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COMPUTER DIVISION

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Schneider Computer Division · Postfach 120 · D-8939 Türkheim/Unterallgä

SuperCalc²

SOFT 27028

Für Schneider CP/M Plus Computer

Wir beglückwünschen Sie zum Kauf dieses Produktes von Amsoft/Sorcim/IUS. SuperCalc² ist ein vielfach getestetes und erprobtes Programm, das weltweit von mehr als 1 Million Anwendern benutzt wird.

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Manche Händler stellen spezielle Unterstützungs- und Übungspläne bereit, und wenn Sie Probleme mit dem Programm haben, sollten Sie sich bei Ihrem Händler danach erkundigen.

Herausgegeben von Amsoft und Sorcim/IUS
Vertrieb in Deutschland durch:

Schneider Computer Division
Silvastraße 1
8939 Türkheim 1

SuperCalc²

SOFT 27028

Für Schneider CP/M Plus Computer

LIZENZBEDINGUNGEN

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b) das Programm als Sicherheit oder für Änderungen zum Gebrauch auf einem einzelnen Schneider-Rechner kopieren.

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a) den Programmcode in irgendeiner Weise verändern, es sei denn, mit Hilfe des Installationsprogramms
b) eine Kopie des Programms oder des Begleithandbuches bzw. Teile davon an dritte weitergeben.

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SuperCalc®2

User's Guide & Reference Manual

Documentation 1.2
January, 1985

Please print your disk Serial Number here:

2195 Fortune Drive
San Jose, CA 95131

SuperCalc² auf Schneider CP/M Plus Computern

Diese Version von SuperCalc² wurde speziell für die Arbeit mit den Schneider Computern CPC6128 und JOYCE angepaßt. Um SuperCalc² erfolgreich anzuwenden, müssen Sie sich als erstes wie nachfolgend beschrieben eine Arbeitskopie erstellen. (Diese Anweisungen ersetzen die im Handbuch auf den Seiten 2-1 und 2-2 beschriebenen).

Vorbereitung

Formatieren Sie mittels des `DISCKIT` oder `DISCKIT3` (für den CPC6128) Utility Programms, das mit Ihrer Masterdiskette geliefert wird, eine neue Leerdiskette.

Schreiben Sie:

'Seite 1 SuperCalc² Programme und Tabellen'

auf die eine Seite der Diskette und

'Seite 2 SuperCalc² Installation'

auf die andere Seite. Alle Bildschirmmitteilungen während des Kopiervorgangs beziehen sich auf diese Seitenzahlen.

Erstellen einer Arbeitsdiskette:

Stellen Sie sicher, daß die Originaldiskette nicht schreibgeschützt ist und legen Sie die Diskette in Laufwerk A ein.

Falls Sie einen JOYCE haben, geben Sie `SUBMIT MAKE8256` **[RETURN]** ein, falls Sie einen CPC6128 haben, geben Sie `SUBMIT MAKE6128` **[RETURN]** ein.

Befolgen Sie die Anweisungen auf dem Bildschirm und tauschen Sie die Disketten jeweils wie verlangt aus.

Wenn Sie den oben beschriebenen Vorgang abgeschlossen haben, besitzen Sie eine Arbeitskopie des Programms. Seite 1 beinhaltet die SuperCalc² Programme und Demonstrationstabellen, Seite 2 die Installation, SDI Datenübertragungsprogramme und Wartungsprogramme, die alle vollständig im Handbuch beschrieben sind. Bewahren Sie die Originaldiskette an einem sicheren Ort getrennt vom Computer auf und benutzen Sie nur die eben erstellte Arbeitskopie. Vorsicht zahlt sich immer aus.

Table of Contents

Preface

SuperCalc^2 is part of a family of products from Sorcim Corporation, including SuperWriter and SuperCalc, the original spreadsheet developed by Sorcim Corporation.

SuperCalc^2 is an enhanced version of SuperCalc that contains many advanced features to make your spreadsheet more powerful.

Files produced by SuperCalc and SuperCalc^2 can be used interchangeably with a few exceptions. Please see Appendix F for a discussion of compatability between files produced by each program.

The SuperCalc^2 distribution diskette you received cannot be used to start (boot) your computer. You must copy the SuperCalc^2 program files and your computer's start up files to a new disk or you must start your computer with the system disk, then use your SuperCalc^2 program disk. In either case, refer to Appendies B and C for information on how to start your system and use SuperCalc^2 and how to make backup copies of SuperCalc^2 for your protection.

List of Screens

SuperCalc 2

Welcome to SuperCalc2

1

SuperCalc 2

TABLE OF CONTENTS

List of Illustrations

1. Welcome to SuperCalc²

What is SuperCalc²

The SuperCalc² program turns your micro computer into a powerful electronic spreadsheet. With SuperCalc² you can:

- Lay out your spreadsheet in a convenient manner.
- Perform any type of spreadsheet calculation that you once did with paper and pencil.
- Perform a large number of calculations quickly.
- Supply headings and text material without affecting the calculations.
- Consolidate spreadsheets.
- Print professional-looking reports.
- Include the report information in other documents.

The SuperCalc² spreadsheet consists of a two-dimensional grid containing cells at the intersection of each row and column. With SuperCalc² you can enter information into these cells and interrelate them using powerful but easy-to-use logical commands and built-in mathematical functions.

Because many computations are performed swiftly, you can easily set up *what-if* modeling spreadsheets.

This book is your complete reference to SuperCalc². It describes every aspect of the program and is organized to make that information readily available.

How to Use SuperCalc²

SuperCalc² is a powerful tool for solving all types of financial, business or mathematical problems. SuperCalc² acts as a simple means to tap the power of your computer to do time-consuming, repetitive calculations.

Solving any problem, from the simplest to the most complex, requires that you organize it in a logical manner. The designers of SuperCalc² recognized the importance of logical, practical commands to make the spreadsheet easy to use.

SuperCalc²'s simple, common-sense approach to commands helps you organize your problems. For example, if you want to change your spreadsheet, you can insert, delete or move a column/row and SuperCalc² adjusts your formulas automatically.

Once your problem has been clearly defined, data can be changed easily and numbers recalculated quickly. SuperCalc² displays data in the format you select, thus aiding you in developing professional-looking reports. Once generated, spreadsheets can be stored on disk for access, edit and print later.

SuperCalc² Applications

The uses for SuperCalc² are limited only by your imagination. Some of the more common uses are:

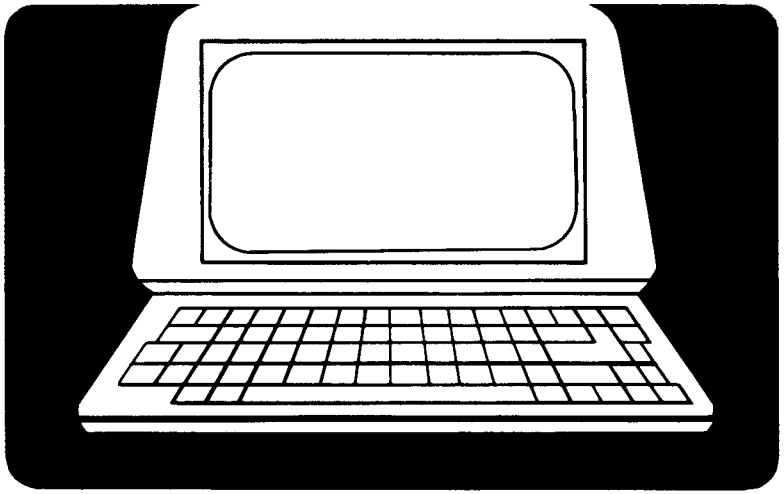
- Balance sheets
- Cash flow analysis/forecasting
- General ledger
- Inventory records
- Job cost estimates
- Market share analysis and planning
- Patient records
- Profit projections
- Profit statements
- Project budgeting and control
- Salary records
- Sales projections and records
- Tax estimation

SuperCalc² is easy to use

With SuperCalc² you manipulate data on your electronic spreadsheet instead of using paper and pencil. SuperCalc² edits, formats, stores, calculates and prints at your command. You don't have to be a computer programmer to use SuperCalc².

You don't need to remember a long list of commands. SuperCalc² prompts you with the options for each command.

SuperCalc² contains built-in AnswerScreens that provide immediate help on screen. Just press the AnswerKey (?) and SuperCalc² explains your available options. You are always returned to the same place you left on your spreadsheet.



Getting Started

2

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How to Use SuperCalc²

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Once your problem has been clearly defined, data can be changed easily and numbers recalculated quickly. SuperCalc² displays data in the format you select, thus aiding you in developing professional-looking reports. Once generated, spreadsheets can be stored on disk for access, edit and print later.

2. Getting Started

The first step in getting started is to prepare a SuperCalc^2 program disk for daily use. To prepare a program disk, and to learn how to use the program, follow the numbered outline on the next few pages.

Experienced Computer Users:

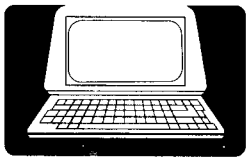
Here is a condensed version of the detailed outline that follows.

- Copy the files from the original SuperCalc^2 disk(s) onto a program disk (or disks) containing your operating system *boot* tracks.
- Install SuperCalc^2 for your terminal if you see "[Must Be Installed]" printed on the original SuperCalc^2 disk label. See Appendix D if installation is required.
- Learn the basics of SuperCalc^2 by using the booklet "10 Minutes to SuperCalc^2." You can also use the practice lessons in Chapter 3 of this manual, and the AnswerCard shipped with your SuperCalc^2 package.

To begin SuperCalc^2:

At the system prompt, enter **SC2** ↵

NOTE: Some computers, such as the IBM PC, can use the AUTOEXEC.BAT file provided by Sorcim to begin SuperCalc^2 automatically when you turn on the machine.



New Users:

1. Prepare a SuperCalc² program disk for daily use:

   A. Make a copy of the flexible disk(s) you received with your SuperCalc² package — to avoid damaging or altering the original(s). In Appendix C we show you how to prepare a blank disk for use as a program disk. Note that flexible disks are also called "floppies" or "diskettes."

   Details: Appendix C

   NOTE: For a primer on files, filenames, and the five most-used operating system commands, see Appendix B.

   B. IF REQUIRED: Install SuperCalc² for your terminal.

   (SuperCalc² is already installed for some terminals.)

   Use the SuperCalc² Install program if "[Must Be Installed]" is printed on the original SuperCalc² disk label.

   Details: Appendix D

   C. OPTIONAL: Change screen or printer settings.

   SuperCalc² is shipped ready to work with most monitor screens and printers, but you can change some screen and printer default settings if you wish. (For example, printer page width can be changed from the 132 characters per line default to 80 characters per line.)

   NOTE: You can make temporary changes to some printer default settings at any SuperCalc² session.

   Details: Appendix D

At this point you have a program disk that works properly with your computer system.

2. Learn the basics of SuperCalc². Get productive in a hurry.

   Details: "10 minutes to SuperCalc²" booklet

3. Now go beyond the basics. Practice the main features of SuperCalc² at your own pace.

   Details: Chapter 3 (Lessons for first-time users)

At this point you have seen how fast and easy it is to learn the main commands and functions. You are ready to apply the power of SuperCalc² to your own requirements.

4. To begin, save, print or end your work, enter the easy-to-remember commands shown below. Then respond to program prompts:

   To begin, type **SC2**, then press ↵ (RETURN or ENTER key)
   To save your work, type **/S** ("S" for Save).
   To print your work, type **/O** ("O" for Output).
   To end your work, type **/Q** ("Q" for Quit).

   NOTE: Some computers, such as the IBM PC, can use the AUTOEXEC.BAT file provided by Sorcim to begin SuperCalc² automatically when you turn on the machine.

5. When you begin developing spreadsheet and financial modeling applications, Sorcim provides you with a lot of help.

   Use the many additional reference aids included in your SuperCalc² package:

   - AnswerScreen help at the touch of the AnswerKey ? (and F1 on some keyboards) built into the SuperCalc² program.
   - Quick reference AnswerCard, includes Data Entry Guidelines and a Slash Command Map (an identical Map is included in Chapter 7 of this manual).
   - Detailed reference sections in this manual:

     Descriptions and examples of SuperCalc² functions, commands, formulas, and other features: Chapters 4 through 8.

1 2 3 4
5 6 7 8
9 10 11 12
LESSONS

Learning To Use Super Calc2

3

Glossary, Error Messages, and other helpful information, Appendix A through I.

Comprehensive Index.

- SuperData Interchange User's Guide, describes the capabilities of the SuperData Interchange program. Two SuperData Interchange program files are included on the original SuperCalc^2 disk.

  SuperData Interchange gives you the capability to convert certain data files from one file format to another.

Using This Manual

Here are some conventions used in the SuperCalc^2 manual and other training and reference materials:

Keytop graphics:

Many special-purpose keys are shown within simulated keytops, such as (ESC), (F2) and (↵). The (↵) symbol refers to the key labeled RETURN or ENTER on some keyboards.

Boldface characters:

Keys to be typed are printed in boldface. For example, "Enter **/QY**" or "Enter **/W**indow,**H**orizontal". Variables, such as row number, or column range, are not printed in boldface.

Interpretive Prompting:

You are frequently asked to type a series of single-letter entries preceded by a "slash" (the "/" character on your keyboard). In a command sequence such as **/QY**, the first entry, **/Q**, is interpreted by SuperCalc^2 as /Quit. SuperCalc^2 shows the full "/Quit" command on your monitor screen, and asks you for a confirmation. You type the second entry, **Y**, which SuperCalc^2 interprets as Yes. Typing a single letter, which SuperCalc^2 interprets as an entire word, is a time-saving feature called interpretive prompting.

