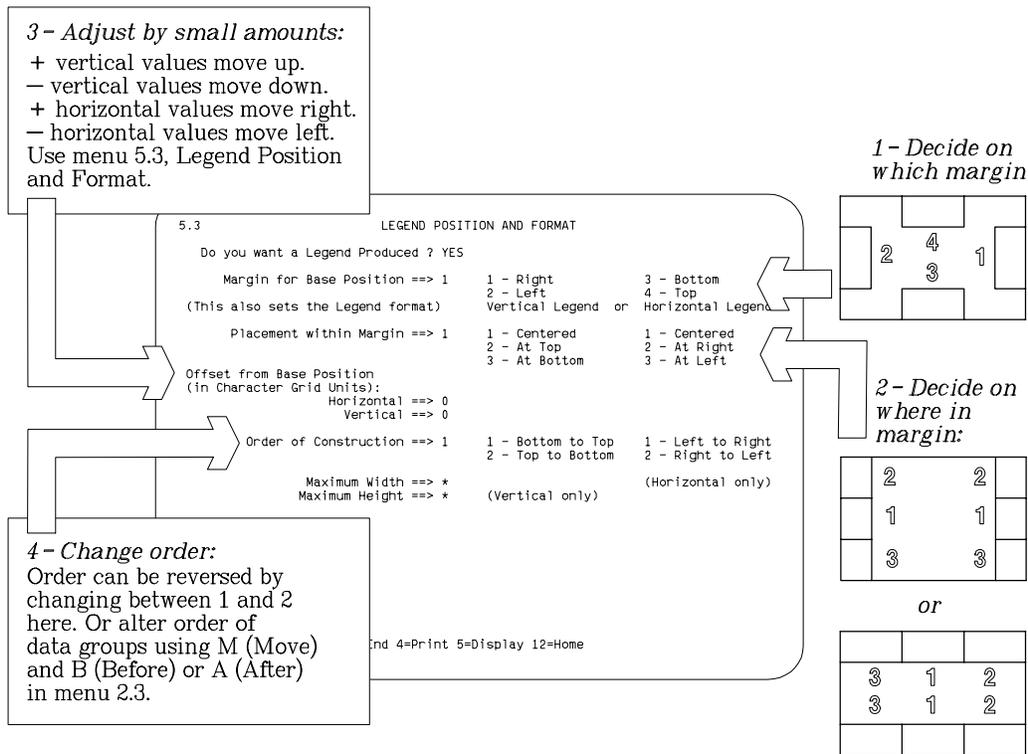


Figure 76. Fields in Legend Position And Format panels

Legend too big for margin

The legend sits in one of the margins of your chart but it may overflow into the plotting area. Increase the margin size (panel 5.4) to stop this.

Legend and heading overlap

If the legend and heading are in the same margin they may overlap. Increase the margin size (panel 5.4) to stop this.

Changing the number of labels

The number of labels is decided by the major tick mark interval (panel 4.5). On the x axis, if you use Data Labels, you get the labels you type in when they match up with major tick marks (which they normally will). On the y axis, you get as many labels as you have major tick marks. (You get the same on the x axis if you do not use Data Labels.) “*”, the default major tick mark interval, gives 9 to 12 ticks on the x axis and 5 to 7 on the y axis. Changing the interval changes the number of tick marks; the bigger the interval, the fewer the labels (see the pictures above).

Labels that don't line up

Stray blanks in axis labels will make your labels look odd. If this happens, check for extra blanks in the labels, particularly at the beginning of the label.

Positioning axis titles

Axis titles, controlled from panel 4.1, can be in the positions shown in the picture. If you want the y axis title with vertical letters use Character Mode 2 *but* either use * as a symbol set name or an image symbol set of your own.

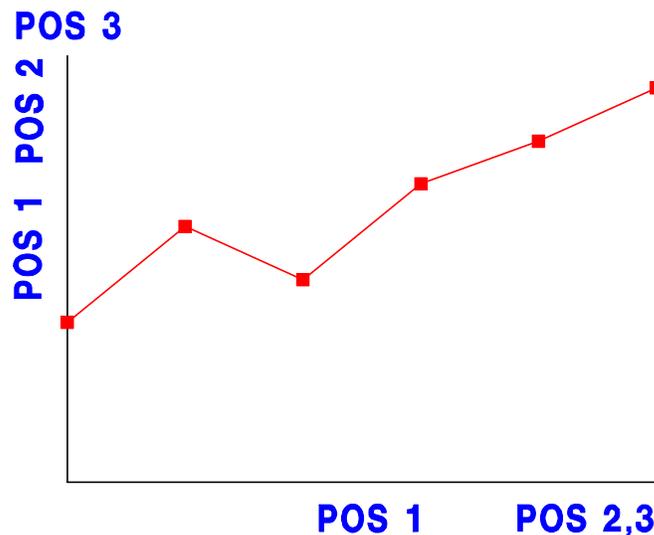


Figure 78. Positioning axis titles

Notes

Notes add wording at any point in your chart. They can either be fixed on the screen (type 1) or tied to a data value so they move with the data when the chart changes (type 2).

Typing in notes

Notes are typed in on panel 3, one note per line of the panel.

Changing color, type style, and more

PF6 changes the panel to show columns as below. This lets you change the color and type style of all your notes at once.

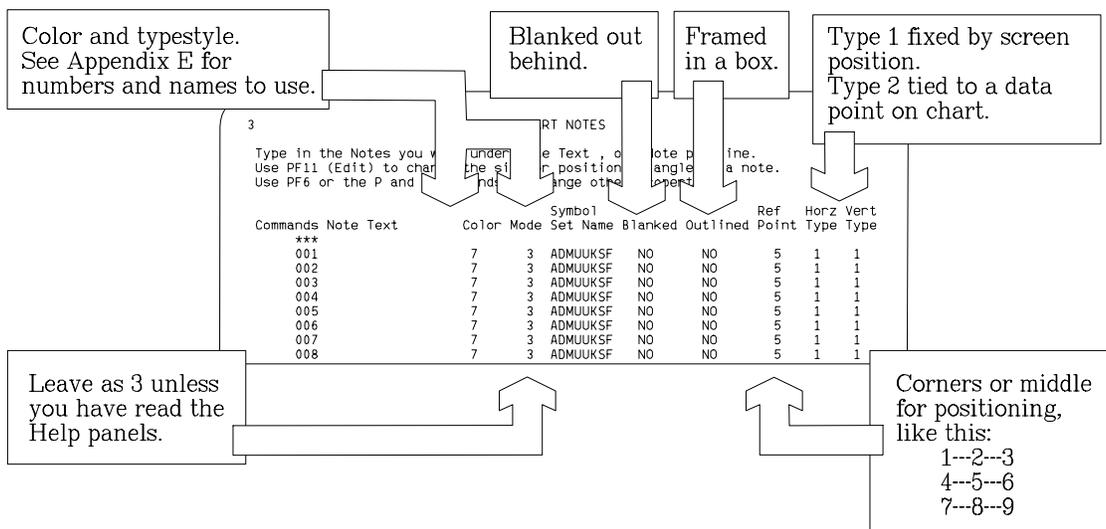


Figure 79. Changing attributes of notes

Changing the order of notes

You can change the order with M and A in the command field in panel 3.

Changing position, size, proportion, and angle

There are two ways:

1. Interactive Edit on the display (see the next page for details)
2. P (position) or T (text attributes) command against a note in panel 3.

Normally use interactive edit. **But** T lets you get all notes at same scale, and quickly get notes horizontal again after using angle. P (position) lets you first position notes that are tied to data points (otherwise they may not be on the chart).

Equally spaced notes

If you want fewer than eight notes and you want them equally spaced, delete the default eight and insert the number you want.

Interactive edit

You can use interactive edit with both chart notes and subcharts. Press PF11 from most panels to use it. Interactive edit lets you change the position, size, height, and width of chart notes and subcharts. You can also use it to change the angle of chart notes, but you cannot change the angle of subcharts.

The 'SELECT' button

The "SELECT" button is mouse middle button, puck button 2, stylus, or PF2 if you have none of the others.

Position

1. Choose a point in a note with the cursor, press "SELECT."
2. Move the cursor to where you want the chosen point to move to, press "SELECT" again.

Size, height, or width changed with 3 points

This is best shown with a picture.

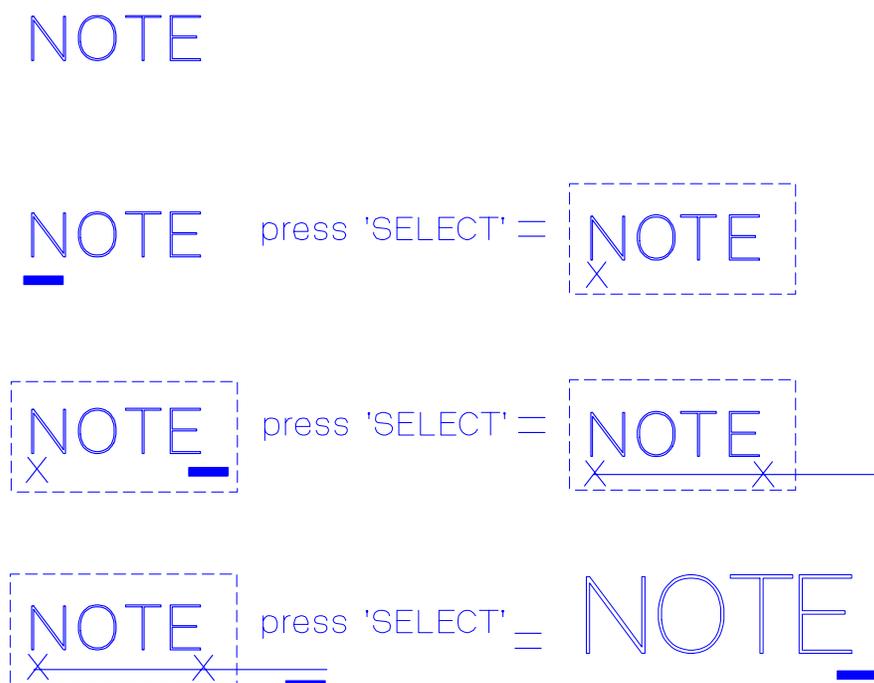


Figure 80. Changing note size

Angle

Remember, you can only use this with notes, not with subcharts.

1. Choose a point that the note will rotate round, press "SELECT."
2. Choose a point to move (probably other end of note), press "SELECT."
3. Choose a point around the circle where you want to move the second point to, press "SELECT."

Printing and plotting

This section tells you how to get printed copies of your charts.

Print or plot a chart at the standard size

Pressing PF4 gets you the print panel and lets you print or plot the chart you are working on. All you have to do is fill in the Printer/Plotter Name field and press ENTER. (The name says which printer or plotter to use and what the output will look like. See “Get these answers before you start” on page 25 for a list of the names that you can use.)

For plotting you must be using an IBM 3270 PC /G or /GX, a 3179-G, or a 5550 terminal with a plotter directly attached.

When you have filled in the name, press ENTER. If you are plotting, you will see a message saying PLOTTING STARTED. You can cancel a plot by pressing CLEAR. (If you use TSO, CLEAR may not work – talk to your local expert.) Whether you are printing or plotting, a message saying CHART SUCCESSFULLY OUTPUT will be produced when the work is complete. This means the ICU has done its part. If you are working on VM/CMS you may have to do more when you leave the ICU. (See “Get these answers before you start” on page 25 again.)

Printing GDF files

You can print a GDF file by using the PR command from the Advanced Directory panel.

Printer colors

Things that are white on the screen will be black when printed. Things in the default color (0) that shows as green on the screen, print as black. Also colors that the printer does not have print as black.

Printing more than one chart

You can only do it on queued devices. In practice this means most printers and very few plotters. (See your local expert or Appendix D, “How to become the local expert” on page 243 to learn more.)

1. Two copies of the same chart. Press PF4 for print panel, and set number of copies to 2.
2. Two different charts in a series. Use PF6 to “Start Series” then, for each chart, restore if necessary, use PF4 for print panel, and press ENTER. End with PF6 or by exiting from the ICU.
3. Two copies of a series. Set Number of Copies to 2, after you have pressed PF6 for “Start Series.”

Plotting colors

Holder Number	2-pen (7371)		6-pen (7372)		8-pen (7374/5)	
	Pen Color	Color Number	Pen Color	Color Number	Pen Color	Color Number
No pen	White	8	White	8	White	8
1	Black	1 (or 3, 5, 7)	Blue	1	Blue	1
2	Red	2 or 0 (or 4, 6)	Red	2	Red	2
3			Violet	3	Violet	3
4			Lime green	4	Lime green	4
5			Turquoise	5	Turquoise	5
6			Black	6 or 0 (or 7)	Orange	6
7					Black	7
8					Green	0

Figure 81. Plotter pens and pen colors

The color numbers on your terminal refer to pen positions in the pen holder of your plotter. If you use color numbers greater than the highest pen number available to you, the pen number that the ICU uses is not predictable. Don't use more colors than there are pens to plot them. The table above shows you how to assign your plotter pens to get the best colors.

Notes:

1. “Color number” in the table above refers to the ICU color numbers.
2. Color 0 will always give you the highest pen number that is available.
3. Color 8 will always give you white, no matter how many pens you have.

Plotting patterns

The shading patterns used on the plotter are different from those used on the display. Don't use the solid shading pattern (number 16) when plotting; they take longer to plot, and wear out the pens quickly. However, if you **do** want white shading that obliterates whatever is beneath it, use pattern 16 and color 8.

Controlling size, proportion, and position

If you fill in the Printer/Plotter Name and nothing else, you will get a chart at the center of the page with 10% on each edge as a margin. The Width, Depth, and Offsets let you change this. You have a choice of units to work in, inches, centimeters or percentage of paper size. Make sure you choose the one you want!

Size of print or plot

Use width and depth to change size. Or use left and top offsets which are treated as margins when used on their own.

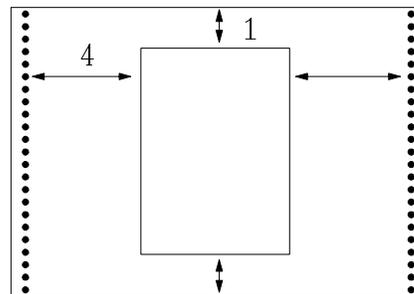
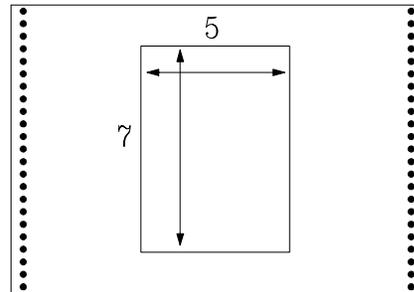


Figure 82. Calculating the size of your plot

Keep the proportions or fill the space

Panel 5.4 lets you choose whether your chart will keep the proportions it had on the screen, or take on the proportions specified by the width and depth values in the Printer/Plotter panel and completely fill the space. Unless you are going to use ready-made charts, set the proportions (panel 5.4) that you want for your printed output before you start creating your chart.

Position

Use width and depth and top and left offsets to control position.

Try printing charts at the sizes shown in the diagrams. Take care to specify Units as 2 (inches).

loading, deleting, and saving charts

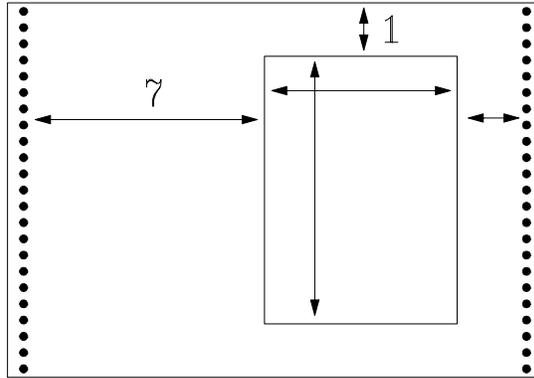


Figure 83. Positioning your plot

Using percentages

If you use percentage values, there is no need for you to know the size of the paper.

Traps to avoid

Here are some of the common pitfalls in plotting:

Small paper

If paper or color printing does not go to the full width of the printer, be sure to position with width and left offset to get your chart on the paper.

Extra work on VM/CMS

If your subsystem is VM/CMS, your printed chart may stay in your machine and not be automatically sent to the printer. See the details in “Get these answers before you start” on page 25.

Plotting more than one chart

On most plotters, the Number of Copies field is ignored. See the Help panels for more details.

Using rows/columns as units

Avoid setting Units to 4 (rows/columns). This is retained for compatibility with previous releases of the ICU and may cause you problems. Use one of the other units.

Loading and deleting charts

Here we look at how you get charts to update (load), and get rid of charts you don't want (delete).

Getting it back – loading the chart

Loading a chart lets you work on it again, or use it as the basis of a new chart.

1. Make sure you are in the Home Panel. (It says INTERACTIVE CHART UTILITY – HOME PANEL at the top.) If you are not, press PF12.
2. Press PF2.

3. If the panel says SAVE AND LOAD CHART at the top:

- a. Set What is to be done to 1, set What part of chart to 3, and type in the name of the chart you want to load.

You can only work on one chart at a time. If you try to load a chart and you already have one that you haven't saved, you will get a warning message. Either save the original chart before getting the next one, or set Replace to Yes (you will lose any changes that you made to the original chart).

- b. Press ENTER. You will get a message saying 'LOAD' SUCCESSFUL FOR CHART FORMAT AND DATA. The chart will be shown in the preview chart, if you have it set on.

If the panel says DIRECTORY at the top, you have set Usage of Directory Panel to 2 – Advanced Mode in the Menu Control panel. Carry on as follows:

- a. On the top line of the panel, type in R for RESTORE and the name of the chart so that the line looks like the one below.

```
R__ *** NMCHART
```

- b. Press ENTER. You will get a message saying 'LOAD' SUCCESSFUL FOR CHART FORMAT AND DATA. The chart will be shown in the preview chart if you have it set on.

Getting rid of it – deleting the chart

If you no longer need a chart, you can get rid of it by deleting it. But remember, once you have deleted a chart you cannot restore it ever again. Check carefully before telling the ICU to delete a chart.

1. Make sure you are in the Home Panel. (It says INTERACTIVE CHART UTILITY – HOME PANEL at the top.) If you are not, press PF12.

2. Press PF2.

3. If the panel says SAVE AND LOAD CHART at the top:

- a. Set What is to be done to 4.

- b. Set Which part of chart to 3.

- c. Press ENTER. You will see a list of all your charts. Look down the list for the one you want to delete and type d. If you want to get rid of both the data and the format, you will need to fill in two lines like this:

```
D__ nnn NMCHART DATA
D__ nnn NMCHART FORMAT
```

- d. Press ENTER. You will be asked to confirm that you want to delete these files. If you are sure, type YES.

- e. Press ENTER. You will get a message saying (2) ITEMS DELETED SUCCESSFULLY.

If the panel says DIRECTORY at the top, you have set Usage of Directory Panel to 2 – Advanced Mode in the Menu Control panel. Carry on as follows:

- a. On the top line of the panel, type in D for DELETE and the name of the chart, so that the line looks like the one below.

```
D__ *** NMCHART
```

loading, deleting, and saving charts

b. Press ENTER. You will get a message saying (2) ITEMS DELETED SUCCESSFULLY.

If you have previously listed or loaded some files using this directory, you can delete files by putting D by their names in the list.

How charts are saved and loaded

Charts are saved and restored as two items:

DATA
FORMAT

When you save a chart and when you load it you have the choice of saving either the data or the format or both. You can make use of this to save yourself time and your computer storage space as shown on the opposite page.

You can also save a "picture" of your chart as a set of computer drawing instructions. This is called a Graphics Data Format (GDF) file. You cannot edit GDF files but you can display or print them or pass them to other programs to display or print.

You can print a GDF chart by using the PR command from the directory panel. (There is more on GDF in Appendix D, How to become the local expert)

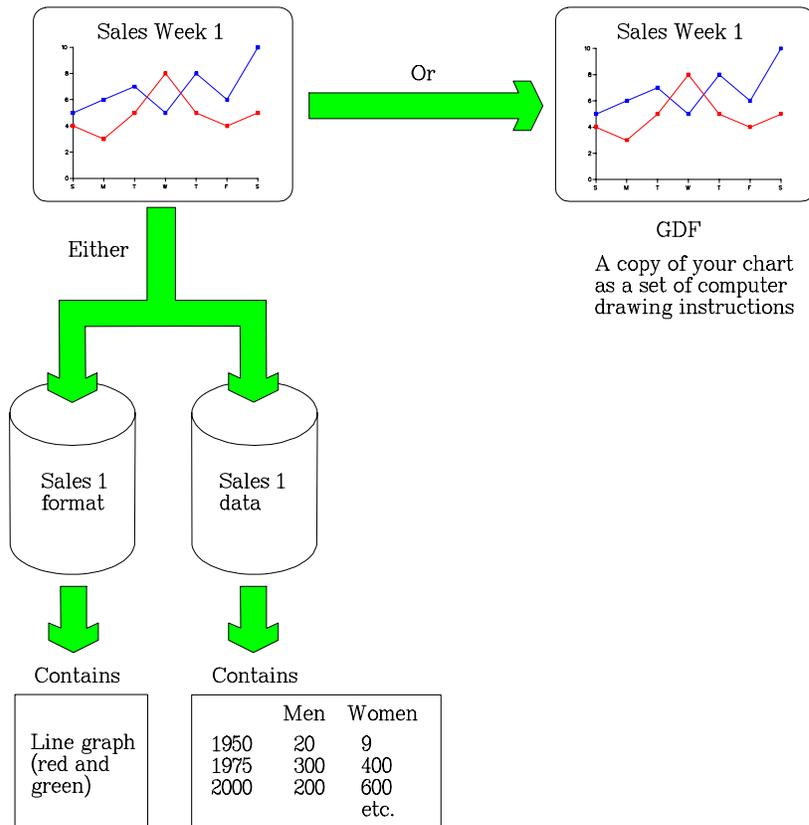


Figure 84. Charts are either saved in two parts or as a GDF file

How to save and load

Initially you should save and load using the Save/Load PF key (PF2) and the S option from the Home Panel. Fill in a name and a description as a reminder of what it is.

As you get more experienced, you will find it more convenient to load (and probably to save) from the Directory panel described on the next page.

How to make use of the two parts of your charts

You may want a chart to look the same each week, but use different data. Because the chart is saved in two parts, you only need to create the format once, thus saving time and computer storage.

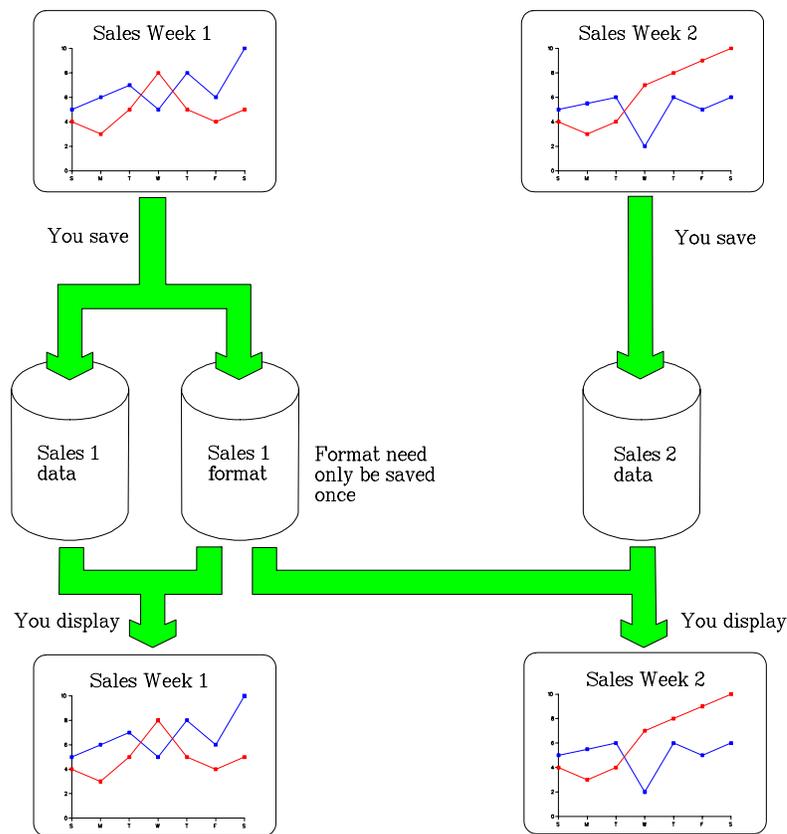


Figure 85. Making use of the two parts of your charts

Listing your charts, symbol sets, and GDFs

The ICU lets you choose between two types of directory:

- Standard** List, save, load, or delete charts
- Advanced** List charts, but also GDF files, symbol sets, and other objects produced by GDDM. It is generally much more useful.

This section describes the Advanced Directory. You can find out about the Standard Directory from the Help Panels.

Getting the Advanced Directory

To get the Advanced Directory you go to Menu Control (panel M) and set Usage of Directory to 2 – Advanced.

```

                                MENU CONTROL

Preview Chart on Panels ==> 1      1 - No
                                   2 - Yes, except for Data Entry Panels
                                   3 - Yes, including Data Entry Panels
                                   (Some panels never show the Preview Chart)

Preview Chart Position:          (in Screen Rows)
  First Row ==> 23                (numbered from the top)
  Last Row ==> 3                 (numbered from the bottom)

Text Highlighting ==> 1          1 - None
                                   2 - Reverse Video

Text String Contents ==> 1       1 - Latin Characters Only
                                   2 or 3 - Mixed Latin and DBCS Characters
                                   (see Help for explanation)

Usage of Directory Panel ==> 2    1 - Standard Mode
                                   2 - Advanced Mode

(Panels will not use the space after this line except for the PF key list)

PF: 1=Help 2=Directory 3=End 4=Print 5=Display 12=Home
```

Figure 86. Selecting the advanced directory from the Menu Control panel

From then on you can get the directory at any time by pressing PF2.

Getting a list

The Advanced Directory is empty until you use the list command; it shows one blank line as shown to the right.

Put L for List in the Command Column and press ENTER. This gives you a list of all your charts.

```

                                DIRECTORY
ADM1043 I MAIN FILE TYPES ARE 'FORMAT', 'DATA', 'DATADEF', 'GDF', 'ISS', 'VSS'

Commands Name      Type      Mode Date and Time      Description
              Last Written

1      *** f

Commands: R (Restore (Load)) D (Delete) P (Pick Name) C (Copy From)
          / (Scroll Here) SH (Show GDF File) PR (Print GDF File)
*** line only: L (List) S (Save) U (Update) T (Copy To)

PF: 1=Help 3=End 4=Print 5=Display 6=Show Description 7=Up 8=Down 12=Home
    
```

Figure 87. Listing files from the advanced directory

By putting a value in the type column, you can list other things as well as charts:

- FORMAT** Chart format only
- DATA** Chart data only
- DATADEF** Data definitions
- ISS** Image symbol sets
- VSS** Vector symbol sets
- GENMGRP** Generated map groups
- PICTURE** Saved pictures (in device dependent form)
- GDF** GDF files (in device independent form)
- IMAGE** Image objects
- IMPROJ** Projections

By combining letters and * in the Name column you can list things with certain names. (All the charts with your initials for example.)

- (all blank) Everything of the type requested
- a*..... Everything starting with "A"
- ab*..... Everything starting with "AB"
- *a..... Everything ending with "A"
- *a*..... Everything with "A" in it

```

                                DIRECTORY
ADM1042 I 6 ITEM(S) LISTED

Commands Name      Type      Mode Date and Time      Description
                                Last Written
*** AACH*
001 AACH1          FORMAT  A1   02 APR 1986 12:42 PM My first chart
002 AACH1          DATA   A1   02 APR 1986 12:42 PM My first chart
003 AACH2          FORMAT  A1   02 APR 1986 12:53 PM My second chart
004 AACH2          DATA   A1   02 APR 1986 12:53 PM My second chart
005 AACH3          FORMAT  A1   17 FEB 1986  1:13 PM My third chart
006 AACH3          DATA   A1   17 FEB 1986  1:13 PM My third chart

Commands: R (Restore (Load)) D (Delete) P (Pick Name) C (Copy From)
          / (Scroll Here) SH (Show GDF File) PR (Print GDF File)
*** 1line only: L (List) S (Save) U (Update) T (Copy To)

PF: 1=Help 3=End 4=Print 5=Display 6=Show Description 7=Up 8=Down 12=Home
    
```

Figure 88. A file list on the advanced directory

Command lines

When items are listed they are numbered with command lines to their left. Everything except saving and copying can be done using the command lines to the left of the listed items.

To save or copy you use the top command line because you will not be using a name that is there already.

You can use the following commands in the Advanced Directory:

R	restore (load)	(charts, data definitions)	Brings the chart or data definition back so you can look at it or use it.
D	delete	(all objects)	Erases the object.
C/T	copy/to	(all objects)	The item to be copied to must be named on the top line.
S	save	(charts, data definitions)	Saves chart or data definition with an unused name. (Top line only.)
U	update	(charts, data definitions)	Saves chart or data definitions re-using an old name. (Top line only—useful when you change a chart or data definition.)
PR	print	(GDF only)	Prints GDF.
SH	show	(GDF only)	Displays GDF.

Handling the list

Two commands and 3 PF keys help you manage the list:

P	pick	Moves name to top line so you can use U (update) or save typing.
/	top	Scrolls the list so that this item is on the top line.
PF6	long description	Shows the complete description by removing the time and date field.
PF8	down	Moves down list to show any later items off screen.
PF7	up	Moves up list to show any earlier items off screen.

Tips on using the list

Here are a few pointers to make things easier for you.

Searching for a chart

With the preview chart set on (panel M) you can see a chart as soon as it is restored.

Putting in long descriptions

Remember to press PF6 for a long description BEFORE you type in the command, or PF6 will execute the command.

Printing charts

Use the restore command against the data and format elements of a chart and then press PF4. You will go straight to the Print panel, ready to print the restored chart. (The same method can be used with PF5 to display a chart, but displaying full size is slower than using preview if you are looking for a chart.)

Part 3. Reference information

Chapter 6. Chart types

This part contains:

- A complete table showing the uses of ICU chart types and alternative names for them.
- A section on each chart type showing possible variations and a worked example.
- A section on tricks, techniques and graphics tips.

The chart types are in alphabetical order:

Bar charts
Histograms
Indexed charts
Line graphs and scatter plots
Mixed charts
Multiple charts
Pie charts
Polar charts
Presentation material
Surface charts
Table charts
Tower charts
Venn diagrams.

Different types of chart

Here are the chart types you can produce on the ICU with other names that are sometimes used.

Bar chart

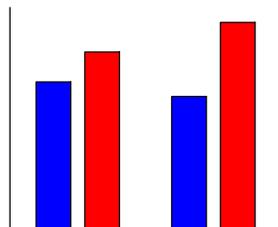


Figure 89. Bar (column)

Horizontal bar chart

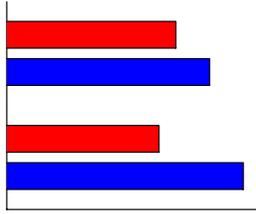


Figure 90. Horizontal bar (bar)

Histogram

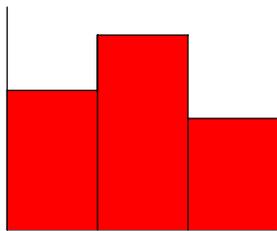


Figure 91. Histogram (step)

Scatter plot

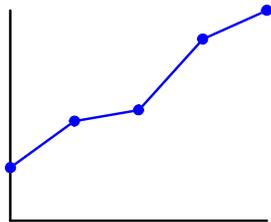
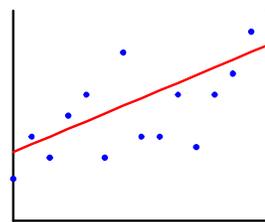


Figure 92. Scatter plot (dot)



Pie

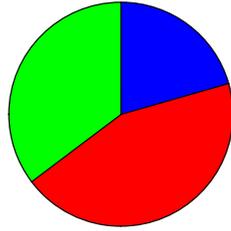


Figure 93. Pie

Polar charts

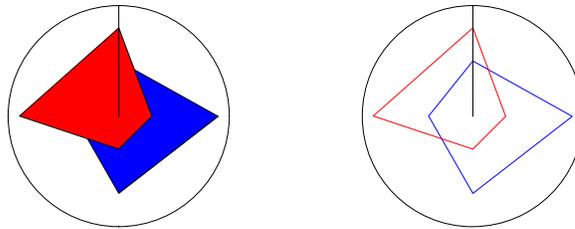


Figure 94. Polar shaded (radar) and unshaded (star)

Surface chart

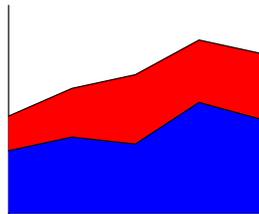


Figure 95. Surface (layer)

Table

Sales	Spring	Summer	Fall	Winter
1983	15	54	32	17
1984	12	62	35	21
1985	11	47	40	19
1986	13	51	38	13

Figure 96. Table

chart types

Tower

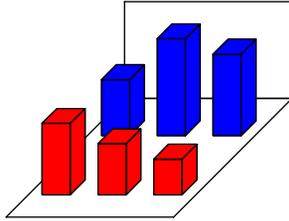


Figure 97. Tower (Manhattan, skyscraper)

Venn

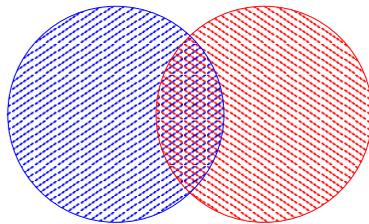


Figure 98. Venn

Choosing the right chart for your data

Here we show, by example, how to choose the right chart for the data you want to display. In most cases, there's more than one to choose from.

Time series

Example: Sales over past five years.

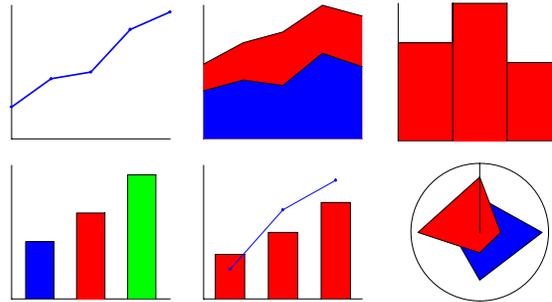


Figure 99. Polar for repeated data only (daily, yearly).

Planned against actual

Example: Actual sales compared to target.