3. Learning To Use SuperCalc²

The following twelve lessons are provided to teach you the basic skills needed to use SuperCalc². Each lesson walks you through key features of SuperCalc² building your knowledge of the program. The individual lessons are designed to augment the reference section.

Sit down at your terminal, place your disk in the system and let's learn about this powerful tool: SuperCalc².

LESSON 1

Moving the Active Cell Around the Spreadsheet

Imagine that you are examining a map through a magnifying glass. When you use the SuperCalc² program, think of the video screen or *display window* as your magnifying glass; through it, you can view any area of your map or SuperCalc² spreadsheet. You will make the display window move or *scroll* to show you different parts of your spreadsheet.

In the same way that you use latitude and longitude measurements to designate a unique location on a map, you will learn to locate and enter data on the SuperCalc² spreadsheet in positions specified with reference to alphabetically designated columns and numerically designated rows. A unique letter and number combination names every location on your spreadsheet. In this lesson, you will also learn how to point to, or specify, a unique address on the display area of your worksheet by using a pointer or cursor. This chapter assumes that you know how to load the SuperCalc² program from your diskette. If you do not, please read Chapter 2.

When the SuperCalc² program begins running you should see the title page on the screen:

```
SuperCalc2 (Reg)
  Version 1.2
    CP/M
S/N 000000 CP/M

 Copyright 1983
  SORCIM CORP.
  San Jose, CA
```

Screen 3-1: SuperCalc² Copyright

Any coordinate—for instance, A1, B3, B6, or G1—is called a *cell* because it represents a unique position on our *spreadsheet*. The spreadsheet cursor can be positioned to any cell on the screen. This is accomplished by pressing any of the arrow keys at the right side of your keyboard.

Let's press the (right arrow). The spreadsheet cursor should have moved one cell to the right, to B1. Again press the same key, to move to C1. Try the down direction. Experiment, using these four keys to move the Active Cell indicator around to different locations on the spreadsheet display.

Note: If you do not have arrow keys you can use the .23D, S, E, X keys along with the Control key (CTRL) to move right (CTRL D), left (CTRL S), up (CTRL E), and down (CTRL X). When one of these keys is pressed in conjunction with the (CTRL) key, it moves the cursor in the same direction as the corresponding arrow key. For convenience we will refer only to the arrow keys in this manual.

Scrolling

What happens if you try to go above Row 1 or to the left of Column A? Nothing. You have reached the spreadsheet margin in these directions. But what about moving to the right or down? Try it, if you haven't already. You will quickly discover that when you move as if to go off the screen to the right or downwards, the columns or rows appear to renumber themselves. Actually those cells that were *off-screen*, beyond the range of your display window, are brought into view, a column or row at a time.

Move one column to the right beyond the edge of the screen. You see that the columns change from A through H, to B through I. At any given moment you will be looking at only a portion of the potentially usable spreadsheet. This is what we mean by the *display window*. As we move this window either horizontally or vertically, we are *scrolling* the display.

A message appears at the bottom of the screen similar to the following two lines. The message is somewhat different for different computers.

> Enter ? for HELP or "return" to start.
>
> Function Keys: F1 = HELP; F2 - ERASE LINE/RETURN TO SPREADSHEET

Press the **Return** key. From this point on the **Return** key will be referred to as (↵) for carriage return.

```
    :  A  ::  B  ::  C  ::  D  ::  E  ::  F  ::  G  ::  H  :
  1:
  2:
  3:
  4:
  5:
  6:
  7:
  8:
  9:
 10:
 11:
 12:
 13:
 14:
 15:
 16:
 17:
 18:
 19:
 20:
> A1
Width:  9  Memory:451 Last Col/Row:A1      ? for HELP
  1>
```

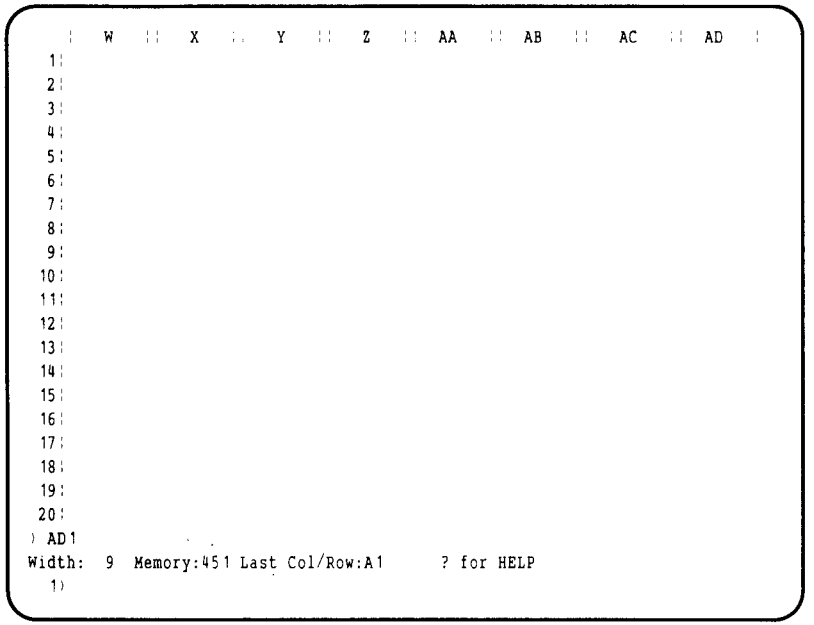
Screen 3-2: Empty Spreadsheet

Let's examine the screen. You will note that columns A through H and rows 1 through 20 are represented. If your screen displays only 40 characters per line you will see only columns A through D. You can see that the coordinate A1 is highlighted. On some terminals, you will see a bright underscore at that position. Some terminals may have *inverse video*, which means that you will see a bright bar or perhaps your terminal uses < > as an indicator. This is the *spreadsheet cursor* and designates the Active Cell. The Active Cell is the location where data are entered.

LESSON 1

LEARNING TO USE SUPERCALC²

Moving the Active Cell Around the Spreadsheet



Screen 3-3: Right-Scrolled Spreadsheet

Try moving off the screen to the right, but this time continue to hold the key down instead of just striking it once. If your keyboard is so equipped, you will see the screen continue to scroll until you stop pressing the key.

If your keys do not *repeat* when you hold them down, your terminal may have a special **Repeat** Key. Use it with the arrow key for the same result.

Continue to *scroll* the screen until you come to column Z. Note that the remaining columns are represented by two letters, AA, AB, and so on.

The Status, Prompt, and Entry Line

Notice the three lines at the bottom of your screen. The top line is the Active Cell and spreadsheet cursor *status* line. The SuperCalc² program uses this line to report to you the cursor status.

The first character, an arrow (∧ ∨ < >), indicates the direction in which the spreadsheet cursor will move when you use the (↵). To change the direction of the cursor movement, press an arrow key that points in another direction from which the cursor is presently moving.

The next entry on the status line is the *address* of the current Active Cell. The status line allows you to read from your spreadsheet the location of the Active Cell more conveniently than you could by visually triangulating the cursor position with respect to the spreadsheet borders.

If the current Active Cell is empty, there will be nothing else displayed on the *status* line; however, if the Active Cell contains text, number, or formulas, the contents of the cell will appear as you entered it.

Now move the spreadsheet cursor around, and watch the status line as the Active Cell and direction indicators change.

The second line is the *prompt* and secondary status line. This line will display the current cell width, available memory, and indicate spreadsheet size by giving the right-most column and lowest line number used for your current application. When you are in command-entry mode the message displayed here will change depending on what command you are currently using. The prompt message lists your options at any given moment.

The bottom line is the *entry* line. It displays a 1> at the left margin. This line allows us to communicate with the SuperCalc² program. It displays the information we type in at the keyboard—data, a command, or a response to a prompt message. The entry line is your scratch pad. It allows you to check and edit the data or text you wish to enter before you commit it to the spreadsheet. As we input characters, the entry line cursor will move to indicate where the next character will appear. At the left-hand margin, the number 1 will change to 2, 3, etc. as the cursor moves.

The GoTo Command

It is natural to wonder if there isn't some way to move the spreadsheet cursor quickly to a desired position without using a stepwise combination of arrow keys. There is. Typing (=) initiates the *GoTo* command.

What if you mistyped (=)? What can you do about it? You can use the left arrow key to backspace and then try again. We'll explain this feature more fully later on, but for now you know how to correct a mistake.

The prompt line now reads:

Enter cell to jump to.

This is typical of the helpful conversational efforts you can expect from the prompt line. Now type **M31** or **m31**. Either will work. (The SuperCalc² program accepts either lower case or upper case letters for any entries, but you cannot use a lower case letter *l* for the numeral one, *1*. But for any action to occur, you must press the return key, ↵. It's a good habit to check your work first, by reading the entry line.

Now press ↵, if you haven't done so already. If you did everything right, we have very quickly moved to the part of the spreadsheet where M31 is located. Cell M31 now appears at the top left-most corner of your display window. See if you can use the = to find out how large the spreadsheet is. When you are finished, *GoTo* A1 again.

Here is an additional feature of the *GoTo* command. Move the Active Cell to anywhere near the middle of the screen, say to E8. Enter [= but specify no cell, just press ↵. Notice how the Active Cell remains E8, yet the display window is repositioned so that the Active Cell appears at the top left corner.

We have now used the arrow keys and the = key. Remember that for most situations, any entry must be followed by pressing the ↵ key. The SuperCalc² program will then accept and display our entry.

Press the ↵ key a few times, and notice that the position of the Active Cell advances to the next cell. The direction taken—left, right, up, or down depends on which arrow key was last used.

Press the down arrow, and then ↵ a few times. Now the left arrow, and ↵ several times. The arrow keys set the direction, and then the ↵ advances the spreadsheet cursor cell by cell. Remember you can always check the status line to find the current direction.

The Quit Command

What about some of the other operations? Let's try /. Press the / key. The prompt line changes and now says:

Enter: A,B,C,D,E,F,G,I,L,M,O,P,Q,R,S,T,U,W,X,Z,?

The prompt line is telling you that these letters represent the only meaningful actions you can take now that you have entered the /.

Each letter designates an option of the / commands. Whenever you wish to examine this command option list in its expanded form, press ? and the list will be displayed on your screen. To return to your spreadsheet display, press ↵. We will explore many of these commands soon, but for now you should know about one in particular.

Press the **Q** key. What happened? First the **/Q** was automatically interpreted by the SuperCalc² program so that your **/Q** appears on the entry line as **/Q**uit. Second, the prompt line changes. It now reads:

EXIT SuperCalc²? Y(es), N(o) or T(o)?

If you want to stop here and continue the lesson later, press the **Y** key; otherwise, press **N**.

What you have learned in this lesson?

In this lesson you have seen the display window scroll and learned what *current direction* means. You have also learned how to:

- Identify the spreadsheet cursor and locate the Active Cell.
- Move the spreadsheet cursor anywhere on the spreadsheet.
- Move the cursor with the four arrow keys, the alternate diamond keys, and the ↵.
- Use the = (or *GoTo*) command, either as a shortcut to a new location, or to reposition the spreadsheet with respect to the active cell.
- Read the Active Cell location, current direction, and column display width on the status line.

LESSON 2

Data Entry — Numbers, Text and Simple Formulas

From Lesson 1 you have gained a general understanding of the control and display characteristics of the SuperCalc² program. In this lesson, you will learn how to enter data. You will also learn the *zap* command **/Z** to clear the spreadsheet, using the *in-line editing* features, and using the edit command **/E**.

If the SuperCalc² program is not already loaded, load it now. See Chapter 2 if you are not sure how to do this.

Now let's actually make some entries on our spreadsheet.

In this exercise, we will be entering numbers down the column, so we want to set the spreadsheet cursor to move *down*. Do so by pressing the (down arrow). Now use the *GoTo* command to place the Active Cell marker at A1.

Enter the number **5** on the entry line. Do not press (↵) yet. You may cancel an operation at any time by pressing the (CTRL) key and the (Z) key simultaneously. If you start to do something but then change your mind, pressing (CTRL | Z) or (CTRL | C) or (F2) will allow you to start over without affecting the spreadsheet.

You have *5* on the entry line. Now press (↵).

```
    :  A  : :  B  : :  C  : :  D  :
  1:        5
  2:(       )
  3:
  4:

vA2
Width:   9 Memory:451   Last Col/Row:A1     ? for Help
  1)
```

Screen 3-4: Active Cell Cursor Movement (Down)

Pressing (↵) will enter whatever is currently shown on the entry line; that is, the characters you have typed will be sent to the active cell, and the entry line will be cleared. In our example, the data item *5* should now appear on the screen in cell A1.

Notice that the spreadsheet cursor moved to A2. Enter **6**, but do not press (↵) yet. Did you notice that before you typed 6, there was a **1**> at the left edge of the entry line? Now there is a **2**>. You will see this number increase each time you type a character on the entry line. The number you see is always one more than the number of characters you have typed. For now, this information helps you fit your data into the column width you have — remember the *9* on the status line. In a later lesson, you will learn how to change the column width, and this character count will be even more helpful.

Now press (↵), and cell A2 will contain the value 6. Cell A3 has become the active cell.

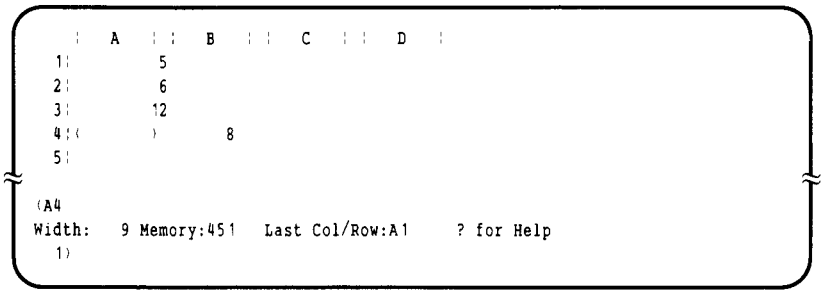
Let's try another entry, **12** and (↵).