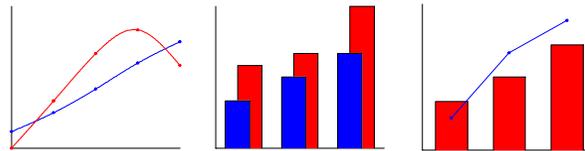


Figure 100. Mixed line and bar chart

Correlation (profile charts)

Example: Age make up of different populations.

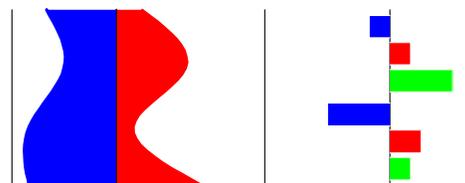


Figure 101. Surface chart

See Chapter 16, "Surface charts" on page 175.

Mathematical data

Examples: Plotting an equation or the results of an experiment.

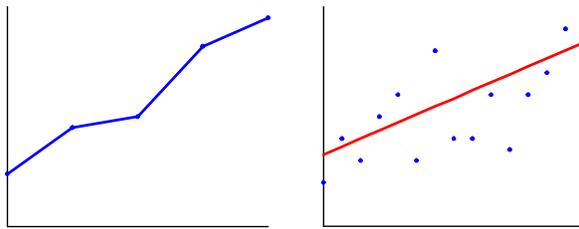


Figure 102. Graph

Scheduling

Example: Showing start and duration of different jobs.

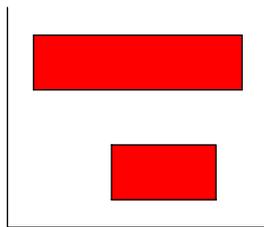


Figure 103. Horizontal bar

Make up of whole

Example: What taxation is spent on.

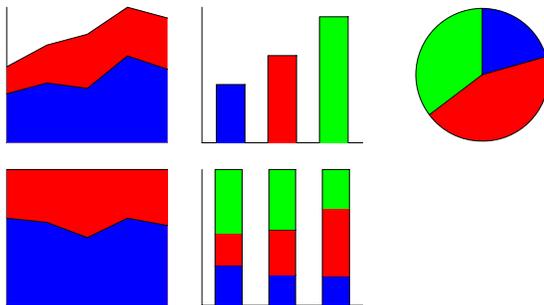


Figure 104. Indexing type 1.

Comparison

Example: Comparison of two companies, for profitability, turnover, and other variables.

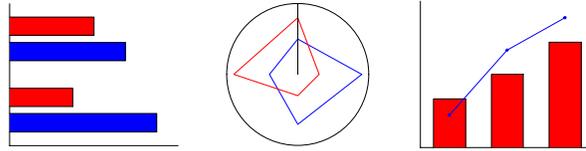


Figure 105. Bar, polar unshaded, bar and graph

Frequency

Example: Traffic flow through the day.

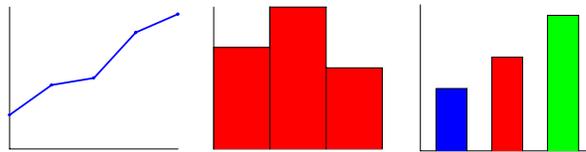


Figure 106. Graph, histogram, bar

Overlapping sets

Example: Math students, female students, and female math students.

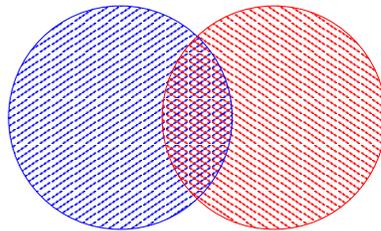


Figure 107. Venn

Presentation material

Examples: Slides for a sales conference.

Words only using chart notes.

Highlighted rows of figures using table charts.

chart types

Chapter 7. Bar charts

Bar charts are specified in panel 1 with further details in panel 1.4. The vertical form is sometimes called a “Column Chart.” Use Step-by-step charts with the general purpose sample data (selection 1 in panel 0.1) to see what can be achieved with bar charts. Or try the horizontal bar sample data (selection 5 in panel 0.1) to see what can be achieved with horizontal bar charts.

Different kinds of bar chart

Here are some of the different kinds of bar chart you can create, with an indication of what you'd use each for.

Vertical bar chart

Compares activities.

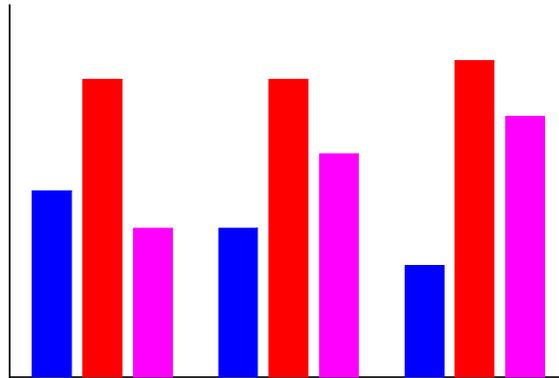


Figure 108. Bar chart: vertical

Stacked bars

Shows totals and how they are made up of different elements. Chart Options (Bar Chart) (panel 1.4).

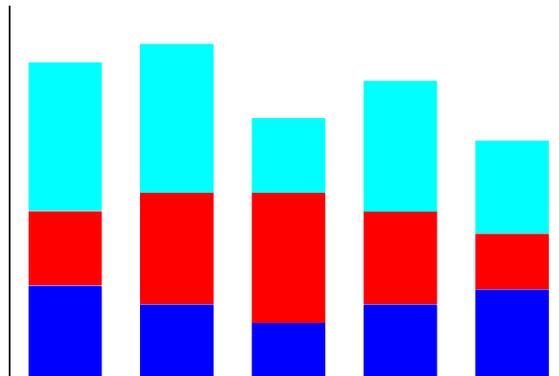


Figure 109. Bar chart: stacked

Overlapping bars

This makes comparison of bar height easier. It is specified as a negative gap in Chart Options (Bar Chart) (panel 1.4). Gap between Bars here is -50.

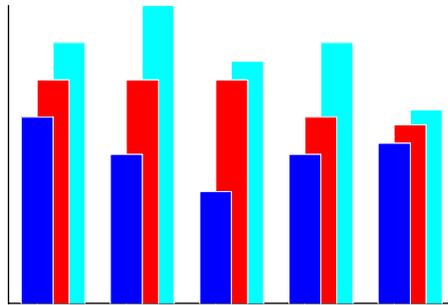


Figure 110. Bar chart: overlapping

Horizontal bar chart

Set Axis Orientation to Y Horizontal/X Vertical in Heading and Axis Positions (panel 5.2).

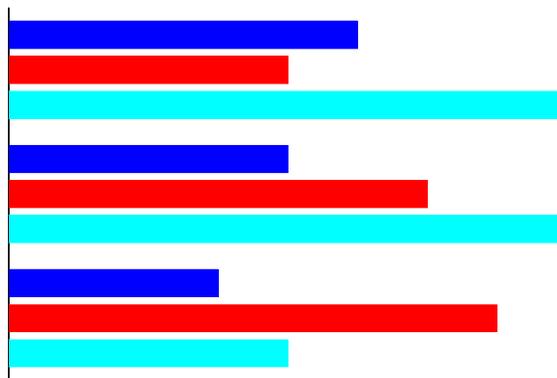


Figure 111. Bar chart: horizontal

Planned against actual chart

This one uses non-shaded bars.

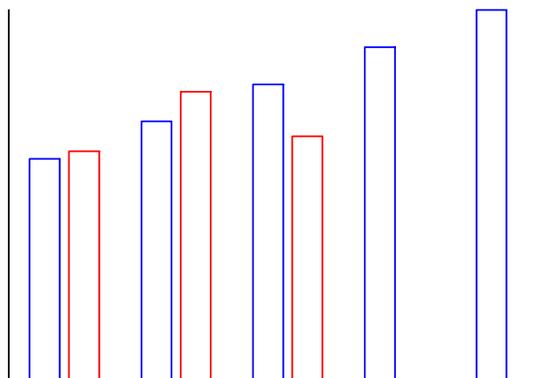


Figure 112. Bar chart: planned against actual

Bars behind each other

Type 3 in Chart Options (Bar Chart) (panel 1.4).

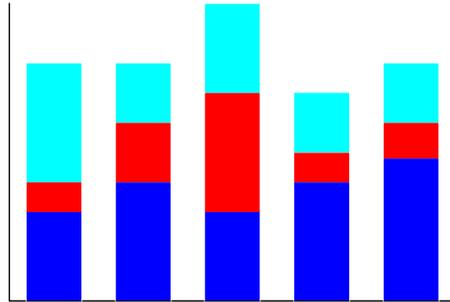


Figure 113. Bar chart: bars behind each other

Floating bars

Used here to show critical events on a time scale. First Data Group Visible? set to NO, Type to 2, in panel 1.4. Horizontal bars set by making x Axis Vertical in Heading and Axis Positions (panel 5.2).

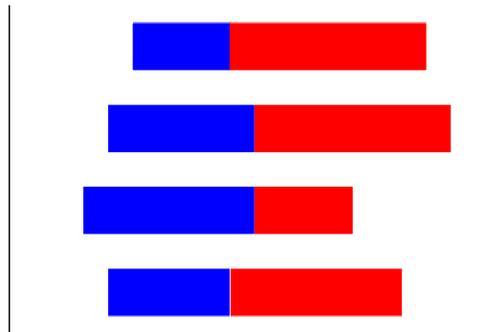


Figure 114. Bar chart: floating bars

Unevenly spaced bars

Bars can be placed at any point along the x axis. Y values positioned field in panel 2.5 can be set to 2 to override this.

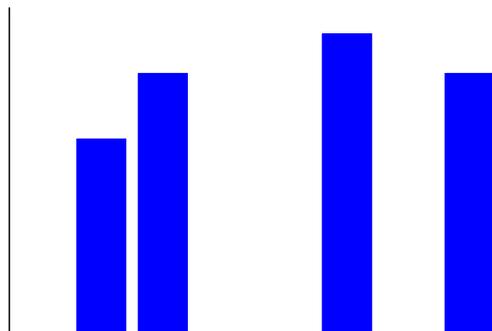


Figure 115. Bar chart: unevenly spaced

Reference and datum lines

Use on bar, line, surface, polar, histogram, and tower.

Set reference lines in panel 4.7 and datum lines in panel 4.8. The y axis reference and datum lines (the normal sort) start on the y axis and run parallel to the x axis.

To get a reference or datum line, go to panel 4.7 or 4.8 and look at the axis you are working on. Press PF6 if it is the wrong axis. Change NO to YES **and** type in the Value at which you want the line to start.

Reference

Here's an example of using reference lines.

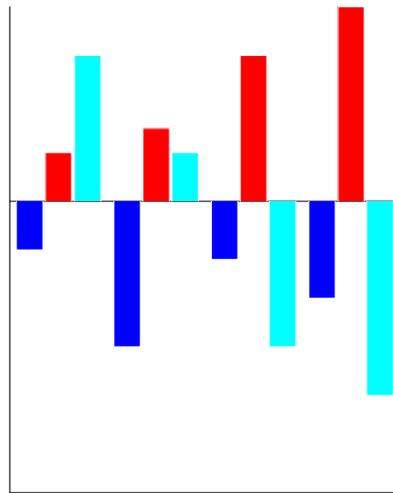


Figure 116. Reference lines in a bar chart

Datum

Here's an example of using datum lines.

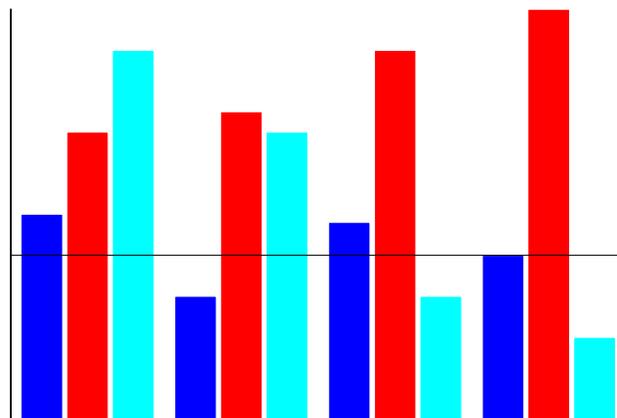


Figure 117. Datum lines in a bar chart

Difference between the lines

Reference lines

Shaded charts are drawn either side of reference lines.

Datum lines

Datum lines are just lines across the chart.

(On line charts and polars with no shading, both appear the same.)

Remember the difference this way: reference lines rearrange the chart; datum lines do not.

Datum lines go on top of shading whereas reference lines are covered by it. So you can use a datum line on top of your reference line to highlight it.

Special uses

X axis reference lines can be used to draw profile charts, as explained in Chapter 16, “Surface charts” on page 175. Datum lines at the ends of axes can be used to box in a chart.

Values on bars

You can choose either of the methods shown below.

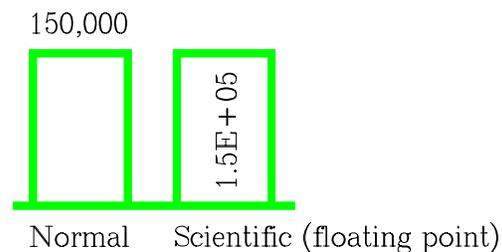


Figure 118. Values on bars: normal and scientific

You can also control the size, color, angle and more from Bar Chart – Text Attributes (panel 1.4.1). For example, you can position the values vertically in the bars.

Arrangement of bars

Specified in Chart Options (Bar Chart) (panel 1.4). Here are the possibilities:

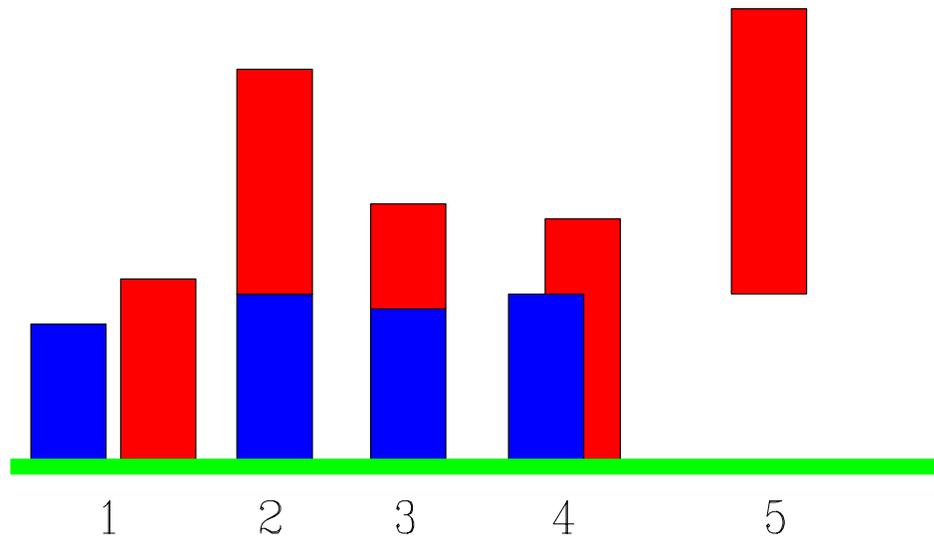


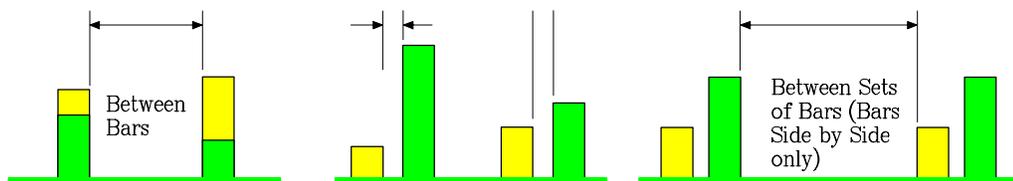
Figure 119. Different bar arrangements

And here are the descriptions of each type.

1. Data Groups Side by Side
2. Data Groups Stacked ...
3. Data Groups Overlaid ...
4. Use 1 – Data Groups Side by Side and Gap between Bars set to -5
5. Use 2 – Data Groups Stacked and First Data Group Visible? set to NO

Gaps between bars and bar width

Overlap is done by using negative gap values (-50 for example).



Units are a percentage of bar width.

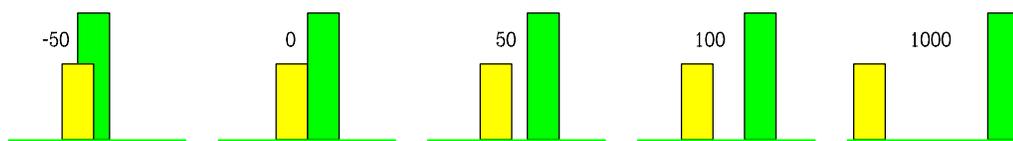


Figure 120. Result of using negative gap values

Tips

Here are some hints for using bar charts.

Horizontal charts

Horizontal charts have their Axis Orientation set to 2, (panel 5.2).

Indexing

Indexing Type 1 is very effective with stacked bars. (See Chapter 9, “Indexed charts” on page 127.)

Mixed charts

A bar chart and a line graph are a very effective mixture. Use them to show planned against actual or to show two different sets of data on one chart.

Profile charts

Bar charts can be used to produce profile charts, see example in Chapter 20, “Tricks, techniques, and tips” on page 195.

Traps

Here’s something to avoid when using bar charts.

Negative values and funny shading

If bars are overlaid (on top of each other), the data groups must be in the order of the smallest to the largest, or shading patterns will overlap. Negative values can only be satisfactorily used when bars are placed side by side, otherwise there will usually be shading overlap.

Example

Before you start, you can set the preview chart on in panel M. You can examine the chart full size (PF5) whenever necessary. After examining it, go back to what you were doing (PF3), or return Home (PF12). Go to the panels either by typing in the numbers and pressing ENTER on the Home Panel, or by making a choice on the previous panel, (usually by answering a YES/NO question).

Panel Action taken

- 0.1** Choose 10 to type in the data.
- 2.1** Type in the data as shown in Figure 121 on page 120. Press PF3.
- 0.1** Choose 11 to type in the heading.
- 5.1** Type in the heading. Press PF3 twice.
- 0.2** Choose 2. Press ENTER, then choose 3.
- PF12** To get to the Home Panel and add the finishing touches.
- 1.4** Set Gap between Bars to -20. Set Gap between Sets of Bars to 80.
- 2.6** Change the Shading Pattern to 0 for all three data groups.

Chapter 8. Histograms

Histograms are chosen in panel 1 with details defined in panel 1.3. They are used to show ranges of data. For example, the number of people in an age range. If your data is not in ranges, use a bar chart. Use Step-by-step charts with the ranges sample data (selection 7 in panel 0.1) to see what can be achieved with histograms.

Different kinds of histograms

Here are the different kinds of histograms you can create, with some notes on making sure that they're effective.

Non-shaded histogram

Turning shading off (panel 1.3) and thickening the line (panel 2.6), produces effective looking histograms.

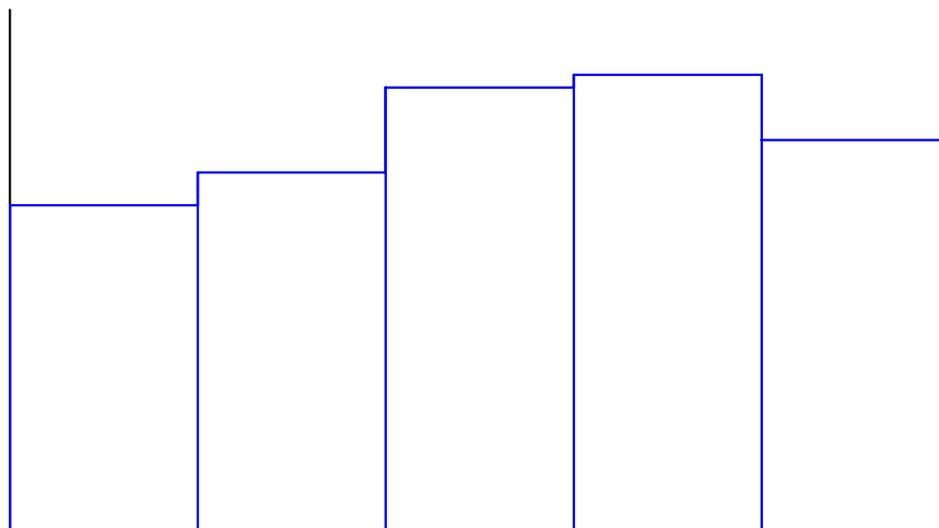


Figure 123. Histogram: non-shaded

Histogram with relative data

This is set in panel 1.3 with values plotted above one another. For more on relative data see page 175.

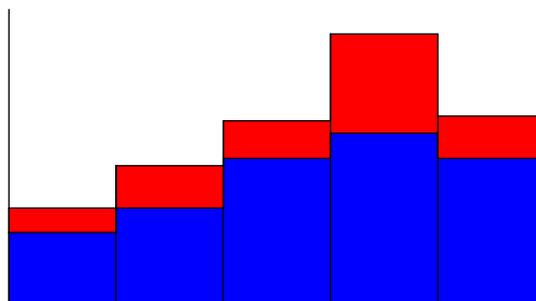


Figure 124. Histogram: with relative data

Histogram bar – height and area

These values, set in panel 1.3, are needed for different types of data. If the steps are of equal length, as they are in the examples above, it is better to use Type 2 (the default) so that the actual values can be read from the y axis.

For example, the following example shows traffic flow, using bar area, which is correct.



Figure 125. Histogram: bar area example

If the steps are of different lengths as they are below, Bar Height can be misleading. There appears to be more traffic in the midday period if you use Bar Height, because the period is longer. Use Bar Area to show low traffic density during the day.



Figure 126. Histogram: bar height example

First or last value ignored

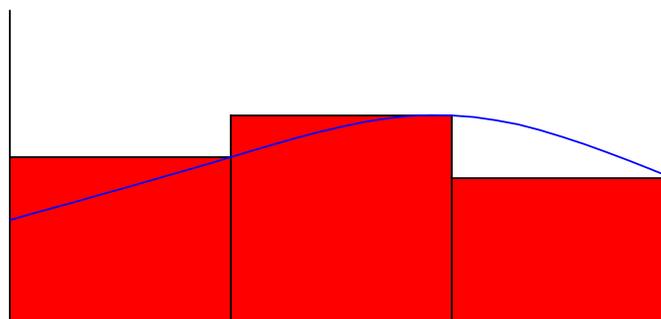


Figure 127. Histogram: first value ignored example

As you can see, a three-step histogram can be fitted two ways under a four-plot line graph. This is because a histogram needs one more x value than it does y values.

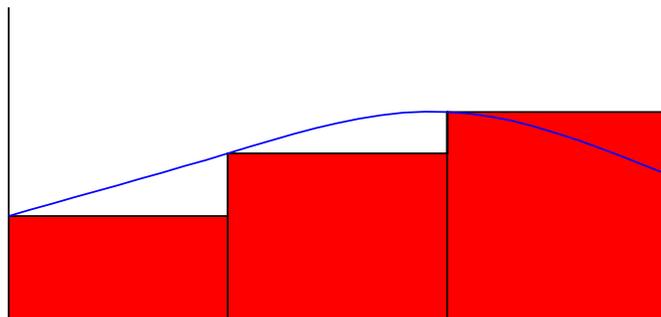


Figure 128. Histogram: last value ignored example

The ICU asks for four x values for a three-step histogram and lets you put the x values against either the first three or the last three. Normally the extra y value can be set as missing (".").

Tips

Here's a hint on using histograms.

Reference lines

Reference lines (see page 117) can be used effectively on histograms.

Traps

Here are some traps to avoid when using histograms.

Funny shading

Histograms with absolute data (the default) cannot show two data groups unless one group is always larger than the other. Use relative data, set in panel 1.3.

Histogram or bar chart

If the values on the x axis are not ranges, use a bar chart.

AGE RANGE

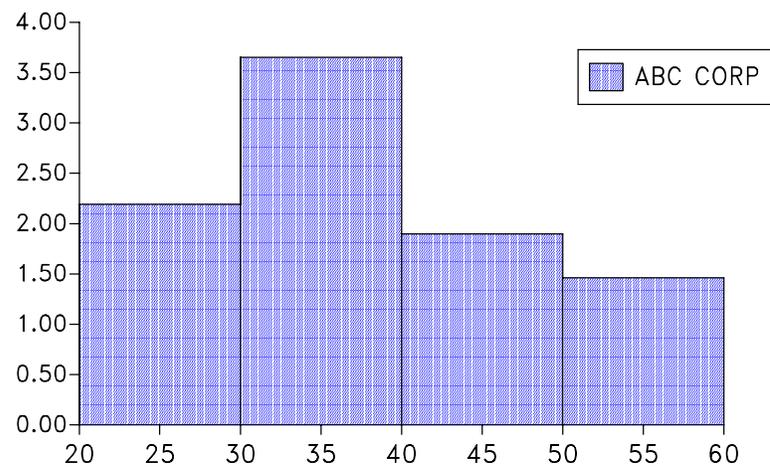


Figure 130. Sample histogram

histograms

Chapter 9. Indexed charts

Indexed charts are created as normal charts and changed to indexed charts in Data Interpretation, panel 2.5. Specify y values displayed as 2 **and** select one of the four types of indexing. Indexed Charts let you highlight aspects of your data by plotting y values as percentages.

Different types of indexed chart

The four types of indexing are shown below. In each description, we show the normal chart first, followed by the indexed version.

Type 1

A normal, not indexed chart places all y values at that x value.

Not indexed

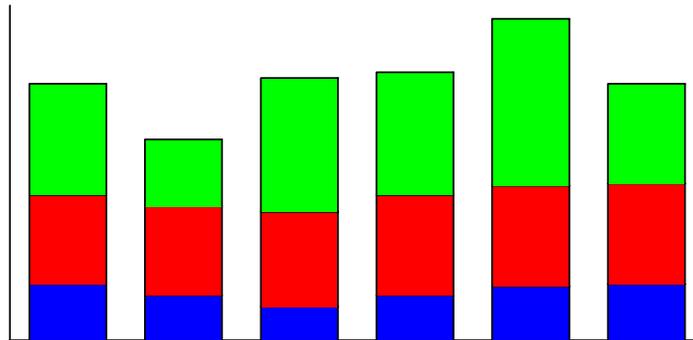


Figure 131. Non-indexed chart: type 1

Type 1 non-indexed charts show share of changing total.

Indexed

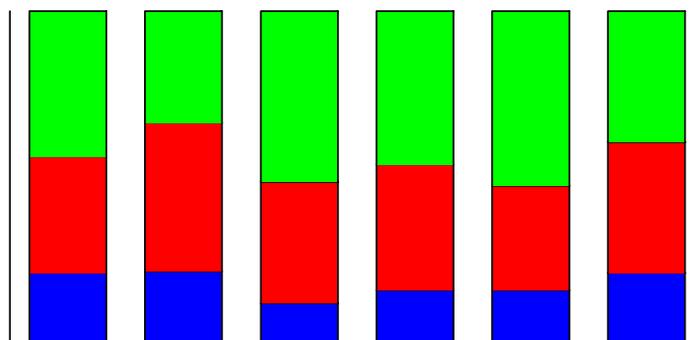


Figure 132. Indexed chart: type 1

Sum of all bars is plotted as 100%. This emphasizes the share regardless of the total size for the year.

Typical use: Comparing market shares regardless of change in market size.

indexed charts

Type 2

Type 2 indexed charts compare items of different size – (all y in that data group)

Not indexed

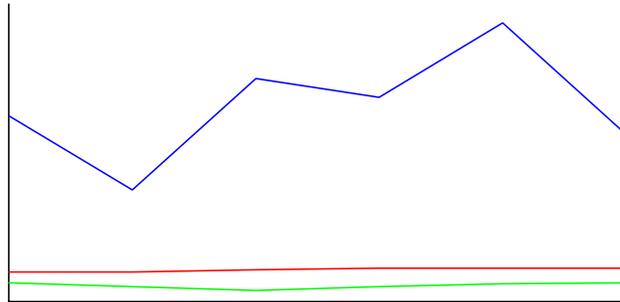


Figure 133. Non-indexed chart: type 2

Indexed

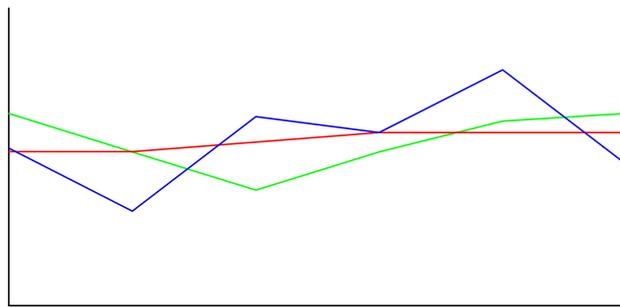


Figure 134. Indexed chart: type 2

Each line is plotted as if the sum of all its y values were 100. The area under each line is equal.

Typical use: Comparing the performance of things of very different sizes.

Type 3

Type 3 indexed charts establish a common start point – (the y value at $x=1$)

Not indexed

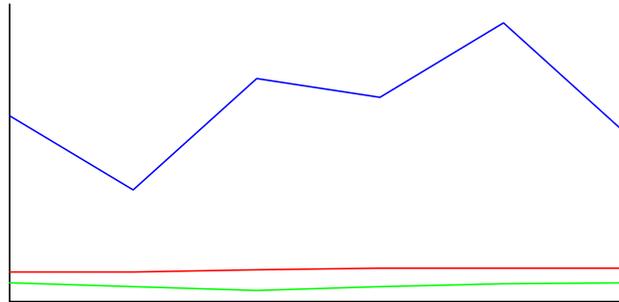


Figure 135. Non-indexed chart: type 3

Indexed

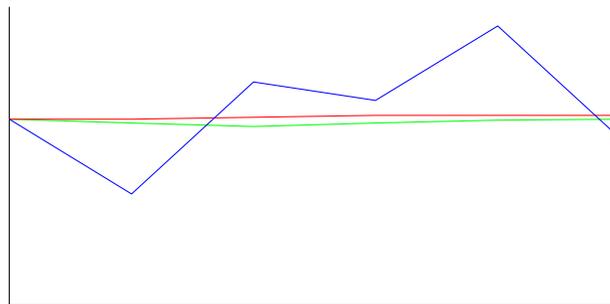


Figure 136. Indexed chart: type 3

Each line is plotted as if all started from the same place. All values at one point on the x axis are treated as 100 and others are plotted relative to that. The point shown here is the first point. (Others can be used.)

Typical use: Comparing inflation rates of different countries from a fixed date.

Type 4

Type 4 indexed charts make one line the norm – (the y value in data group = 1)

Not indexed

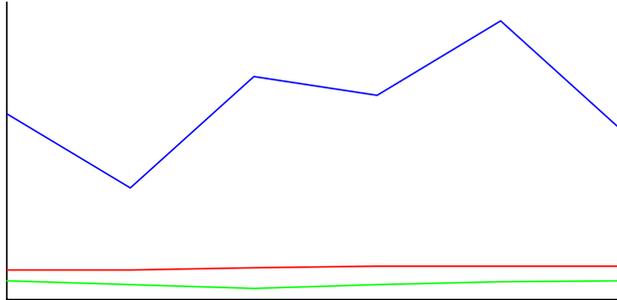


Figure 137. Non-indexed chart: type 4

Indexed

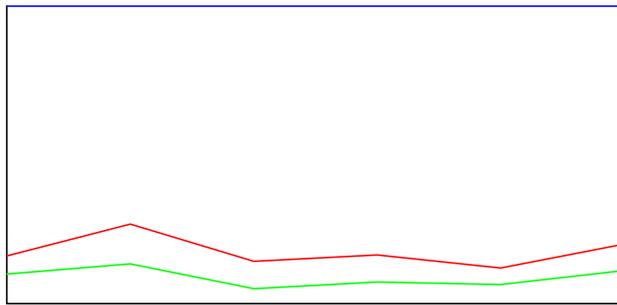


Figure 138. Indexed chart: type 4

Typical use: Comparing other corporations with your own. Consider excluding the straight line in panel 2.2 or 2.3 to increase the effect.

Indexing types summary

The table below tells you what to use each indexing type for, and with what charts.

Indexing type	Uses	Charts to use
1	Comparing shares of a changing total: market share, population make up.	Bar chart (Stacked) Surface (Relative Data) Table
2	Comparing things of different sizes: market leaders against small firms, big and small countries.	Line
3	Comparing things that are always changing: currencies, salaries, cost of living.	Line Table
4	Establishing a norm among changing items: comparing currencies, performance of shares, corporations and so on.	Line Polar Table

How you index a chart

You index a chart in Data Interpretation panel 2.5. You set Y Values Displayed to 2, Indexed, and specify the type of indexing by choosing what you want each y value indexed as a percentage of. (Just changing the lower field and not the one above it has no effect.)

Indexing does not alter any of the data values that you entered: indexing is done automatically by the ICU as it draws the chart. The indexing type is saved with the chart.

What you can index

You can index the data for all types of chart, except Venn diagrams. Line, bar, surface, table, and polar charts are the most useful types of chart for indexing.

indexed charts

Chapter 10. Line graphs and scatter plots

Line graphs are chosen in panel 1 with details specified in panel 1.1. Use them to show accurate comparisons and trends. Scatter plots, a variation of line graphs, are used to show patterns, or lack of them, in experimental data. Use Step-by-step charts with the planned against actual sample data (selection 2 in panel 0.1) to see what can be achieved with these chart types.

Line graphs

Here's a standard line graph.

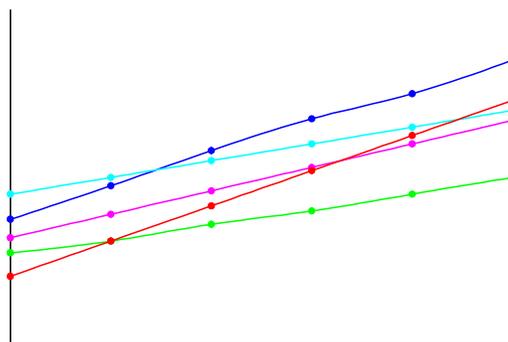


Figure 139. Standard line graph

You can also vary the format, for example, by using curved lines and no markers, as shown below.

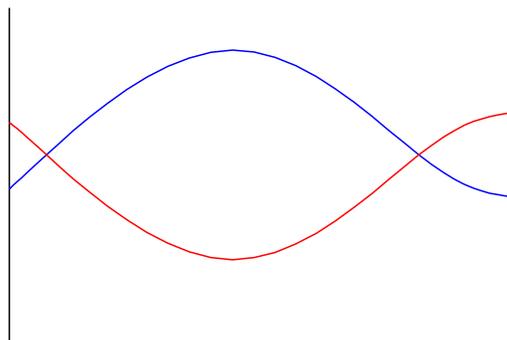


Figure 140. Line graph with curved lines and no markers

For curved lines, set Type of Connection to 2 in Chart Options (Line Graph) (panel 1.1). Set Markers to NO in same panel.