The same thing should have happened. The spreadsheet cursor is progressing down the column, automatically anticipating the location of your next entry.

Now press the (right arrow). Enter **56**, press (↵). What happened?

56 appears in B4, and the spreadsheet cursor has moved to cell C4. After each entry, the spreadsheet cursor will continue to move automatically to the next cell. The direction it will move has been set by whichever of the arrow keys was last used. For instance, suppose we wish to change the contents of cell B4. Press the (left arrow). Enter **8** and press (↵).

This will replace the previous entry of *56*. But, in addition, the spreadsheet cursor continues now in a leftward direction to A4.



Screen 3-5: Active Cell Cursor Movement (Left-Right)

Try entering different letters and numbers as data, using the arrow keys to change direction. You can erase the entire line using (CTRL Z). Take a few minutes.

Generally speaking, there are two kinds of entries, text and numbers. When your entry is preceded by a double quote ("), it is regarded as *text*. When it is preceded by a single quote ('), it is regarded as *repeating text*. Otherwise it is regarded as a number or formula.

Headings, labels, and explanatory notes are examples of text entries. Mathematically they are regarded as having a *value of zero*. If you forget to lead text with quotation marks, the computer will respond with an error message. The quotation marks should not be closed. Otherwise, the closing quotation marks will be included in the displayed text.

For example:	"Sample Text	Right
	"Sample Text"	Wrong
	Sample Text	Formula Error (Use inline editor or (CTRL Z) or (CTRL C) or (F2) to erase the entry line and start again).

The Zap Command

Let's try some examples, but first let's start with a fresh screen.

Remember we used the *quit* command to exit from the SuperCalc² program altogether in Lesson 1. Now we will use another command, *zap*.

Enter (/), and note that the prompt line again displays for us all possible (/) commands.

Enter **Z**. The prompt now asks for confirmation:

Zap-ENTIRE-worksheet?

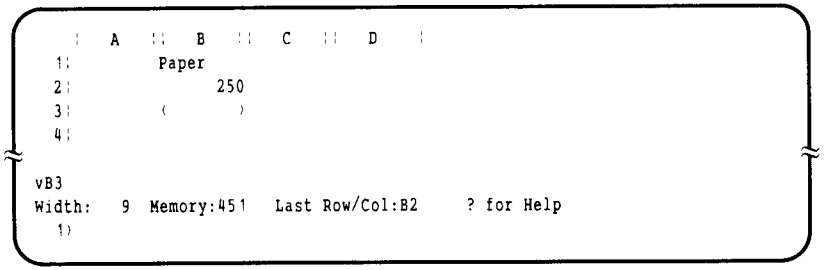
The effect of the *zap* command is to clear the entire spreadsheet and return everything to its original state, just as it was when you first loaded the SuperCalc² program. Because the effect is so drastic, the program uses the prompt line to remind us that the entire spreadsheet will be emptied and to verify that we really want to do this. The prompt asks:

Y(es) to clear everything, else N(o) or C(ontents)?

We do want to clear everything, so enter **Y**, and the SuperCalc² program will do just that. Whatever we had put on the spreadsheet is now gone, permanently.

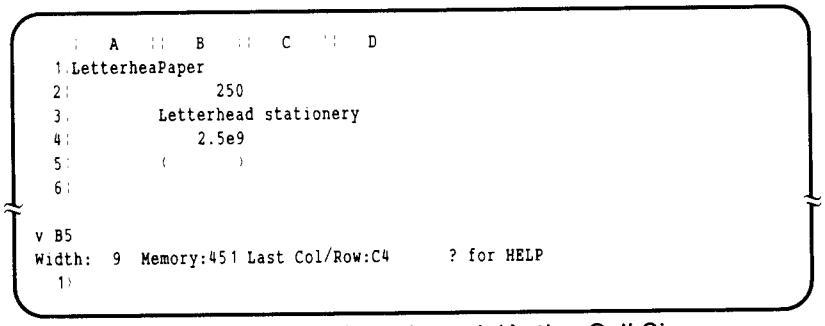
Textual and Numerical Entries

Now enter **"Paper** in cell B1 and **250** in B2. Remember to lead off Paper with quotation marks ("). Notice that text is left-justified and numeric values are right-justified within the column.



Screen 3-6: Entry Left-Right Justification

Move to B4. Enter, without commas, **2500000000**. The number is too large to display. The SuperCalc² program converts it to scientific notation, a more compact format, and displays it as 2.5e9, which is the display form of the expression 2.5x109, or the conventional abbreviation of 2,500,000,000. The SuperCalc² program provides many different display and format options. These will be described in more detail later.



Screen 3-8: Entry Length/Active Cell Size

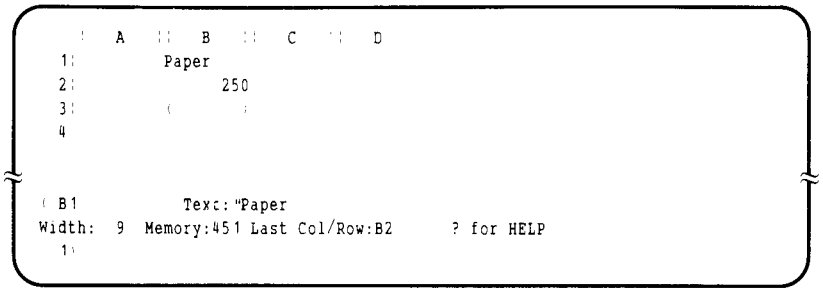
If exponential numbers are new to you, here is a quick look at what they are and how the SuperCalc² program displays them. Exponential numbers are displayed as *powers of 10*. You will soon see what this means.

Go to Cell C1 and set column C to exponential display. Use the format command to do this. Enter **/F** for the command, and **C** for Column. When the prompt asks you what column to format, you can press the . or the ↵ key to tell the SuperCalc² program to use the current column (C). Press **E** for Exponential format, then ↵.

Press the down arrow to set the current direction as down. Now enter **1776**. Cell C2 shows *1.776e3*. What does this mean? e3 means *exponential 3* or *10 to the power of 3*. 10 to the power of 3 is 1000; 1.766 times 1000 is 1776. That's all that 1.776e3 means.

Try entering **1000**. Is 1e3 what you expected? What will 100 be? Try it. Now enter **2000**, and then enter **.002**. Notice that 2000 is 2e3 and that .002 is 2e-3. e3 is thousands; e-3 is thousandths. What is -2000? Try it and see.

Move the Active Cell back to B2 and watch the middle of the Status Line. It will say Form=250. Move the cursor to B1; the same line will say Text="Paper.



Screen 3-7: Status Line Update

You will soon learn how to change the normal justification of both text and numbers.

How wide are the columns? How large a number can we enter? How much text? Remember we mentioned *display width* earlier when looking at the status line. Note again the *9* on the status line.

The 9 tells us that the column currently accessed (the column with the Active Cell) is set to display nine characters. Nine is the standard, or *default*, value for the display width of all columns unless you specify otherwise. You will soon learn how to specify display widths. Text may contain 115 characters; formulas may contain as many as 116 characters. The maximum column width is 127.

Move the spreadsheet cursor to B3, and type **"Letterhead stationery** This piece of *text* is certainly longer than nine characters, but the SuperCalc² program allows display of your text to extend over neighboring cells if they are unused. Now go to A1 and try the same thing.

Your entry did not display in full because B1 is occupied. But the entire entry was accepted in cell A1 even if only a portion of it (the first nine characters) is displayed. Notice that the status line indicates the contents of A1 as Text="Letterhead stationery.

What happens if you enter a number in exponential notation? Let's try it. Enter **567e13**. Are you surprised to see it display as 5.67e15? The SuperCalc² program prefers to put the decimal point just after the first digit and will adjust the exponent value to do so.

Explore on your own — entering numbers as you ordinarily would, and entering them in exponential form. Try to guess beforehand what the display will be.

When you feel comfortable with exponential notation, let's give the SuperCalc² program a little job to do.

Press the down arrow, (**v**) to set the cursor direction and then press =**C6** (↵).

In cell C6 enter **93000000**. That is 93 million, which is the number of miles between the earth and the sun. 9.3e7 is 9.3 times 10 million, which seems right. Now in cell C7, enter **5280*C6**. The value displayed, 4.910e11, is the number of feet in 93 million miles. Let's try inches. Enter **12*C7** in cell C8. The display shows that the sun is 5.892e12 inches from the earth.

So 5.892e12 is the number of inches between the earth and the surface of the sun? Well, not really. It is the number of inches in 93 million miles, but 93 million is the number of miles between here and the sun expressed *to the nearest million.*

What 5.892e12 really tells us is that there are about 5.9 times 1,000,000,000,000 inches between here and the sun. Only the first two digits of 5.892 are significant, because only the 93 was significant in 93 million miles.

Why bring this up? Because that is the point of scientific notation. Scientific notation allows us to quickly grasp the essential points of a number and discard the unessential.

The first part of the number gives us the essentials (and probably some others that we can discard). The exponent value, the number after *e*, tells us whether we are talking about 10s, 100s, 1000s, or millions, billions, trillions (or billionths and trillionths).

In short, exponential or scientific numbers give us the essentials, the significant digits and the general magnitude of the value.

Three types of exponential expressions may occur:

1. 1.776e3; 1.776x1000 or 10^3
2. 1.776e-3; 1.776x1/1000 or 10^3
3. -1.776e3; -1.766x1000 or 10^3 (a negative number).

In-Line Editing

Right now, let's investigate the SuperCalc² program's *in-line* editing feature. If you have used the exponential notation section of the lesson, *zap* your spreadsheet and re-enter your original data as show on page 3-10, and above.

Move the Active Cell to B5. Type this incorrect spelling, **"Envlopes**, but *do not* press (↵). As you know, you could use a *left* arrow to backspace and re-type from the point of the error. The *right* arrow key just moves in the opposite direction.

Using the left and right arrows, move back and forth across your text, but take care not to backspace beyond the left-most character. Notice that nothing is changed and the position of the cursor is on the *a*. Notice, too, that the number 5 appears at the left of your entry line. This indicates that the cursor is located at the fifth character position on your entry line.

Press the (up arrow) key, and see what happens.

```
    A    B    C    D    E    F    G    H
1 LetterheaPaper
2              250
3        Letterhead stationery
4            2.5e9
5
6

B5
Width:  9  Memory:451 Last Col/Row:B4      ? for HELP
 5 "Env  lopes
```

Screen 3-9: Entry Line Editing

Make your changes, using the arrow keys. For instance, delete two zeros from 2500000000. When your change is complete, press (↵), and your modified entry replaces the old one in B4. If you haven't done this, try it now.

You may sometimes wish to edit the contents of a cell and enter them into *another* cell. For example, position the Active Cell to B5 (our destination cell). Enter **/E**. In response to the prompt:

From?

enter **B4** (our source cell), and press (↵). The contents of B4 will be copied to the entry line. After you have made your change, press (↵) and the edited version of B4 will be copied back to B5.

Note that no matter where it comes from, the *new* or *edited* data on the entry line is always entered into the *Active Cell.* In our first example, the original contents of B4, the Active Cell, were modified and replaced by our edited version. In the second example, the contents of B4 were *not* changed. The edited material went into B5, the Active Cell, and the source material remained unchanged in B4.

If you want to stop here, use the *quit* command. Or if you wish, continue on to Lesson 3.

What have you learned in this lesson?

In this lesson you have learned how to:

- Make number and text data entries
- Cancel an operation by using (CTRL Z) or (CTRL C) or (F2)
- Replace one data entry with another
- Set the direction in which the spreadsheet cursor moves
- Recognize and use exponential notation
- Do *in-line* editing
- Use **/E**, the *edit* command

A space has been created for us just ahead of the *a* so that we may insert the correction without having to re-type good text. Enter **e**. Your entry line now says **"Envelopes**. What if you had needed to insert several characters, or to delete some?

Press the up arrow key continuously, or press the key several times, to generate a large gap in the text. Press the down arrow key and notice that the gap is reduced by one character. Hold the down arrow key down, or press the key several times, and watch the blank spaces be deleted. Go ahead and enter **"Envelopes**, and then make up other examples. Practice with these keys until you are comfortable with this *in-line editing* feature. Try it with numeric entries, too.

Regardless of where the cursor is positioned on the entry line, all of the visible text or numeric values will go into the Active Cell when you press (↵).

You have discovered that the arrow keys have two different uses. They move the active cell around the spreadsheet *until* you type a character on the entry line. Then the SuperCalc² program recognizes that you have begun to enter data.

Once you begin to enter data instead of positioning the spreadsheet cursor the arrow keys have an editing function until you press (CTRL Z) or successfully complete the cell entry.

The Edit Command

We have seen how to edit data *before* we actually enter it into the Active Cell. How can we edit data that we have already sent to a cell? Of course, we could enter the data again in its entirety. The new entry would replace the old one. But there is a better way. We can use a new command, the *edit* command **/E**.

Make B4 the Active Cell (use *GoTo* or move the spreadsheet cursor). Enter **/E**, for *edit*. You see the prompt line now says:

From? Enter cell.

It is asking where to find the material to be edited.

Because in this case we want to edit the contents of the Active Cell, we don't have to give a cell address. Simply press (↵), and the SuperCalc² program will bring the Active Cell's contents to the entry line.

LESSON 3

Blanking, Protecting, Unprotecting, and Saving Your Work

In Lesson 2, we expanded our knowledge to include the fundamentals of data entry for the purposes of creating text or for entering numeric data to be used in actual calculations. In this lesson, you will gain more experience entering data. You will learn to blank, protect, unprotect, and save your data. You will also learn to use the **/G** command to make some general or *global* changes in your spreadsheet display and to use the **/F** command to make certain formatting changes.