Scatter plots

You produce scatter plots by setting Connected Points to NO in Chart Options (Line Graph) (panel 1.1). Here's an example.

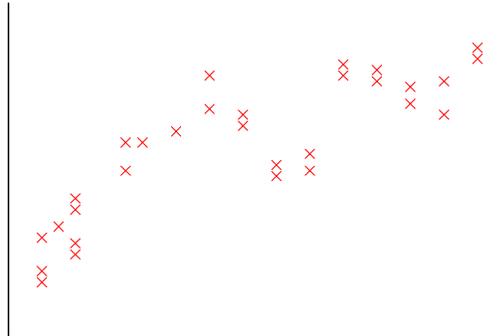


Figure 141. Standard scatter plot

You can also create scatter plots with fitted lines, by calculating a straight line equation to fit the scatter plot on the Data Manipulation Panel (panel 2.2). (See “Data manipulation” on page 79.) Here's the kind of result you get.

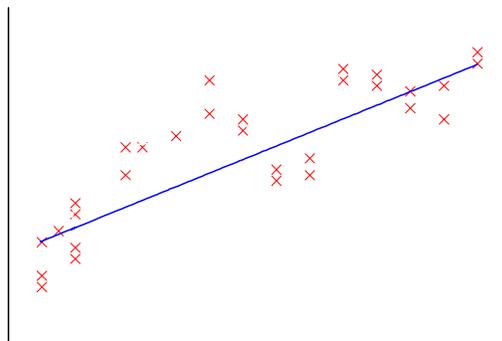


Figure 142. Scatter plot with fitted line

Tips

Here are some hints on using line graphs and scatter plots.

Indexing

Indexing types 2, 3, and 4 (Data Interpretation (panel 2.5) – Chapter 9, “Indexed charts” on page 127) are particularly useful with line graphs.

Mixed charts

Mixed charts (Chart Types (panel 1) – Chapter 11, “Mixed charts” on page 141) normally include one element as a line graph.

Markers

The size and color of markers is set on panel 2.6. Look at Appendix F, “Colors, markers, line types, shading patterns, type styles” on page 257 to see all the different shapes that you can use.

Traps

Here are some things to avoid when using scatter plots or line graphs.

Curves

Curved lines may give unexpected results. Use straight connectors to make the lines look right.

Reference lines

Reference line and datum lines ((panels 4.7 and 4.8) – see page 117) appear the same on line graphs. The differences only show in shaded charts.

Smooth lines

Increasing the Curve Smoothness (panel 1.1) means the chart takes longer to draw. Leave it until you have done everything else.

Linear and log axes

Note: This applies also to bar, histogram, polar, surface, and tower charts.

Linear axes

Here’s an example.

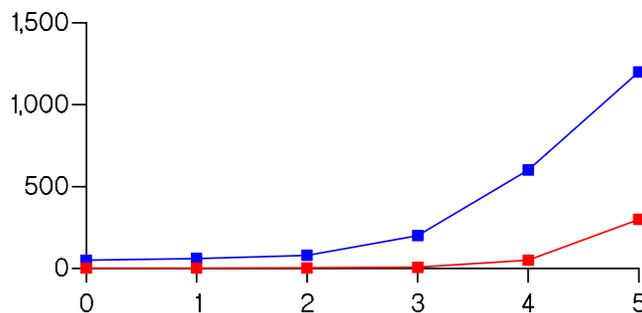


Figure 143. Sample use of linear axes

You set them in Axis Scale and Range (panel 4.3).

On panels 4.3 and 4.4 use PF6 to swap between x and y axes.

The linear (normal) axis shows the SIZES of the two populations.

Logarithmic axes

Here's an example.

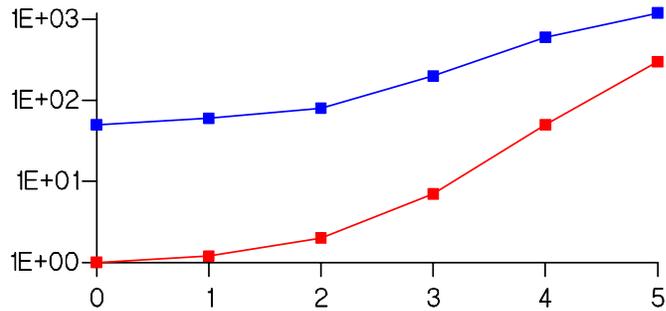


Figure 144. Sample use of logarithmic axes

The logarithmic axis chart shows the GROWTH RATES. On a logarithmic axis, 1 and 10 are as far apart as 1 million and 10 million. So doubling looks the same on small and large numbers.

Labeling Logarithmic Axes

Log axes can only be labeled with numbers in scientific notation (panel 4.4).

Axis position

Set in Heading and Axis Positions (panel 5.2), or Axis Scale and Range, (panel 4.3). Use for line, surface, bar, and histogram charts.

Horizontal axis at the center

Set in Heading and Axis Positions (panel 5.2).

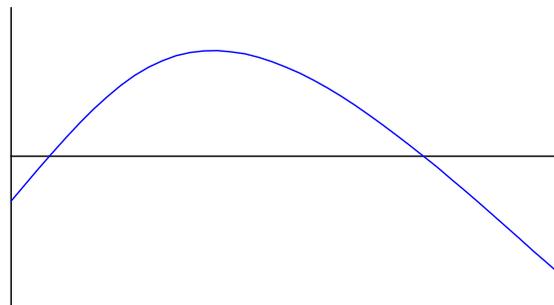


Figure 145. Axis position: horizontal at the center

Intersection at 0,0

Set in Axis Scale and Range (panel 4.3) for both x and y axes.

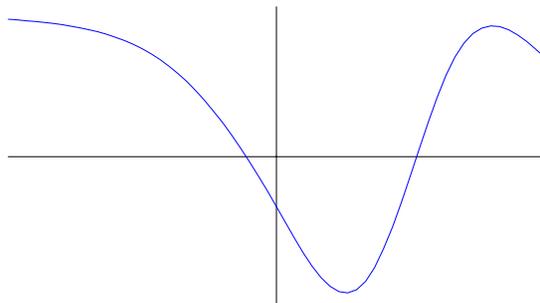


Figure 146. Axis position: intersection at 0,0

Vertical axis at right

Set in Heading and Axis Positions (panel 5.2).

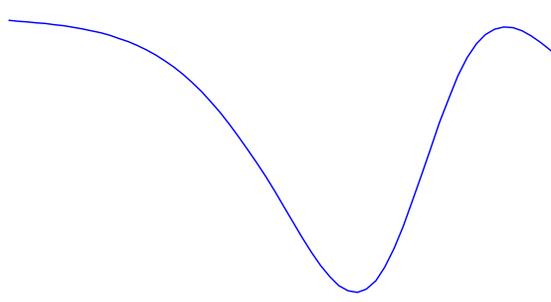


Figure 147. Axis position: vertical at right

How to change axis position

Axis positions can be changed either by specifying left, right, top, bottom, and center in Heading and Axis Positions (panel 5.2), or by intersection point in Axis Scale and Range (panel 4.3). Generally, use Heading and Axis Positions (panel 5.2) except where data demands a specific axis intersection. If one contradicts the other, Axis Scale and Range is used.

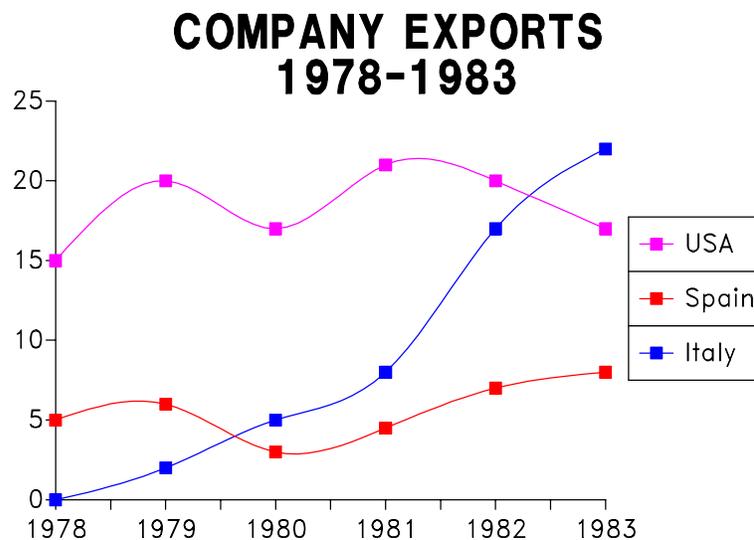


Figure 149. Sample line graph

Example of a scatter plot with fitted line

Before you start, you can set the preview chart on in panel M. You can examine the chart full size (PF5) whenever necessary. After examining it, go back to what you were doing (PF3), or return Home (PF12). Go to the panels either by typing in the numbers and pressing ENTER on the Home Panel, or by making a choice on the previous panel, (usually by answering a YES/NO question).

Note: Because you need to use panel 2.2 to put in the data for this chart, it is better not to use Ready-made charts for this example.

Panel Action Taken

- 1 Set Chart Type to 1.
- 2.2 Type in the data as shown in Figure 150 on page 140. Make sure you are using Data Entry and Manipulation (panel 2.2). On the green command line above the Y1 column type FIT. A new column will be created. (This is a regression fit, more in the help panels.)
- 2.6 Change the first Line Type to 8 making it invisible. Set the first Marker Scale to 3 and its Type to 36.
- 5.1 Type in the heading.
- 5.1.1 Set Character Width Multiplier to 3.
- 5.3 Set Vertical Offset from Base Position to -6.
- 4.1 Put in the Axis Title Text. Look to see which axis you are working on. Press PF6 for axis swap, and put in the other axis title.
- 4.1.1 Set Character Width Multiplier to 1.5. Press PF6, and do the same for the other axis.
- 4.2.1 Set Line width to 2. Press PF6, and do the same for the other axis.
- 4.4.2 Set Character Width Multiplier to 1.5 and Symbol Set Name to ADMUUDRP. Press PF6, and do the same for the other axis.

Chapter 11. Mixed charts

Mixed charts are specified in Chart Type (panel 1) and Data Attributes (panel 2.6). Each data group can be represented as a different type of chart. The fact that you are using mixed charts is set in the Chart Type Mixing field in panel 1. The types used are set in the Data Attributes panel in the Chart Type column. Mixed charts let you contrast information effectively and let you show two different sorts of data on one chart, with one set of axes.

Why mix charts?

The examples that follow show a number of different mixes of charts, with an indication of why you would want to mix them.

Lines and bars

Lines show exchange rates, bars show exports.

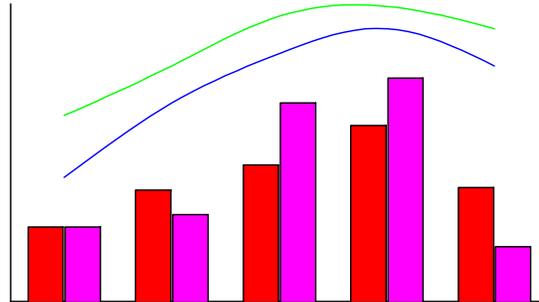


Figure 152. Mixed bar and line chart

Histogram and surface

Unshaded histogram shows pressure, surface chart shows rainfall.

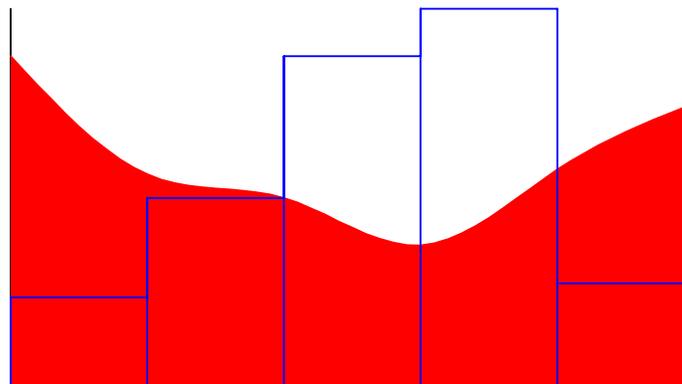


Figure 153. Mixed histogram and surface chart

Line and histogram

Line shows distribution in industry, histogram shows the same in government.

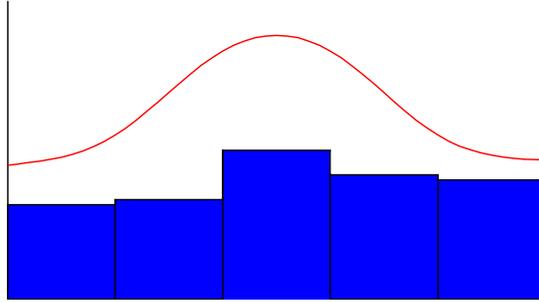


Figure 154. Mixed line and histogram chart

Bar, histogram, and line

Bars show temperature, histogram shows sunshine, line shows ice cream sales.

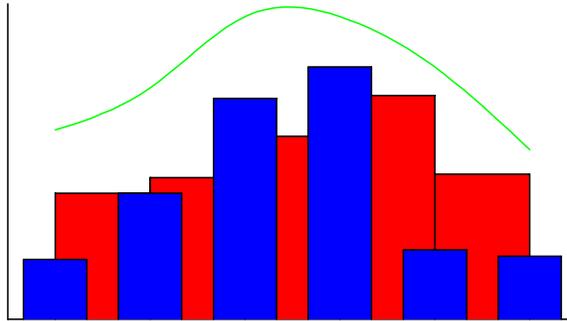


Figure 155. Mixed bar, histogram, and line chart

The charts you can mix and how to do it

You can mix:

1. Line graphs
2. Surface charts
3. Histograms
4. Bar charts

To mix charts you set Chart Type Mixing to 2 in Chart Type (panel 1) then go to Data Attributes (panel 2.6) and specify the types you want in the Chart Type column using 1 for line, 2 for surface, 3 for histogram, and 4 for bar.

The chart type you specify in panel 1 has no effect.

To define the details of the chart types you are using, either go directly from the Home Panel (using 1.4 for bar charts for example), or change the chart type in panel 1 and type YES in the "...further detail" field.

Tips

Here are some hints when mixing charts.

Second scale

Notes can be used to provide a second scale on the y axis, if the units are different for the different data groups. The actual plotting will be done on one axis values, but the data can be changed in panel 2.2 by suitable multiplication and division. Indexing type 2 in panel 2.5 can sometimes be used to reconcile differences between scales for example in a chart showing rainfall and temperature.

Method of drawing

Each different chart type is drawn individually on the axis. If a type is used more than once, it will be drawn separately PROVIDED the two different data groups are not next to each other in the Data Entry panels. Separately drawn bars, for example, will be drawn at the same position. This can be used to advantage to show negative and positive bars.

Traps

Here are some things to avoid when mixing charts.

X (EXCLUDE) command causes complete change

The chart types apply to the data groups that are not excluded, in the order shown in panel 6. Excluding a group in the middle can therefore change the chart type for other groups.

Overlaid bars

See the “Method of drawing” tip.

Overwriting by surface charts

Use shading method 2 in panel 1.2 to solve this problem. The normal method of shading in a surface chart is Mountain Range shading. This means that the shading will cover up any previous data groups.

Example

Before you start, you can set the preview chart on in panel M. You can examine the chart full size (PF5) whenever necessary. After examining it, go back to what you were doing (PF3), or return Home (PF12). Go to the panels either by typing in the numbers and pressing ENTER on the Home Panel, or by making a choice on the previous panel, (usually by answering a YES/NO question).

Note: Ready-made and Step-by-step charts are not suitable for creating mixed charts.

Panel Action taken

- 2.1 Type in the data as shown in Figure 156 on page 144.
- 1 Set Chart Type Mixing to 2.

Chapter 12. Multiple charts

Multiple charts are specified in panel 6.

Different kinds of multiple chart

Here are some examples of how you'd use different charts together.

All the same size

Four different topics each represented by the most suitable type of chart.

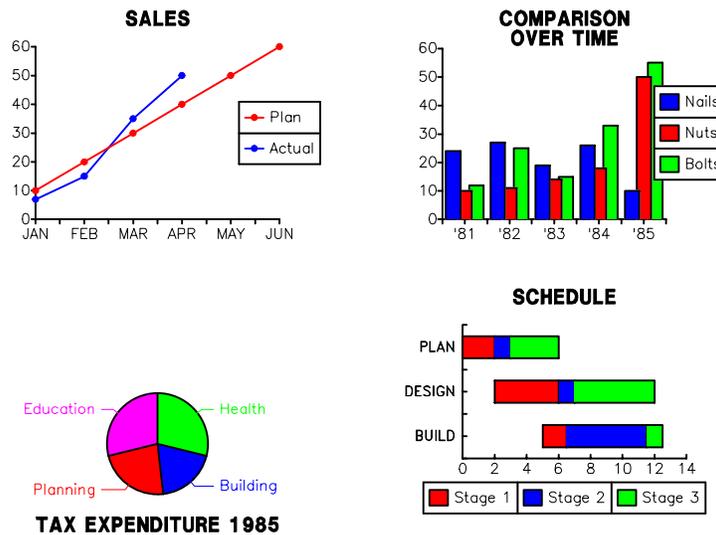


Figure 158. Multiple charts: different types

Major and minor

Show side issues that affect the main point.

Sales Results 1985

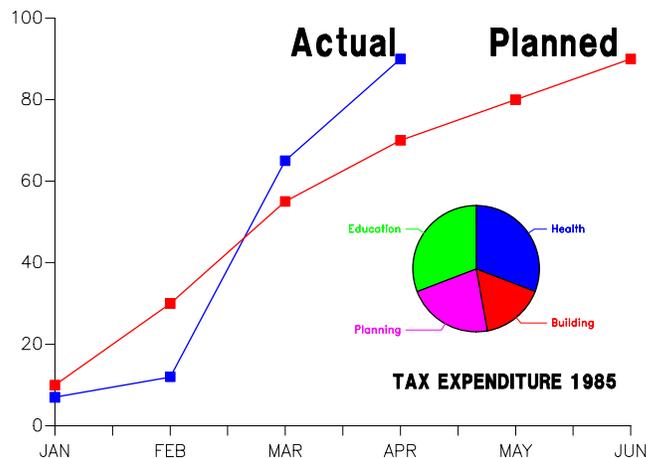


Figure 159. Multiple charts: superimposed for side issues

One chart type, several charts

Comparison between companies.

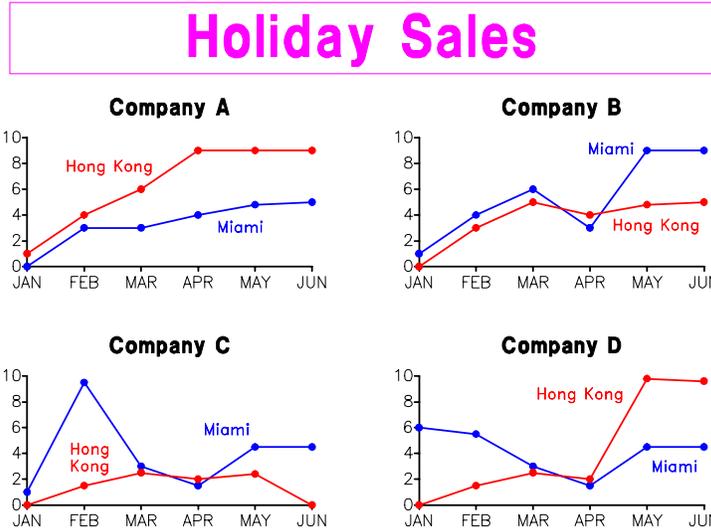


Figure 160. Multiple charts: one type

Superimposed charts

Visual impact. Shows what influenced a peak or trough.

Nuts and Bolts

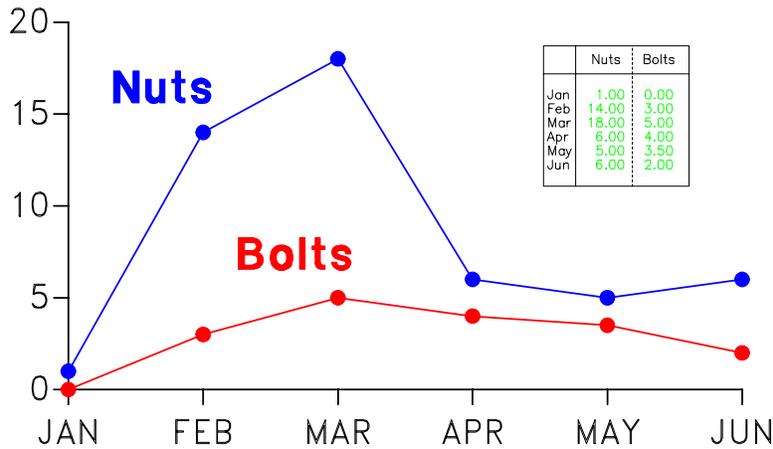


Figure 161. Multiple charts: superimposed for impact

Charts you can put together on a page

You can combine any of the chart types on a page. You can use the same chart type more than once.

A multiple chart consists of a master chart and one or more subcharts.

Think of the master chart as a blank piece of paper on which to arrange subcharts, notes and headings.

A subchart can be any chart that you can load.

Creating a multiple chart

1. Create and save the charts to be the subcharts.
2. Clear the format and data.
3. Choose 6 from the Home Panel.
4. Type in the names of the charts you want to use. This automatically loads them, you do not need to go to the Save/Load panel or the Directory panel.

Tips

Here are some hints on creating multiple charts

Moving the master chart

Put the master chart last in the list (use the M and A commands). This makes it easy to pick the notes.

Moving notes

Use P from chart notes (panel 3.1) to get the position roughly correct. Then use interactive edit (PF11) to get it exact.

Keep it simple

Remove legends, axis labels, and notes on individual charts to avoid a cluttered appearance.

Table charts

Reduce the margins (panel 5.4) and increase the Relative size of Table (panel 1.9.1), then it takes up as much room as other charts.

Boxes and backgrounds on their own

Specify ★ for the format and data names.

Traps

Here are some things to avoid when creating multiple charts.

Unwanted master chart

If you only want subcharts but want to keep the chart heading or notes, type CLEAR in panel 2.1. If you want to get rid of everything, choose reset in the Save/load panel, or load ★ from the advanced directory.

Disappearing charts and partial charts

Superimposed subcharts that use the same colors as the master chart will be invisible. Change the colors of the data in the subcharts (panel 2.6).

Notes not appearing

Are they on the master chart that you have excluded?

Nesting problems

You can create and save a multiple chart, then use it as a subchart on another multiple chart. This is called **nesting**.

You can nest up to five levels of subchart. If you try to nest more deeply than this, the subchart will not be shown and you will get an error message.

Example

Before you start, you can set the preview chart on in panel M. You can examine the chart full size (PF5) whenever necessary. After examining it, go back to what you were doing (PF3), or return Home (PF12). Go to the panels either by typing in the numbers and pressing ENTER on the Home Panel, or by making a choice on the previous panel, (usually by answering a YES/NO question).

First, create a table chart to be one subchart:

Panel Action taken

- 0.1** Choose 10 to type in the data.
- 2.1** Type in the data as shown in Figure 162 on page 149. Press PF3 twice.
- 0.2** Choose 5. Press ENTER. Choose 3.
- PF12** To get to the Home Panel.
- 1.9** Set Relative size of Table to 250.
- PF2** Save the chart format and data. Make a note of the name you use.

multiple charts

6 MULTIPLE CHARTS

Type in the format and data names of the charts you want, and the positions and attributes of the areas in which you want the charts to appear. You position a chart by giving the distance of each of its edges from the lower left corner of the master chart (the chart that you are editing at the moment). Express the distance as a percentage of the size of the master chart. Charts may overlap. Use PF6 to switch between positions and attributes.

Commands	Chart Name	Format	Data	Chart Position			
				Left	Right	Bottom	Top
***	*MASTER*	*CHART*		0	100	0	100
001	SUB1	=		5	95	5	50
003	SUB2	=		5	95	40	95
004				10	45	10	45
005				55	90	10	45

Commands: I (Insert) D (Delete) R (Repeat) M (Move) A (After) B (Before)
/ (Scroll Here) S (Select) X (Exclude)

PF: 1=Help 2=Save/Load 3=End 4=Print 5=Display 6=Show Attributes 7=Up 8=Down
11=Edit 12=Home

Figure 163. Multiple charts selection panel

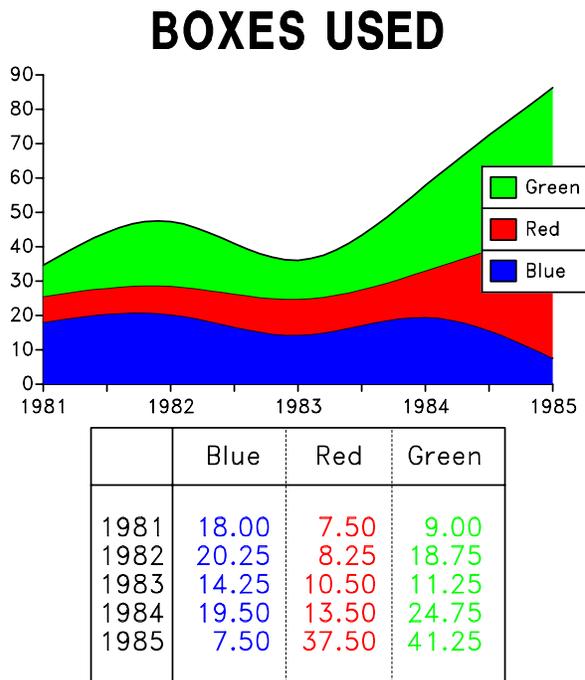


Figure 164. Multiple chart example

Chapter 13. Pie charts

Pie charts are chosen in panel 1 with details specified in panel 1.5. They are used to show how parts make up a whole, and to compare the make up of different wholes. Use Step-by-step charts with the parts-of-a-whole sample data (selection 4 in panel 0.1) to see what can be achieved with pie charts.

Different kinds of pie chart

Below are some different kinds of pie chart, with some notes on why you might consider using them.

Standard pie chart

Shows parts of a whole in an easy-to-grasp way.

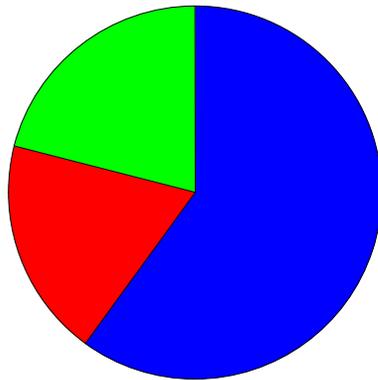


Figure 165. Standard pie chart

3-D pie chart

Gives more punch. An exploded slice emphasizes a particular element. Use Data Attributes (panel 2.6) to decide which slices to explode, then use Chart Options (panel 1.5) for depth, angle, and explosion distance.

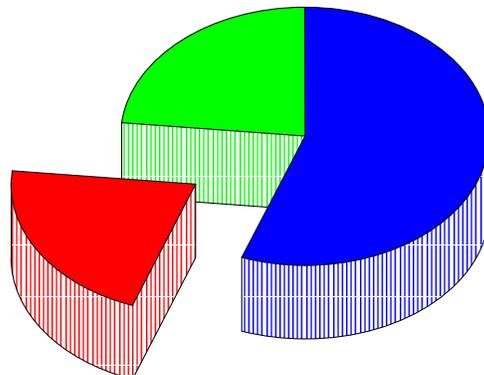


Figure 166. 3-D pie chart

More than one slice exploded

Use Chart Options (panel 1.5) and Data Attributes (panel 2.6). (“slices” are sometimes called “sectors”)

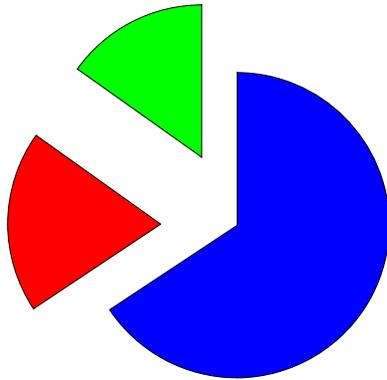


Figure 167. Exploded pie chart

Percentage data

With percentage data (Type 2 in Chart Options panel 1.5), an empty slice can be left in the pie.

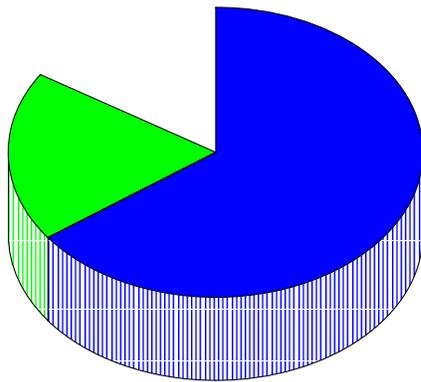


Figure 168. Percentage data pie chart

Two pie charts

Compare the make up in different years. (Use two columns in the Data Entry panel.) See “No pies or tiny pies” on page 155 before you try this.

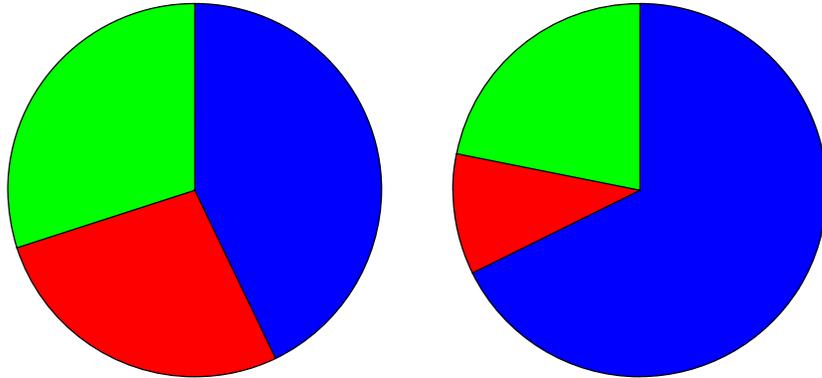


Figure 169. Two pie charts

Different sizes

Sizes Related to Total Value in Chart Options (panel 1.5). Total size as well as make up of each pie can be seen.

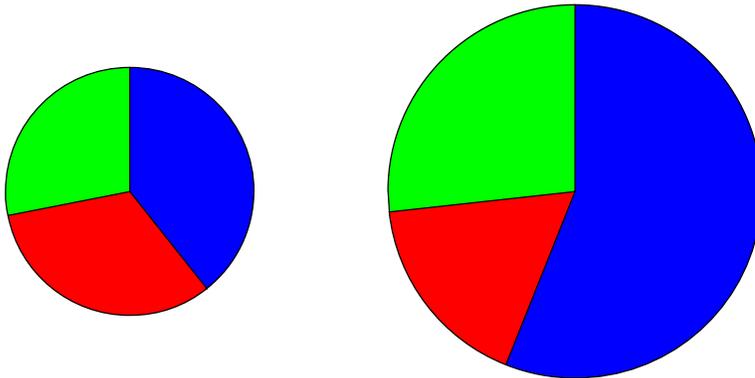


Figure 170. Pie charts of different sizes together

Different labeling methods

There are several ways of labeling your pie charts. You set the labels in Chart Options (panel 1.5) by Pie Labeling and Values Attached to Slices.

The examples that follow show the various options.

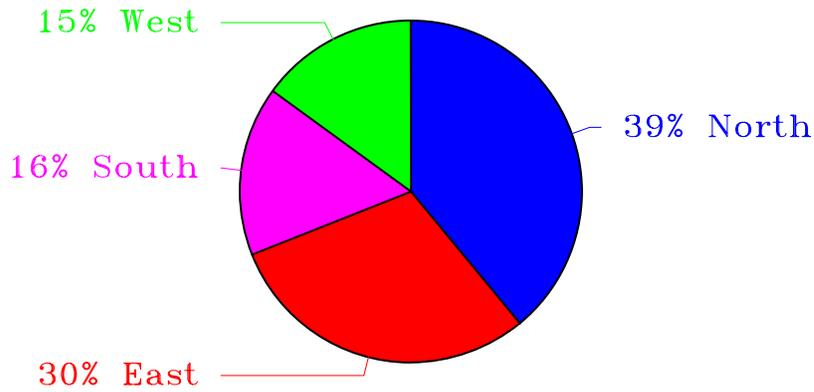


Figure 171. Pie labeling type 1 – Values Attached – YES

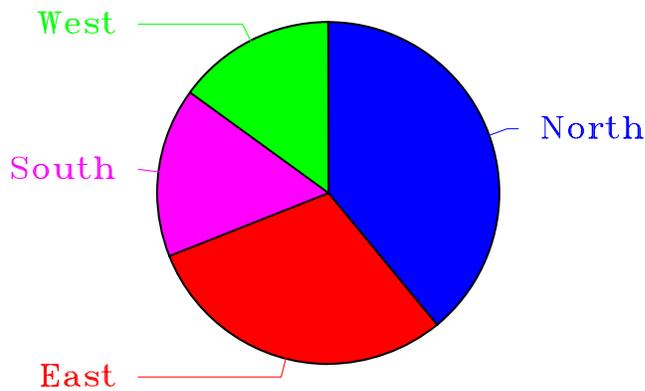


Figure 172. Pie labeling type 1 – Values Attached – NO

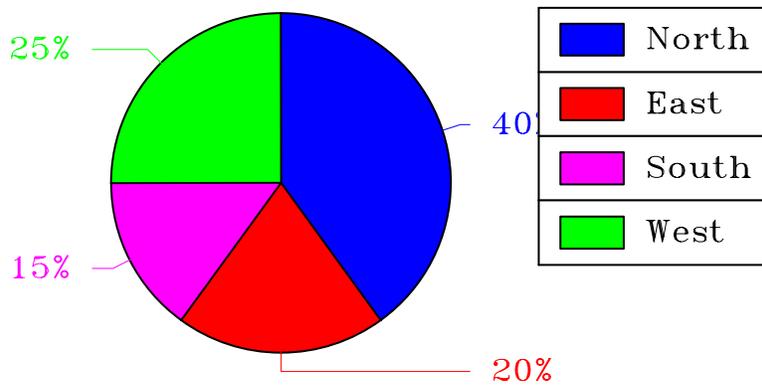


Figure 173. Pie labeling type 2 – Values Attached – YES

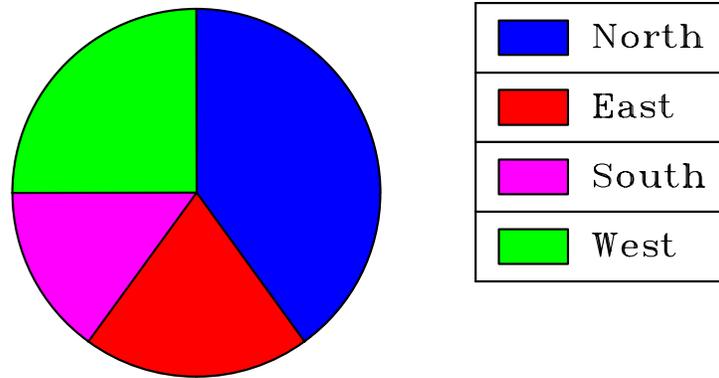


Figure 174. Pie labeling type 2 – Values Attached – NO

No pies or tiny pies

Hours of Sunshine

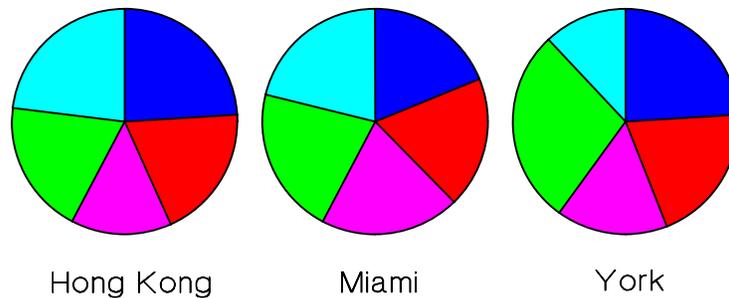


Figure 175. Multiple pie example

You cannot show many pies at a practical size using the ICU. On most terminals three is the practical limit and even two is sometimes difficult. On terminals with larger screens, five is sometimes practical. To give yourself more space, try any or all of these:

1. Reduce Left and Right margins to 0 (panel 5.4). Look under “Columns.” Do not change Bottom margin, or the data group names will be omitted.
2. Try Labels in a Legend, Chart Options (panel 1.5).
3. Set Values Attached to Slices to NO, Chart Options (panel 1.5).
4. Set Axis Orientation to 2, (panel 5.2). This puts the pies above one another. If you use this method, Left Margin should not be set to 0 (panel 5.4), or the data group names will be omitted.
5. Use a chart note instead of a heading and set the top margin to 0.