If you are continuing directly on from lesson 2, do a **/Z** command so that we may start with an empty screen. Otherwise, load the SuperCalc² program in accordance with the instructions in *Getting Started*.

Use the (down arrow) to set the current direction. Use the *GoTo* command to go to A1. Enter **"Pens**. At A2 enter 5. Continue in this way with A3 through A9, entering values of **8**, **3**, **11**, **4**, **9**, **6**, and **12** respectively.

In Lesson 2, we learned how to modify a cell's contents, to *edit*. But what if we want to *blank* a cell, to clear out its contents?

We can do that with a new command, the *blank* command. It can be used to blank out, or erase, data that you have already entered on any portion of your spreadsheet. You can blank an individual entry or cell, partial or complete rows or columns, or entire blocks (rows *and* columns) of cells. We will try an example of each in this lesson.

Enter (/) and note the prompt line. Now enter **B**. The interpretive prompting feature of SuperCalc² fills this out, **/B**lank. And the prompt line changes to say:

Enter range.

You must now specify the portion, or range, of the spreadsheet that you wish to blank.

Type **A4** and press (↵). The contents of A4 have been *blanked*, that is erased. Or you can place the spreadsheet cursor on the cell you wish to blank, enter **/B**, and with no cell reference, press (↵). Try doing this with cell

A5. When working regularly within the SuperCalc² program, use whichever method is more convenient for you. Remember that since the cursor can only point to an individual cell, the **/B** (↵) method of the **/B** command will only affect an individual entry.

Enter **/B** again. Now in response to the prompt:

Enter range

specify A6 through A8 by typing **A6:A8**. Press (↵). This is how we can specify a range of cells for either a row or a column. The range that you designate will always include the end points.

```
      A         B         C         D
 1 Pens
 2            5
 3            8
 4
 5
 6
 7
 8
 9           12
10
```

Screen 3-10: Blanking Cell Contents

The Protect Command

Now let's use **/P** to *protect* a cell. Enter **/P**. We use the protect command in the same way as the *blank* command. That is, enter a cell or a range. For example, enter **A5**. Press (↵). Move the cursor to A5 and note that a *P* appears now next to the *Form* display on the status line. This indicator tells you that the Active Cell is *protected*.

```
      A    :    B    :    C    :    D
 1 Pens       Paper
 2            5         1
 3            8         2
 4            3         3
 5            :         4
 6            4         5
 7            9         6
 8            6         7
 9           12         8
10
```

Screen 3-11: Protecting Cell Contents

Re-enter the numbers we just blanked out. Create a new column of numbers in column B. Label it **"Paper**. Enter those numbers in column B as shown in the diagram.

If your terminal provides half-intensity display, you will also see the protected cells at half intensity. On machines equipped for color, protected cells are shown in a distinctive color.

Let's continue by protecting a range of cells.

Type **/P** and enter **A8:B8**. Press (↵). This will protect that portion of row 8.

What is the significance of what we have done?

Remember we said that **/B** could blank out an entire block of cells. Let's attempt to blank out that block of cells from row 2 through row 8 for both columns A and B. How do we specify this?

Enter **/B**. Now enter **A2:B8**. (We define the range for a *block* of cells as a diagonal, top left-most cell followed by the lower right-most cell in the block).

Now press (↵), and let's consider the results of our actions.

Row 1, with our titles, should remain because it lies outside the range of the block-definition we used with the *blank* command. A5 and row 8 remain because they were protected. Row 9 remains, not because it was protected but because it, too, was beyond the range we blanked out.

Try to change the contents of A9. Now try the same thing with A5 or B8. Because these cells have been protected, they cannot be changed or blanked out. This feature can provide you with a large measure of safety when you are working around information that has taken you time to develop, and which you cannot afford to accidentally lose. However, blank cells within a protected range are not protected.

The Unprotect Command

The *unprotect* command **/U** can be used to unprotect cells, partial rows, partial columns, or blocks of calls. We could use the command twice to unprotect cell A5 and row 8, but can we do it with just one **/U** command?

Yes. **U**nprotect the *block*, row 5 through 8 of columns A and B. What is the proper range specification? Did you say **A5:B8**? Correct.

Formula and Numeric Display Options

Move the Active Cell to A2. Enter **3+5**. What happened? The value of the expression, 8, was placed in A2. If the spreadsheet cursor is not at A2, move it there and examine the status line. The right-most display will read *Form=3+5*, our original expression.

What has the SuperCalc² program actually stored, *3+5* or the *8*?

However complicated the expression is, the SuperCalc² program will calculate the result and display it. This allows us to use the entry line like a scratch pad. For instance, we may be adding two columns of numbers but only be interested in their total value.

Again at A3 enter **1+A2**. The SuperCalc² program will recognize this as a formula referring to cell A2 and will quickly calculate and display the value based upon the value in A2. Further, if we change the contents of A2 — for instance, to *5* — we should observe that the new value of A3 will be recalculated as well. Try it!

Now move the Active Cell to A3. The screen displays *6* there, the current value, while the status line displays *Form=1+A2*. The SuperCalc² program is keeping track of both. In A4, let's enter **A3*.65**. The * means multiply and is equivalent to the *x* sign in conventional notation. Division is represented by /.

Locate the active cell at A10. Enter **SUM(A2:A9)**.

SUM is a built-in function. The SuperCalc² program provides many special built-in functions, including SQRT (square root), AVERAGE (arithmetic mean), NPV (net present value), IF conditionals, trigonometric functions, and many more. For SUM we can specify ranges (as we have done in this example) and cells, for example, *SUM(A8,B9:B12)*. Now change the value of A9 to **5**. Watch the sum be recalculated.

The Global Command — Formatting Options

Earlier we determined that the SuperCalc² program is keeping track of our formulas although it only displays their current values on the spreadsheet. How can we review all the original formulas more clearly? Enter **/G**.

Note that SuperCalc²'s interpretive prompting fills this out to read **/G**lobal. What could this conceivably mean? The prompt line now reads:

F(orm.), N(ext), B(order), T(ab), R(ow), C(ol.), M(an.), A(uto)?

We could think of the **/G** command as a way to make overall or *global* changes to the spreadsheet, rather than specific or local changes. It is as if we had a map of California before us and we could, at will, transform it into a topographical map, a population density map, a tourist attraction map, etc.

Our concern here is with formulas, so enter **F** and see your formulas displayed.

```
  :  A   ::  B   ::  C   ::  D  :
 1:Pens      Paper
 2: 5
 3: 1+A2
 4: A3*.65
 5: 11
 6:
 7:
 8: 6         7
 9: 5         8
10: SUM(A2:A9)
11:(          )
12:
```

Screen 3-12: Global Command/Formula Display

To return to the other style of display (cell values), simply repeat the sequence **/G**,**F**. The SuperCalc² program will alternate or flip-flop between the two display modes.

Determining Column Width

Enter **9** in cell B10.

In formulas mode (**/G**,**F**), you will notice one problem. The SUM formula in A10 has two characters more than our column width, which is only 9. Let's widen the column to accommodate our entry.

Enter **/F** for *format*. The prompt responds with:

Enter Level: G(lobal), C(olumn), R(ow), E(ntry) or D(efine).

The *G* in this case is not the same as the **/G** command. Here it simply qualifies the **/F** command. But its meaning is similar; that is, *for all* or *every*.

Now enter **G**. The prompt line now displays:

Define Formats: (I, G, E, $, R, L, TR, TL, *, U(1-8), H, D,column width).

As you can see, the **/F** command has many possible parameters; however, for now, let's enter a new column width by typing **12** and (↵). Now move the cursor to column B and note the status line displays *12*. Notice that we changed *all* columns to a width of 12 characters. We could have specified the new width for just a single column by **C** for column level, rather than **G** for global.

Now that we are using commands with several levels of prompts, it may be useful to point out another use for the left arrow key — one that you may have discovered for yourself already. Backspacing with the left arrow will always take us back to the prior *step* in a command, to a less completely specified statement.

For instance, enter **/F**ormat,**G**lobal,**12** again. Now backspace once with the (left arrow) (or (CTRL | S)). Backspace again and see that the prompt changes to its earlier message:

Enter level: G(lobal), C(olumn), R(ow), E(ntry) or D(efine).

If we wished, we could then enter a level other than G(lobal), and continue on with the command sequence. Instead, let's backspace once more.

You will see the list of (/) command options on the prompt line. Backspace again. And now we have finally backed all the way to the original prompt.

Of course, no matter how far we have gone in specifying some command, range, or option, we can always use (CTRL | Z) or (CTRL | C) or (F2) to abort; simultaneously pressing the (CTRL) key and (Z) will return us to the original prompt. Now, if you are still in formulas mode, return to the display mode that displays cell values rather than formulas, **/G**lobal,**F**ormula.

The Save Command

We will want to save the work we have done in this lesson so that we may use it later. We can do this with the *save* command, **/S**. This command makes a copy of our entire spreadsheet and stores it on a diskette located on either drive A or drive B, depending on which we specify.

Enter **/S**. The prompt requests:

Enter File name.

You can respond to this in one of several ways, depending on where you want to store your file. If you wish to save it on the disk on the system drive (the same disk that has the SuperCalc² program), enter **WORK1** and ↵. Or you can specify the drive to use by entering either **A:WORK1**, ↵ or **B:WORK1**, ↵. Do not leave any blank spaces in your file name. The computer will not accept *TOM 1*, but only *TOM1*. If you have more than two disk drives, you can specify C:WORK1 or D:WORK1, and so on. If you are unsure what is meant by *system drive*, review that material in *Getting Started*.

After you have entered the file name, the prompt line inquires further:

A(ll), V(alues), or P(art)?

Since we wish to save both our formulas and our values, enter **A**, for all. Your disk drive unit will whir and click contentedly for a few moments.

We will use this file to *load* our work back into the system when we resume with Lesson 4, so keep the disk handy. Now enter **/Q** and exit from the SuperCalc² program. All our work *disappears*. It is gone irretrievably *unless* you specifically save it with the *save* command before exiting.

What have you learned in this lesson?

In this lesson you have learned:

- How to blank the contents of a cell or group of cells by using the **/B** command.
- How to protect and unprotect cells, using the **/P** and **/U** commands, and what protection does for a cell.
- That in an arithmetic expression, * means multiply and / divide.
- That you can enter numerical expressions and formulas, that the SuperCalc² program will calculate and display the results, and that it will continue to recalculate as necessary.
- How to use the *global* command, **/G**, to display formulas or their calculated values on the spreadsheet display.

- How to use the *format* command, **/F**, to change column display width.
- How to use the backspace (left arrow) key to return to an earlier step in a command sequence.
- How to create a file and *save* your work by using the **/S** command.

LESSON 4

Load, Copy and Replicate

In Lesson 3, we began to see the power of the SuperCalc² program — in particular, its ability to recalculate automatically all values that depend upon the values in other cells. In this lesson we will gain even more insight into its versatility. You will learn to use the *load* command **/L**, *copy* command **/C**, *replicate* command **/R**, and the *current—cell key* (ESC). *The* **/C**, **/R** *and* (ESC) *commands are basically time-saving commands.*

The Load Command

We are going to continue using the spreadsheet we began to develop in Lesson 3. Let's retrieve the file we created at the end of that lesson. We will use the *load* command, **/L**, do this. If the file is not on the disk that has the SuperCalc² program, be sure to insert the disk with the file into your other disk drive.

Enter **/L**oad. How you respond to the prompt message:

Enter File Name, (or <RETURN> for Directory)

depends on where you have stored the file. To see the directory of your disk, press (↵) and the SuperCalc² program will give you three options:

C(hoose) alternate disk drive: to change your current disk (given at the top of the screen).

D(isk) Directory: to see the directory of your current disk.

S(uperCalc) format files only: to see the SuperCalc² files of your current disk.

E(nter) filename: to return to the Command line and enter a file name.

Pressing **E** takes you out of this menu and back to where you left off. If your file is on the SuperCalc² disk, enter the file name without specifying the drive. So you enter **WORK1** and press (↵). If the file is not on the system drive, you should designate the appropriate drive by entering **A:WORK1** or **B:WORK1** (depending on which disk your file is on), before pressing (↵).

The disk drive will respond with some clicking, and the prompt line will change to read:

A(ll) or P(art)?

Enter **A**, for *all*, and the material we saved from our last effort will be copied from the disk and appear on the screen.

The Copy Command

Now that we have restored our work from the previous lesson, let's investigate another command, **/C**. The *copy* command is easy to use. You can copy a single cell, a partial row or partial column, or a block of cells.

In this first example, we will copy the data in column A into column C. Enter **/C**. The prompt line responds:

From? (Enter Range).

In response, enter **A1:A10**, (↵). This time the prompt asks:

To? (Enter Range)

then:

(↵) or (.) for Options.

We just want a *standard* copy this time — we will look at *options* later. So enter **C1** and press (↵).

Now use the *copy* command to copy the contents of cell A10 to B10.

Change the display to show formulas by entering **/G**lobal,**F**ormula and look at the contents of B10 and column C. The formulas have been adjusted automatically relative to the columns to which they were copied. All cell references have changed to reflect the new location of the formulas. If we had moved to a new row, as well as a new column, relative row designations also would have been adjusted.

```
       A          B      :    C
 1 Pens       Paper       Pens
 2  5                      5
 3  1+A2                   1+C2
 4  A3*.65                 C3*.65
 5: 11                     11
 6:
 7:
 8: 6           7          6
 9: 5           8          5
10: SUM(A2:A9)  SUM(B2:B9)  SUM(C2:C9)
11:
12:
```

Screen 3-13: Copy Command/General

Generally, this automatic adjustment is exactly what we want. But there are other options open to us. For instance, we can specify that there be no adjustment or we can tell the SuperCalc² program to ask whether each occurrence of a cell reference should be adjusted or left alone. We will try this soon.

The *copy* command makes a one-to-one copy of its source material into a destination of the same type of size; cell to cell, row to row, or column to column. But suppose you want to repeat a series of values and formulas many times, perhaps to compare alternative cases.

The Replicate Command

You can use another very powerful command, *replicate* **/R**, to do that. It will make a *one-to-many* copy of a cell, a partial row, or a partial column and will distribute these copies over a destination range that is larger than the source range. Make sure the display shows formulas.

Let's *replicate* a single cell, A10.

Enter **/R**. For *From*, enter **A10**, ↵. For *To?*, enter the range D10 through F10, by typing **D10:F10** and ↵. Note how the command performs.


```
    :  A     ::    B    ::    C    ::    D    ::    E    ::    F    :
 1:Pens        Paper       Pens
 2: 5                      5
 3: 1+A2                   1+C2        1+D2        1+E2        1+F2
 4: A3*.65                 C3*.65      D3*.65      E3*.65      F3*.65
 5: 11                     11
 6:
 7:
 8: 6          7           6
 9: 5          8           5
10: SUM(A2:A9) SUM(B2:B9)  SUM(C2:C9)  SUM(D2:D9)  SUM(E2:E9)  SUM(F2:F9)
11.
12: A2+A2      A2+B2       A2+C2       A2+D2       A2+E2       A2+F2
```

Screen 3-14: Replicate Command

Try replicating the partial column A3 through A4 into D3 through F3. These columns, D through F, now have data in rows 3, 4, and 10.

The *replicate* command has the same formula adjustment options as the *copy* command. Let's try one of them now.

Enter into cell A12, the formula **A2+A2**.

Now enter **/R**eplicate, **A12** ↵, **B12:F12**. After you enter F12 enter a comma (,) instead of ↵ to get the options. They will be displayed on the prompt line:

N(o Adjust.), A(sk for Adjust.), V(alues), +, -, *, /

Enter **A**. This option allows you to specify adjustment or non-adjustment to specific cells. Entering **N** for No adjustment will allow you to replicate a formula with no adjustment for the destination; and **V** for Values will only replicate the values of the formulas, not the formulas themselves.

The prompt changes to say:

Source cell A12, Adjust A2 (Y or N)?

and the first A2 is highlighted on the entry line.

Respond with **N**, for no adjustment. Now the second reference to A2 is highlighted on the entry line. Let's respond with **Y**. You see that the first part of our formula remained unchanged while the second was adjusted, according to our responses. In this way, we can specify one component of a cell to be held constant, while other components are adjusted relative to their new location.

	A	B	C
1	Pens	Paper	Pens-1
2	5	1	8
3	1+A2	2	1+C2
4	A3*.65	3	C3*.65
5	11	4	11
6	4	5	4
7	9	6	9
8	6	7	6
9	7	8	7
10	SUM(A2:A9)	SUM(B2:B9)	SUM(C2:C9)
11			
12	A2+A2	A2+B2	A2+C2
13			

Screen 3-15: Replicate Command (Cont'd)

Replicate cell A1 into the range D1 through F1, then use **/E**dit to edit the contents of C1 through F1 so they will be *Pens-1*, *Pens-2* and so forth. Change C2 and then enter data as needed to make your spreadsheet look like the one above. You are going to save this spreadsheet and do more work with it later.

It's very important to save the work we have completed up to this point. We will use it again in Lesson 5. If you want to save it on the same disk as the SuperCalc² program, enter **/S** then **WORK1** (↵), otherwise, specify the drive that has your destination disk. (If you want to jog your memory about the save command, try *help* (?), or look back at Lesson 3.

To help protect your work, the SuperCalc² program checks to see if you already have a file with the same name on your destination disk. If you do, the SuperCalc² program prompts you with:

File already exists:

and offers three alternatives:

C(hange name), B(ackup), O(verwrite)?

If you no longer need the original version of the file then you would press the **O**. Otherwise press **C** to rename your file or use the Backup option which will change the existing file to:

filename.BAK

and automatically write your spreadsheet to disk under the specified filename. If there is a previous backup it will now be lost when you use the backup option. In this case, you can overwrite because you won't need the old *WORK1* file created in Lesson 3. The spreadsheet developed in this lesson is the one we will use later.

Try replicating a row, or rows, or a block. If a practical application of your own comes to mind, try to begin an example on the screen. If you want to save this first effort of your own, be sure to use a different name — for example, TRIAL or MYTRY. Safety tip: It is a good idea to choose a name substantially different from WORK1, so that there is less chance of inadvertently overwriting the material you will need on this tutorial. *WORK2*, for example, is so close that it might cause you some confusion.

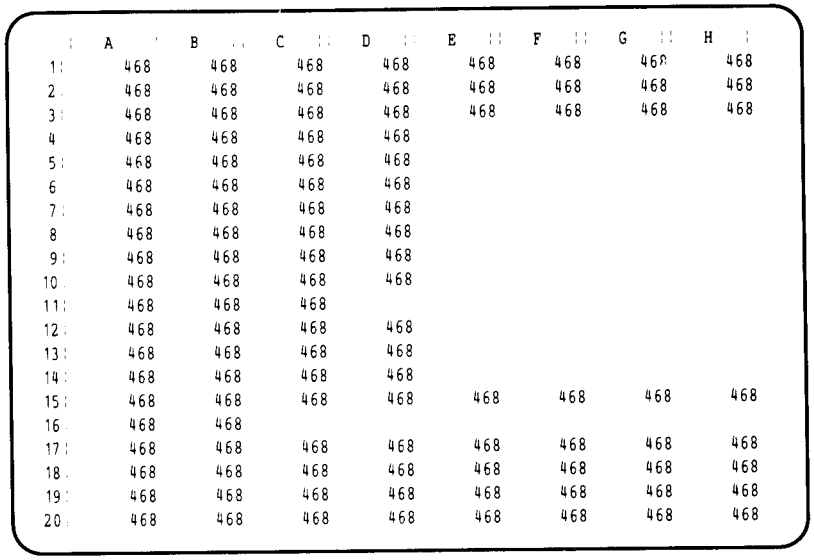
By now you have probably realized that the SuperCalc² program offers you a great many command options. This makes it a tremendously powerful and versatile tool. We will not discuss all the options in this tutorial section. Instead, we encourage you to investigate them on your own. You should find it easy to make the best possible use of the SuperCalc² program by combining what you learn here with information available in the reference section of this guide and through the *help* function, (?), built into the SuperCalc² program itself.

The Current-Cell Key: ESCAPE Key

This is a good time to become acquainted with the *current-cell* key. It can be used to boost the efficiency of certain kinds of data manipulation, which use the *copy* and *replicate* commands. The (ESC) key serves as the current-cell key.

Whenever a cell or range is required by the SuperCalc² program, the Active Cell coordinate will be placed on the entry line if we simply press the (ESC) key.

Let's set up an example and learn how to use this feature. Start with a fresh screen. After you have saved any work you want for later, use the *zap* command.



	A	B	C	D	E	F	G	H
1	468	468	468	468	468	468	468	468
2	468	468	468	468	468	468	468	468
3	468	468	468	468	468	468	468	468
4	468	468	468	468				
5	468	468	468	468				
6	468	468	468	468				
7	468	468	468	468				
8	468	468	468	468				
9	468	468	468	468				
10	468	468	468	468				
11	468	468	468					
12	468	468	468	468				
13	468	468	468	468				
14	468	468	468	468				
15	468	468	468	468	468	468	468	468
16	468	468						
17	468	468	468	468	468	468	468	468
18	468	468	468	468	468	468	468	468
19	468	468	468	468	468	468	468	468
20	468	468	468	468	468	468	468	468

Screen 3-16: [ESC] Function — Current Cell Key

In brief, this is what happens. Once we have set the (ESC) function, the arrow keys will temporarily move the spreadsheet cursor. As the location of the Active Cell changes, the cell location shown on the entry line will also change. Pressing the (:) locks in the Active Cell as the corner cell of a range or block. You can then use the arrow keys to move the spreadsheet cursor to specify the limit of the range. The (ESC) movement of the Active Cell is only temporary; when you terminate the (ESC) function, the Active Cell returns to its starting position.

Here is another sample. Enter **/B**lank. Press (ESC). Move the spreadsheet cursor to D4, press (:) and move again to H14, press (↵). We have blanked cells in the block from D4 to H14.

By using the (ESC) key and placing the Active Cell at the appropriate points, we can let the SuperCalc² program define our statements. At first, this may seem a little difficult, but with some practice, you will begin to find it increasingly useful. This feature allows us to modify our screen simply by pointing with the Active Cell to the boundary of the range of cells we wish to blank without our having to blank each cell individually.

Enter **468** into A1. Use the *replicate* command to fill every cell on the visible screen with *468*. Can you do this? Try it before reading on.

Here is how your entries should have looked. First, enter, **/R**eplicate,**A1**,**B1:H1**. Then, **/R**eplicate,**A1:H1,A2:A20**. Or, **/R**,**A1,A2:A20**. Then, **/R**,**A1:A20,B1:H1**. Now you should have *468* everywhere for the purposes of our example.

Enter **/B**, for *blank*. The SuperCalc² program now wants you to specify a cell or a range to be blanked. Let's start with a single cell.

Press the (ESC) key. The address of the Active Cell will appear on the entry line. Use the **arrow** keys to move the spreadsheet cursor to another location — for example, C11. Notice the Active Cell address on the entry line change as we go.

Now press (↵). Observe. Notice that the latest Active Cell was blanked, and that the Active Cell location has returned to its original place. Again, enter **/B**lank, and press (ESC).

Use the **arrow** keys to make cell C16 be the Active Cell. The entry line now reads **/B**lank,**C16**.

We can use this to begin a range specification. Just enter (:). The line now reads **/B**lank,**C16:C16**. Now move the spreadsheet cursor to cell H16. Notice that the second address of our range is incremented as we go. Now press (↵). The cells in the range C16 through H16 have been blanked.

LESSON 5

Move, Insert, Delete

You have learned to use the *GoTo* command, the (ESC) key, and many important (/) commands. You can *save* and *load* your spreadsheet. Now we will introduce some new commands and techniques that can greatly simplify the development of a complex display.

If you are continuing directly on from Lesson 4, use the *zap* command so that you will begin with an empty spreadsheet. Otherwise, start up the SuperCalc² program.

We will continue to develop the spreadsheet that we saved in Lesson 4.

Use **/L** to *load* the file WORK1. You can use ? for help or check back to Lesson 4 if you want a refresher on how to use *load*.

The Move Command

Suppose Column B, labeled *Paper*, really belongs to the right of *Pens-4*, at Column F. With what you know already, you could use copy to *move* it there and then use **B**lank to erase Column B. But there is a better way.

Enter **/M** for *move*, and read the prompt:

R(ow) or C(olumn)?

Enter **C**, and the prompt changes to:

From? Enter column range.

We want to move Column B, so enter **B**, (↵). The new prompt, *To?*, asks where we want the material to go. Enter F, for Column F.

But isn't Column F already occupied?

Press (↵) and note what happens

Our column has been moved and the formulas adjusted. The *gap*, which we might have expected Column B to leave behind, had been filled. The SuperCalc² program moved our entries for former Columns C through F

Here are some examples you can try using *replicate* and (ESC). Enter in E5, **"aac**. Enter **/R**eplicate. Press (ESC), place the Active Cell at E5, then press (.) or (↵). Now press (ESC) again for the *To?* portion of our entry. Move the Active Cell to E6, enter (:), and move the Active Cell to E13, then press (↵).

One more example. **/R**eplicate, (ESC), move the Active Cell to E5, enter (:), move to E13, press (↵). Press (ESC), move to G7, enter (:), move to J7, press (↵). This replicates cells E5 through E13 in the block of cells outlined by G7, J7, G15, and J15. The entries in columns H, I, and J are the same.

The (ESC) function can be used any time you can specify a cell or range on the entry line. Pressing any other keys besides (↵) and (ESC) will allow you to resume formula entry, but remain in (ESC) mode. When another arrow key is pressed the current cell is again placed on the entry line. Only (↵) and (ESC) will take you out of (ESC) and allow the use of your arrow keys for editing. You can use (ESC) in commands or with data. For example, you can use it to provide cell locations in formulas.

There is no need to save any of this work. At this point you may quit or continue on to Lesson 5.

What have you learned in this lesson?

- How to use the *load* command **/L**, to bring a spreadsheet in the SuperCalc² program from a disk file and to view the directory of any disk.
- How to use the *copy* command, **/C**.
- That the SuperCalc² program will adjust formulas automatically when data are moved to new locations — or that the program will let you specify whether to leave part or all of a formula unchanged.
- How to use the *replicate* command, **/R**, to make a *one-to-many* copy of a cell, a partial row, or a partial column and to distribute the copies over a range.
- That you can use the (ESC) key to bring the Active Cell location to the entry line and can then change the location by using the arrow keys to move the spreadsheet cursor. You have also learned the special use of (:) with the (ESC) function.

one column to the left, in effect, vacating Column F and making it available to us. The program has neatly moved all the columns and adjusted all the formulas to reflect the new locations.