If these remedies fail, exclude some of the pies with the X command in Long Data Group Names (panel 2.3) or in panel 2.2.

Tilt, thickness (3-D effect), and explosion distance

Tilt, thickness, and explosion can be specified independently.

Tilt of pies away from viewer

Specified in panel 1.5

Tilt values range from 0, no tilt, to 99, completely tilted away. 30 to 40 is normal.

Tilt=20

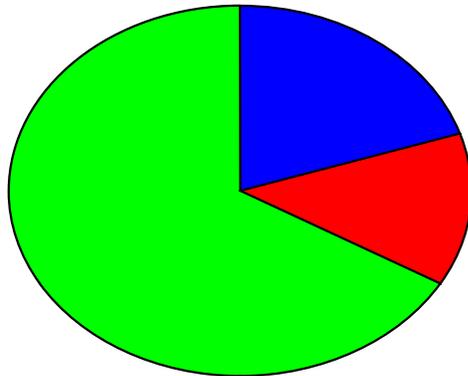


Figure 176. Tilting pies (at 20)

Tilt=60

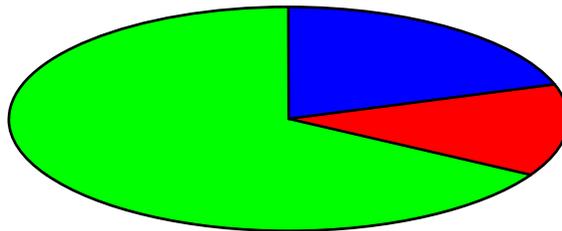


Figure 177. Tilting pies (at 60)

Thickness of pie compared to size (3-D effect)

Specified in panel 1.5

Thickness is specified by giving height as a percentage of width. 15 to 20 is normal.

Thickness=15

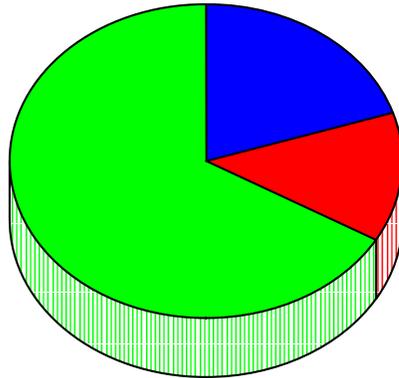


Figure 178. Setting pie thickness (15)

Thickness=100

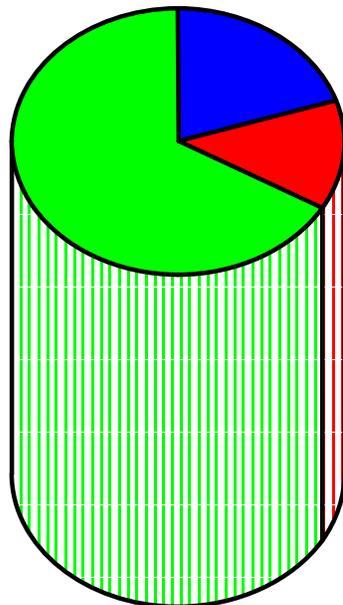


Figure 179. Setting pie thickness (100)

Movement of exploded slices

Which slices are exploded is specified in panel 2.6, the movement of explosion in panel 1.5.

Change NO to YES in the Explode Slice column in panel 2.6. The first row refers to the top right-hand slice, and so on round the circle.

Explosion movement is specified as a percentage of the pie width.

Explosion=20

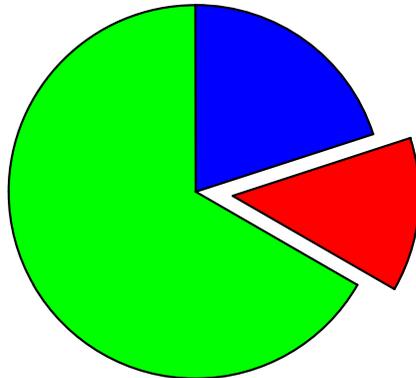


Figure 180. Distance of explosion (20)

Explosion=100

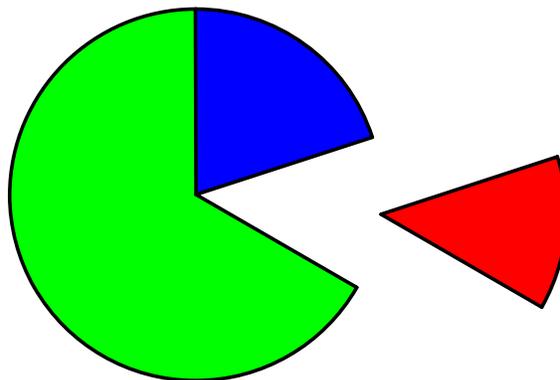


Figure 181. Distance of explosion (100)

Tips

Here are some hints for using pie charts.

Transposing charts that are the wrong way round

For business charts that show time, the swap between pie charts and line and bar charts usually gives data the wrong way round. To correct this, use the TR (transpose) command in Data Entry and Manipulation (panel 2.2).

Emphasis and exploded pies

Try exploding all slices but one, and giving a label only to the item that is not exploded.

Percentage data

It is possible to produce percentage data from ordinary data by multiplication and division in Data Entry and Manipulation (panel 2.2). You can then specify percentage data in panel 1.5. This can be useful if you want to show an incomplete pie.

Traps

Here are some things to avoid when using pie charts.

Pie charts not shown

This is a symptom of the problem described in “No pies or tiny pies” on page 155.

Pie charts the wrong way round

Use the TR command, transpose and, if necessary, exclude one or more data groups (Data Manipulation (panel 2.2)).

Message about X AXIS LABELS OMITTED

This message refers to the data group names that are used as pie titles. Increasing the Bottom or Left Margins (panel 5.4) will solve the problem.

Values

Always use whole numbers, otherwise the values on your labels may not add up to 100.

Example

Before you start, you can set the preview chart on in panel M. You can examine the chart full size (PF5) whenever necessary. After examining it, go back to what you were doing (PF3), or return Home (PF12). Go to the panels either by typing in the numbers and pressing ENTER on the Home Panel, or by making a choice on the previous panel, (usually by answering a YES/NO question).

Panel Action taken

- 0.1** Choose 10 to type in the data.
- 2.1** Type in the data as shown in Figure 182 on page 161. Press PF3.
- 0.1** Choose 11 to type in the heading.
- 5.1** Type in the heading. Press PF3 twice.
- 0.2** Choose 3. Press ENTER, then choose 4.
- PF12** To get to the Home Panel and add the finishing touches.
- 1.5** Set Tilt of Pies to 30, Thickness to 30.
- 5.4** Set Right Margin to 14.
- 2.6** Change the first four items in the Pattern column to 0.
- 2.7** Change Symbol Set Name to ADMUUDRP, and Character Width Multiplier to 1.5.
- 4.4.2** Change Symbol Set Name to ADMUUDRP, and Character Width Multiplier to 1.5.
- 5.3** Change Order of Construction to 2.

Press PF2 and choose option 3 to save the chart or option 2 to clear the data and format.

pie charts

Chapter 14. Polar charts

Polar charts are chosen in panel 1 with details specified in panel 1.7. Panel 2.5, Data Interpretation, determines their type. Y values positioned at the specified X values (1 in panel 2.5) plots the first and last value at the same point and so is suitable for circular line or surface charts. (The last label is not shown for these charts.) Y values positioned at equal X intervals (2 in panel 2.5) shows all labels and is suitable for comparison charts. Use Step-by-step charts with the cyclic sample data (selection 6 in panel 0.1) to see what can be achieved with polar charts.

Different kinds of polar chart

Below are various different kinds of polar chart, with notes suggesting why you might use them, and how you go about creating them.

Comparison polar chart

Compares two companies for profits, turnover, cash-flow, and share price. Y values at equal X intervals (panel 2.5) to make the lines meet on the y axis.

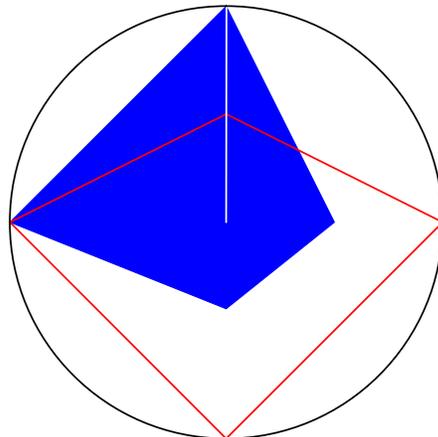


Figure 184. Polar chart: comparison

Curved comparison chart

Set shaded bands and curved connections in panel 1.7. Y values at equal X intervals (panel 2.5) to make the lines meet on the y axis.

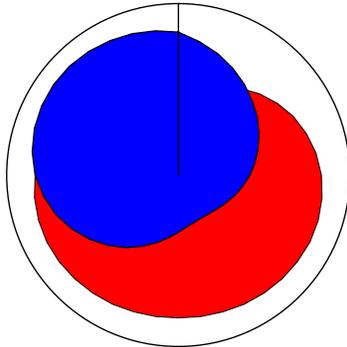


Figure 185. Polar chart: curved comparison

Circular line graph

Shows temperature through 24 hours. Shaded bands set to NO and Type of Connection set to A Smooth Curve (panel 1.7). Y values at specified X values (panel 2.5) so the lines don't meet on the y axis.

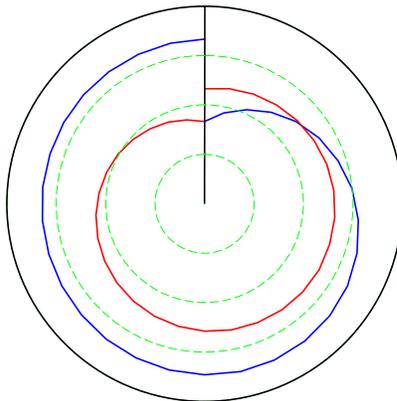


Figure 186. Polar chart: circular line graph

Circular surface chart

Set relative data, shaded bands, and curved connections in panel 1.7. Y values at specified X values (panel 2.5) so the lines don't meet on the y axis.

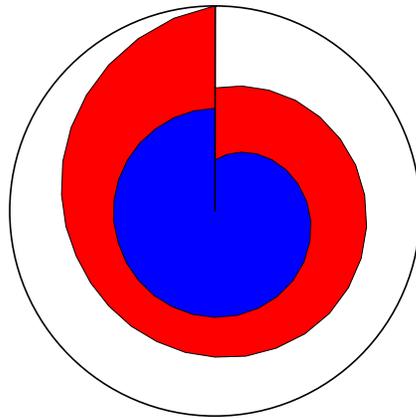


Figure 187. Polar chart: circular surface

What goes where

The picture below shows you the “parts” of standard charts as they relate to a polar chart.

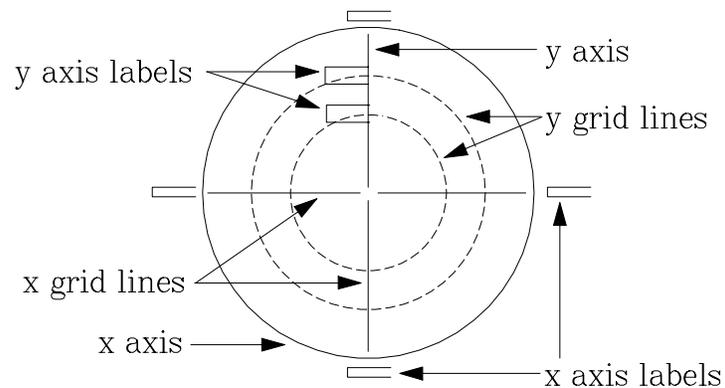


Figure 188. Polar chart: the naming of parts

Note that with Y values at the specified X values (panel 2.5), the first and last value are both plotted on the y (vertical) axis. The last x label is not used because it would cover up the first.

Tips

Here are some hints on using polar charts.

Comparison charts and data of different scales

When polar charts are used for comparisons, the data available is often in different scales. For example, if you wanted to show turnover and share price for a company, turnover might be in billions and share price in thousands or hundreds. In cases like this, the data has to be changed so it is all in a similar scale. You have several choices:

- Change the data before you type it into the Data Entry panel.
- Change the data in Data Manipulation, panel 2.2. (For example, you could multiply the share price by 1 million by putting `*1000000` on the command line for the profits row.)
- Use indexing type 4 in the Data Interpretation panel. This makes one of the data groups the norm (a perfect circle) and shows the others in comparison.
- A variation of this is to set up a dummy “perfect” data group and always index against that. You can then exclude the dummy group (X command in panel 2.2) so that it does not show. This data group should have the end value of each X value in its column. For example if you wanted the end of the Profits axis to be 200, you would use 200 as the value in the dummy group.

Grid lines

Grid lines (on the x and y axes) are very useful on polar charts.

Traps

Here are some things to avoid when creating polar charts.

Lost an x label or got one more than you want?

The method of positioning y values is important. Comparison charts always need y values at equal intervals so that a solid shape is made. Circular line graphs, particularly when the data is cyclic, should not really have them. But if, for example, you plot your electricity bill for the four seasons, you will only get Spring, Summer and Fall unless you set Y values positioned at equal X intervals in Data Interpretation (panel 2.5).

Just one straight line?

Charts with three values or less may appear as just one straight line. Curved connections can be used to cure this. The smoothness of the curve may need to be increased (panel 1.7).

Heading and labels overlap?

A heading that takes up more than one line may interfere with axis labels. Increase the size of the margin (panel 5.4) to give the heading more room.

Corporate Comparison

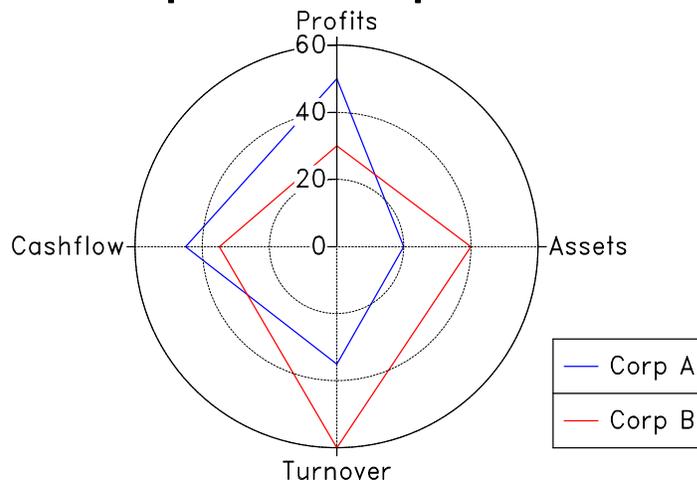


Figure 190. Polar chart example

Chapter 15. Presentation material

Presentation material is typed in as Chart Notes in panel 3. The type style and color are then set by pressing PF6 to show the attribute columns. The position, size, angle, and proportions can then be arranged on the interactive edit panel, reached by pressing PF11.

Different kinds of presentation material

Here are some examples of lively presentation material you can produce using the ICU.

Notes on their own

With a trade mark produced on one of the GDDM symbol editors.



Figure 191. Presentation material: text with a graphic feel

Note text attributes (color, size, angle, and the rest)

Add punch to your presentations.

Do YOU Feel...
 Squashed? Stretched?
 Boxed in?
 That it's an uphill struggle?

Figure 192. Presentation material: playing with text

Notes and chart together

Reduce chart size by increasing margins (panel 5.4).

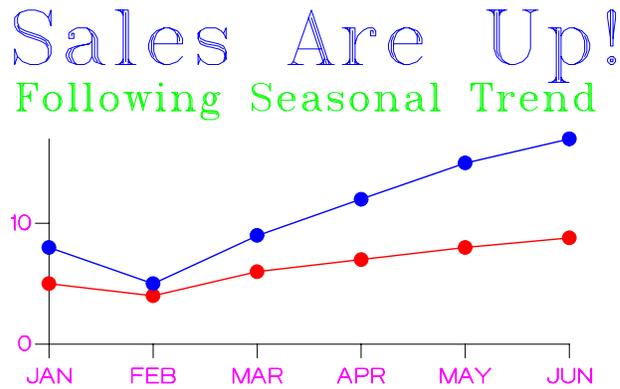


Figure 193. Presentation material: using text and charts

Drawing a picture

With surface charts and vector symbols you can draw a picture.

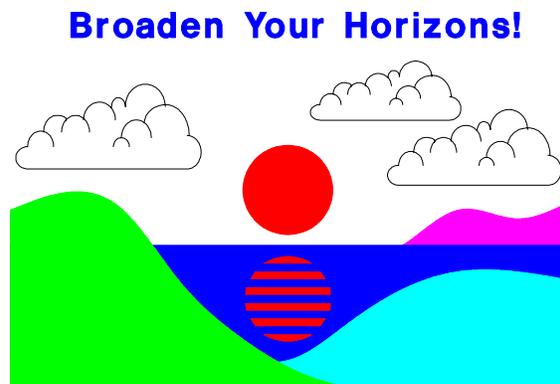


Figure 194. Presentation material: drawing pictures

Tips

Here's a hint for making it easy for you to create presentations.

When to use interactive edit

Everything you do on the Interactive Edit panel, you can also do with the P or T command against notes in panel 3. Use whichever way you like. The P and T commands are particularly good for:

- Getting you out of a mess if you make mistakes on the Interactive Edit panel
- Producing a series of presentations with matching positioning
- Arranging the notes when you use multiple charts because you don't have to be able to pick the note to position it.

Traps

Here are some things to be careful of when creating presentations.

Disappearing notes

If the color is set to 8, notes will not show. If they are off the screen, use the P command in panel 3 and change their position. More on this in the Help panels.

Height, Width, or Size ?

You need to remember the effects of changing dimensions.

Size Always keeps your note in the same proportion (aspect ratio).

Width Changes width but keeps the same height.

Height Changes height but keeps the same width.

Example

This example uses interactive note editing on the display panel. You may prefer to use panels 3.1 (reached by the P command against each note in turn) and 3.2 (reached by the T command against each note in turn). If you do it this way, setting the Preview chart will make the operation much easier. Look at the full size version before you stop, the different line widths can make it look very different from the Preview Chart.

Panel

or Key Action Taken

2.2 Type in CLEAR command if you have any data.

3 Type in the notes as follows:

___001 Medieval

___002 Presentations

___003 Are a Thing of the Past

Put a blank before "Are" and after "Past" to balance box.

PF6 Fill the Attribute Columns, as shown below.

3 CHART NOTES									
Type in the Notes you want under Note Text , one Note per line. Use PF11 (Edit) to change the size or position or angle of a note. Use PF6 or the P and T commands to change other properties.									
Commands	Note Text	Color	Symbol Mode	Set Name	Blanked	Outlined	Ref Point	Horz Type	Vert Type

001	Medieval	2	3	ADMUUGEP	NO	NO	5	1	1
002	Presentations	1	3	ADMUUCSP	NO	NO	5	1	1
003	Are a Thing of	4	3	ADMUUTIP	NO	YES	5	1	1
004		7	3	ADMUUKSF	NO	NO	5	1	1

Figure 195. Setting attributes for presentation material example

presentation material

Do not worry that part of the note text is not shown. You can see all the text by pressing PF6 again.

PF11 Display the chart.

You will get a message saying you can move the notes. Press the SELECT button. It is middle button on mouse, puck button 2, stylus, or PF2. Move the cursor where you want the note and press SELECT again.

Repeat for "Presentations."

PF7 You get a message about SIZE. Move the cursor to bottom left of a note, press SELECT. Move the cursor to bottom right of note press SELECT again.

A line will join the two points. Move the cursor to the point on the line where you want the right hand corner of note and press SELECT.



Figure 196. The presentation material example

Repeat for each note.

(The two points need not be at the corners, but these are usually the most convenient places.)

When the size is right you may need to move the notes again. If you do, press PF10 and move them.

PF11 You will get a message about ANGLE. Move the cursor to the bottom left corner of "Presentations," press SELECT. Move the cursor to the bottom right hand corner, press SELECT again. A line joins the two points and a circle is drawn starting at the second point. Move the cursor to the point around the circle that marks the angle you want and press SELECT again.

(You need not choose the two bottom corners as the points, but they are usually the most convenient.)

To make a note horizontal use the T command in the Notes panel (panel 3) and set the angle of rotation to 0.

PF5 End editing and show the presentation without the editing messages.

Press PF2 and choose option 3 to save the chart or option 2 to clear the data and format. (PF2 is the SELECT button while you are in interactive edit, so be sure you have pressed PF5 to end editing first.)

Chapter 16. Surface charts

Surface charts have more visual punch than line graphs but are not so accurate to read. Use Step-by-step charts with the comparison sample data (selection 3 in panel 0.1) to see what can be achieved with surface charts. They are particularly useful in showing how shares make up a total and how they change. The first four charts below all use the same data. They are only different because of the Chart Options chosen (panel 1.2). To produce chart 5 some of the data was excluded and some was multiplied by -1.

Different kinds of surface charts

There are two basic kinds of surface chart:

1. Absolute
2. Relative

Absolute

All data groups are plotted from the x axis and so overlap. The actual values for each data group are harder to read than with absolute data.

Below are some different examples of absolute surface charts.

Absolute data with mountain range shading

Items on same base (absolute) to show size of each data group.

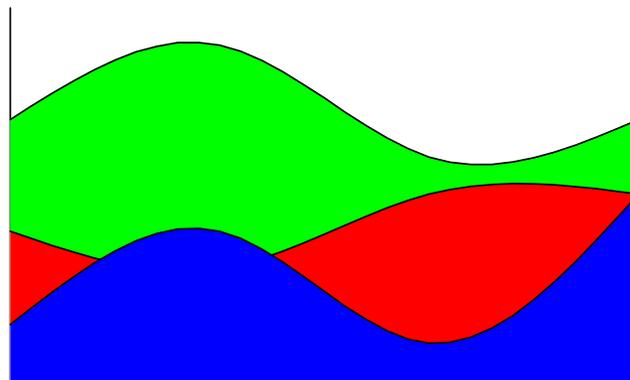


Figure 197. Absolute surface chart: mountain range shading

Absolute data with shading to previous line

Shows where a group is hidden by a mixed shading pattern.

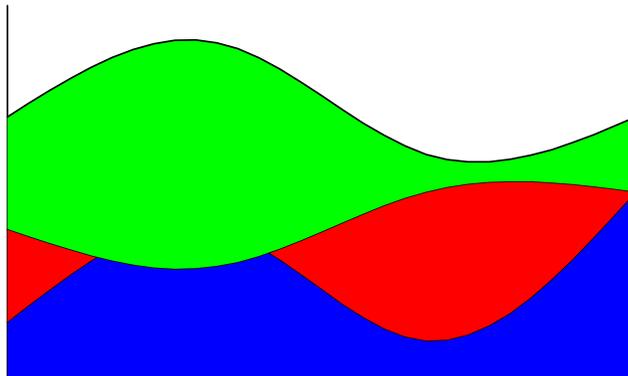


Figure 198. Absolute surface chart: shading to previous line

Relative

Data groups are stacked one above the other so that the total can be read off the y axis and the share is apparent.

Below are some different examples of relative surface charts.

Relative data with mountain range shading

Items stacked to show changes over time and overall total.

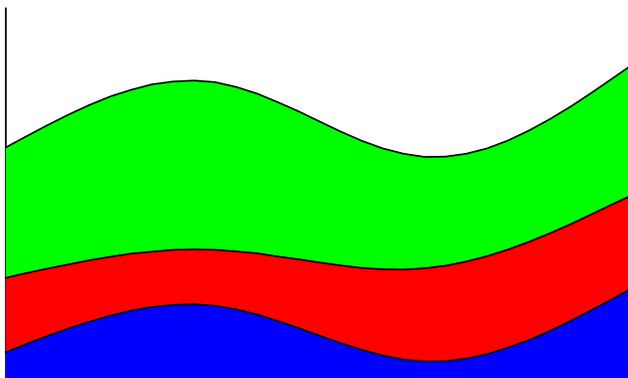


Figure 199. Relative surface chart: mountain range shading

Relative data with shading to previous line

Would look like 3 above but altered by not shading first group and using straight line connectors.

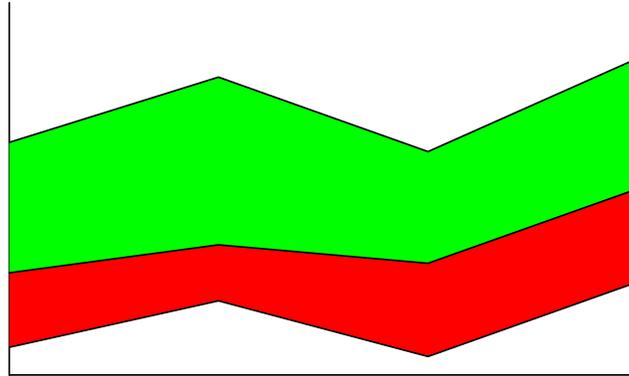


Figure 200. Relative surface chart: shading to previous line

Profile or correlation chart

Vertical surface chart with reference line (see Chapter 20, “Tricks, techniques, and tips” on page 195).

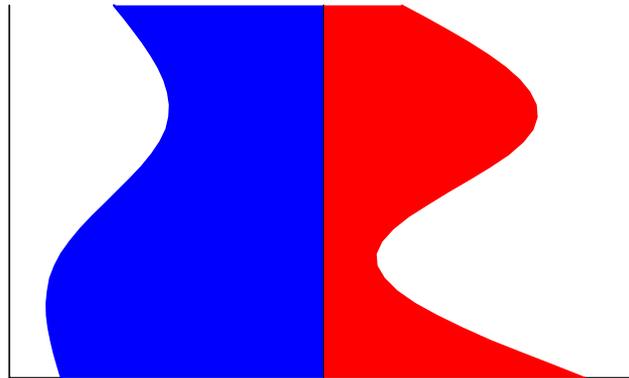


Figure 201. Profile or correlation chart

Tips

Here are some hints on using surface charts.

Indexing

Indexing type 1 (panel 2.5 – see Chapter 9, “Indexed charts” on page 127) is useful with surface charts.

Drawing pictures

Surface charts can be used for simple drawings; see Chapter 15, “Presentation material” on page 169.

Reference lines

Reference lines (panel 4.7 – see “Floating bars” on page 115) are effective on surface charts.

Smooth lines

Don't increase curve smoothness (panel 1.2) until you've done everything else. Even then, curved lines may give unexpected results. Use straight connectors if you don't like what you see.

Improving data group shapes

Put the data group whose values change least on the bottom.

Traps

Here are some things to watch out for when creating surface charts.

Funny shading

Overlapping or negative data may shade in an unexpected way. Solve the problem by changing to Relative Data (panel 1.2). If this fails try Mountain Range Shading (panel 1.2) or alter the order of the data groups (panel 2.2 or 2.3).

Shading method used

For both shading methods, the first group is shaded up or down to the x axis (or y reference line, if there is one).

In Mountain Range shading, all other groups are shaded to the first block of shading that is found. There are never mixed shading patterns.

In Shading to Previous Line, all other groups are shaded to the previous DATA GROUP (as entered in 2.1 or 2.2). If this causes an overlap, mixed shading patterns will occur.

Example

Before you start, you can set the preview chart on in panel M. You can examine the chart full size (PF5) whenever necessary. After examining it, go back to what you were doing (PF3) or return Home (PF12). Go to the panels either by typing in the numbers and pressing ENTER on the Home Panel, or by making a choice on the previous panel, (usually by answering a YES/NO question).

Panel Action taken

- 0.1** Choose 10 to type in the data.
- 2.1** Type in the data as shown in Figure 202 on page 179. Press PF3.
- 0.1** Choose 11 to type in the heading.
- 5.1** Type in the heading. Press PF3 twice.
- 0.2** Choose 4. Press ENTER. Choose 3.
- PF12** To get to the Home Panel and add the finishing touches.

Chapter 17. Table charts

Table charts are chosen in panel 1 with details specified in panel 1.9. They let you display your data in rows and columns. They are useful because they show the data on which your charts are based. They are particularly good as one of a series of charts on a multiple-chart page. Use Step-by-step charts with the general-purpose sample data (selection 1 in panel 0.1) to see what can be achieved with table charts.

Different kinds of table chart

Here are some examples of what you can do with tables.

Standard table chart

The data alone with suitable headings.

Sports	Football	Golf	Tennis	Squash
1980	54	15	26	5
1981	62	25	20	15
1982	65	27	19	30
1983	60	30	21	43
1984	63	31	20	52

Figure 204. Standard table chart

Highlighting with color

Set Color selection to 1 (1.9) and make all but one of the shading colors the same (2.6).

	7,982	297	4,261
	6,542	305	3,974
Best Year	8,032	769	5,351
	7,631	540	5,100

Figure 205. Table, highlighted with color

Rotated table chart

Draws attention to different features (panel 5.2).

	North	South	East	West
1982	5,000	4,300	3,670	2,560
1983	5,230	4,600	3,290	1,900
1984	6,010	4,520	4,100	2,190
1985	6,050	4,670	4,320	2,210
1986	6,000	4,630	4,130	2,340
1987	6,120	4,540	4,100	2,290

Trees Planted

Figure 206. Rotated table chart

What goes where

Here's how the basic elements of charts relate to table charts.

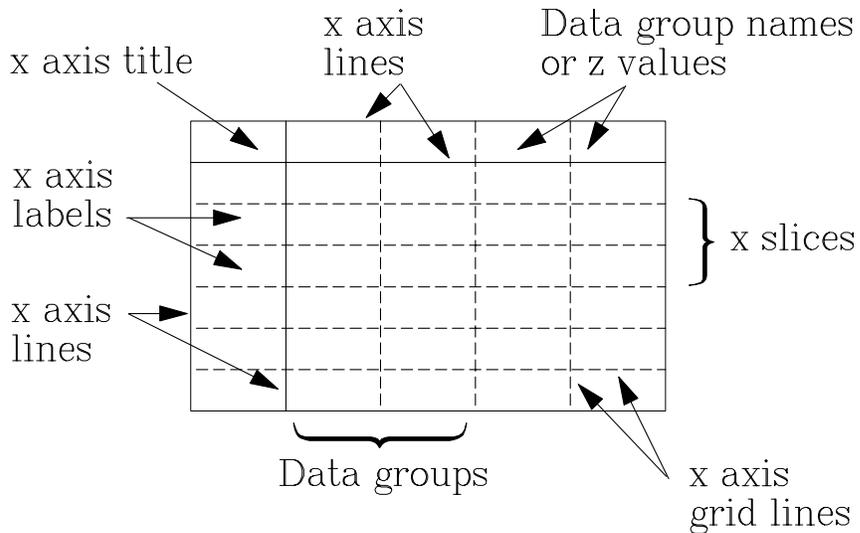


Figure 207. Table charts: the naming of parts

Tips

Here are some tips on creating table charts.

Big is beautiful

Increase the Relative size of Table (panel 1.9) to make it easier to read.

Getting enough room

Decrease the margins (panel 5.4) to give you more space.

Traps

Here are some things to watch out for when creating table charts.

The y axis

Changing its attributes makes no difference to your chart.

Gap and line between x slices

Neither appears unless you put a number in X slices, Number in a set.

Example

Before you start, you can set the preview chart on in panel M. You can examine the chart full size (PF5) whenever necessary. After examining it, go back to what you were doing (PF3), or return Home (PF12). Go to the panels either by typing in the numbers and pressing ENTER on the Home Panel, or by making a choice on the previous panel, (usually by answering a YES/NO question).

Panel Action taken

- 0.1** Choose 10 to type in the data.
- 2.1** Type in the data as shown in Figure 208 on page 184. Press PF3.
- 0.1** Choose 11 to type in the heading.
- 5.1** Type in the heading. Press PF3.
- 0.1** Choose 12 to type in the x-axis title.
- 4.1** Type in the x-axis title "Shift." Press PF3 twice.
- 0.2** Choose 5. Press ENTER, then choose 4.
- PF12** To get to the Home Panel and add the finishing touches.
- 1.9** Set Missing values shown as to none and Color Selection to 2.
- 1.9.1** Set Symbol Set Name to ADMUUFSS.
- 2.7** Set Symbol Set Name to ADMUWKSF and Character Width Multiplier to 1.5.
- 4.1.1** Set Symbol Set Name to ADMUWKSF. Press PF6 and do the same for the other axis.
- 4.2.1** Set Line Width to 2. Press PF6 and do the same for the other axis.

Chapter 18. Tower charts

Tower charts are chosen in panel 1 with details specified in panel 1.8. They let you compare data in two directions and, because they are three-dimensional, have more impact than bar charts. (People are used to seeing things in three dimensions.) Use Step-by-step charts with the general-purpose sample data (selection 1 in panel 0.1) to see what can be achieved with tower charts.

Different kinds of tower chart

Here are some different ways that you can present tower charts.

Standard tower chart

You can compare between companies, between years, or get an overall picture of both.

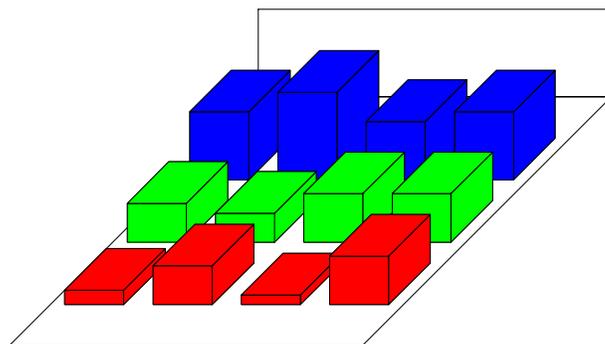


Figure 210. Standard tower chart

Color differences side by side

Set Attribute Selection to 2 – Along the X axis in panel 1.8.

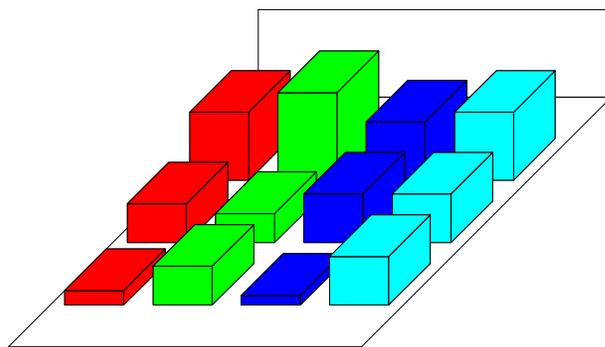


Figure 211. Tower chart with side-by-side color differences

With scale tower

Helps to show scale. Set Scale Tower Drawn to YES in panel 1.8. This chart shows a z-axis angle of 120 (panel 1.8).

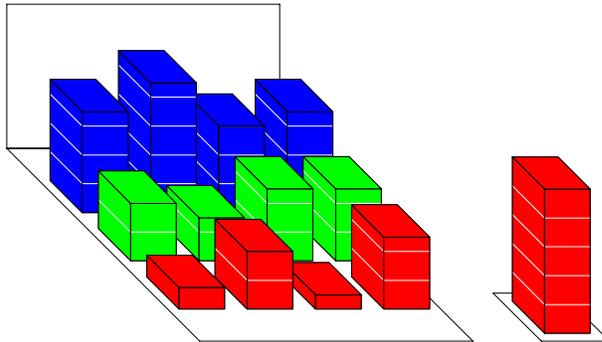


Figure 212. Tower chart with scale tower

Tower spacing

Towers are normally evenly spaced along the z axis and spaced along the x axis in the positions given by the x values. Z values (panel 2.2 only) can be used for spacing if this is set in panel 2.5 (Data Interpretation).

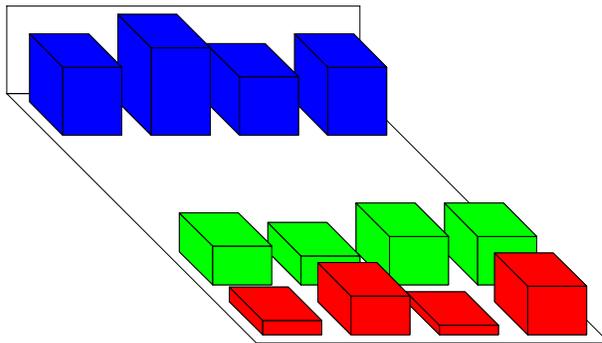


Figure 213. Tower chart with adjusted tower spacing

What goes where

The picture below shows how the standard parts of a chart relate to tower charts.

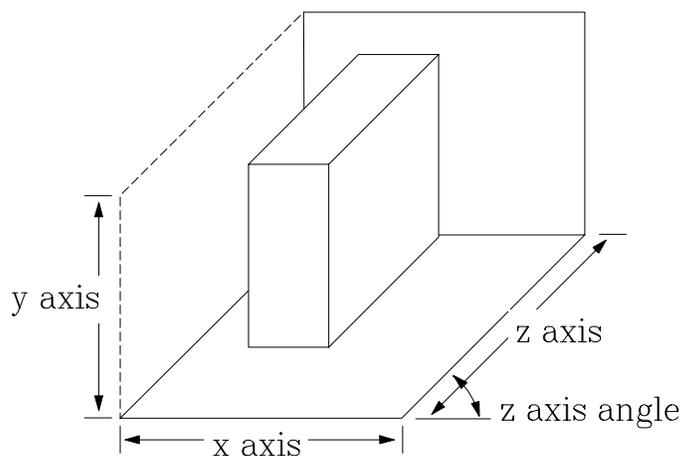


Figure 214. Tower charts: the naming of parts

Tips

Here are some hints on using tower charts

Handling the z axis

The z axis is controlled by Tower Chart Options (panel 1.8), Data Interpretation (panel 2.5), and the z values shown on panel 2.2. These values only take effect if y values is set to 1 – At the specified Z (Data Group) values, in panel 2.5.

Data group names can be placed as z-axis labels as well as in the legend (panel 1.8). If you want to remove the legend, specify NO in panel 5.3.

Tower shape

Tower shape is controlled by Gap between Towers. Decide on Z axis Angle and Relative Size, then change gap to get towers the shape you want (all in panel 1.8).

Constant outline to towers

Constant outline, set in panel 2.6 by changing the * to all the same number (and possibly line width to 2), can be very effective.

Changing angle

Changing the angle of the Z axis (panel 1.8) can make the comparison easier to see.

Smallest towers at front

Tower charts look best with the smallest towers at the front. This can be done either by moving groups in Data Group Names (panel 2.3), or by changing the Data Group (Z) Values to the order you want and then using the SORT command on the same line.

Traps

Here are some things to watch out for when creating tower charts.

Faulty towers

Floating towers which normally give a message about UNORDERED Z VALUES can be cured by either changing the Data Group Z values (panel 2.2) or setting Y values plotted at equal intervals on the Z axis (panel 2.5). Normally z and x axes should have values plotted at equal intervals unless you want towers spaced unevenly.

X axis labels omitted

The size of the x axis means that labels will often be too long. Solve this by shortening the labels (panel 2.4) or by setting them at an angle (panel 2.8 or 4.4.2).

Labels among the towers

Axis labels are not scaled to keep them in the margin. Increase the margin (panel 5.4) or change the character width multiplier (panel 2.7 or 2.8).

Example

Before you start, you can set the preview chart on in panel M. You can examine the chart full size (PF5) whenever necessary. After examining it, go back to what you were doing (PF3), or return Home (PF12). Go to the panels either by typing in the numbers and pressing ENTER on the Home Panel, or by making a choice on the previous panel, (usually by answering a YES/NO question).

Panel Action taken

- 0.1** Choose 10 to type in the data.
- 2.1** Type in the data as shown Figure 215 on page 189. Press PF3.
- 0.1** Choose 11 to type in the heading.
- 5.1** Type in the heading. Press PF3 twice.
- 0.2** Choose 7, press ENTER, and choose 2.
- PF12** To get to the Home Panel and add the finishing touches.
- 1.8** Set Z and X Axis Gap to 150, Z Axis Angle to 20, Attribute Selection to 1.
- 2.7** Set Symbol Set Name to ADMUUDRP, and Character Width Multiplier to 1.5
- 4.4.2** Set Symbol Set Name to ADMUUDRP, and Character Width Multiplier to 1.5 Press PF6 and set the other axis.
- 2.6** Set the four Shading Patterns to 0.

tower charts

Chapter 19. Venn diagrams

Venn diagrams are chosen in panel 1 with details specified in panel 1.6. They are a specialized chart form used to show overlap between two sets of data. Use Step-by-step charts with the data in the example on the next page to see what can be achieved with Venn diagrams.

Kinds of Venn diagram

There are, basically, two kinds of Venn Diagram, as shown below.

Venn diagram

Shows overlap of students studying math and art.

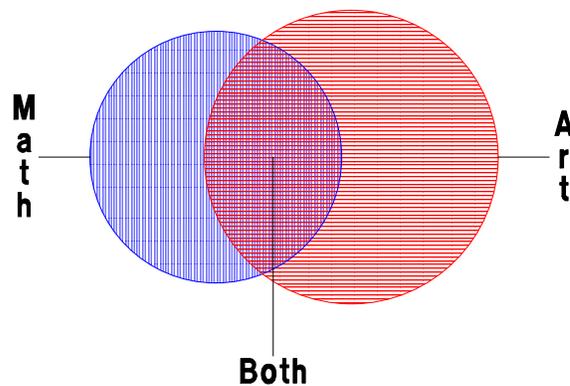


Figure 217. Basic Venn diagram

Vertical Venn diagram

Vertical arrangement, Axis Positioning (panel 5.2).

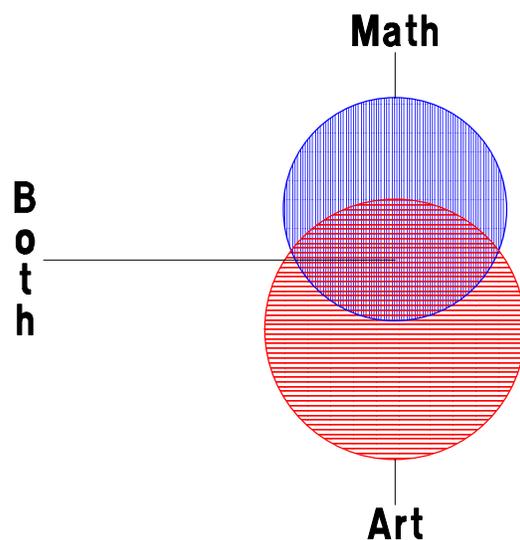


Figure 218. Vertical Venn diagram

Tips

Here are some hints on creating Venn diagrams.

How plotted

Venn diagrams are plotted from three y values. Only one data group can be shown. Overlapping of more than two circles is not possible.

No legend

A legend is never shown in a Venn diagram. The labelling is taken from x labels in the Data Entry Panel.

Traps

Here are some things to watch out for when creating Venn diagrams.

No chart produced

The third value must be the smallest as it shows the overlap that is included in both.

Color of spider lines

You cannot control the spider lines on a Venn diagram.

Showing data as other types of chart

Data from other chart types cannot normally be shown as a Venn diagram, and if it can it is normally meaningless.

Example

Before you start, you can set the preview chart on in panel M. You can examine the chart full size (PF5) whenever necessary. After examining it, go back to what you were doing (PF3), or return Home (PF12). Go to the panels either by typing in the numbers and pressing ENTER on the Home Panel, or by making a choice on the previous panel, (usually by answering a YES/NO question).

Panel Action taken

- 0.1** Choose 10 to type in the data.
- 2.1** Type in the data as shown in Figure 219 on page 193. Press PF3.
- 0.1** Choose 11 to type in the heading.
- 5.1** Type in the heading - 'Student Population'. Press PF3 twice.
- 0.2** Choose 8 and press ENTER. Choose 3, press ENTER, and then choose 2.
- PF12** To get to the Home Panel and add the finishing touches.
- 2.6** Change the Shading Patterns to 9, 10.
- 2.8** Change Symbol Set Name to ADMUUKSF and Character Width Multiplier to 2.

Venn diagrams

Chapter 20. Tricks, techniques, and tips

Everything, well almost, that you wanted to do with charts but never dared to hope for.

Broken lines

Plot two data groups, one without a name. Use Data Attributes 2.6 to make the two lines look the same. This lets a line stop, then start again:

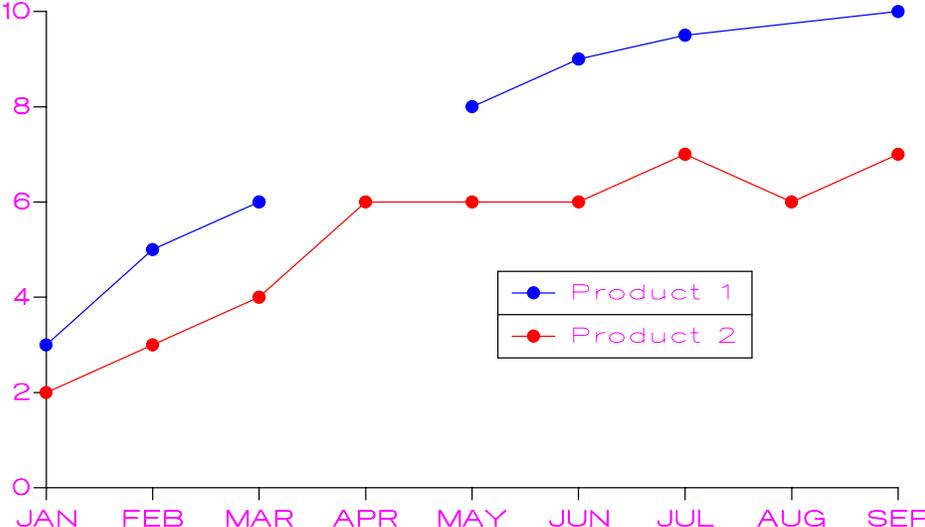


Figure 221. Broken lines

Shading under line graphs

Use a mixed chart with two data groups, one a line, and one a surface chart. By using missing values in the surface chart, and the same values as the line chart where values are used, you can get parts of the line with shading under them:

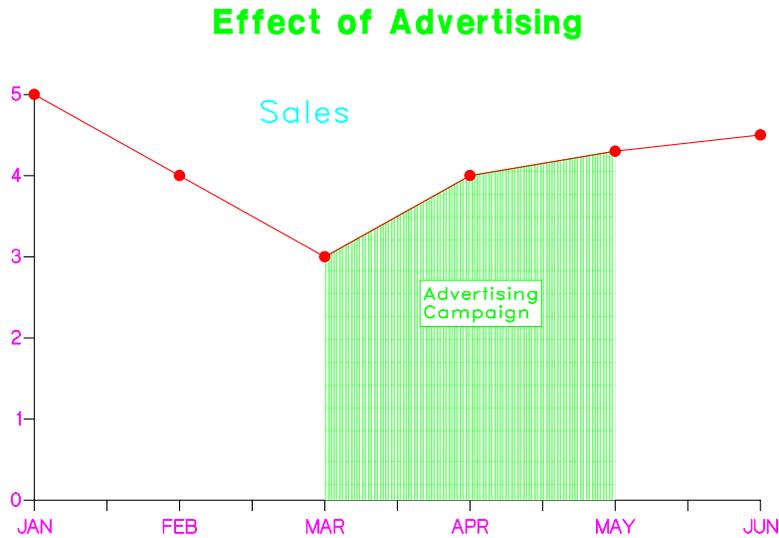


Figure 222. Shading under line graphs

Multiple bar sets

You can exploit the fact that mixed charts that are not in adjacent data groups are drawn as separate charts. For example, you can separate two sets of data groups as bar charts with a data group that contains only missing values and is set to a line graph. The sets of bars will then be plotted at the same points in the x axis.

Show the y axis

If a surface chart hides your y axis, put a datum line where the axis should be.

Framing the plotting area

Datum lines at the extreme end of each axis can be used to frame the chart area:

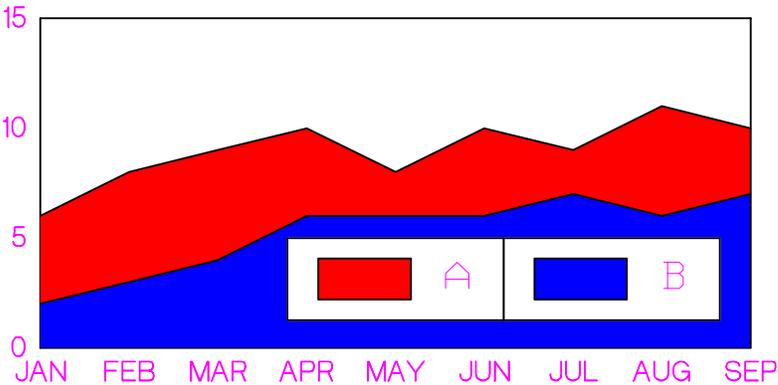


Figure 223. Framing the plotting area

Framing the chart area

From panel 6, press PF6 and set Box to Yes.

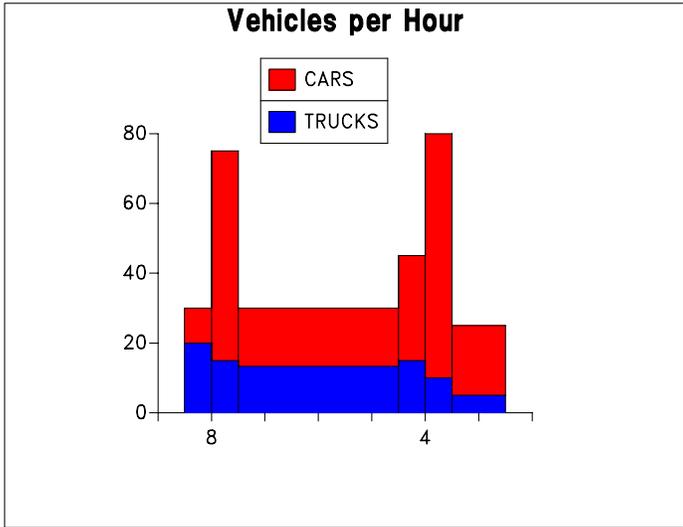


Figure 224. Framing the chart area

Boxes around anything

Type in a note consisting of blanks, then box it in by pressing PF6 and changing the Outline column to YES. By changing its size and moving the note, you can put the box around anything from the heading to the complete chart.

Profile Charts

You can create profile charts for:

- Surface charts
- Bar charts

For a surface chart

Set Type of Data to 1 – Absolute (panel 1.2).

For a bar chart

Set Bar Chart Type to 1 (panel 1.4) and set Gap between Bars to -100. (In the example below, the Gap between sets of bars was also altered, to 50.) Then proceed as follows:

Panel Action taken

- 2.2 Multiply one data group by -1.
- 5.2 Set Axis Orientation to 2.
- 4.7 (Y Axis) set a reference line at 0.
- 4.8 (Y Axis) set a datum line at 0 (as reference lines are covered by shading).
- 4.3 Set Axis Range so that 0 is in the middle. (-30 to 30 was used here.)
- 4.4 Set Label Type to 2.
- 4.4.1 Type in the x-axis labels. If needed, adjust the Major Tick Mark Interval (panel 4.5) to control their number.



Figure 227. Profile chart form of a bar chart

Getting grid lines behind bars

Sometimes, grid lines show through bars. To put them behind the bars, try one of the following:

- Use overlapping bars.
- Use solid shading patterns.
- Use mixed charts and plot the data twice; first with all the bar colors set to black, then with the colors you want.

This last method also works to put grid lines behind histograms and surface charts.

Pictures

Use multiple charts to put several very simple charts together. Solid-shaded charts are best.

Table chart instead of a legend

Remove the axis labels and legend from a chart and include a table chart as a subchart instead. This makes the figures easier to read from a distance.

Your own markers and shading patterns

You can create your own markers and shading patterns. They must have the names ADMICUM. and ADMICUP. respectively. See the *GDDM-PGF Programming Reference* book for details.

Extra shading patterns

Ask your local expert for access to the file ADMPATT. This gives you lots more patterns to use.

Extra colors

Ask your local expert for access to the file ADMCOLS. This gives you lots more colors to use.

Chart style defaults

If you do not like the defaults that the ICU gives you (for example characters too small or unsuitable colors), you can:

- Save a format file with the values you like, and load it each time you start to create a chart.
- Ask your local expert to write a program that calls the ICU with different starting values and use that to run the ICU.

Exploit the symbol editors

Using the symbol editors – see “GDDM publications” on page 273 – you can draw pictures either as Vector Symbols, or as Image Symbols. All panels that allow you to change text attributes (1.4.1, 1.9.1, 2.7, 2.8, 3.2, 4.1.1, or 5.1.1) have a Character mode option. To use these symbols, you need to change the Character mode:

- To use Vector Symbols, change Character mode to 3. Vector symbols can be any size and color and can be rotated when used in chart notes.
- To use Image Symbols, change Character mode to 2. Image Symbols, which are PIXEL patterns, can be very accurate and can be multicolored. To make the multicolors show, you must set the note color to 7 (neutral).

How to think of your own ways

The most fruitful way of producing special charts is to use:

- Notes instead of titles (especially if you want them multicolored).
- Mixed charts, exploit the way it can cause the chart to be drawn in two stages, as for Multiple Bar Sets described earlier.
- Missing values.
- Invisible plots. You can make lines or markers disappear by setting their color to 8 (background). Using this technique it is possible to draw lines on solid background objects.
- Layers of multiple charts. Restore one multiple chart and then put another on top.

Useful techniques

You may like to try these techniques to speed up your use of the ICU:

- Clear the data or format with option 2 in the Save/get panel.
- Clear a data definition with option 2 in the Save/get panel from panel 2.9.4.
- Use the TR (transpose) command in Data Manipulation (panel 2.2) to give you more room to edit a chart with many data groups, then transpose back when you have finished editing.

You can also you use this to speed up data import. Select the data by columns and transpose it after importing it.

- Go directly a panel by typing in its number in any command field.
- Use a set of sample data as a template for your own data.
- Use Chart by example to get an overview of a chart type before creating a chart.
- Use Chart by example to generate the chart, then use the rest of the ICU to fine-tune it.
- Be selective when using preview – use it only when you are trying something new.
- Only change curve smoothness when everything else has been done.

- Use PF2, rather than S from the Home Panel, for directory functions.
- Speed things up by using PF6 in Step-by-step charts to suppress the pictures.

Graphics tips

The ICU helps you to produce good charts in three ways:

1. By giving you the best defaults for things like type styles, axis colors and shading patterns
2. By giving you panels in Step-by-step charts that allow you to choose how to present your chart
3. By making it easy for you to change the defaults to suit your house style, audience and data

Use the tips below to help you make the best choices when you select your data or change the defaults.

Presentations

Keep the chart simple: let it make just one or two points. See the tips under “Color.”

Reports

If you are going to photocopy the chart for a report, choose the monochrome option from Step-by-step charts.

If you photoreduce the chart, solid shading looks more even but you can lose the shape of some letters in thick type styles. Use panel 5.4 to reduce the size and proportions of your chart to give you some idea of what the real reduced chart will look like.

Remember that both presentations and reports are usually supported by words, so use the chart to reinforce only the major points.

Analyses

When you create a chart to analyze data that you have captured, you cannot be selective about which data you show, but you can still select the best type of chart. Try dividing up the data and use multiple charts, with all the charts of the same type. Or use mixed charts for impact, with table charts to give the details.

Color

Choose your color scheme before you start and stick to it. Be consistent: blue for all headings and white for all axis attributes, for example. Better to use a few colors well than all the colors randomly.

Use the “heavier” colors at the base of the chart getting lighter as you go up. Similarly, use one color with a very dense shading pattern at the bottom and progressively lighter ones nearer the top.

Select harmonizing colors for related data. For example, orange, red, violet on a plotter or turquoise, blue, green on a screen.

Plotting

You can put whatever color pens you like in the plotter carousel. If you need to use more pens than the plotter allows, try plotting the chart in stages, changing the pens between stages.

Use fine pens (0.3mm) for detailed information and thick pens (0.6mm) for better coverage of large solid areas.

Change the line color to 7 or 8 on panel 2.6 to separate and strengthen the areas of pies, towers, overlapping bars, surface charts, and histograms.

Type styles and text

With so many available it can be difficult to choose the right type style. Try choosing those similar to your house style. Avoid very ornate or spidery ones for most charts.

For a presentation using text only charts, create one chart and use it as a template for the rest. On this chart, select the type style, character size and colors you want. Also set the margins, indentations and line spacings. Save the first chart, then create each of the others by overtyping and editing the first.

Have a maximum of ten lines of text on any one chart, the more lines you have, the smaller the lettering will have to be.

Part 4. Appendixes

Appendix A. Introduction

This part of the book contains useful reference information. You don't need to read it now; dip into it when you have a problem.

Where to look

Appendix B, ICU messages What the ICU messages mean

Appendix C, What is new for Version 2 New features of the ICU and things that have changed

Appendix D, How to become the local expert Things the local expert needs to know

Appendix E, ICU panels How the ICU panels are grouped

Appendix F, Colors, markers, line types, shading patterns, type styles Colors, markers, line types, shading patterns, type styles

Appendix G, Illustrated glossary ICU words and what they mean

Appendix H, Sample data Sets of sample data

Appendix B. ICU messages

This appendix is a last resort. The best way to handle messages is shown in “Getting over mistakes” on page 65.

In this appendix the messages are listed in numeric order starting with ADM0001. All begin with the letters ADM. Just find the message and read the explanation that follows it. If you cannot understand what to do, ask the local expert. And write and tell us on the reader’s comment form at the back of the book, so we can try to do better next time.

Help...the Message is Not There

There may be times when you get a message that is not explained here.

There are two possibilities:

1. The message comes from another part of GDDM (still begins with ADM)
2. The message comes from somewhere else (doesn’t begin with ADM)

The Message Begins with ADM

If the message begins with ADM, you can look it up in the *GDDM Messages* book. To understand how the explanation in that manual relates to the ICU, you will have to understand the information in Appendix C.

You should ignore such messages if you can, and if you cannot, ask the local expert. If you are the local expert and you cannot understand the message, try Appendix C, then IBM – in that order.

The Message Begins with Something Else

This is a message from the operating system or one of its related programs. There will be a book that explains these messages in the library of your computer organization. The most likely reasons are that you are trying to write or read a data set or file that you are not allowed to, or you have done something that needs more space than you have.

Again, you should ignore the message if you can, and if not, try the local expert, then Appendix C which explains (very briefly) how the ICU fits into GDDM. The *GDDM System Customization and Administration* manual for your subsystem is the next step up and may help. If not, try a system programmer and IBM – in that order.

Message Explanations in Numeric Order

ADM0001 TO ADM0095 Miscellaneous Messages

What to Do: You should not get these messages, if you do look them up in the *GDDM Messages* book.

ADM0096 E AUXILIARY DEVICE TYPE a IS UNKNOWN TO GDDM

What to Do: The name you used as the Printer/Plotter name is not associated with a device that ICU can use. Check that you typed the name correctly. If you did, see Appendix C for more information on using plotters.

ADM0097 E AUXILIARY DEVICE 'a' NOT FOUND

What to Do: The name you have used as a Printer/Plotter Name does not match the plotter that is attached to the device. Check that you typed the name correctly. If you did, see Appendix C for more information on using plotters.

ADM0098 TO ADM0102 Miscellaneous Messages

What to Do: You should not get these messages, if you do look them up in the *GDDM Messages* book.

ADM0103 E PLOTTER CANNOT SUPPORT THE REQUESTED PAPER SIZE

What to Do: You have asked for a plot that is bigger (or just possibly, smaller) than the paper the plotter can use. Change the size, checking for typing errors; use of * for all dimensions will print at a reasonable size on the loaded paper.

ADM0104 E PLOT AREA IS TOO BIG FOR THE CURRENT PLOTTER SETUP

What to Do: You have asked for a plot that is bigger than the paper in the plotter. Change the paper or the size you asked for, checking for mis-typing. Use of * for all dimensions will print at a reasonable size on the loaded paper.

This message can also be caused by the local controls on the plotter being set incorrectly.

ADM0105 TO ADM0500 Range of unexpected messages.

What to Do: This range contains a number of messages that can occur in the ICU when saving, restoring, or asking for a particular symbol set. Look in the list below, and if the message is not there look in the *GDDM Messages* book.

ADM0119 You have asked for an image symbol set with the character mode set to 3.

ADM0233 You have asked for a symbol set that is not there.

ADM0275 You are using the wrong sort of terminal.

ADM0304 The name you typed in was invalid.

ADM0306 You have asked for a data set that is not there.

ADM0307 You have asked for a file that is not there.

ADM0310 You have probably tried to store something somewhere you are not allowed to, or to get hold of something in storage that is not available to you. On VM, if there is no obvious error, check that your A disk is read/write.

ADM0314 You have tried to access storage that is not available to you.

ADM0323 You have run out of disk space when saving a chart or other object. If you must save it, the best way is to delete (erase) other items.

ADM0324 A file with that name already exists. Try another name.

The most probable cause of all except ADM0275 is that you have typed a name wrong. Check this carefully then talk to your local expert. ADM0275 is caused by the hardware being set up incorrectly. It may just be you are using a non-graphics terminal. If the terminal is a graphics terminal, it is connected incorrectly. Most likely the controller is wrong. This and other messages in this range are the business of the local expert.

ADM0504 E MARGINS EXCEED AVAILABLE CHART AREA

What to Do: Change the margins (panel 5.4) or accept system action which is to ignore your margins.

ADM0510 W LEGEND FORMAT MAY BE INCORRECT

What to Do: If the legend does not look right, remove the name for the first data group in the bar chart using the ERASE EOF key in panel 2.3. This error only happens when using mixed charts, stacked bars, and first data group not shown.

ADM0511 W NOT ENOUGH ROOM TO DRAW ALL KEYS. ONE OR MORE WERE OMITTED

What to Do: Keys are items in the legend. They are usually group names. You can:

- Reduce the number of data group names by excluding data groups (panel 2.2 or 2.3).
- Reduce the length of data group names (panel 2.3). Start with the longest data group name.
- Reduce the size of the data group name characters in panel 2.7. Ensure the character mode is 3. Sizes less than one are normally too small.

ADM0512 W HEADING TEXT EXCEEDS AVAILABLE SPACE AND HAS BEEN TRUNCATED

What to Do: Reduce the length (panel 5.1) or character size (panel 5.1.1) or split the heading text into several lines using “;” to show line break points. Alternatively increase the top or bottom margin size (panel 5.4), if it is the bottom of the heading that has been cut off.

ADM0514 W LABEL(S) OMITTED ON X, Y, OR Z AXIS

What to Do: Axis labels or pie titles will not fit.

For all charts except pie charts:

- Reduce the length of your labels (panel 2.4, or 4.4.1).
- Increase the major tick mark interval (panel 4.5) to reduce the number of labels.
- Set labels at an angle (panel 4.4.2 or 2.8).
- Reduce the character size (panel 4.4.2), changing the character type to 3.

For pie charts:

- Increase the bottom margin size (panel 5.4).

ADM0525 W CHARACTER SIZE IS TOO LARGE FOR THE CHART

What to Do: Too large a value for the Character Grid Size in panel 5.4; or for the character size multiplier in one of the text panels. Change the value.

Leave the character grid size (panel 5.4) to the default unless you are trying to change the basic appearance of the chart. (See discussion of CHCGRD call in the *GDDM-PGF Programming Reference* book if you want to use the character grid size field.)

ADM0526 S LOGARITHMIC X OR Y AXIS RANGE CONTAINS A NON-POSITIVE VALUE

What to Do: Negative or zero values are not allowed with a logarithmic axis. Change the data (panel 2.1) or change the axis range (panel 4.3) or change the axis scale to linear (panel 4.3).

Note that with the Curve Connection option on a line graph (panel 1.1) or surface chart (panel 1.2), a curved line connecting two data points may go below zero even when the data point values are all positive.

ADM0527 E NON-POSITIVE INTERCEPT ON LOGARITHMIC X OR Y AXIS

What to Do: Negative or zero values are not allowed on logarithmic axes. Change the axis intercept point in panel 4.3 choosing either a positive value or resetting to the default, using *.

ADM0528 E X, Y, OR Z AXIS TICK INTERVAL TOO SMALL

What to Do: Tick marks too close. Increase the Interval between Major Tick Marks (panel 4.5), or reduce the axis range (panel 4.3).

ADM0531 W DATUM LINE DATA VALUE LIES OUTSIDE AXIS RANGE

What to Do: Reset the reference or datum line value (panel 4.7 or 4.8) or extend your axis (panel 4.3).

ADM0534 W DATA LIES OUTSIDE THE X, Y, OR Z AXIS RANGE AND HAS NOT BEEN PLOTTED

What to Do: One or more values in panel 2.1 or panel 2.2 is outside axis range (panel 4.3). Change the value that is wrong. If none of the values look wrong, change the axis range (panel 4.3) to * * and display the chart (PF5) to see what the ICU thinks the values are.

ADM0535 E ZERO OR NEGATIVE DATA IS INVALID ON A LOGARITHMIC AXIS

What to Do: Change your data. See message ADM0526.

ADM0537 E TOTAL OF ABSOLUTE PIE VALUES IS ZERO

What to Do: Change your data or use percentage data (panel 1.5) where 0 values are allowed.

ADM0538 E TOTAL OF PERCENTAGE PIE CHART SLICES EXCEEDS 100 PERCENT

What to Do: If your data is in percentages, change it (panel 2.1 or 2.2). If it is not, change data type to absolute (panel 1.5).

ADM0539 E A NEGATIVE PIE SLICE VALUE WAS ENCOUNTERED

What to Do: Negative values cannot be shown in pie charts. Change the data (panel 2.2) or use another chart type (panel 1).

ADM0540 E PIE CHART CANNOT BE DRAWN IN THE AVAILABLE CHART AREA

What to Do: Possible solutions are: increase margin size (panel 5.4), try labels in a legend (panel 1.5), reduce number of pies shown (X-exclude in panel 2.2), try placing pies vertically (Axis Orientation 2 in panel 5.2). See "No pies or tiny pies" on page 155.

ADM0541 E VENN DIAGRAM POPULATION OR OVERLAP IS TOO SMALL

What to Do: One of the populations or the overlap in a Venn diagram was specified as zero or negative. Correct the data in panel 2.1 or panel 2.2 using a positive value.

ADM0542 E VENN DIAGRAM OVERLAP EXCEEDS ONE OF THE POPULATIONS

What to Do: The overlap figure (line 3 on panel 2.1 or panel 2.2) is larger than one or other of the previous figures. Change it.

ADM0544 S STORAGE LIMIT EXCEEDED

What to Do: Your chart requires more storage than you have available. Try increasing margins, (panel 5.4) or removing shading (panel 1.1). Or ask your system programmer for more storage.