	A	B	C	D	E	F
1	Pens	Pens-1	Pens-2	Pens-3	Pens-4	Paper
2	5	8	3	4	5	1
3	1+A2	1+B2	1+C2	1+D2	1+E2	2
4	A3*.65	B3*.65	C3*.65	D3*.65	E3*.65	3
5	11	11	6	7	8	4
6	4	4	10	11	12	5
7	9	9	13	14	15	6
8	6	6	1	2	3	7
9	7	7	4	5	6	8
10	SUM(A2:A9)	SUM(B2:B9)	SUM(C2:C9)	SUM(D2:D9)	SUM(E2:E9)	SUM(F2:F9)
11						
12	A2+A2	A2+B2	A2+C2	A2+D2	A2+E2	A2+F2
13						

Screen 3-17: Move Command

The Insert and Delete Commands

Here are two other complementary commands that can create or delete intermediate columns and rows. They are *insert* and *delete*.

Let's insert a new row between rows 9 and 10.

Enter **/I**, followed by **R** for row. Respond to the next prompt by entering **10** (↵), and a *new* row appears.

Look at the formulas in row 11, and you will see they are unchanged. The SuperCalc² program has no way of knowing if you want to include the new row in the SUM equations—you would have to change them yourself.

Nevertheless, the SuperCalc² program does know the range we have specified in our SUM formulas.

Now let's insert another row at 7. **/I**nsert,**R**ow,**7**.

Look at the SUM formulas in row 12. They have been adjusted, extended automatically from A2:A9 to A2:A10, because the row we just inserted fell within the range we had described. Your screen display should look like the one below.

Now enter **/D** and **R** (for row). For row number, enter **14** and (↵). Row 14 is deleted. If we delete row 7, will the SUM formulas be adjusted back to A2:A9? Try it and see.

Let's delete a column, and try an experiment as well. Let's find out what happens to a value that depends on one that we delete. Enter into cell E9 the equation, **F2**. E9 will contain whatever value F2 contains. Change the display to show cell value (**/G,F**).

	A	B	C	D	E	F
1	Pens	Pens-1	Pens-2	Pens-3	Pens-4	Paper
2	5	8	3	4	5	1
3	1+A2	1+B2	1+C2	1+D2	1+E2	2
4	A3*.65	B3*.65	C3*.65	D3*.65	E3*.65	3
5	11	11	6	7	8	4
6	4	4	10	11	12	5
7						
8	9	9	13	14	15	6
9	6	6	1	2	3	7
10	7	7	4	5	6	8
11						
12	SUM(A2:A10)	SUM(B2:B10)	SUM(C2:C10)	SUM(D2:D10)	SUM(E2:E10)	SUM(F2:F10)
13						
14	A2+A2	A2+B2	A2+C2	A2+D2	A2+E2	A2+F2
15						

Screen 3-18: Delete/Insert Command

Now enter **/D**elete,**C**olumn,**F**, (↵). The column entitled *Paper* has been deleted. E9 displays *ERROR*. The SuperCalc² program has no value to use in calculating the value of E9, and warns us of that with this message. Once a cell is in error, any reference to it will display a similar error message. As you see, the SUM value also indicates ERROR.

	A	B	C	D	E	F
1		Pens	Pens-1	Pens-2	Pens-3	Pens-4
2	Variable A	5	8	3	4	5
3	Formula 1	1+B2	1+C2	1+D2	1+E2	1+F2
4	Formula 2	B3*.65	C3*.65	D3*.65	E3*.65	F3*.65
5	Variable B	11	11	6	7	8
6	Variable C	4	4	10	11	12
7	Total	SUM(B2:B6)	SUM(C2:C6)	SUM(D2:D6)	SUM(E2:E6)	SUM(F2:F6)
8						
9						

Screen 3-20: Correcting an ERROR Condition

Now enter **"Variable A** in Cell A2, **"Formula 1** and **"Formula 2** in A3 and A4, respectively. Enter **"Variable B** and **"Variable C** in A5 and A6, and **"Total** in A7.

When you show formulas, your screen should look like this.

At this point, use **/S** to save your work. This time, let's call it *Lesson 5*. It will be used later.

Now that you have saved your work, let's try something new. We should start with a fresh spreadsheet, so use the *zap* command.

As we have seen, doing insertions and deletions at the boundaries of specified ranges creates problems. But because you will often want to add or delete from lists—including, naturally, the beginning or end of the list—here is a useful suggestion.

Avoiding Errors

At B1 enter **"Title**. In cells B2 through B4, enter some numbers. At B5 enter **"—**. At B6 enter **SUM(B1:B5)**. Notice that our range specification includes our text line and the ledger line (—). This is harmless because, mathematically, *text* is regarded as having the value of zero and, therefore, has no effect on the calculation.

	A	B	C	D	E	F
1	Pens	Pens-1	Pens-2	Pens-3	Pens-4	
2		5	8	3	4	5
3		6	9	4	5	6
4		3.9	5.85	2.6	3.25	3.9
5		11	11	6	7	8
6		4	4	10	11	12
7		9	9	13	14	15
8		6	6	1	2	3
9		7	7	4	5ERROR	
10						
11		51.9	59.85	43.6	51.25ERROR	
12						

Screen 3-19: Delete Command—ERROR Display

If cell E9 should, in fact, have *F2* in it, we could simply enter that formula again, and everything would be set right. Now put a number or F2 into E9, whichever you wish. Notice that the error display in the SUM value also goes away. It is replaced by the recalculated value.

If we delete row 10, will this affect our range specification for the SUM formulas in row 10? No, because row 10 is beyond the range. Delete row 10.

What will happen if we delete row 9? Try it.

It produced an ERROR in the SUM formula.

The general rule is to not delete either of the boundaries specified in a range like the one in our example. Our example was *SUM(A2:A9)*. Deleting either A2 or A9 will cause an ERROR condition because the SuperCalc² program cannot guess your exact intentions. These warnings help us avoid inadvertently leaving references to nonexistent cells after a *delete* command.

Use the *blank* command to blank out the block from A7 to E9. Now reenter **SUM(A2:A6)** in A7, and then use replicate to place it in cells B7 through E7.

Use the **/I**, the *insert* command, to create a new column at A for labels.

	A	B	C
1		Title	
2		3	
3		4	
4		5	
5		---------	
6		SUM(B1:B5)	
7			
8			
9			

Screen 3-21: Column Error Correction

Now you may insert or delete as you wish. Enter **/I**nsert,**R**ow,**5** ↵, and add the number **9**. Now delete row 2, **/D**elete,**R**ow,**2** ↵. As you can see, you can add entries or remove entries without concerning yourself with the top and bottom of the column.

Repeating Text

By the way, here is an easy way to put in lines of repeating characters like the — you entered in cell B5. The SuperCalc² program has a function to repeat text. Go back to cell B5 and enter **'-** and press ↵.

As you see, the single quote (') causes the display of - to be repeated to fill the cell display, and in fact to continue displaying to the right until it meets a non-blank cell. Not bad for three keystrokes. Take a look at the contents of cell B5. As you see, they are what you typed in.

Experiment with this one a bit. Find some open space and try:

'268 and press ↵.
'abcd and press ↵.
'* and press ↵.
' * and press ↵.

And so on. Try your name. . .

You can prevent repeating text from extending all the way to the right boundry of the spreadsheet. Enter a null text entry into a cell on the row containing repeating text where you want the repeating text to stop. Enter only the double quote character ("). This cell becomes a text cell that has no actual text in it. Its purpose is to block the repeating text.

Unavailable Data

Sometimes you may be working on a complex spreadsheet with many values which are functions of other values. Because your data may be incomplete, you may mistakenly view some totals or values as significant when in fact they are not yet complete.

Here is what you can do in such cases. Using the example we started above, now enter **NA** ↵ into cell B3, for instance. This tells the SuperCalc² program that you intend to have a value here at some future time so the value of the cell should be considered as *Not Available* rather than zero. You will see that as soon as we enter **NA** ↵, cell B6 is also flagged and N/A when values are shown, or NA as formulas.

	A	B	C
1		Title	
2		4	
3		N/A	
4		9	
5		----------	
6		N/A	
7			
8			
9			

Screen 3-22: Unavailable Data Place Holding

NA and ERROR behave identically; the difference is the display: *N/A* or *ERROR*. By using NA, you inform yourself of the ramifications of any incompleteness or oversights.

You may either *quit* here or continue on to Lesson 6.

What have you learned in this lesson?

In this lesson you have learned:

- How to use the *move*, *insert*, *delete* commands. (**/M**, **/I**, **/D**).
- That those commands automatically adjust your formulas to fit the new spreadsheet.

LESSON 6

Format

By now you have learned many of the basics that you need in order to use the SuperCalc² program. You may remember that when we introduced the *format* command, **/F**, in Lesson 3, we used it to change the display width of all the columns on the spreadsheet. But the prompt line indicated that there were a number of other options available to us with this command. In this lesson, we will examine these options more closely.

We will use the spreadsheet that we have been developing in previous lessons. It is the one you saved under the name *Lesson 5* in the last lesson.

If you are continuing directly on from Lesson 5, use **/Z** now, so that you will have a fresh start. Otherwise, bring up the SuperCalc² program.

Now *load* the file, Lesson 5.

Integer Format

Look at your spreadsheet. Is it displaying formulas? We will want to look at cell *values*, not formulas, in this example. Use the *global* options command, **/G**, if you need to change the display.

Change cell B5 to 11.4.

Enter **/F**, and note the prompt line:

G(lobal), C(olumn), R(ow), E(ntry) or D(efine).

This means we can specify whether our format change will affect all cells, a column only, a row only, a cell, or a range of cells.

Let's enter **C** for column. The prompt line now asks what column we want to affect. Enter the column letter, in this case, **B**. Press ↵.

Now the prompt gives us a variety of options:

Define Formats: (I,G,E,$,R,L,TR,TL,*,U(1-8),H,D, column width).

- That when you delete cells which are referred to by formulas elsewhere, you get error messages. You learned how to fix that error.
- How to use ⍁ to repeat the display of one or more characters.
- How to use **NA** to make sure that you do not forget to enter important information.

Enter **I** for *integer* format. Press ↵. Look at the entries on the display, and see what happened to the value in B4, B5 and B7.

Only the integer portion of the values is displayed. The *integer* format will display the numbers in the range given, rounded to the nearest whole number.

Note: The *integer* format is not to be confused with the INT function. The values in cells with the *integer* display format set are not changed in any way. Errors are likely to occur in subsequent real equations because the actual values will not reflect the displayed values. The formulas will take into consideration any fractional values not shown. This is also true when using the *money* display format.

	A	B	C	D	E	F
1		Pens	Pens-1	Pens-2	Pens-3	Pens-4
2	Variable A		5	8	3	4	5
3	Formula 1		6	9	4	5	6
4	Formula 2		3.9	5.85	2.6	3.25	3.9
5	Variable B		11.4	11	6	7	8
6	Variable C		4	4	10	11	12
7	Total		30.3	37.85	25.6	30.25	34.9
8							
9							

Screen 3-23: $ Display Format

Until now we have always used the SuperCalc² program's standard or *default* display format to display numbers. That is the *G* or *general* format. We have seen that with *general* format, numbers too large to display in ordinary notation will be converted to scientific or exponential notation automatically. In *integer* format, numbers too large to display will appear as a series of >>>>s at the cell location. In fact, whatever the format, >>>>s will be displayed whenever a number cannot be shown. The SuperCalc² program will round off as necessary, even if it can only display one significant digit, the E, and the exponent.

Enter **123456789** at cell B5.

Now reduce the display width to 8. Do you remember how? **/F,G,8**.

Notice the >>>>>>. Now change the column widths back to 12.

Again enter, **/F**ormat,**C**olumn,**B** ↵. This time specify **G**, for general format, and ↵. Notice that the fractional portion of our data values has been restored.

	A	B	C	D	E	F
1		Pens	Pens-1	Pens-2	Pens-3	Pens-4
2	Variable	5	8	3	4	5
3	Formula	6	9	4	5	6
4	Formula	3.9	5.85	2.6	3.25	3.9
5	Variable	>>>>>>>	11	6	7	8
6	Variable	4	4	10	11	12
7	Total	>>>>>>>	37.85	25.6	30.25	34.9
8						
9						

Screen 3-24: Oversized Integer Display

	A	B	C	D	E	F
1		Pens	Pens-1	Pens-2	Pens-3	Pens-4
2	Variable A	5e0	8	3	4	5
3	Formula 1	6e0	9	4	5	6
4	Formula 2	3.9e0	5.85	2.6	3.25	3.9
5	Variable B	1.2345679e8	11	6	7	8
6	Variable C	4e0	4	10	11	12
7	Total	1.2345681e8	37.85	25.6	30.25	34.9
8						
9						

Screen 3-25: General Display Format (return from integer format)

Exponential Notation

For scientific or exponential notation, enter **/F**ormat,**C**olumn,**B, E**xponent, ↵. This format displays numbers as a power of 10. For example, 1776 is 1.776e3, or 1.776 x 103; 1,000,000 is 1.0e6, or 1.0 x 106.

Look at your spreadsheet. As you can see, the SuperCalc$_2$ program converted all our data to this format. If the data does not look familiar to you, you may wish to experiment a bit. Enter some ordinary numbers in this column in row 9 or 10, and watch how the program displays them. See Lesson 2 if you need more explanation on exponential notation.

	A	B	C	D	E	F
1		Pens	Pens-1	Pens-2	Pens-3	Pens-4	
2	Variable A	5e0	8.00	3.00	4.00	5.00
3	Formula 1	6e0	9.00	4.00	5.00	6.00
4	Formula 2	3.9e0	5.85	2.60	3.25	3.90
5	Variable B	1.2345679e8	11.00	6.00	7.00	8.00
6	Variable C	4e0	4e0	10.00	11.00	12.00
7	Total	1.2345681e8	37.85	25.60	30.25	34.90
8						
9						

Screen 3-27: General Format/Global Change Attempt

Well, everything has changed, *except* those cells where we have been changing formats. Why? The SuperCalc² program will change all the formats when **G**lobal is indicated—except those that you have specified by the **C**olumn, **R**ow, or **E**ntry options. It leaves these untouched, because you set them individually.

What can we do so that *global* changes will include any column, row, or cell that was formatted individually? Column B, for example? If you said we must *undo* the individual format, you were right.

Position the Active Cell to column B. Enter **/F**ormat,**C**olumn, ↵. Now enter **D**, for default, and press ↵. Notice that column B has changed to *general* format.

When a *format* setting that refers to a column or row is defaulted, it changes back to whatever format operates on the next level. An entry level format, entered as a cell or a range of cells, is the *highest level.* The next levels, in order, are *row, column,* and finally the *global* formats. In this case, the column defaulted to the existing global format because there was no intervening row format.

See if you can *default* the format on C6.

Display Format: Justification

Enter **/F**ormat,**R**ow,**1**, ↵. You will see these options (. . .*R,L,TR,TL*. . . *"$.26)* on the prompt line. They allow us to change the setting of right or left justification. The *standard* or *default* values are left-justified text and right-justified numbers. Let's shift the text on row 1 so that all text entries are right justified. Can you do it? Of course you can. **TR** stands for *Text Right.*

$ Format

The next format option may be more familiar to you. Enter **/F**ormat,**G**lobal,**$**, ↵. The money format comes into view. Numbers will be rounded to the nearest cent. (Note that the SuperCalc² program adds the *.00* to whole numbers, but does not insert a *$*).

	A	B	C	D	E	F
1		Pens	Pens-1	Pens-2	Pens-3	Pens-4	
2	Variable A	5e0	8.00	3.00	4.00	5.00
3	Formula 1	6e0	9.00	4.00	5.00	6.00
4	Formula 2	3.9e0	5.85	2.60	3.25	3.90
5	Variable B	1.2345679e8	11.00	6.00	7.00	8.00
6	Variable C	4e0	4.00	10.00	11.00	12.00
7	Total	1.2345681e8	37.85	25.60	30.25	34.90
8						
9						

Screen 3-26: $ Format

Individual and Global Format Changes

Let's change the format for a single cell. Move the spreadsheet cursor to C6, making that the Active Cell.

Enter **/F**ormat,**E**ntry. Notice that the prompt line reads:

Enter range.

We could specify a range of cells—that is, a partial row or a partial column—at this point. Or we could specify a single cell. Let's change the format of C6, the Active Cell. Of course, you could type *C6* on the entry line. Instead, press . or ↵ and see what happens.

The SuperCalc² program automatically added C6, the Active Cell, to the entry line. Now enter **E** for Exponent and press ↵. Note the change on your spreadsheet from *4.00* to *4e0.*

Now suppose we wished to convert all the display back to the *general* format. Could we make a *global* change? Let's try it. Enter **/F**ormat,**G**lobal,**G**eneral ↵.

```
  :   A     ::     B     ::    C    ::    D    ::    E    ::    F    :
 1:                 Pens      Pens-1     Pens-2     Pens-3     Pens-4
 2: Variable A       5e0           8          3          4          5
 3:  Formula 1       6e0           9          4          5          6
 4:  Formula 2     3.9e0        5.85        2.6       3.25        3.9
 5: Variable B 1.2345679e8        11          6          7          8
 6: Variable C       4e0           4         10         11         12
 7:      Total 1.2345681e8     37.85       25.6      30.25       34.9
 8:
 9:
```

Screen 3-28: Text Right Justification

Now that you have done that, let's try another one.

Enter **/F**ormat,**G**lobal,**L**, (↵). All numbers will now be justified to the left.

Format entries may be entered in combination; for example, **/F**,**G**,**R**,**$**. Try this one, and you will see the numbers right-justified in dollars and cents format.

Graphic Display

We have one more *format* option to try: *graphic* display. Place the Active Cell at C2. Enter (=) (↵) to put C2 at the upper left of our screen. Enter **/F**ormat,**G**lobal. Enter the ***** to specify *graphic* format. We will also need some display space, so enter **75** as our column width. Press (↵). If your values in column C are less than 75, you will see them represented by bar graphs composed of asterisks. Values greater than 75 will fill the column and the screen width; you cannot tell if they are 75 or larger.

```
                                   C
 2: ********
 3: *********
 4: *****
 5  ***********
 6: ****
 7: *************************************
 8:
 9:
```

Screen 3-29: Graphic Display

It is possible, however, to make the column display wider than the screen. The display area for your spreadsheet is 75 characters wide. You can specify a column width of up to 127 characters. You won't be able to see the whole line, however, on your screen. You can see only the first 75 characters, unless you output your spreadsheet to the printer. **/O**utput will be discussed later in Lesson 9.

This was a very brief look at the *graphic* format option. In practice, you will want to make the graphic display fit within a column width of convenient size and still give a comparison of values. In Lesson 8, we will find out how to do this by *scaling* the values in order to fit them within the column.

There is no need to save our work from this lesson. But remember we will use the file Lesson 5 again, so do not overwrite it.

Now you may either *quit* or continue on to Lesson 7, as you wish.

What have you learned in this lesson?

In this lesson you have learned:

- That formats can be entered globally, by column, row or cell (including a range of cells).
- The Integer, General, Exponential, and $ formats of display.
- How to change individual column widths.
- How to *default* formats.
- How to alter justification for text or numbers.
- How to transform numerical values into graphic display.

LESSON 7

Title Lock and Window (Split Screen)

You now know enough about the SuperCalc² program and its many commands to put it to practical use. You have used the different *format* options. This lesson adds two more commands to your store of tools.

One of them, *title* lock, is useful if you want to keep a portion of the spreadsheet locked in place while you scroll the rest of the screen. Although it is called *title lock* because locking titles can be especially useful, any part of the screen can be locked. The other command, *window*, lets you *split* your screen and look at different parts of your spreadsheet at the same time. Let's try them now.

Title Lock

First, of course, start the SuperCalc² program, if it is not already running. Or, if you are continuing directly on from Lesson 6, *zap* the screen so that you will have a fresh spreadsheet.

Now *load* the file that we saved under the name Lesson 5. What can *title* lock do for us? Place the Active Cell at A1. Enter **/T**. The prompt line asks:

H(oriz), V(ert), B(oth), or C(lear)?

The SuperCalc² program wants to know which titles you want locked in place.

Press **V**, for vertical titles.

Now scroll the screen so as to move off the screen to the right. You will see that the titles at the left of our screen are *locked* in place, while the rest of the screen scrolls as usual. The position of the Active Cell when you enter the **T** command determines how much of the screen will be locked in place.

Go back to A1 by using the (=) command. Use the **H** option to lock the top row of titles in place.

Move the spreadsheet cursor down the screen, and watch the information scroll up while the row 1 titles stay in place. Now, go back to A1 by using the (=) command.

Now let's clear the locked row. Enter **/T**. Then enter **C**, for *Clear*. We are telling the SuperCalc² program that we do not want anything locked. Use the **/I** command to insert a new row 1 for an additional title.

	A	B	C	D	E	F
1			Sample Spreadsheet			
2		Pens	Pens-1	Pens-2	Pens-3	Pens-4
3	Variable A	5	8	3	4	5
4	Formula 1	1+B3	1+C3	1+D3	1+E3	1+F3
5	Formula 2	B4*.65	C4*.65	D4*.65	E4*.65	F4*.65
6	Variable B	11	11	6	7	8
7	Variable C	4	4	10	11	12
8	Total	SUM(B3:B7)	SUM(C3:C7)	SUM(D3:D7)	SUM(E3:E7)	SUM(F3:F7)
9						

Screen 3-30: Title Lock Example

At C1, enter **Sample Spreadsheet**.

This time let's lock both the horizontal and vertical titles with one command. Position the Active Cell at A2. Enter **/T**. Enter **B**, for *Both*. This locks column A and rows 1 and 2.

Move the spreadsheet cursor down and to the right to make the display scroll both up and to the left. Note that rows 1 and 2 and column A stay in place.

Window — Split Screen

What if you want to view two widely separated areas of your spreadsheet at the same time? The *window* command will allow you to do this. We will use one of the sample programs on your SuperCalc² program disk to demonstrate *window*. But we will need to have a new spreadsheet.

Use the *zap* command to clear everything.

Now let's load that sample program. Use **/L** and enter the file name, **SAMPLE**. SAMPLE is a complete sample SuperCalc² spreadsheet. We will study it more closely later. For now, just scroll to column N, and notice that we have columns representing months and total column for the year.

Go back to A1, and scroll down to row 20 to see *Net Income*. Go back to A1. Now move the Active Cell to column D. This will designate where we wish to *split* the screen.

Enter **/W**, for *window*. The prompt reads:

H(oriz), V(ert), C(lear), S(ynch), or U(nsynch).

We are going to split the screen vertically into two separate display windows, so enter **V**.

Notice that now, starting at column D, there is a second set of row numbers. This is the left-hand border of our new display. You should realize that the spreadsheet itself has not been split. We have simply created two display windows through which to view it. Either window may now be scrolled independently.

```
  :         A          ::   B   ::   C   :     :   L   ::   M   ::   N   :
 1:THIS IS A SAMPLE SUPERCALC SPREADSHEET      1:
 2:                                            2:
 3:                          JAN      FEB      3:   NOV      DEC     TOTAL
 4:NET SALES                 1000     1100     4:   2594     2853    21384
 5:                                            5:
 6:COST OF GOODS SOLD         300      330     6:    778      856     6415
 7:--------------------------------------------7:--------------------------
 8:GROSS PROFIT               700      770     8:   1816     1997    14969
 9:                                            9:
10:RESEARCH & DEVELOPMENT     160      176    10:    415      456     3421
11:MARKETING                  200      224    11:    621      696     4827
12:ADMINISTRATIVE             140      151    12:    302      326     2657
13:-------------------------------------------13:--------------------------
14:TOTAL OPERATING EXPENSES   500      551    14:   1338     1479    10905
15:                                           15:
16:INCOME BEFORE TAXES        200      219    16:    477      519     4064
17:                                           17:
18:INCOME TAXES                80       88    18:    191      207     1626
19:-------------------------------------------19:--------------------------
20:NET INCOME                 120      131    20:    286      311     2438
> N3          P Text="TOTAL
Width:  9  Memory:451 Last Col/Row:N20    ? for HELP
 >1
```

Screen 3-31: Vertical Split-Screen

Scroll the display and notice that the left-hand window remains still.

Now press the ; key. This will transfer us to the *other* window. Regardless of which window we are working in at a given moment, the ; key will serve to move us over to the other.

Instead of splitting our screen vertically into a right and a left half, we could split it horizontally. However, before we can split the display horizontally, we must return to a single window display by pressing **/W**indow, and **C**lear. Then set the Active Cell at the point at which you wish to split the screen horizontally. For our example, move the Active Cell to row 15 and then enter **/W**indow,**H**orizontal. This leaves us on the lower screen.

```
  :   D   ::   E   ::   F   ::   G   ::   H   ::   I   ::   J   ::   K   :
 1:
 2:
 3:   MAR      APR      MAY      JUN      JUL      AUG      SEP      OCT
 4:   1210     1331     1464     1611     1772     1949     2144     2358
 5:
 6:    363      399      439      483      531      585      643      707
 7 ----------------------------------------------------------------------
 8:    847      932     1025     1127     1240     1364     1501     1651
 9:
10:    194      213      234      258      283      312      343      377
11     251      281      315      352      385      442      495      555
12:    163      176      190      206      222      240      259      280
13:----------------------------------------------------------------------
14:    608      670      739      816      900      994     1097     1212
              A            ::   B   ::   C   ::   D   ::   E   ::   F   :
15:
16:INCOME BEFORE TAXES           200      219      239      261      285
17
18:INCOME TAXES                   80       88       96      105      114
19:----------------------------------------------------------------------
> K1            P Text="TOTAL
Width:  9  Memory:451 Last Col/Row:N20    ? for HELP
 >1
```

Screen 3-32: Horizontal Split-Screen

Scroll down so we can see Net Income. Press ; Move the cursor to B4 and change the value. Watch as recalculation takes place. Within seconds you will see the Net Income change in the lower window.

When you wish to remove the split screen, enter **/W** and then **C** for clear split.

The **S** option indicates to the SuperCalc² program that we wish to scroll both windows in a *synchronized* fashion. That is, we want them to scroll simultaneously. Let's try it.

Split the screen vertically at D again, but now enter **/W**,**S**ynchronous. Now scroll the displays together by moving the spreadsheet cursor parallel to the split. To *unsynchronize* the displays so that only one window will scroll at a time, enter **/W**indow,**U**nsynchronous.

With split screen in effect, each window has its own *global* identity for both the *global* options and *format* commands. For instance, we could specify formula display in one window and cell value display in the other. Similarly, we could use *format* to specify General format in one window and Integer in the other. We could even look at the same data, if we wished, in two different formats at once.

Scroll both displays to show January through April. Now change to display formulas for one side of the screen. Enter **/W,S**. Now you can scroll through the data in one window and compare it to the formulas as you go.

The *window* and *title* lock affect the way our spreadsheet is displayed. The effect is temporary and may always be reversed. When you *save* your spreadsheet to a disk, the *title* lock and *split screen* information is included. When you load your work back to the screen, it will look exactly as it did before.

If you want to take a break now, use *quit* to exit from the SuperCalc² program.

What have you learned in this lesson?

In this lesson you have learned:

- How to lock any number of rows or columns in place so that they will remain in place while the rest of the screen scrolls.
- How to split the screen, either horizontally or vertically, into two windows and how to move back and forth from one *window* to the other.
- How to *synchronize* the windows.
- That you can specify different global display options (cell values or formulas) and **G**lobal level format options for each window.