ADM0545 E THE X, Y, OR Z AXIS HAS AN INVALID POWER OF 10 FOR TICK DEFINITION

What to Do: Your axis range, tick mark interval, or data includes numbers too large or too small for the ICU to handle. Specify a new tick interval in panel 4.5, or change the axis range in panel 4.3, or change the data in panel 2.1 or panel 2.2.

ADM0546 E THE X, Y, OR Z AXIS RANGE EXCEEDS NUMERIC BOUNDS

What to Do: One end of one axis is too big or too small. You must change this. If axis ranges are numbers, use panel 4.3. If axis ranges are * in panel 4.3, change the data in panel 2.2. If the data is not outside numeric bounds (see below), make the tick mark interval smaller in panel 4.5.

Numeric Bounds. The largest and smallest values that can be handled by the ICU are about ten to the power of 18 (1.0E+18) and ten to the power of -18 (1.0E-18).

ADM0547 E BARS ARE TOO NARROW FOR HARDWARE CHARACTER MODE VALUES

What to Do: Your bars are too narrow for the values to be printed on top. Mode 3 characters (panel 1.4.1) will be squashed in to fit or can be put at an angle. Use these, or increase bar width by reducing gap between bars (panel 1.4) or do without the values.

ADM0550 E INSUFFICIENT STORAGE AVAILABLE

What to Do: Your chart is too complicated to be drawn in the computer storage you have available.

You must either increase the storage available, or simplify the chart. A high degree of smoothness specified in panel 1.1, panel 1.2, or panel 1.7, or the use of relative data when there are a lot of data groups are likely causes. Reduce the degree of smoothness, and either exclude some data groups or use absolute data.

ADM0556 W NOTE TEXT EXCEEDS AVAILABLE SPACE AND HAS BEEN TRUNCATED

What to Do: Change the size or the shape of the note (panel 3.2) or the note contents in panel 3. (The number of lines can be changed by use of the semicolon line break character.)

ADM0557 W AXIS TITLE TRUNCATED ON RIGHT OF CHART

What to Do: Change the character mode to 3, or the character size multipliers in panel 4.1.1. Alternatively reduce the wording of the title. A note (specified in panel 3) can be used to amplify a title if you need a two line title.

ADM0558 W AXIS TITLE TRUNCATED AT TOP OR BOTTOM OF CHART

What to Do: Change the character mode of the title to mode 3, or its character multipliers in panel 4.1.1. Alternatively use a less wordy title, clarifying it, if necessary, with a chart note. Finally you can display the axis title horizontally above the vertical axis (panel 4.1).

ADM0559 W INSUFFICIENT SPACE FOR VENN LABEL IN MARGIN

What to Do: Increase the size of the margin in panel 5.4 or decrease the character size multipliers in panel 4.4.1, or shorten the label, or split using a semicolon, in panel 2.4.

ADM0560 E LOGARITHMIC X, Y, OR Z AXIS RANGE IS TOO SMALL

What to Do: Logarithmic axis range must be more than smallest allowed (about 2.0E-7). Change axis range (panel 4.3) or the data (panel 2.1 or panel 2.2), if the axis range is set to *.

ADM0561 W PIE SPIDER TEXT OMITTED

What to Do: (See Message ADM0540.)

ADM0562 E DATA VALUE(S) OUTSIDE VALID RANGE

What to Do: In a pie chart or Venn diagram, one of the data values exceeds the maximum that can be plotted (approximately ten to the power 70). Remove or change the value.

ADM0563 E NOTE TEXT OR BAR VALUE WILL NOT FIT WITHIN THE CHART AREA

What to Do: (See Message ADM0556.)

ADM0565 E NON-POSITIVE LOGARITHMIC AXIS OFFSET SPECIFIED FOR A NOTE

What to Do: Change the method of positioning your note to character grid offsets (panel 3.1). See message ADM0526 for explanation of log axes and nonpositive values.

ADM0567 E INVALID NOTE POSITION FOR A POLAR CHART

What to Do: Change the method of positioning your note (panel 3.1). Both horizontal and vertical positioning must be of the same type.

ADM0571 W PIE RADIUS HAS BEEN INCREASED TO ALLOW CHART TO BE DRAWN

What to Do: You are using relative sizes of pie, and one pie would be too small to see unless the size was increased. Check that your data is correct (panel 2.2).

ADM0572 W ALL DATA HAS THE VALUE 'MISSING'

What to Do: Check your data (panel 2.2). All data that is not excluded has the missing value “..”

ADM0574 W A LOGARITHMIC X AXIS IS NOT ALLOWED ON A TOWER CHART

What to Do: Change the axis to linear (panel 4.3).

ADM0581 W DUPLICATE {X|Z} VALUES MAY DISTORT TOWER CHART APPEARANCE

What to Do: If the chart looks funny change the data group values (panel 2.2) or set Y values positioned at equal Z intervals in panel 2.5.

ADM0582 W UNORDERED {X|Z} VALUES MAY DISTORT TOWER CHART APPEARANCE

What to Do: If the chart looks funny, change the Data Group Values field (panel 2.2), or set Y values positioned at equal Z intervals in panel 2.5.

ADM0583 W MORE THAN 256 MAJOR TICK MARKS HAVE BEEN REQUESTED

What to Do: Reduce the number by increasing the major tick mark interval (panel 4.5). Incidentally, this is a way of drawing a very thick axis line.

ADM0584 W LOGARITHMIC X, Y, OR Z AXIS NOT ALLOWED WITH ALPHANUMERIC LABELS

What to Do: The axis has been changed to linear because you asked for labels other than numeric. You cannot have one without the other. If you want a logarithmic axis, change the labeling type (panel 4.4), if you do not, change the axis type (panel 4.3).

ADM0586 E AXIS NOT AVAILABLE TO POSITION NOTE

What to Do: The chart you were trying to plot has failed probably because the data you are using is not suitable for that type of chart. Select a different chart type and try again.

ADM0587 W CHART IS TOO WIDE. n COLUMN(S) MISSING

What to Do: Some of the chart you were plotting has been left out because it is too large for the area available. Reduce the Gap between Sets for data groups and try again.

ADM0588 W CHART IS TOO LONG. n ROW(S) MISSING

What to Do: Some of the chart you were plotting has been left out because it is too large for the area available. Reduce the Gap between Sets for the x slices and try again.

ADM0589 W INSUFFICIENT SPACE FOR PIE DATA GROUP NAME LABEL

What to Do: Increase the size of the margin in menu 5.4 or decrease the character size multipliers in menu 2.7, or shorten the label, or split using a semicolon, in menu 2.3.

ADM0700 E INVALID PRINTER WIDTH, DEPTH, OR OFFSET

What to Do: The ICU is being called from a program, and is being passed the wrong data. See your local expert.

ADM0701 E FIRST DATA GROUP DOES NOT HAVE 3 VALUES FOR VENN DIAGRAM

What to Do: The data for a Venn diagram is taken as the first three Y values of the first selected data group. Make sure there are three values and that values one and two are greater than the third value (panel 2.2).

ADM0702 S INVALID PRIMARY DEVICE

What to Do: You are trying to use the ICU on the wrong sort of terminal. Try a graphics terminal. Talk to the local expert or read Appendix C.

ADM0703 E NUMBER OF DATA GROUPS (=n) IS INVALID

What to Do: The ICU is being called from a program, and is being passed the wrong data. See your local expert.

ADM0704 S SCREEN IS TOO SMALL (n1 BY n2 REQUIRED)

What to Do: You are trying to use the ICU on the wrong sort of terminal. Try a graphics terminal. Talk to the local expert or read Appendix C.

ADM0705 E {KEY|LABEL|HEADING} LENGTH (n) IS INVALID

What to Do: The ICU is being called from a program, and is being passed the wrong data. See your local expert.

ADM0706 E a (=n) IS INVALID

What to Do: Same as ADM0705.

ADM0707 E NUMBER OF COPIES FOR PRINT (=n) IS INVALID

What to Do: Same as ADM0705.

ADM0708 E MISSING X VALUES NOT ALLOWED IN 'FREE' DATA

What to Do: You cannot use "." the missing value in FREE data. Change it to a number.

ADM0709 E ELEMENT n2 OF 'DATA CONTROL' (=n1) IS INVALID

What to Do: Same as ADM0705

ADM0711 E CHART {DATA|FORMAT} 'a' HAS INVALID CONTENTS

What to Do: Whatever you tried to load has either been corrupted or was never a chart in the first place. If it should be a chart you can only investigate it outside the ICU.

**ADM0712 E CANNOT {LOAD|DISPLAY|PRINT} KANJI/HANGEUL CHART
{FORMAT|DATA|FORMAT AND DATA} 'a'**

What to Do: Ask your installation programmer to include Kanji/Hangeul support in the current GDDM external defaults. Or do without the chart.

ADM0713 E CHART {DATA|FORMAT} CANNOT BE SAVED WITH NAME '**

What to Do: "*" may not be used as a name in any save operation, use another name.

ADM0714 E TOO MUCH DATA TO {SAVE|PRINT|DISPLAY}

What to Do: Your chart is too complex. If the save, print, or display operation needs more than 32K of contiguous storage, the operation cannot be performed.

Reduce the amount of data involved, either by group or value deletion (panel 2.1 or 2.2), or, for displaying or printing, by excluding data groups (panel 2.2 or 2.3).

ADM0715 TO ADM0749 Miscellaneous Messages

What to Do: These messages occur when the ICU is called from a program, and the program is not correct. You should call your local expert if you get these messages.

ADM0750 TO ADM0769 Miscellaneous Messages

What to Do: You should not get these messages. If you do, talk to your local expert. Probable cause is incorrect set up of printing.

ADM0770 TO ADM0799 IMS Interactive Utility Transaction Messages

What to Do: Under IMS the ICU and the GDDM symbol editors are run under the control of a single transaction. Messages in this range come from the transaction. ADM0771 probably means you have mis-typed the name ICU. ADM0772 means that the maximum possible number of people are using the transaction and you should try again later. Other messages in this range should be reported to the systems programmer.

ADM0800 TO ADM0919 Miscellaneous Messages

What to Do: You should not get these messages. If you do, talk to your local expert. Possible causes are incorrect set up of print or of the IMS utility that runs the ICU.

ADM0920 E CLEAR KEY PRESSED. PLOTTING IS TERMINATED

What to Do: You pressed the CLEAR key which is the way to stop plotting.

ADM0921 E IEEE488 NOT CONFIGURED OR INSTALLED ON THE WORK STATION

What to Do: The plotter is not attached properly; check the configuration and that the plotter is attached to the port that has been configured for IEEE488. See the local expert if in doubt.

ADM0922 E IEEE488 CHANNEL IS NOT ALLOCATED TO GDDM

What to Do: You, (or someone else) is trying to use the plotter from another session in the work station. (You can use the work station like a personal computer as well as using it for GDDM.) It may be worth trying again later. If in doubt see the local expert.

ADM0923 E PLOTTER IS INOPERATIVE, POSSIBLY POWERED OFF

What to Do: Turn on the plotter and try again. If the plotter is powered on you may be using the wrong name. Talk to the local expert after trying any alternative names.

ADM0925 TO ADM0999 Miscellaneous Messages

What to Do: You should not get these messages. If you do, talk to your local expert. Possible causes are incorrect set up of print or of the IMS utility that runs the ICU.

ADM1000 E INVALID INTERRUPT. USE ONLY PF, CLEAR, OR ENTER KEYS

What to Do: You have pressed a key that should not be used in the ICU. Some data may have been lost.

If the data is critical, display it to ensure that nothing was lost. If anything was lost, type it in again. Otherwise continue, but try to remember which key you pressed and avoid doing it again.

ADM1001 E VALUE ENTERED IS INVALID. PLEASE ENTER A VALID NUMBER

What to Do: Type in a correct value where the cursor is positioned. the largest value that can be used is 10 to the power of 18 (1.0E18). The value will stay red when it is corrected, as the computer will not see it until you press ENTER or one of the PF keys.

ADM1002 E PLEASE ENTER 'YES' OR 'NO'

What to Do: Type either YES or NO. You can type in uppercase (capitals) or lowercase and only the first letter need be typed.

The value will stay red when it is corrected, as the computer will not see it until you press ENTER or one of the PF keys.

ADM1003 E COMMAND ARGUMENT IS TOO LARGE

What to Do: You have typed in too large a number for the I (Insert) or R (Repeat) command. Type in a valid number. 32 entries are allowed on the Data Attributes panel 2.6. 999 entries are allowed on the other panels.

ADM1004 E PLEASE ENTER A WHOLE NUMBER IN THE RANGE n1 THROUGH n2, OR **

What to Do: Type in a whole number or an * (for example, 1, or 2232 or *). Leave out any punctuation. (For example, one million should be entered 1000000, **not** 1,000,000.)

See message ADM1006 for details.

The value will stay red when it is corrected, as the computer will not see it until you press ENTER or one of the PF keys.

ADM1005 E PLEASE ENTER A WHOLE NUMBER IN THE RANGE n1 THROUGH n2

What to Do: Type in a whole number (2232, for example). Leave out any punctuation. (For example, one million should be entered 1000000, **not** 1,000,000.)

See message ADM1006 for more details.

ADM1006 E PLEASE ENTER A NUMBER IN THE RANGE n1 THROUGH n2, OR **

What to Do: Type in an * or a number in a form that will be recognized by the ICU.

Numbers and How to Enter Them.

A **whole number** is a number like 1 or 101, that has no decimal point. In some fields a negative number (-1 or -101) is allowed.

A **number** can have decimal points (1.25, 101.673). The ICU accepts them in the normal, fixed point, notation (1.25) or in the “scientific,” floating point, notation (1.50E+05).

Punctuation of numbers.

The ICU lets you punctuate numbers for clarity. However the safest thing is to leave the punctuation out and let the ICU put it in for you.

Traps

It is easy to edit numbers by removing one of the digits and then find that the punctuation is in the wrong place (1,00 for example). The ICU will give you a message for this.

ADM1007 E PLEASE ENTER A NUMBER IN THE RANGE n1 THROUGH n2

What to Do: Type in a number in a form that will be recognized by the ICU. Note that punctuation may be in the wrong place.

See message ADM1006 for details.

ADM1008 I SAMPLE DATA PROVIDED

What to Do: The sample data is to show you what goes where in the data entry panels. Continue with the next operation.

ADM1009 E PFn DOES NOTHING

What to Do: Use only those PF keys that are listed on the bottom line of the menu (if there is no list, press ENTER and it will be shown).

To exit from the ICU go to the Home panel and use PF9.

ADM1010 E ONLY ONE 'a' COMMAND IS ALLOWED

What to Do: Remove all but one occurrence of the command in error either by typing over it with blanks or using the ERASE EOF key.

ADM1011 E MARKER TYPE MUST BE A WHOLE NUMBER, 0 THROUGH 62 OR 65 THROUGH 254

What to Do: Enter a value in the valid range specified in the message.

The value will stay red when it is corrected, as the computer will not see it until you press ENTER or one of the PF keys.

ADM1012 E LINE TYPE MUST BE A WHOLE NUMBER IN THE RANGE n1 THROUGH n2

What to Do: You have typed in a line type number outside the range given in the message. Type in another value.

ADM1013 E COLOR MUST BE A WHOLE NUMBER IN THE RANGE n1 THROUGH n2

What to Do: Enter a value in the range specified in the message.

The value will stay red when it is corrected, as the computer will not see it until you press ENTER or one of the PF keys.

ADM1014 E PATTERN MUST BE A WHOLE NUMBER, 0 THROUGH 16 OR 65 THROUGH 254

What to Do: Type in a pattern value in the range shown.

ADM1015 E COMMAND IS NOT LISTED. SEE HELP PANEL FOR A COMPLETE LIST

What to Do: The thing that has turned red is not a command. Most likely you typed it wrong. You can press PF1 to get a list of commands that you can use.

ADM1016 E INVALID COMMAND ON *** LINE**

What to Do: You have used the top command line, which is marked ***, incorrectly. See the HELP panels for more information.

ADM1017 W n NOTE(S) POSITIONED IN AXIS UNITS SUPPRESSED

What to Do: For pie, Venn, and tower charts you cannot position Chart Notes using axis units (type 2 in panel 3 when you have pressed PF6 to show the attributes). If you want the notes they must be changed to type 1.

For polar charts, notes cannot be positioned in a combination of both axis and character grid units. You must use one or the other. (Change them on panel 3 after pressing PF6 to show the attributes.)

ADM1018 I SERIES SUCCESSFULLY FINISHED

What to Do: Continue, the message is to let you know that all is well.

ADM1019 E PLEASE ENTER THE NAME TO BE USED

What to Do: Enter the name to be used. It must have 8 or fewer characters and start with an alphabetic character. The name is converted to uppercase (capitals).

ADM1020 E PLEASE ENTER THE PRINTER/PLOTTER NAME

What to Do: Discover the printer or plotter name and type it in.

See “Get these answers before you start” on page 25.

ADM1021 I {CHART|GRAPHIC DATA FORMAT (GDF)} SUCCESSFULLY OUTPUT

What to Do: One or more copies of the current chart or Graphic Data Format file have been transmitted for printing. (Under VM/SP, a file has been created, which you must print yourself.) Continue, the message is to let you know that all is well.

ADM1022 I '{SAVE|LOAD|RESET}' SUCCESSFUL FOR CHART t

What to Do: Continue with the next operation, all is well.

ADM1023 E TOO MUCH TEXT (IN TOTAL). PLEASE REDUCE TEXT LENGTH

What to Do: Reduce the length of the longest item of text by using the ERASE EOF key. It may be a data group name, or a label, or a note. Then press ENTER. Do this repeatedly until the error message goes away.

ADM1024 E TOO MUCH TEXT FOR LARGER DATA MATRIX. SHORTEN TEXT ITEMS

What to Do: Either reduce the length of the longest text item (for example, shorten the longest data group name) so that more space is available for text storage, or, if a command was entered, remove the command by typing over it with blanks. Do the former repeatedly until you can use the command or scroll successfully.

ADM1025 W RANGE DIFFERENCE FOR {X|Y} VALUES IS ZERO. RANGE LIMITS IGNORED

What to Do: Axis start and end values are the same. Return to the Axis Scale and Range panel 4.3 and change the axis range. Reset to the default *, if in doubt.

ADM1026 E 'AFTER' AND 'BEFORE' COMMANDS CANNOT BOTH BE SPECIFIED

What to Do: Use one or other not both.

ADM1027 E PLEASE ENTER 'M' AGAINST THE ITEM YOU WISH TO MOVE

What to Do: Enter a Move (M) command on the appropriate line. If you do not want to move, overtype the “A” or “B” with blanks, or remove it with ERASE EOF key.

ADM1028 E PLEASE ENTER 'A' OR 'B' TO DEFINE WHERE YOU WISH TO MOVE THE ITEM

What to Do: Enter either an A (AFTER) or a B (BEFORE) command on the appropriate line. If you do not want to move a line, overtype the “M” with blanks, or remove with ERASE EOF key.

ADM1030 E KANJI/HANGEUL CAPABILITY NOT AVAILABLE IN THIS INSTALLATION

What to Do: Contact the local expert if you need Kanji or Hangeul. Action is required to GDDM defaults to allow Kanji or Hangeul to be used.

ADM1031 I YOU HAVE REACHED THE LIMIT OF SCROLLING {UP|DOWN|TO THE LEFT|TO THE RIGHT}

What to Do: You have pressed the scroll key when there is no more data to scroll to. Continue with the next operation. The message is for information only.

ADM1032 E '{/P|C}' COMMAND IS INVALID ON *** LINE**

What to Do: Either correct the command or move the command to another line, then press ENTER to continue.

ADM1033 E a COMMAND MUST NOT BE ENTERED WITH OTHER COMMANDS

What to Do: Correct the combination of commands so that it is just Delete commands, just Restore commands, or some other combination of allowable commands. Then press ENTER to continue.

ADM1034 E COMMAND INVALID EXCEPT ON *** LINE**

What to Do: Either move the command to the *** line or change it to one of the commands that is valid on the other lines on the panel. (The "Command Information" line near the bottom of the screen may help you.) Then press ENTER to continue.

ADM1035 E ENTER 'T' ON *** LINE WITH NAME AND DESCRIPTION OF NEW ITEM(S)**

What to Do: Type a Copy To (T) command and the name of the item to be created (and optionally a description of the new item) on the *** line. Then press ENTER to complete the copy.

ADM1036 E ENTER 'C' AGAINST ITEM(S) YOU WISH TO COPY

What to Do: Type a Copy From (C) command against the item in the Directory list that you want copied. Then press ENTER to continue.

ADM1037 E PLEASE SPECIFY 'COPY TO' TYPE COMPATIBLE WITH 'COPY FROM' TYPE

What to Do: Either change the type of the item defined on the *** line (note that a blank Type field will automatically match the type of the item being copied); or move the Copy From (C) command to identify the correct item that you want copied. Then press ENTER to continue.

ADM1038 E COMMAND IS INVALID FOR THE 'TYPE' VALUE SHOWN

What to Do: You cannot use the command on the type of object specified in the Type column.

1. The command is a Save (S), Restore (R), or Update (U) command and the item is not chart data or chart format. These commands are only valid for chart data and chart format items.
2. The type of the item is listed as ????????? which means that it is not recognized as a valid GDDM item. Such items cannot be manipulated by any commands except Scroll Here (/) and Delete (D).

ADM1039 E PLEASE SPECIFY 'FORMAT' OR 'DATA' TYPE

What to Do: You have typed a Delete (D), Restore (R), Save (S), or Update (U) command on the *** line but have not filled in the Type field. On TSO subsystems, a blank in the Type field does not mean format and data. The Type field must be specified. Complete the Type field on the *** line and press ENTER to continue.

ADM1040 I NAME PICKED AS SHOWN. PLEASE PROCEED

What to Do: Continue with your next operation. This message is just to let you know that the Pick Name (P) command was successful.

ADM1041 I n ITEM(S) COPIED SUCCESSFULLY

What to Do: Continue with your next operation. This message is just to let you know that the Copy command(s) was successful.

ADM1042 I n ITEM(S) LISTED

What to Do: Message tells you how many items are listed. Continue with your next operation.

ADM1043 I MAIN FILE TYPES ARE 'FORMAT', 'DATA', 'DATADEF', 'GDF', 'ISS', 'VSS'

What to Do: If you wish to see a list of GDDM objects, type a List command on the *** line, with the word from the message corresponding to the type of object you want to list in the 'Type' column. Or you may type any of the Restore (R), Delete (D), Save (S), or Update (U) commands on the *** line without using a List command first, if you know the details of the GDDM objects that you want to operate on.

ADM1044 E INVALID 'TYPE' VALUE

What to Do: Correct the Type, then press ENTER to continue. Valid Types are shown on page 99.

ADM1045 E YOU CANNOT DELETE AN ITEM IN A READ-ONLY LIBRARY

What to Do: (TSO subsystem only) You have tried to delete an item from a library that is a concatenation of two or more data sets. Write access to such a library is not supported. Remove the Delete command.

ADM1046 E YOU MAY LOAD ONLY ONE CHART DATA AND ONE CHART FORMAT AT A TIME

What to Do: Remove all but one of the Restore (R) commands or all but two if you are going to restore a chart data and a chart format, then press ENTER to continue.

ADM1047 E LINE WIDTH MUST BE A NUMBER IN THE RANGE n1 THROUGH n2

What to Do: Correct the value to a value within the allowable range and continue.

ADM1049 I '{LOAD|SAVE}' SUCCESSFUL FOR CHART '{FORMAT|DATA|FORMAT AND DATA|DATA DEFINITION}' (LIBRARY NUMBER IGNORED)

What to Do: (TSO subsystem only) The save or load operation has been successfully completed. The Library number has been ignored. Continue with the next operation.

ADM1050 I STANDARD MODE SELECTED. LOAD AND SAVE USING PF2 (AND PANEL 2.9.4)

What to Do: You have changed the mode of use of the Directory panel to standard. For charts (format or data), Load and Save are available pressing PF2. For data definitions, Load and Save are available on the Save and Load Data Definition panel (2.9.4). Continue with your next operation.

ADM1051 I ADVANCED MODE SELECTED. LOAD AND SAVE USING THE 'DIRECTORY' (PF2)

What to Do: You have changed the mode of use of the Directory panel to advanced. The Directory panel is available via the Directory PF key. and both save and load commands are available on it. Continue with your next operation.

ADM1052 I n ITEM(S) DELETED SUCCESSFULLY

What to Do: Continue with your next operation. The message is just to let you know that the Delete command(s) were successful.

ADM1053 E INVALID WIDTH SPECIFIED

What to Do: The value you have specified for the printed chart width is not in the allowed range. Type a correct value for the width, then press ENTER to continue.

ADM1054 E INVALID DEPTH SPECIFIED

What to Do: The value you have specified for the printed chart depth is not in the allowed range. Type a correct value for the depth, then press ENTER to continue.

ADM1055 E INVALID HORIZONTAL OFFSET SPECIFIED

What to Do: The value you have specified for the offset of the printed chart from the left-hand edge of the page is not in the allowed range. Type a correct value for the left offset, then press ENTER to continue.

ADM1056 E INVALID VERTICAL OFFSET SPECIFIED

What to Do: The value you have specified for the offset of the printed chart from the top of the page is not in the allowed range. Type a correct value for the top offset, then press ENTER to continue.

ADM1057 E SUM OF WIDTH AND HORIZONTAL OFFSET IS INVALID

What to Do: The values you have specified for the printed chart width and its offset from the left-hand edge of the page make it impossible to print the complete chart. Correct either or both of the width and left offset values, then press ENTER to continue.

ADM1058 E SUM OF DEPTH AND VERTICAL OFFSET IS INVALID

What to Do: The values you have specified for the printed chart depth and its offset from the top of the page make it impossible to print the complete chart. Correct either or both of the depth and top offset values, then press ENTER to continue.

ADM1059 I NO ITEMS DELETED

What to Do: Continue with your next operation. The message is just to let you know that no chart data or format items were deleted.

ADM1060 I PLOTTING STARTED. PRESS CLEAR TO CANCEL

What to Do: This indicates that plotting has started. To cancel the plotting, press the CLEAR key. Otherwise, no action is required.

ADM1062 W SUBCHART(S) HAVE BEEN OMITTED BECAUSE THEY ARE NESTED TOO DEEPLY

What to Do: One or more of the subcharts that you were expecting to see cannot be drawn because it is nested too deeply.

Reduce the number of subcharts that you are using.

ADM1063 W SUBCHART(S) HAVE BEEN OMITTED BECAUSE THEY ARE TOO SMALL

What to Do: One or more of your subcharts is too small and has not been drawn.

Increase the size of the subchart to make it appear.

ADM1065 E COMMAND NOT ALLOWED HERE

What to Do: Remove the command by overtyping with blanks or using ERASE EOF. Then press ENTER. Consult the help panels for further information.

ADM1069 E MARKER SCALE MUST BE IN RANGE GREATER THAN 0 THROUGH 100, OR **

What to Do: Type in a marker value in the range shown.

ADM1070 E CHART TYPE MUST BE A WHOLE NUMBER IN THE RANGE n1 THROUGH n2

What to Do: Type in a value in the range shown.

ADM1071 E NOT ENOUGH DATA TO PERFORM THE FIT FUNCTION

What to Do: There is not enough data in the group chosen for a fitted line to be calculated. At least two points are needed for the FIT command.

ADM1072 E FIT CANNOT PROCEED, THE X VALUES ARE TOO CLOSE TOGETHER

What to Do: The slope of the line calculated by a FIT command is larger than it is possible to store. It is not possible to calculate the new set of values.

Check the data (both the data group and the X values) to see if there is an error. If there is no error, erase the FIT command with ERASE EOF or overtyping with blanks. The slope of the fitted line can be assumed to be infinite in most cases.

ADM1073 E ENTER '1' AS THE LAST X OR Y VALUE ON THIS ROW OR COLUMN

What to Do: A "SER" or "=" command is being used on a row or column with no selected items in it.

Type in a 1 (or any other value except ".") as the last entry, and press ENTER, if you want the command to work. Erase it with ERASE EOF or blanks if it was a mistake.

ADM1074 E COMMAND ARGUMENT IS INVALID

What to Do: If the command should be followed by a number (I2 for example), the number you have used is too big. Otherwise, you are using the command in the wrong way. See the help panels.

ADM1075 E VALUES ARE UNSUITABLE FOR CALCULATION

What to Do: One or more of the calculations in a command cannot be carried out because of limitations in the computer. The following conditions can produce this error:

- Dividing by a number in the exclusive range +1.25E-36 to -1.25E-36.
- Dividing a number greater than +8E35 or less than -8E35 by a number in the exclusive range +1 to -1.
- Multiplying a number greater than +8E35 or less than -8E35 by a number greater than +1 or less than -1.
- Addition or subtraction involving a number greater than +1.6E71 or less than -1.6E71.
- Using FIT when involving a number greater than +1.6E71 or less than -1.6E71.

Check your command, and the data. Change any values that are unsuitable and try again.

ADM1076 W VALUES UNSUITABLE FOR CALCULATION HAVE RESULTED IN MISSING VALUES

What to Do: Check for missing values if the result looks funny. A combination of valid individual commands has affected the contents of the data matrix so one or more calculations cannot be performed. If the commands had been entered one at a time, then one of them would have produced the error ADM1075. Values which should have been changed by these calculations have been replaced by “missing” values.

ADM1077 W SPECIFIED INDEX DATA ROW NOT FOUND. DATA ROW n USED

What to Do: Use an existing index row or accept the choice made by the ICU.

ADM1078 W SPECIFIED INDEX DATA GROUP NOT FOUND. DATA GROUP n USED

What to Do: Use a data group value that exists or accept the choice made by the ICU.

ADM1079 E INVALID UNITS FOR USE WITH SELECTED PLOTTER

What to Do: Change from using rows and columns to any other units for specifying size and position. If you are not using rows and columns, try percentage values.

ADM1080 E NAME DOES NOT SPECIFY A SUITABLE PRINTER OR PLOTTER

What to Do: Check with your local expert or see Appendix C.

ADM1081 E NAME DOES NOT SPECIFY A QUEUED PRINTER OR PLOTTER

What to Do: Check with your local expert or see Appendix C.

ADM1082 E PLEASE REPOSITION CURSOR TO PREVENT NOTE MOVING OUTSIDE PLOT AREA

What to Do: The note you are editing has one or both of its coordinates in axis units, and the change you attempted to make would have caused the note to move outside the plot area. This would have resulted in the note disappearing from the screen.

Reposition the cursor so that the note's text-rectangle point will not move outside the plot area, and try again.

Alternatively, discontinue the operation by pressing PF4 (Cancel); the note will be left unchanged.

ADM1083 W HEIGHT MULTIPLIER HAS REACHED BIGGEST VALUE POSSIBLE

What to Do: You cannot make the note any taller than it is. The character height multiplier now has the biggest value possible, namely 100.

ADM1084 W WIDTH MULTIPLIER HAS REACHED BIGGEST VALUE POSSIBLE

What to Do: You cannot make the note any wider than it is. The character width multiplier now has the biggest value possible, namely 100.

ADM1085 W RATIO OF CHARACTER MULTIPLIERS HAS REACHED BIGGEST VALUE POSSIBLE

What to Do: The note is either as long and thin or as short and fat as possible. One of the character multipliers is 100 times bigger than the other.

ADM1086 W HEIGHT MULTIPLIER HAS REACHED SMALLEST VALUE POSSIBLE

What to Do: You cannot make the note any shorter. The character height multiplier now has the smallest value possible, namely 0.01.

ADM1087 W WIDTH MULTIPLIER HAS REACHED SMALLEST VALUE POSSIBLE

What to Do: You cannot make the note any thinner. The character width multiplier now has the smallest value possible, namely 0.01.

ADM1088 I READY FOR FIRST {CHART|GRAPHIC DATA FORMAT (GDF)} IN SERIES

What to Do: This message appears after you have switched to “Series” mode (see the PRINTER/PLOTTER OUTPUT help panel). It means that an output file has been created, to which you can add charts and/or GDF files.

Press ENTER if you want to put the current chart or GDF object in the file.

ADM1089 I OTHER ERRORS MAY HAVE OCCURRED BUT CANNOT BE DETECTED

What to Do: Investigate the previous error message. This is just to warn you that there has been no check that there are not other errors. When you have solved the previous error, try the operation again.

ADM1090 W {CHART|DATA DEFINITION} HAS UNSAVED CHANGES. PRESS PF9 AGAIN TO EXIT

What to Do: Save the changes using PF2 if you want them, otherwise press the key again. (For data definitions when in standard Directory mode, you must go to panel 2.9.4 rather than press PF2.)

ADM1091 W TOWER CHARTS ARE NOT ALLOWED WITH FREE DATA

What to Do: A tower chart may only be plotted when you have TIED data.

Use the CONVERT command to change the data from FREE to TIED.

ADM1092 E THERE IS NOTHING SELECTABLE AT THE CURRENT CURSOR POSITION

What to Do: Move the cursor to a note or subchart. If the cursor was positioned at a note, change it to interactive (panel 3.1, reached by typing P command against the note).

ADM1093 E COLOR MUST BE A WHOLE NUMBER IN THE RANGE n1 THROUGH n2, OR **

What to Do: Type in a number in the range.

ADM1094 W A LOGARITHMIC X AXIS IS NOT ALLOWED WITH EQUAL X INTERVALS

What to Do: You cannot have a logarithmic axis (panel 4.3) and Y values positioned at equal X intervals (panel 2.5). Change “Y Values Positioned” to 1 if you want a log axis.

ADM1096 I THE PRECEDING ERROR WAS CAUSED BY SUBCHART n

What to Do: The subchart with the number shown in the message caused one or more errors when it was drawn. Look at the message shown on the screen immediately preceding this message.

Edit the subchart and correct the error.

ADM1099 W CURRENT {CHART|FORMAT|DATA|FORMAT AND DATA|DATA DEFINITION} HAS UNSAVED CHANGES. PRESS ENTER TO REPLACE

What to Do: You have tried to get a saved chart or data definition but you have changed the chart or data definition you have been working on since it was last saved. Press ENTER again if you do not care. Use the top *** line of the directory panel if you want to save the chart.

ADM1100 W CURRENT CHART {FORMAT|DATA|FORMAT AND DATA|DATA DEFINITION} HAS UNSAVED CHANGES

What to Do: You went to the Save/Load panel while there were unsaved changes in your current chart, or to the Data Import panel while there were unsaved changes in your current data definition. Ignore the message if it does not matter, or if you were going to save the chart anyway. Choose one of the save options if you want to save the chart before you get the next one.

ADM1101 E PANEL SELECTION IS INVALID

What to Do: You have put a number in the Home Panel or a command line. If you wanted to go to the panel of the same number, you have got it wrong. You can use a single number, or a series of numbers with dots between, for example "3," or "2.5."

ADM1102 E REQUESTED PANEL DOES NOT EXIST

What to Do: You have put a number in the Home Panel or a command line, but a panel of that number does not exist.

ADM1103 E REQUESTED PANEL CANNOT BE SELECTED FROM THIS PANEL

What to Do: You have put a number in the Home Panel or a command line, but you cannot go to the panel you asked for this way.

If it was 3.1 or 3.2, you have to go to panel 3 then use the P command against a note for 3.1 or the T command for 3.2.

ADM1104 E REQUESTED PANEL OR CHOICE IS NOT AVAILABLE

What to Do: You have put a number in a panel or a command line, but you cannot go there, either because you are in Advanced Directory Mode, or because you cannot save or get or import data from where you are.

Try another selection.

ADM1105 E TOO MANY REQUESTS FOR OTHER PANELS

What to Do: You have asked to move to panels on two command lines. You can make only one request.

ADM1106 E SCROLLING {UP|DOWN} IS NOT ALLOWED WITH DELETE COMMANDS

What to Do: Scrolling will not happen if there are D (delete) commands in the list. Press ENTER to delete, or remove commands before scrolling.

ADM1107 E PLEASE ENTER A NUMBER

What to Do: Type in a number where the cursor is positioned instead of whatever is there. If you think it is a number see message ADM1006.

ADM1108 W MARKERS REQUIRE MORE THAN ONE SYMBOL SET. ONLY ONE SET CAN BE USED

What to Do: You cannot have the range of markers you asked for because they would need to come from more than one symbol set. Change the marker types so that only one marker symbol set is needed.

ADM1118 E PLEASE REPOSITION CURSOR INSIDE CHART

What to Do: Move the cursor closer to the middle of the screen. The part you chose is not being used by the ICU. Check the proportion values in panel 5.4. These values control how much of the screen is used by the ICU.

ADM1122 I PUT CURSOR AT THE POINT YOU WANT TO MOVE

What to Do: Establish a reference point (for example the middle of the note or subchart) by moving the cursor to it and pressing SELECT. The operation that follows this will be to choose where you want this reference point to be moved to.

ADM1123 I MOVE CURSOR TO WHERE YOU WANT THE POINT

What to Do: Put the cursor where you want the cross and press SELECT; the note or subchart will move as if the cross moved to the position of the cursor.

ADM1126 I PUT CURSOR AT THE POINT YOU WANT TO KEEP FIXED

What to Do: Put the cursor at the point around which the note or subchart will shrink or grow and press SELECT.

ADM1127 I PUT CURSOR AT THE POINT YOU WANT TO MOVE

What to Do: Move the cursor to a second point (probably an edge of the note or subchart) that you will later move to the target point. Mark this edge by pressing SELECT.

ADM1128 E PLEASE MOVE CURSOR FURTHER AWAY FROM FIXED POINT

What to Do: The point to be moved cannot be the same as (or too near to) the fixed point. Try another point like the opposite edge of the note or subchart and then press the SELECT key.

ADM1129 I PUT CURSOR ON LINE WHERE YOU WANT POINT 2

What to Do: Choose the point on the line where you want the second point moved to. When you press SELECT the point will move to the place where you have put your cursor and the note or subchart will grow or shrink in proportion.

ADM1132 I PUT CURSOR AT THE POINT YOU WANT TO KEEP FIXED

What to Do: Put cursor at a point around which the note or subchart will shrink or grow and press SELECT.

ADM1133 I PUT CURSOR AT THE POINT YOU WANT TO MOVE

What to Do: Move the cursor to a second point (probably an edge of the note or subchart) that you will later move to the target point. Mark this edge by pressing SELECT.

ADM1134 E PLEASE MOVE CURSOR UP OR DOWN AWAY FROM FIXED POINT

What to Do: The point to be moved cannot be the same as (or too near to) the fixed point. Try another point like the opposite edge of the note or subchart, then press SELECT.

ADM1135 I PUT CURSOR ON LINE WHERE YOU WANT POINT 2

What to Do: Choose the point on the line where you want the second point moved to. When you press SELECT the point will move to the place where you have put your cursor and the note or subchart will grow or shrink in proportion.

ADM1137 I PRESS MIDDLE BUTTON ON MOUSE, BUTTON 2 ON PUCK, OR STYLUS

What to Do: Press the appropriate button when the cursor is in the position you want.

ADM1138 I PUT CURSOR AT THE POINT YOU WANT TO KEEP FIXED

What to Do: Put the cursor at a point around which the note or subchart will shrink or grow and press SELECT.

ADM1139 I PUT CURSOR AT THE POINT YOU WANT TO MOVE

What to Do: Move the cursor to a second point (probably an edge of the note or subchart) that you will later move to the target point. Mark this edge by pressing SELECT.

ADM1140 E PLEASE MOVE CURSOR LEFT OR RIGHT AWAY FROM FIXED POINT

What to Do: The point to be moved cannot be the same as (or too near to) the fixed point. Try another point like the opposite edge of the note or subchart, then press SELECT.

ADM1141 I PUT CURSOR ON LINE WHERE YOU WANT POINT 2

What to Do: Choose the point on the line where you want the second point moved to. When you press SELECT the point will move to the place where you have put your cursor and the note or subchart will grow or shrink in proportion.

ADM1144 I PUT CURSOR AT CENTER OF ROTATION

What to Do: Put the cursor at a point around which the note will rotate and press SELECT.

ADM1145 I PUT CURSOR AT THE POINT YOU WILL ROTATE

What to Do: Move the cursor to a second point (probably one edge of note) that you will later move to the target point. Mark this by pressing SELECT.

ADM1146 E PLEASE MOVE CURSOR FURTHER AWAY FROM CENTER OF ROTATION

What to Do: The point to be moved cannot be the same as (or too near to) the center of rotation. Try another point like one edge of the note then press SELECT.

ADM1147 I PUT CURSOR ON CIRCLE WHERE YOU WANT POINT 2

What to Do: Choose the point on the circle where you want the second point rotated to. When you press SELECT the point will move to the place where you have put your cursor and the note will rotate.

ADM1149 W n INVALID NUMBER(S) CONVERTED TO MISSING

What to Do: Some of the items in your data definition that should contain only numbers contain something else.

Look at the data that you have imported (panel 2.1) to see where there are missing values (turquoise ".") and then check what you specified on panel 2.9.1.

ADM1150 E FILE IS TOO LARGE

What to Do: The file contains more than the maximum 32766 records allowed. Specify a file that contains 32766 records or less, and re-execute the program.

ADM1154 E NO CURRENT DATA DEFINITION AVAILABLE

What to Do: You have not told the ICU the name of the file you want to import data from, or how to import the data. Specify the file name on the Data Import File Selection panel, and choose 1 to view the file, then mark at least one item for import. Alternatively, get a data definition you have previously saved.

ADM1155 E CURRENT DATA DEFINITION HAS NO VALID ITEMS DEFINED

What to Do: Your current data definition does not describe how the data is to be imported. Choose 1 on the Data Import File Selection panel, and then mark at least one item for import. Alternatively, get a data definition you have previously saved.

ADM1156 E 'START' MUST BE THE TOP LEFT CORNER AND 'END' THE BOTTOM RIGHT CORNER

What to Do: You tried to define an item where the Start and End are not in the right place. Check that you have set the data group and part numbers correctly. Make sure that you press PF4 before PF5.

ADM1157 E 'NUMBER' INVALID. THE PRECEDING DATA GROUP OR NOTE IS NOT DEFINED YET

What to Do: While you are defining data groups or notes, and you move to a new data group or note, you must add one to the previous highest data group or note number.

ADM1158 E 'PART' INVALID. THE PRECEDING PART IS NOT DEFINED YET

What to Do: While you are defining x values, y values, or notes, and you move to a new part, you must add one to the previous highest part number.

ADM1159 I DATA DEFINITION CHANGED. REMEMBER TO SAVE IT AND TO IMPORT YOUR DATA

What to Do: You have added or changed some item definitions. This does not in itself import your data, so this message reminds you that import still has to be done. It also reminds you that you may want to save the changed data definition.

ADM1160 I AUTOMATIC SCROLL HAS BEEN USED TO BRING THE ITEM INTO VIEW

What to Do: When the current item was selected, none of it would have been shown on the screen. To help you, the current position in the file was moved so that (at least) part of the item can be seen.

ADM1161 I 'UNMARK' SUCCESSFUL

What to Do: You have just completed an Unmark operation successfully. The item that is currently selected is now undefined.

ADM1162 I DATA SUCCESSFULLY IMPORTED FROM FILE

What to Do: The data that you defined has been imported from the file. Continue with the next operation. All is well.

ADM1163 W n ITEM(S) INCORRECTLY DEFINED

What to Do: Some of the item definitions that you are using are either incomplete or are badly defined. Use choice 1 on Data Import (panel 2.9) to review these items.

ADM1164 I END OF FILE REACHED

What to Do: You have reached the last record on the file.

The message is for information only.

ADM1165 E YOU MAY LOAD ONLY ONE CHART DATA DEFINITION AT A TIME

What to Do: Remove all but one of the Restore (R) commands, then press ENTER to continue.

ADM1166 E PF4 DOES NOTHING IF CURSOR IS ON THE EXTEND TO END OF FILE LINE

What to Do: Move the cursor to the start of an item to be marked. Or press PF5 if you really intended to mark the whole of that column.

ADM1167 W HEADING HAS BEEN TRUNCATED TO 132 CHARACTERS. ORIGINAL LENGTH n

What to Do: If the heading that you have got makes sense, leave it; if not, go to panel 2.9.1 and select something shorter for the heading.

ADM1168 E INVALID CURSOR POSITION

What to Do: You cannot define any data with the cursor where it is at present. Move the cursor so it is over part of the data in your file and try again.

ADM1169 W ITEM CONTAINS INVALID NUMERIC DATA

What to Do: The current item must contain only numeric data. Something in the item you have selected is not a number.

Usually this happens if you have tried to select more than one column of figures at once. The ICU is objecting to the blanks between the columns. Select the columns one at a time.

ADM1170 W ITEM DEFINITION IS INCOMPLETE

What to Do: Press PF4 or PF5 to complete the item definition.

ADM1171 W ITEM IS NOT YET DEFINED

What to Do: The item indicated by the Which Item?, Data group, and Part fields is not defined. Define the item by using PF4 at the start and PF5 at the end of a suitable piece of the data.

ADM1172 I LEFT EDGE OF FILE REACHED

What to Do: Nothing. This is just to tell you that you now have the first column of the file on the screen.

ADM1173 E PLEASE ENTER A FILE IDENTIFIER

What to Do: Fill in the name of a file to import data from.

ADM1174 W CHART & DATA DEFINITION HAVE UNSAVED CHANGES. PRESS PF9 AGAIN TO EXIT

What to Do: Save the changes using PF2 if you want them, otherwise press the key again. (For data definitions when in standard Directory mode, you must go to panel 2.9.4 rather than press PF2.)

ADM1175 W NO DATA GROUPS HAVE BEEN DEFINED

What to Do: When the data was imported, no definitions for data groups (y values) were found. Select some figures to be the data groups (item 4 on panel 2.9.1) and then import the data again.

ADM1176 E PFn DOES NOTHING FOR THE CURRENT ITEM TYPE

What to Do: You used the Next Part (PF2) or Next Number (PF6) PF keys, but the current item cannot have parts or numbers respectively.

Change the Which item? number and try again.

ADM1177 I RIGHT EDGE OF FILE REACHED

What to Do: Nothing. This is just to tell you that you have the last column in the file on the screen now.

ADM1178 I START OF FILE REACHED

What to Do: Nothing. This is just to tell you that you have the first record on the screen now.

ADM1179 E THE CURSOR MUST BE PLACED ON THE ITEM DURING AN UNMARK OPERATION

What to Do: The cursor must be on the item you want to unmark before you press PF9. Move the cursor and try again.

ADM1180 E FILE IS NOT IN THE DATA INTERCHANGE FORMAT

What to Do: The file selection panel defines the current file as being in data interchange format. The file you are using is not in that format. Check the file name or change the type of file.

ADM1182 E FREE DATA CANNOT BE IMPORTED

What to Do: You cannot import data while you have "free" data in use. In a directory panel (PF2 from most panels), load *TIED, and try again.

ADM1183 W DATA GROUP NAME(S) TRUNCATED TO 70 CHARACTERS

What to Do: Nothing unless you do not like the shortened name, in which case go to panel 2.9.1 and select a shorter name of your own.

ADM1184 W DATA LABEL(S) TRUNCATED TO 70 CHARACTERS

What to Do: Nothing unless you do not like the shortened label, in which case go to panel 2.9.1 and select a shorter label of your own.

ADM1185 W CHART NOTE(S) TRUNCATED TO 70 CHARACTERS

What to Do: Nothing unless you do not like the shortened note, in which case go to panel 2.9.1 and select a shorter note of your own.

ADM1186 W MORE THAN 999 DATA LABELS FOUND. REMAINDER IGNORED

What to Do: While importing data from a flat file, it was found that the number of data labels would exceed 999 entries. The data labels are imported to fill the available space. The remaining data labels are ignored.

ADM1187 W MORE THAN 999 DATA KEYS FOUND. REMAINDER IGNORED

What to Do: While importing data from a flat file, it was found that the number of data keys would exceed 999 entries. The data keys are imported to fill the available space. The remaining data keys are ignored.

ADM1188 W MORE THAN 999 DATA GROUPS FOUND. REMAINDER IGNORED

What to Do: While importing data from a flat file, it was found that the number of data groups would exceed 999 entries. The data groups are imported to fill the available space. The remaining data groups are ignored.

ADM1189 W MORE THAN 999 Y-VALUES IN A DATA GROUP FOUND. REMAINDER IGNORED

What to Do: While importing data from a flat file, it was found that the number of Y-values in one data group would exceed 999 entries. The Y-values are imported to fill the available space. The remaining Y-values are ignored.

ADM1190 W MORE THAN 999 X-VALUES FOUND. REMAINDER IGNORED

What to Do: While importing data from a flat file, it was found that the number of X-values would exceed 999 entries. The X-values are imported to fill the available space. The remaining X-values are ignored.

ADM1191 W MORE THAN 999 NOTES FOUND. REMAINDER IGNORED

What to Do: While importing data from a flat file, it was found that the number of notes would exceed 999 entries. The notes are imported to fill the available space. The remaining notes are ignored.

ADM1192 W CURRENT CHART HAS UNSAVED CHANGES. PRESS ENTER AGAIN TO IMPORT DATA

What to Do: You have tried to import data from a file but you have changed the chart you have been working on since it was last saved. Press ENTER again if you do not want to save the changed chart.

ADM1199 W MIXED LATIN AND DBCS STRINGS OPTION SET TO 3 RATHER THAN 2

What to Do: No action need be taken, but the selection for mixed Latin and DBCS strings on the Menu Control panel has been set to 3, and you may like to change this value to 2.

ADM1201 I HERE IS YOUR CHOSEN SAMPLE DATA

What to Do: On the Chart by Example panel, you asked for sample data. The sample data is to show you how to enter your data, which you can do by typing over the sample data. Press PF3 to return to the Chart by Example panel.

ADM1202 I FOLLOW THE INSTRUCTIONS TO IMPORT YOUR DATA. PRESS PF3 TO RETURN

What to Do: On the Chart by Example panel, you asked to get your data from a file created by another program. Follow the instructions on the Data Import panel to import your data. Press PF3 to return to the Chart by Example panel.

ADM1203 I TYPE IN THE NAME OF YOUR CHART DATA FILE. PRESS PF3

What to Do: On the Chart by Example panel, you asked to load data from a file previously created by the ICU. Type in the name of the chart data file you wish to restore. Check that 'What is to be done' is set to 1 (load) and 'Which part of chart' is set to 2 (chart data), and press PF3.

ADM1204 I TYPE 'R' BY THE NAME OF YOUR CHART DATA FILE. PRESS PF3

What to Do: On the Chart by Example panel, you asked to load data from a file previously created by the ICU. Type R by the name of the chart data file you want to load, and press PF3.

ADM1205 E YOU HAVE NO DATA TO MAKE A CHART WITH. CHOOSE '1' TO GET SOME

What to Do: On the Chart by Example panel, you asked to make a chart using current data, but you do not yet have any data. Get some data by choosing option 1.

ADM1206 E ALL YOUR DATA IS EXCLUDED SO YOU CANNOT MAKE A CHART

What to Do: On the Chart by Example panel, you asked to make a chart using current data, but all your data is excluded. This is probably because you previously made a text-only chart. Get some data by choosing one of the options 1 through 4, or go to the Data panels to select your excluded data again.

ADM1207 I TYPE IN NAMES OF FILES TO SAVE YOUR CHART FORMAT AND DATA. PRESS PF3

What to Do: On the Chart by Example panel, you asked to save your chart in a file. Type in the names of the chart format and data files you wish to use. Check that 'What is to be done' is set to 3 (save) and 'Which part of chart' is set to 3 (chart format and data), and press PF3.

ADM1208 I TYPE 'S' AND THE FILE NAME FOR SAVING YOUR CHART. PRESS PF3

What to Do: On the Chart by Example panel, you asked to save your chart in a file, and advanced mode directory was selected. On the '****' line, type the save command ('S') and the name of the file you wish to use, and press PF3. If you want different names for the files for chart format and chart data, or if you want to use an existing file, read the help information for the panel.

ADM1209 W YOU HAVE CHOSEN 'RESET'. PRESS ENTER AGAIN TO CONFIRM

What to Do: Because your request will reset all the chart format settings you have established to their initial default values, you must confirm that that is what you really wish to do. If so, press ENTER; otherwise, type in another choice.

ADM1210 W YOU HAVE ASKED TO 'END' CHART VARIATIONS. PRESS PF3 AGAIN TO CONFIRM

What to Do: You have asked to end chart variations. This could be either because you are satisfied with the current chart and do not wish to see or make any more variations, or because you wish to abandon the current chart and start over again. You must confirm that you really want to finish by pressing PF3 again. Otherwise, press ENTER or PF7.

ADM1220 E PF4 (PRINT) AND PF5 (DISPLAY) ARE NOT AVAILABLE WITH THIS CHOICE

What to Do: You have chosen the 'More ...' option on the Step-by-step charts or on the Ready-made charts panel and then pressed PF4 or PF5. Press ENTER to see the other chart variations or make a different choice on this panel.

ADM1221 W PRELOADED SYMBOL SET 'a' HAS BEEN UNLOADED

What to Do: You have used the Show ('SH') or Print ('PR') command on the Advanced Directory panel to show or print a GDF file, and this has resulted in a preloaded symbol set being unloaded.

The ICU cannot prevent the preloaded symbol set being unloaded, but it will try to reload the symbol set when next you need it, or when the ICU terminates.

Be aware that the ICU may not be able to reload the symbol set when it is needed next. Avoid using the Show or Print commands when you are using preloaded symbol sets.

ADM1222 I PRELOADED SYMBOL SET 'a' HAS BEEN RELOADED

What to Do: A preloaded symbol set was unloaded earlier as a result of the Show ('SH') or Print ('PR') command being used on the Advanced Directory panel to show or print a GDF file. The ICU has now reloaded the symbol set from disk storage.

Be aware that although the ICU has reloaded the symbol set, it may not be identical to the version that was originally preloaded. If this is the case, avoid using the Show or Print commands for GDF files when you are using preloaded symbol sets.

ADM1223 E PRELOADED SYMBOL SET 'a' CANNOT BE RELOADED

What to Do: A preloaded symbol set was unloaded earlier as a result of the Show ('SH') or Print ('PR') command being used on the Advanced Directory panel to show or print a GDF file. The ICU has now tried to reload the symbol set from disk storage, but the load has failed.

Make the symbol set available on disk storage so that the ICU has access to it and can reload it when necessary. Alternatively, avoid using the Show or Print commands for GDF files when you are using preloaded symbol sets.

ADM1224 E PLEASE REPOSITION CURSOR TO STOP SUBCHART EXTENDING OUTSIDE CHART

What to Do: You tried to make a change to a subchart that would have caused the subchart to extend outside the master chart's chart area. This is not possible.

Reposition the cursor so that the change you are making is smaller than before, and try again.

Alternatively, discontinue the operation by pressing PF4 (Cancel); the subchart will be left unchanged.

ADM1225 E PLEASE REPOSITION CURSOR TO STOP SUBCHART BECOMING TOO SMALL

What to Do: You tried to change the size, height, or width of a subchart, but the change would have caused the subchart to become too small.

Reposition the cursor so that the change you are making is smaller than before, and try again.

Alternatively, discontinue the operation by pressing PF4 (Cancel); the subchart will be left unchanged.

ADM1226 E MARKER SET 'a1' CANNOT BE LOADED. 'a2' IS ALREADY IN USE

What to Do: The ICU could not load the marker symbol set required by your chart because the master chart and subcharts use different markers sets. Edit your charts so that the master chart and the subcharts all use markers from the same marker set.

ADM1227 E MARKER SET 'a1' CANNOT BE LOADED. 'a2' WAS PRELOADED

What to Do: The ICU could not load the marker symbol set required by your chart because the application you are using had preloaded a marker set.

ADM1228 W MARKERS REQUIRE MORE THAN ONE SYMBOL SET. 'a' WILL BE USED

What to Do: You cannot have the range of markers you asked for because they would need to come from more than one symbol set. Go to the Data Attributes panel (2.6) and change the marker types so that only one marker symbol set is needed.

ADM1229 W MARKER SCALE '*' IS VALID ONLY FOR MARKER TYPES 1 THROUGH 8

What to Do: A marker scale of '*' causes a non-scalable image marker to be used, but only marker types 1 through 8 are available as image markers. A scale of 1 is used instead.

Any message number greater than ADM1223 Miscellaneous Messages

What to Do: You should not get these messages. If you do, look them up in the *GDDM Messages* book.

Appendix C. What is new for Version 2

Here, we summarize the new facilities that those of you used to Version 1 will find in Version 2. If this is your first experience of using the ICU, skip this appendix.

Two new ways to create a chart

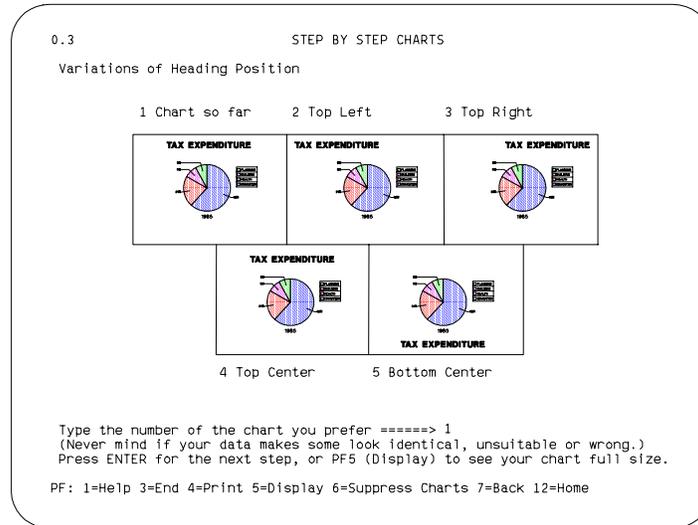


Figure 228. Build a chart one step at a time

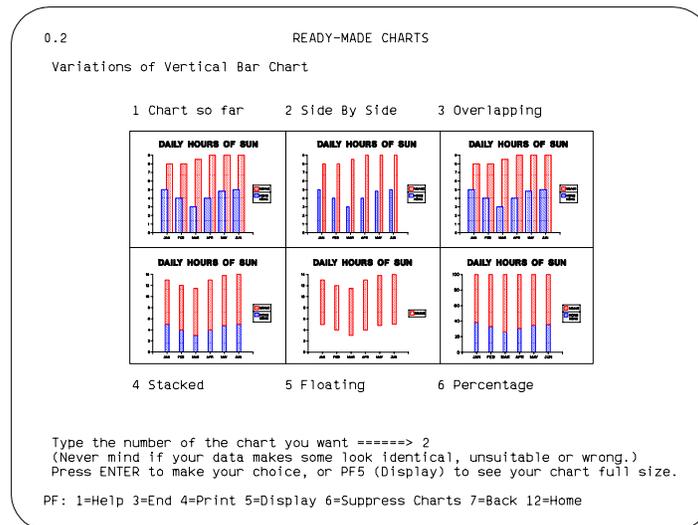


Figure 229. Build a chart in just two stages.

A new chart type – table charts

Sales	Spring	Summer	Fall	Winter
1983	15	54	32	17
1984	12	62	35	21
1985	11	47	40	19
1986	13	51	38	13

Figure 230. Display the actual data that you are using in rows and columns

Putting several charts together

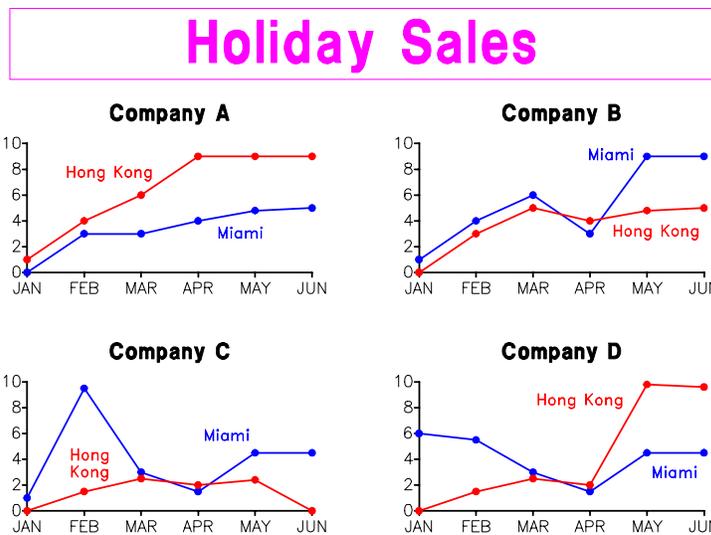


Figure 231. Use multiple charts to illustrate several topics on one piece of paper

A new way to get data

```

2.9.1 FILE VIEW AND DATA DEFINITION

Use PF4 (Mark Start) and PF5 (Mark End) to define each chosen item.

Which type of item? ==> 1 1 - Heading 4 - Data Groups (Y values)
2 - Data labels 5 - X values
3 - Data Group names 6 - Notes
Data Group or Note ==> 1 (ignored for this item) -1
Part ==> 1 (ignored for this item) -1

I----- File: IMPORT DATA -----I
I Record ==> 1 of 12 Column ==> 1 of 58 I
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The average amount of sunshine daily this year has been:

Month Hong Kong Miami
January 5 hours 8 hours
February 4 hours 8 hours
March 3 hours 8.5 hours
April 3 hours 9 hours
May 4.8 hours 9 hours
June 5 hours 9 hours

I (Use PF5 with the cursor on this line to extend an item to End of File) I
PF: 1=Help 2=Next Part 3=End 4=Mark Start 5=Mark End 6=Next Data Group/Note
7=Up 8=Down 9=Unmark 10=Left 11=Right 12=Home

```

Figure 232. File View and Data Definition panel

You can use data that already exists in a sequential file on the host computer. Specify the name of the file and the fields you need.

You can also send a file that already exists in an IBM PC to your host computer and use that data to create a chart.

Where to find the new features

This lists the changes and improvements made and shows the ICU panels and the pages of this book where they are discussed.

what is new for Version 2

New feature	How to find it	Where in this book
Boxes and background	Panel 6	"Boxes around anything" on page 197
Multiple charts	Panel 6	Chapter 12, "Multiple charts" on page 145
Notes and subcharts (editing)	PF11	"Interactive edit" on page 89
PC files	Panel 2.9	"Getting values from a data interchange format file" on page 77
Ready-made charts	Panel 0	"Ready-made charts" on page 28
Save/load panel	Panel S or PF2	"Step 5: Save the chart so you can load it later" on page 47
Sequential files	Panel 2.9	"Getting values from a sequential file" on page 75
Step-by-step charts	Panel 0	"Your second chart" on page 34
Table charts	Panel 1.9	Chapter 17, "Table charts" on page 181

Changes previous users will notice

As well as the items listed previously, existing users will notice a number of small changes.

Default choice

When you start the ICU, option 0 on the Home Panel will already be selected. If you want Chart by Example, press ENTER.

Panel color

The words on the ICU panels appear in turquoise. If you would prefer them in blue, ask your local expert to set the GDDM default ICUPANC.

Help

PF8 now takes you to the next page of help, if there is one.

PF1 inside help takes you to the help index. This tells you which panel to use for each function.

Chart style defaults

There are some changes to the colors and type styles that you get if you don't specify anything in particular for a new chart. Old charts will still look the same when they are loaded.

If you do not like the new defaults, ask your local expert to give you the old ones by using the GDDM defaults ICUFMDF and ICUFMSS. Or look at Chapter 20, "Tricks, techniques, and tips" on page 195 to see how to select different ones.

Plot in progress

There is a new message that appears when the ICU is busy plotting a chart.

Directory of GDDM objects

You can now list, copy, and delete images and projections, You can also list, copy, delete, save and restore data definitions.

Save/load panel

This one panel replaces the Save and Restore panels.

Handling notes

The PF keys you use for editing have changed and each note appears on a separate line.

The default text-rectangle-point has been changed from 7 (bottom left-hand corner) to 5 (center of note).

what is new for Version 2

Appendix D. How to become the local expert

For a computer installation to use the ICU, it is necessary to have at least one local expert who knows the information in this appendix:

- How the ICU fits in with the rest of the computer system
- How the ICU prints and plots charts
- GDDM defaults for the ICU
- Where saved charts are stored and who can get at them
- Files suitable for data import
- How and why to use the ICU for programming
- Differences in using the ICU on different terminals
- How to get ICU panels in languages other than English
- Differences in using the ICU on various subsystems (CICS, IMS, TSO, and VM/CMS)
- Using free data
- Using GDF (graphics data format) files
- How to get extra markers, colors, and patterns
- GDDM publications.

From this information, the local expert will be able to tell all the ICU users the answers to the questions in “Get these answers before you start” on page 25.

This appendix gives an introduction to each of these topics. If you need to know more, look at the *GDDM User's Guide* book, which covers most of these topics in detail. Sometimes this appendix will recommend other manuals that can help you.

How the ICU fits into the computer system

The ICU is a program that makes use of two other, closely related, programs: the Presentation Graphics Routines (a part of GDDM-PGF) and GDDM Base. The ICU uses the Presentation Graphics Routines to draw charts, and these routines in turn use GDDM Base to draw the lines and areas that make up the chart. (The ICU, the Presentation Graphics Routines, and the Vector Symbol Editor are three programs that together make up GDDM-PGF.)

GDDM in turn makes use of IBM interactive subsystems to manage jobs like data storage and input and output. The subsystems it uses are CICS, IMS, TSO, and VM/CMS. In their turn, the subsystems depend on operating system programs that control how computer resources are used from moment to moment.

Further details are given in the *GDDM System Customization and Administration* manual for your operating subsystem (see “GDDM publications” on page 273).

How the ICU prints and plots charts

When you ask the ICU to print or plot a chart, it passes the request to GDDM and it is the GDDM printing and plotting support that is used.

GDDM creates the output and sends it to the printer or plotter. (The VM/CMS subsystem will not let GDDM send output to most printers, so it creates the output as a file for the user or another program to send. The GDDM-supplied program ADMOPUV will do this. You can set up GDDM so that this runs automatically.)

On the ICU Printer/Plotter Output panel, you type in a name of a printer or plotter. GDDM uses this name to discover which printer or plotter you want and how you want it to look on that device. Having discovered this, it then has to find out the sort of printer and plotter it is dealing with and send it the right sort of output. (Each type needs a different sort of output.)

GDDM gets this information from a list. This list either tells GDDM that the printer or plotter is directly attached (this means that GDDM can ask the plotter and discover for itself) or the list contains a description of the printer or plotter in the form of a **device token**. (A third possibility is that the list contains nothing. GDDM then assumes the device is a 3287 printer with a paper size of 132 columns by 80 rows.)

The list that GDDM uses is built each time it is used from a file created by the systems programmer or ICU user called a **defaults file**. This file must be right or else printing and plotting will not work properly. The information in the file is normally in the form of **nicknames**.

When you need nicknames

You will need nicknames to use plotters, to print on anything except a 3287 printer, and, if you are using a 3287, to print on anything except the standard paper.

Plotter nicknames to put in the defaults file

What must be put in the defaults file are **nicknames** that define the printers or plotters.

The following sample nickname directs the output to a plotter, and plots the output in **landscape** (horizontal) format, when you use the destination name LANDSCAP:

```
NICKNAME NAME=LANDSCAP,  
FAM=2,TOFAM=1,TONAME=(*,ADMPLOT),  
PROCOPT=(,)
```

If you prefer the output to be plotted in **portrait** (vertical) format, you need the following nickname, when you use the destination name PORTRAIT:

```
NICKNAME NAME=PORTRAIT,  
FAM=2,TOFAM=1,TONAME=(*,ADMPLOT),  
PROCOPT=((PLTROTAT,YES))
```

You can include other options in the PROCOPT values to control the pen pressure, pen speed, and so on. Plotter options can be included after PROCOPT thus:

```
NICKNAME NAME=PORTRAIT,
      FAM=2,TOFAM=1,TONAME=(*,ADMPLOT),
      PROCOPT=((PLTROTAT,NO),
      (PLTPENV,60))
```

They control the way the plotter plots and can be useful, for example to change the plotter pen speed. Do not use PLTAREA and PLTPAPSZ with the ICU. They restrict the page size you can request in the Printer/Plotter panel.

Plotters can only be attached to certain terminals, and these terminals must be **customized** for them. Among other things, this associates the nickname in the file with the particular plotter, using the information given by TONAME. The method of customizing an IBM 3270-PC /G or /GX work station is in the *Graphics Control Program User's Guide and Reference*, SC33-0180. You use the INDCFIG command for customizing.

The process associates the name in the nicknames file with a plotter address rather than a plotter. Some plotters can work on more than one address and the address they are using is set on the plotter itself. So this is a point to check if the plotter does not work.

Printer nicknames to put in the defaults file

If you want to print your charts, you will need a nickname for a printer:

```
NICKNAME NAME=T087,DEV TOK=L87,
      TONAME=nnnnnnn
NICKNAME NAME=T068,DEV TOK=L68,
      TONAME=nnnnnnn
```

NAME is the Printer/Plotter Name to use on the ICU print panel.

DEV TOK is the device token. The token says what sort of a printer it is (so your output will look right) and what size the paper is so that the ICU can make proper use of the paper. You can supply your own device tokens to specify any page depth. This allows you to print very long charts, or to set the page size to match the paper you use.

TONAME identifies the actual printer to use. It depends on the subsystem in use:

```
CICS    terminal id
IMS    LTERM name
TSO    LU name
VM/CMS any file name.
```

GDDM defaults that control the ICU

There are a number of defaults that affect the way that the ICU looks to the user:

ICUF MDF The default chart format

ICUF MSS The default symbol sets

ICUISOL The panels that the user can see

ICUPANC The color of the words on the panels

OBJFILE The default filetype (VM/CMS), dataset name (CICS), or ddname (TSO) for format, data, and data definition files.

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These can be changed to suit your installation or individual users. See the *GDDM Base Application Programming Reference* book for details.

Where to find the defaults file

The name of the file differs for different subsystems.

CICS

The nicknames must be created by the systems programmer during GDDM installation.

IMS

The nicknames must be created by the systems programmer during GDDM installation.

TSO

The nicknames can be created by the systems programmer during GDDM installation, or can be set up for each user in a data set which is associated with the ddname ADMDEFS. Users can override the system setup by using a data set of their own.

VM/CMS

The nicknames can be created by the systems programmer during GDDM installation, or can be set up for each user in a file called PROFILE ADMDEFS. Users can override the system setup by using a file of their own.

Where saved charts are stored and who has access to them

The ICU produces four types of object: chart data, chart format, GDF objects, and data definitions. A directory panel is available that lets you list and do housekeeping on these and other GDDM objects (symbol sets, saved pictures, and map groups). The directory panel differs according to the subsystem used.

CICS

Saved charts are stored in a VSAM file. Normally all ICU users can access all charts.

IMS

Saved charts are stored in an object data base. Normally all ICU users can access all charts.

TSO

Saved charts are stored as members of a partitioned data set. The data set name is specified in the call to the ICU.

VM/CMS

Saved charts are stored on the A disk of the user. Normal read and write access to other disks allows sharing of charts. To save on a disk other than the A disk, the Advanced Directory must be used.

For security on all subsystems, the subsystem supplied methods must be used.

Further information on this topic is given in the *GDDM System Customization and Administration* manual.

Files suitable for data import

You can use files from an IBM PC or your host computer. The file can have a maximum of 32766 records and a maximum record length of 2000 characters.

Data interchange format (DIF) files

Typically, the original file will be from a spreadsheet program run on an IBM PC. You must transfer the file to the host computer. *GDDM User's Guide*.

Sequential files

You can only use data import under VM/CMS and MVS/TSO.

The ICU can only handle character data. This means that there are three possible sources of data:

1. Files produced by a report generator
2. Spooled listing files produced by a print program
3. Data files where numeric fields are held as characters not as binary or as any form of packed data.

How and why to use the ICU for programming

As well as calling the ICU as a stand-alone utility, you can also call it from an application program you have written. This can let you do the following things that you cannot do when you use the ICU in the standard way:

- Printing overnight or at non-peak times.
- Restricting access of charts to only some users.
- Controlling the access for users in other ways and generally tailoring the ICU.
- Running the ICU to produce output for devices such as the 4250 printer.

Details are in the *GDDM-PGF Programming Reference* book, and in the *GDDM Base Application Programming Guide* book, see “GDDM publications” on page 273.

Differences in using the ICU on different terminals

Here, we compare the different types of terminal you can use.

3179-G1 and G2 Display Stations

These terminals provide better aids for interactive editing of notes than 3279 terminals.

3270-PC/G and /GX Work Stations

These terminals provide better aids for interactive editing of notes than 3279 terminals.

3279 Terminals

Everything described in the book can be done on a 3279, but it does not have a mouse.

3278 and 3290 Terminals

These terminals do not have color.

5080 Work Stations

These are high-function work stations used particularly for graphics.

You need a special nickname and file definition to access it from your 3179 (or similar) terminal:

```
NICKNAME FAM=1,NAME=*,
PROCOPT=((SPECDEV,IBM5080,ddname))
```

```
FILEDEF ddname GRAF cuu
(ALLOC DS('DUMMY'))
DD(ddname) UNIT(cuu) OLD REUSE)
```

When you use a 5080 work station, the ICU panels, help, PF keys, and prompts are displayed on your terminal. If you display (PF5) or edit (PF11) your chart, or use the preview chart, it is displayed on the 5080 work station. So, you have to look at two different screens.

Set the preview chart on in all panels (panel M), and set both the First Row and Last Row to 1. This will give you a very large preview chart to refer to on the 5080 all the time you are creating the chart on your terminal.

If you use the 3270 feature on the 5080 (press the Jump Screen key to get it), you see everything on the 5080.

5550 Family Work Stations

These have a character box size that gives very good definition for Kanji characters. They have a graphics cursor driven by the cursor control keys or a mouse and can be customized to support a plotter.

When you select the preview chart (panel M), you must change the preview chart position or you will not see the preview chart. Setting the First Row to 18 works well.

User control

Any terminal may provide user control functions. Press PA3, or whichever key has been set to this function, when the chart or GDF file is displayed and follow the instructions that are displayed on the screen. (See the *GDDM User's Guide* for details.)

Using printers

Here, we compare the different kinds of printer you can use.

3268 Printers

Unless you use a device token that specifies a 3268 printer, printing will not be correct. The most noticeable effect will be elliptical pies.

4224 Printers

The default device token works in most cases. Specific 4224 device tokens are needed to set characters-to-the-inch and lines-to-the-inch.

4250, 3800-3, and 3820 Printers

These page printers can be used to print charts under the TSO and VM/CMS subsystems but cannot be used directly from the ICU print panel.

Charts are printed as follows:

1. Create the chart in the normal way. Save it and end the ICU.
2. Call the ICU with a program (supplied with GDDM-PGF) to print.

For TSO, a CLIST is supplied called ADMUCIMT. For VM/CMS, an EXEC is supplied called ADMUCIMV. These ask for details and are largely self-explanatory. Details are in the *GDDM-PGF Programming Reference* book (see “GDDM publications” on page 273).

It is possible to create color separations using this process by passing suitable “procopts” to ADMUCDSO, which is the module called by ADMUCIMT and ADMUCIMV. See the *GDDM-PGF Programming Reference* book for ADMUCDSO, and the *GDDM Base Application Programming Reference* book for “procopts”.

Languages other than English

The ICU panels and messages can be used in several languages other than English if the National Language feature of GDDM has been installed. Details are in the *GDDM System Customization and Administration* manual..

Double byte character sets

For ideographic characters such as Japanese Kanji, Korean Hangeul, or any other double byte character set (DBCS), use panel M to set text strings to Mixed Latin and Kanji. (Mixed Latin and Kanji is the default on the 5550 family of terminals.) It will then be possible to type in Kanji into headings and other text strings. See the help panels for more details of this.

For terminals other than those of the 5550 family, Kanji can be entered as hexadecimal values. To delimit the DBCS character strings, you must enter the special character set up by the systems programmer or contained in the ADMDEFS file. Kanji can only be used if the computer system has been set up for it.

Note: When you set your ADMDEFS file to use mixed text strings, you have to specify:

```
MIXSOSI=YES
```

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For terminals other than those of the 5550 family, you also have to choose a character to use to delimit the DBCS strings like this:

```
SOSIEMC=/
```

Do not use your delimit character (in this case “/”) except at the start and end of DBCS strings.

Special symbol sets

National language versions of the default vector symbol set ADMDVSS are supplied with special national characters such as currency symbols. These can be specified in the Text Attribute panels or can be set up as the default by a system programmer. The symbol sets are:

ADMDVSSB	Brazilian
ADMDVSSD	Danish
ADMDVSSE	UK English
ADMDVSSF	French
ADMDVSSG	German
ADMDVSSI	Italian
ADMDVSSK	Katakana
ADMDVSSN	Norwegian
ADMDVSSS	Spanish
ADMDVSSV	Swedish.

Subsystem differences

For full details of your subsystem refer to the *GDDM System Customization and Administration*. for your subsystem.

CICS

No special actions are required.

IMS

Under IMS, the ICU is run by a special utility that works with IMS to make the ICU appear to do interactive processing. This simulation restricts the number of users and also prevents the use of interactive notes.

By default, the ICU will not allow use of the Advanced Directory as this would allow access to all charts on the data base.

TSO

Care should be taken with setting up the data sets for TSO. Each user needs a chart format, and chart data set of their own, and these data sets must be initialized.

You cannot use the CLEAR key to stop the plotter once it has started unless the TSOINTRP procopt has been set. See the Installation manual for details of this procopt.

VM/CMS

By providing an ADMQPOST EXEC, chart printing can be made automatic.

This can also be done by using the INVKOPUV procopt.

Using free data

Free data is a method of data entry that allows x and y values to be entered independently for each data group. If you have many different data groups, each with its own set of y values, it may be more convenient to use free data than missing values. (Missing values allow you to put a period (.) where there is no y value for a particular x value.)

Normally however, particularly for planned against actual charts, it is better to use missing values as using these lets you see all your data at once. You only really need free data if you have very old charts that use it.

Handling free data charts

Charts that use free data, such as those produced on previous releases of the ICU, can be changed to use missing values by using the CONVERT command in panel 2.2. Load the chart, go to panel 2.2 and type CONVERT on any command line. The data will be converted to normal (tied) data with missing values.

How to use free data

To use free data, you must either load a chart that already uses free data, or load *FREE as the chart data name in either the Save/Load panel or the Advanced Directory.

You should always use panel 2.2 for data entry and you will need to use the I (insert) command both to get lines of data and to get second and later data groups. To end free data, you can load *TIED.

Example of using free data

1. In panel S or the Advanced Directory, load *FREE as the chart data name.
2. In panel 2.2, use the I command in the top left command line to get as many lines as you have x and y values for the first data group. For example, use I7 to get seven lines.
3. When you have finished the first data group, use I on the command line above the y values to get another data group (or several data groups if you want more than one).
4. Scroll to the next group using PF11. Enter the data. You can move between data groups using PF10 and PF11, and use the I command to insert new groups.

Using GDF files

GDF (graphics data format) files are a way of storing charts and other pictures as a set of drawing instructions. The ICU lets you store your charts as GDF files and also lets you list, display, and print any GDF file whether produced by the ICU or not. When listed, GDF files can be copied, or deleted.

Saving charts as GDF files

To save charts as GDF files, you either set What is to be saved to 4 in the Save/Load panel or, if you are using the Advanced Directory, specify GDF in the type field and use the S or U command to save or update.

When a chart is saved as a GDF file, it is not possible to change the saved GDF file in the ICU.

Uses of GDF

You may want to use GDF either to provide input to another program that requires GDF, or because charts stored as GDF can be displayed more quickly than those stored as chart data and format files.

The Advanced Directory as a GDF manager

The Advanced Directory (reached by setting Usage of Directory Panel to 2 in panel M, and then pressing PF2) lets you manage GDF files. You can list GDF files by the command:

```
L_  ***  _____  GDF
```

Once the GDF files are listed, you can show one on the screen like this:

```
SH_ 003 FIRSTGDF__ GDF
```

This will display the GDF file as large as possible on the screen while retaining the original aspect ratio.

Print a GDF file like this:

```
PR_ 003 FIRSTGDF__ GDF
```

This will take you to the print panel where you can specify the size and number of copies in the usual way.

You copy and delete GDF files in the same way as ICU charts.

How to get extra markers, colors, and patterns

Two files are provided with the GDDM Base to give you extra colors and shading patterns. They are called ADMCOLS. and ADMPATT. respectively. To use one in the ICU, it must be renamed to ADMICUP.. This means that only one of the two can be used at any one time.

Users can create their own markers and shading patterns using the symbol editors. The marker file must be called ADMICUM. and the shading pattern file must be called ADMICUP.. Again, because of the file names, only user shading patterns, or

the ICU extra colors, or the ICU extra shading patterns can be used at any one time. See the *GDDM-PGF Programming Reference* book for details of these files.

how to become the local expert

Appendix E. ICU panels

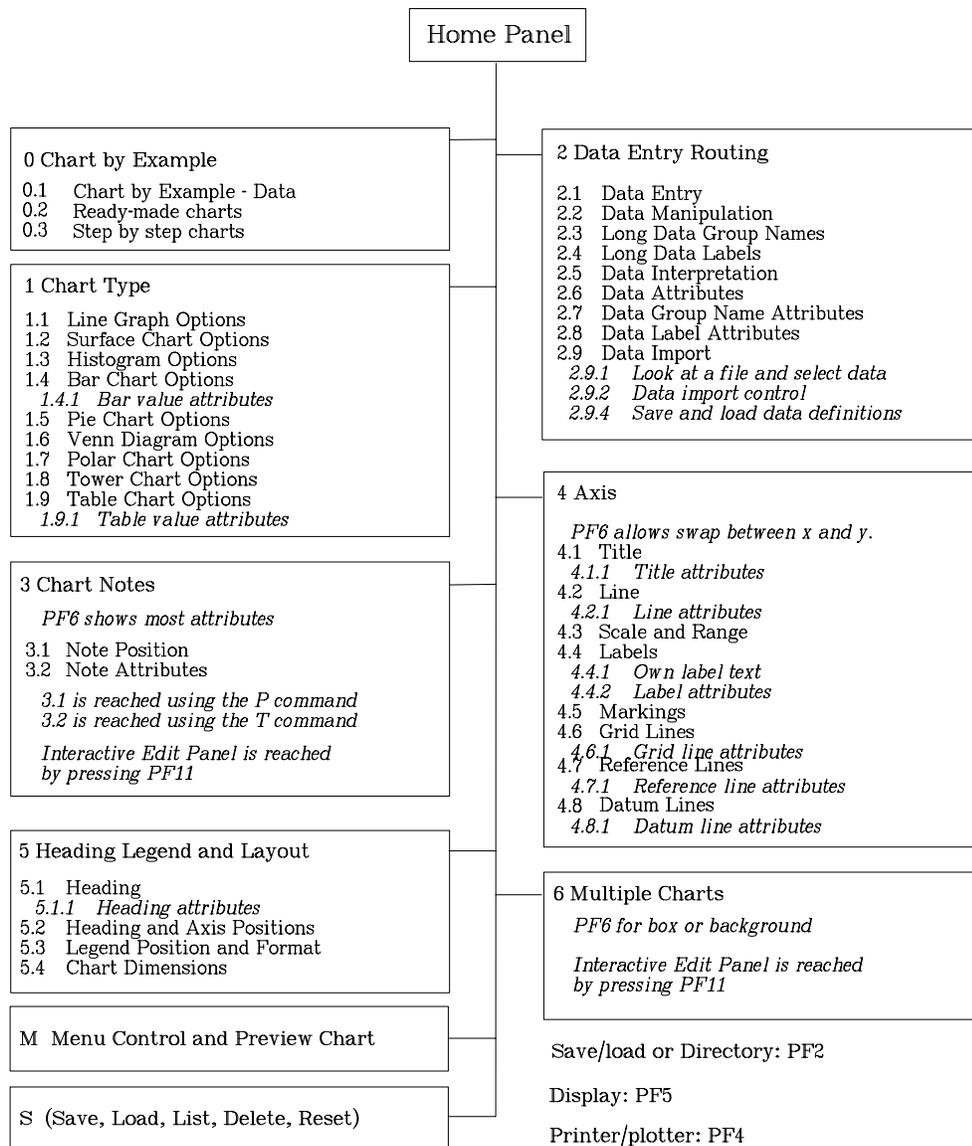


Figure 233. The ICU panels

ICU panels

Appendix F. Colors, markers, line types, shading patterns, type styles

This appendix shows the range of visual attributes you can use with the ICU.

Colors

You should look at the online version of this book to see the color ranges for multi-color terminals, four-color printers, and seven-color printers. "Printing and plotting" on page 91 provides details of the defaults.

For plotters, the color numbers on the various panels refer to the pen positions in the pen holder. See "Plotting patterns" on page 92 for details.

Line types

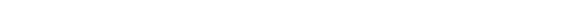
0 - solid line (default)	
1 - dotted line	
2 - short-dashed line	
3 - dash-dot line	
4 - double-dotted line	
5 - long-dashed line	
6 - dash-double-dotted line	
7 - solid line	
8 - invisible line	

Figure 234. Line types available

You may not get the result you expect if you use broken line types with thick lines. Some types of terminal do not support all of these line types.

Markers for line and polar charts

They are specified by number in panel 2.6 where you can also set their size.

Number specified		Marker	
01	x	02	+
03	◇	04	□
05	✖	06	*
07	◆	08	■
09		10	.
11	\$	12	£
13	¢	14	%
15	△	16	▽
17	▷	18	◁
19	▲	20	▼
21	►	22	◄
23	⬆	24	⬇
25	➔	26	⬅
27	⬆	28	⬇
29	➔	30	⬅
31	○	32	⊙
33	⊖	34	⊕
35	⊕	36	●
37	◎	38	⊙
39	N	40	∩
41	Z	42	Σ
43	⊗	44	⊗
45	⊗	46	⊗
47	⊗	48	⊗
49	⊗	50	⊗
51	⊗	52	—
53	—	54	—
55	—	56	—
57	⊕	58	⊕
59	+	60	+
61	⊗	62	⊗

Figure 235. Line and polar chart markers

Shading patterns

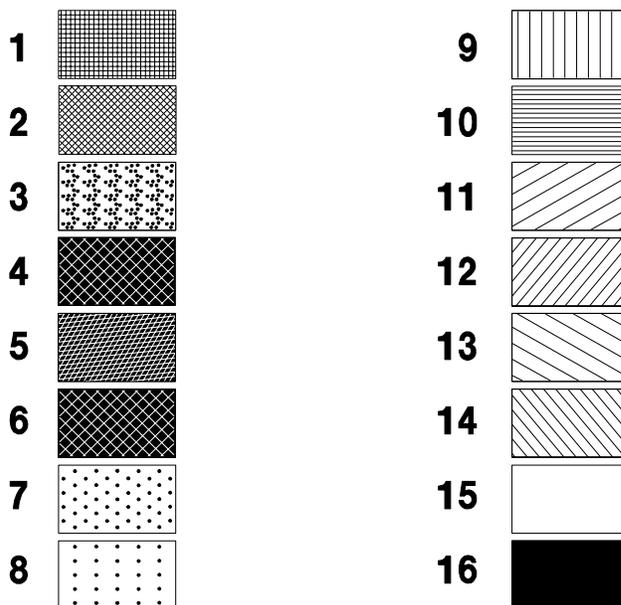


Figure 236. Shading patterns

Shading patterns are different between plotters and screens.

Use of the solid shading pattern (number 16) on plotters may take longer to plot and wear out the pens quickly, depending on the type of plotter available to you.

However, if you **do** want white shading that obliterates whatever is beneath it, use pattern 16 and color 8.

Type styles

The type styles below are supplied with GDDM Base as vector symbol sets.

You can see the names of all the symbol sets that are available by using the list command on the advanced directory panel with Type set to ISS or VSS.

To use a vector symbol set, type the name (ADMUUSRP for example) in the Symbol Set Name in any Text Attribute panel. Character Mode must be set to 3.

Spacing

The styles shown are all proportionally spaced (M is wider than I, for example). There are also proportionally spaced versions of each style with a much wider space character. They have a W instead of a U (ADMUWSRP for example). Non-proportionally spaced versions are available. They have a V instead of a U (ADMUVSRP for example).

Vector symbol sets

ADMUUSRP	ABCD 0123 abcd	ADMUUKRF	ABCD 0123 abcd
ADMUUTRP	ABCD 0123 abcd	ADMUUKRO	ABCD 0123 abcd
ADMUUCRP	ABCD 0123 abcd	ADMUUKSF	ABCD 0123 abcd
ADMUUDRP	ABCD 0123 abcd	ADMUUKSO	ABCD 0123 abcd
ADMUUTIP	ABCD 0123 abcd	ADMUUMOD	ABCD 0123 abcd
ADMUUCIP	<i>ABCD 0123 abcd</i>	ADMUUNSF	ABCD 0123 abcd
ADMUUCSP	<i>ABCD 0123 abcd</i>	ADMUUNSO	ABCD 0123 abcd
ADMUUGEP	ABCD 0123 abcd	ADMUUSHD	ABCD 0123 abcd
ADMUUGGP	ABCD 0123 abcd	ADMUUFSS	ABCD 0123 abcd
ADMUUGIP	ABCD 0123 abcd	ADMUUTSS	ABCD 0123 abcd

Figure 237. Vector symbol sets

Default ICU vector symbol sets

ADMUUSRP for labels, bar chart values, table chart y-values, and data group names.

ADMUUKSF for chart headings and notes.

ADMUUDRP for axis titles.

Special characters

The following are in all the type styles:

& \$. < > () + - | # ! ? * ' ; ~ / , % _ @ : = " ¢ | ' ~ { } \

National symbols are available in the National Language type styles.

type styles

Appendix G. Illustrated glossary

The glossary for this book comes in two parts: pictures, that show graphically the words used in creating graphics; a “standard” glossary. The standard glossary refers back to the picture glossary.

The picture glossary

There are two pictures:

1. The names of parts of a graph
2. The names of elements in other graphics

Picture 1

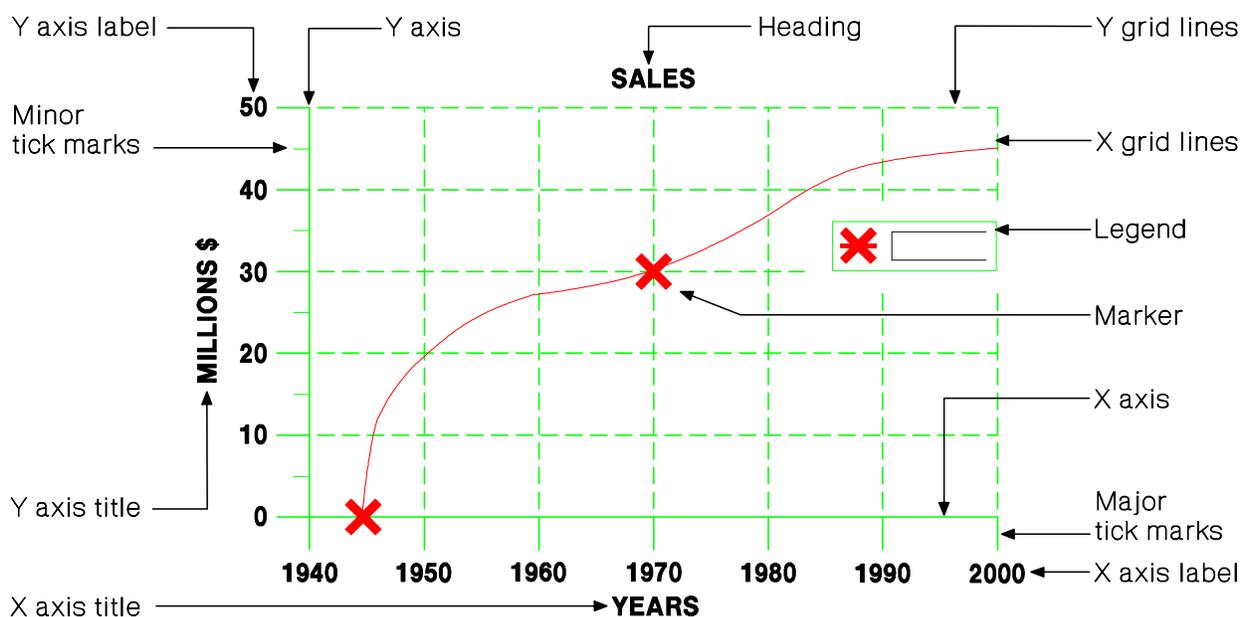


Figure 238. Names of elements in a graph

Polar charts and Table charts are laid out differently. See the “What goes where” diagrams in Chapter 14, “Polar charts” on page 163 and Chapter 17, “Table charts” on page 181 for an example of each.

Picture 2

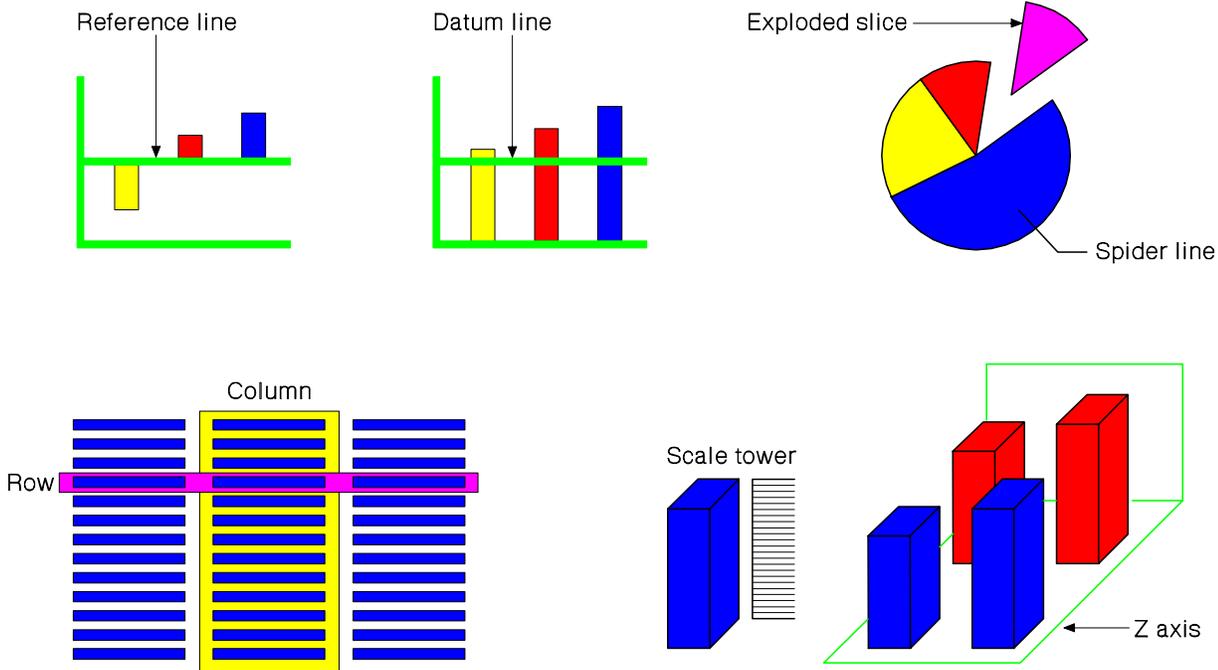


Figure 239. Names of elements in bar, pie, table, and tower charts

The “standard” glossary

absolute data. Presentation in which each group of data is plotted from the x axis so that you can read off its values. See Chapter 16, “Surface charts” on page 175.

attributes. Properties such as color, shading pattern, and so on.

axis labels. Words or numbers along an axis that help you to understand the chart. See Figure 238 on page 261.

axes. Plural of axis.

character. A letter or a number.

character mode. How characters are drawn. Different modes allow you to control the size or spacing of characters.

chart area. The whole of the chart including the axes, lines, bars, markers, heading, labels, and legend.

chart data. The figures that a chart is drawn from. See “How charts are saved and loaded” on page 96.

chart format. Information that describes what a chart looks like. See “How charts are saved and loaded” on page 96.

column. A vertical line of data. See Figure 239.

data definition. A set of instructions that tell the ICU which bits of a report to use to create a chart. The report can be stored on a IBM PC or the host computer. You can save and reuse these sets of instructions.

data group. A set of values that refers to one item. For example, all the sunshine figures for Hong Kong. Data groups look different on different chart types. On a line graph, they are one line; on a bar chart one color of bar.

data interpretation. How the ICU treats your values. For example, they may be treated as percentages.

data labels. X labels that are typed in the Data Entry panel.

datum line. Any line on a chart that draws attention to an item or value. It does *not* rearrange the data. See Figure 239 on page 262.

defaults. Values the ICU gives you if you do not ask for anything else.

delete. Erase, remove.

edit. Change. You edit data on the Data Entry panel.

explosion. Separating a pie chart slice from the rest of the pie. See Figure 239 on page 262.

field. One element on an ICU panel.

format. See "chart format".

grid lines. Extra lines that make a chart background look like squared or lined paper. See Figure 238 on page 261.

heading. The title of a chart. See Figure 238 on page 261.

height multiplier. A number controlling the height of a character.

host. The mainframe computer to which your terminal or work station is connected.

host file. Data available from the mainframe computer that you can use in the ICU.

justified. Aligned. The text on this page is left justified.

labels. Numbers or words on an axis that tell you what units the chart is using. See Figure 238 on page 261.

layout. General appearance

legend. A box on a chart that shows the color, marker, or shading pattern used to represent each data group. See Figure 238 on page 261.

load. Bring a saved chart back into the ICU.

margins. The four areas, one on each side of the plotting area, where the legend, heading, labels, and titles appear.

marker. A shape on a line graph or polar chart that shows where a data item has been plotted. Each data group has its own marker. See Figure 238 on page 261.

menu. Information displayed on the screen from which you can make a choice.

mixed charts. One chart in which each data group is represented by a different chart type (line graph, surface chart, histogram, and bar chart).

mode. Method, or state. See “character mode”.

multiple charts. Two or more charts drawn on different parts of the screen or paper.

notes. Words that you add to a chart to explain important points.

options. Choices

orientation. Arrangement of the axes on a chart. Normally, the x axis is at the bottom and the y axis is on the left. But there are other ways for example, x can be at the top and y on the right.

panel. Questions and information displayed on the screen, to which you can reply.

pixels. The dots on the screen or printer that make up the picture.

plotting area. The part of the chart area that contains the actual chart (axes, bars, lines, markers).

range. A group of figures that fall between two points. 1982 to 1991 is a range of years.

reference line. A line on a chart that represents one particular value. The data is rearranged around it. See Figure 239 on page 262.

relative data. Groups of data that are plotted one above the other so that you can read off the total. See page 175.

restore. Bring a saved chart back into the ICU.

row. A horizontal line of data.

save. Keep a permanent copy in computer storage.

scale tower. An extra block on a tower chart that helps you read off the figures. See Figure 239 on page 262.

scaled. Made bigger or smaller to fit into a particular place.

scientific notation. Floating point. For example, 1.5E+05 is the floating point representation of 150 000.

slice. A piece of a pie chart or a row on a table chart. See Figure 239 on page 262.

spider line. A line linking a pie chart slice with its label. See Figure 239 on page 262.

symbol set. Normally, a set of characters in one particular type style. But it can also be a set of little pictures.

tick marks. Marks on an axis where labels are placed. See Figure 238 on page 261.

type style. Set of letters and numbers that have the same features, for example, loopy tails or very thick lines. See “Type styles” on page 259.

width multiplier. A number controlling the width of a character.

x axis. Normally, the bottom horizontal line of a chart. See Figure 238 on page 261.

y axis. Normally, the extreme left-hand line of a chart. See Figure 238 on page 261.

z axis. It creates the “floor” of a tower chart. See Figure 239 on page 262.

Appendix H. Sample data

There are seven sets of sample data supplied with the ICU. The general purpose set (option 1 from panel 0.1) you can also get by typing SAMPLE on the command line of panel 2.1 or 2.2. The other six you can only get from panel 0.1. If you get some sample data using the Chart by Example panel, you do not have to use Ready-made or Step-by-step charts to create the chart.

Some sets of sample data will only work with one type of chart. Others will work with several types of chart. Only the general purpose set works for all the chart types.

On the next few pages you can see each set of sample data with the chart that it is best for.

The one type of chart that you cannot see is the Venn diagram. There is no set of sample data for this. If you want to see how to type in data for this chart type, look at Chapter 19, "Venn diagrams" on page 191.

(The little charts have been simplified. To get your chart to look **exactly** like the picture you will have to enlarge the axis labels and change the shading pattern, marker type, and in some cases, change the major tick mark interval.)

When you change a set of sample data or type in your data, remember the following points:

1. Move between places where you type using the tab key.
2. Do not type anything except numbers in the columns headed X Values and Y1, Y2, Y3, and Y4. Dates (like 1986 or 3/12/86) do not count as numbers. Use decimals (2.5) not fractions (2 1/2).
3. Put in your Data Group Names above Y1, Y2 and so on.
4. If the names are too long to fit, leave off the end for the time being. You can put them in later.
5. If you need more columns, press PF11. If you need more rows, press PF8.
6. If one of the words or numbers that you typed goes red, change it and press ENTER again. (The message at the top will tell you what is wrong. Most likely you have typed words in a numbers column, or you may have typed data in a command field (underlined in green). Change any words to numbers and get rid of data in the command field with the ERASE EOF key.)

Appendix I. More GDDM information

Latest GDDM information

For up-to-date information on GDDM products, check our Home Page on the Internet at the following URL:

<http://www.hursley.ibm.com/gddm/>

You might also like to look at the IBM Software Home Page at:

<http://www.software.ibm.com>

GDDM publications

GDDM Base	<i>GDDM Base Application Programming Guide</i> , SC33-0867 <i>GDDM Base Application Programming Reference</i> , SC33-0868 <i>GDDM Diagnosis</i> , SC33-0870 <i>GDDM General Information</i> , GC33-0866 <i>GDDM/MVS Program Directory</i> , GC33-1801 <i>GDDM/VM Program Directory</i> , GC33-1802 <i>GDDM/VSE Program Directory</i> , GC33-1803 <i>GDDM Messages</i> , SC33-0869 <i>GDDM Series Licensed Program Specifications</i> , GC33-0876 <i>GDDM System Customization and Administration</i> , SC33-0871 <i>GDDM User's Guide</i> , SC33-0875 <i>GDDM Using the Image Symbol Editor</i> , SC33-0920
GDDM-GKS	<i>GDDM-GKS Programming Guide and Reference</i> , SC33-0334
GDDM-IMD	<i>GDDM Interactive Map Definition</i> , SC33-0338
GDDM-IVU	<i>GDDM Image View Utility</i> , SC33-0479
GDDM-PGF	<i>GDDM-PGF Application Programming Guide</i> , SC33-0913 <i>GDDM-PGF Programming Reference</i> , SC33-0333 <i>GDDM-PGF Interactive Chart Utility</i> , SC33-0328 <i>GDDM-PGF Vector Symbol Editor</i> , SC33-0330 <i>GDDM-PGF OPS User's Guide</i> , SC33-1776

GDDM/MVS is an element of OS/390. GDDM-REXX/MVS and GDDM-PGF are optional features of OS/390. For a complete list of the publications associated with OS/390, see the *OS/390 Information Roadmap*, GC28-1727.

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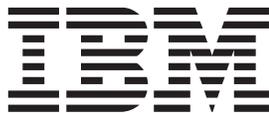
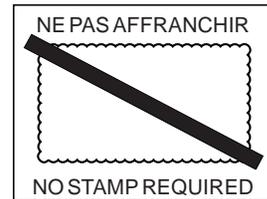
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