LESSON 8

Graphic Format Option & Recalculation Options

In this lesson we will look more closely at some of the options available with two of the SuperCalc² program's most powerful commands, *format* and *global* options. By now you have enough experience to appreciate what they can do for you. We will need to start with a fresh screen—so use *zap* if you are continuing directly from Lesson 7.

We touched briefly on graphic representation of data in Lesson 6 and promised that you would learn more about it. Now it's time to work a bit with it, so that you will feel confident to try it with your own data. Let's enter some numbers in column A, from row 1 to row 7; use numbers between 1 and 50.

```
  :  A  ::  B  ::  C  :
 1:   45
 2:    3
 3:   12
 4:   50
 5:   23
 6:   13
 7:    8
```

Screen 3-33: Graphic Format Option

Now enter **/F**ormat,**C**olumn,**A**, *****,**50**, ↵.

We have done two things—we have changed to graphic display, and we have increased the width of column A to 50, in order to accommodate our largest number.

Suppose we wish to have the number itself displayed as well. Try this: Enter **/F**ormat,**C**olumn,**A**, **D**efault, ↵ to bring column A back to the default format. Enter **/G**lobal,**F**ormulas to show formulas. Enter at B1, the *formula*, **A1**. Enter **/R**eplicate,**B1**, ↵ **B2:B20** ↵.

```
  :  A  ::  B     C
1 : 45     A1
2 : 3      A2
3 : 12     A3
4 : 50     A4
5 : 23     A5
6 : 13     A6
7 : 8      A7
```

Screen 3-34: One-to-One Graphic Display

Enter **/F**ormat,**C**olumn,**B, *,50,**(↵). Enter **/G**lobal,**F**ormulas to switch back to value display.

Now we have a one-to-one graphic display. But what if the values we wish to display are as large as 600 or 1000? Let's put a *scaling* formula into column B, so our largest value will be equal to the column width. You may remember from Lesson 6 that we could make column B longer—up to 127 characters—but it would be difficult to view beyond the screen width, so we will leave it at 50 characters.

If we divide any value in Column A by the maximum value within our sample from A1 to A7, the result will express its *size* (relative to the maximum). And since our maximum, whatever it is, will be represented by 50 characters (*) of display, we can multiply the size by 50 to determine our *scaled* value.

Now we have an opportunity to use another built-in function: *MAX*. The value of *MAX* will be the largest value within the specified range or list. We will use *MAX* to scale our graphic displays so that they are relative to the maximum value. Our formula will look like this: A1*50/MAX(A1:A7). If you split the screen, you can view the numbers, graphic representation and formulas all at one time. Go to row 8. Enter **/W**indow,**H**orizontal. Use (;) to jump back and forth between screens.

Enter **/G**,**F**. Enter **A1*50/MAX(A1:A7)** at B1. Now we will use one of the replicate options. Enter **/R**,**B1,** (↵) **B2:B20** and the (,) for options. Enter **A**, for *A(sk for Adjust)*. Respond **Y** for *yes* for the first A1, then **N** for *no* for the other two values in the formula.

Your formulas should look like the example.

```
  :  A  ::  B
1 : 45     A1*50/MAX(A1:A7)
2 : 3      A2*50/MAX(A1:A7)
3 : 12     A3*50/MAX(A1:A7)
4 : 50     A4*50/MAX(A1:A7)
5 : 23     A5*50/MAX(A1:A7)
6 : 13     A6*50/MAX(A1:A7)
7 : 8      A7*50/MAX(A1:A720)

  :  A  ::  B
1 :      45 *********************************************
2 :       3 ***
3 :      12 ************
4 :      50 **************************************************
5 :      23 ***********************
6 :      13 *************
7 :       8 ********
```

Screen 3-35: Scaled Graphic Display (MAX)

Our graphic portion looks the same but now change the value in any cell to, say, **75**. Notice that all the other lines are *scaled*, relative to 75. Enter **150**.

You may wish to *save* this example for your own use later. Use save and call the file GRAPH or something easy to remember.

Now let's change our formula to scale from the minimum to the maximum value in A1 through A7. Go to B1 and use *edit*. We will insert new information into the formulas:

(A1-MIN(A1:A7))*50/(MAX(A1:A7)-MIN(A1:A7))

Move the cursor to the beginning of the line, not too far, and insert a space and a (() before the *A1*. Move right to the * and insert 13 spaces before it. Then replace the blanks with **-MIN(A1:A7))**. Move to the next *M* and insert (() before it. Then go to the end of the line and insert **-MIN(A1:A7))**. Then press (↵).

Replicate it for B2 through B20, using the *adjust* option. Be careful to adjust only the first cell reference.

Enter **/R**eplicate,**B1,B2:B20,A,Y,N,N,N,N,N,N**.

Notice how the results of the formula on the following page differ from those of our first formula. Try different values to test and verify your work.

```
  :  A  ::  B  ::  C  ::  D  ::  E  ::  F  ::  G  ::  H  :
 1: 45     (A1-MIN(A1:A7))*50/(MAX(A1:A7)-MIN(A1:A7))
 2: 3      (A2-MIN(A1:A7))*50/(MAX(A1:A7)-MIN(A1:A7))
 3: 12     (A3-MIN(A1:A7))*50/(MAX(A1:A7)-MIN(A1:A7))
 4: 50     (A4-MIN(A1:A7))*50/(MAX(A1:A7)-MIN(A1:A7))
 5: 23     (A5-MIN(A1:A7))*50/(MAX(A1:A7)-MIN(A1:A7))
 6: 13     (A6-MIN(A1:A7))*50/(MAX(A1:A7)-MIN(A1:A7))
 7: 8      (A7-MIN(A1:A7))*50/(MAX(A1:A7)-MIN(A1:A7))

  :    A   ::  B                                              :
 1:       45 *********************************************
 2:        3 ***
 3:       12 ************
 4:       50 **************************************************
 5:       23 ***********************
 6:       13 *************
 7:        8 ********
```

Screen 3-36: Scaled Graphic Display (MIN/MAX)

Recalculation Options

We can suspend the automatic recalculation by specifying *manual* in the **G**lobal options. Enter **/G**lobal, then **M** for *manual.* Now try entering new numbers for the graph.

If you enter a new value in column A, notice that the program takes some time to go through all the necessary recalculation of formulas. It may take even longer with a larger spreadsheet, because the SuperCalc² program recalculates automatically every time we enter a new value.

As you can see, the time required for their entry is greatly reduced.

This is fine, but what does *manual* recalculation mean? Certainly, we don't do it ourselves with pencil and paper. How can we get the SuperCalc² program to do it? By now you have used almost every option offered. You may have wondered what the (!) is for.

Besides its usual exclamatory function in text, (!) has a very special meaning to the SuperCalc² program: Pressing (!) *forces* a recalculation.

Try pressing (!).

Manual mode allows you to make periodic recalculations at your convenience. This is helpful in decreasing time and delays and increasing accuracy when you're doing complicated or cumulative operations. When you wish to reestablish automatic recalculation, enter **/G,A** for *automatic.*

Order of Recalculation

When the SuperCalc² program recalculates, it does so in a certain order. You can change that order. Usually, the order of calculation will not affect the results of your recalculations, and you can ignore it. But there are times when it can make a difference. Let's explore this problem.

First, use *zap* to get a fresh spreadsheet.

Enter **4** into cell A1, **6** into A2, and **SUM(A1:A2)** in A3. Now enter **A3** into B1.

Look at the values. Everything seems fine. A3 and B1 both display 10. Now change the value in A1 to **3**.

Observe that B1 does not yet contain the 9, which is the new result in A3. Why?

The SuperCalc² program recalculates row by row. First row 1, then row 2, then 3, and so forth. Obviously, A3 was still 10 when B1 referenced its value during recalculation.

Now enter **/G**. The prompt line now says:

F(orm), N(ext), B(order), T(ab), R(ow), C(ol), M(an), A(uto)?

We have just determined that in our example recalculation should proceed column by column, so let's enter **C**. This will change the order of recalculation.

Enter **5** in A1. And now everything seems to work, because the SuperCalc² program is proceeding down columns as it recalculates. Both A3 and B1 display 11.

It is possible to create a situation where neither order of calculation can give us current values in all cells.

Here is an example. First, zap the spreadsheet.

Enter **5** in cell A1. In C1, enter **A1**. In A3, enter **A1**. Now *GoTo* B2 and enter **C1**+**A3**. You can see a problem coming up, can't you?

Of course, at the moment all looks fine—C1 and A3 display 5, B2 displays 10. Now go to A1, and enter **4**.

Cells C1 and A3 display 4, which is correct. But B2 has 9. When it was calculated, one of the cells was 4, the other was 5.

Change the order and try again. **/G,C**. Then enter **6** in A1. C1 and A3 show 6, but B2 shows 10. When it was calculated, one cell had 6 and the other had the leftover 4.

Press ⓕ. Now B2 has 12, the correct value. You have forced a second recalculation and have the correct value.

This example is unrealistic and improbable. Still you should be aware that it is possible to create situations involving out-of-order references, which give misleading values.

In a case like this one, we can press ⓕ and cause a second recalculation, which gives us the correct values. You see that you can use ⓕ in automatic mode as well as in manual mode. Generally, of course, you don't need to use this command.

Cases of out-of-order references like this one are called *forward* references, because the reference is *forward* to a value not yet recalculated. They can occur in actual spreadsheets, perhaps because a spreadsheet is especially complex or because it has been amended or changed in ways very different from its original design.

A real-life example of forward reference might happen like this. You build a spreadsheet with a table of expenditures by category (columns) and locations (row). You SUM the rows and columns to get totals.

Everything works fine. Later, you add a table comparing various category and location totals. Everything still works fine, because you know where the second table should be. Then, someone else adds new material to the spreadsheet, and moves one of your tables to a new location. . . Now the comparison table shows incorrect values, but they might seem reasonable.

One way to check for such cases is to press ⓕ and see if any value changes. If so, it is time to re-do the spreadsheet.

The *circular* reference is another case that you will certainly want to avoid. Here is an example:

First *zap* the spreadsheet. Now in cell A1, enter **1**+**B1**. It shows as 1, since there is nothing in B1. In cell B1, enter **1**+**A1**. Suddenly you have 3 and 4. Got the idea? Press ⓕ a few times, and watch the values increase. They will never stop changing, because there is no logical place to stop calculating.

You might like to experiment by making up some forward or circular references and trying them out.

When you wish, you can *quit*—or you can *zap* these offending formulas into the oblivion they deserve, and go on to the next lesson.

What have you learned in this lesson?

In this lesson, you have learned:

- How to make practical use of the * *format* option for the graphic display of data by scaling values to fit the display width.
- The difference between the *manual* calculation option and automatic recalculation.
- That the ⓕ key causes a recalculation to occur when you press it.
- What order of calculation means, and how to change it by using the *global* options command.
- What a forward reference is, and how to use ⓕ to get the correct value for such a case.
- What a circular reference is, and that there is no correct value for such a case.

You see that the prompt line requests the range of the material you wish to **O**utput. Let's specify the range a little differently. Enter **ALL** for the range. This is the same as A1:Last Col/Row, which describes the entire spreadsheet. Press (↵).

The prompt now says:

Enter Device: P(rinter), S(etup), C(onsole), or D(isk).

Enter **C**, and the report will be listed on your screen or **C**onsole. If your report is several pages the SuperCalc² program displays them one at a time. Pressing (↵) will display or print the next page; (CTRL Z) will return you to the SuperCalc² spreadsheet. There may seem to be no reason to output your document to the console, but sometimes you may want to check your output before printing it.

Notice that you retain the borders on your display output. To exclude the borders from your output enter **/G**lobal, then **B** for **B**order before you enter **O**utput. To bring them back, enter **/G**lobal,**B**order again. Try it.

Now let's try sending output to the printer, printing only part of the spreadsheet. We will use a range specification that is a little different than the one we used earlier. *Be sure your printer is turned on.* If you don't have a printer hooked up to your system, just skip to the the next example.

Enter **/O**utput,**D**isplay,**A1:D8**, (↵). Then enter **P** to output to the **P**rinter.

You're probably wondering how you can utilize some of your printer features, such as compressed type or bold print, or how to print on continuous forms. Or maybe you want to change the format of your printed page. Never fear, there is a way.

Enter **/O**utput,**D**isplay,**ALL**, (↵). (Remember ALL is equivalent to A1:Last Col Row), then **S** for Setup. Your display changes to show you six options:

L(ength), W(idth), S(etup), A(uto FF), D(ouble Space) or P(rint)

LESSON 9

Output

We have worked with all but one of the SuperCalc² commands and have come to appreciate the power and flexibility of the SuperCalc² program and its electronic spreadsheets.

But so far we can't photocopy those spreadsheets, put them in a binder, or have them reformatted later into some special report layout. In this lesson, we will discuss the *output* command. It makes those things possible.

The *output* command will make a copy of our spreadsheet and send that copy to any of three places, depending on our specification. We can send the *output*—that is, the copy of all or part of our spreadsheet—to our computer system's printer which will print it out immediately. Or we can send it to the *console*, our terminal, where it will temporarily replace the usual SuperCalc² display. Or we can send the output to a disk drive; in this case, the output will be *saved* or *stored* as a special sort of disk file, *different* from the ones we have created in the past with the *save* command.

Let's try this new command now. First, be sure that you have a fresh spreadsheet. Start up the SuperCalc² program, or use *zap*, if necessary.

Now *load* the file that we created in Lesson 5. You may have made some practice files of your own. This is the one we stored as Lesson 5.

Enter **/O**. Now the prompt line reads:

D(isplay) or C(ontents)

Display means that the output will reproduce exactly what you see on the screen. Let's try that first.

Enter **D**.

```
L = Change page length
    (Length = 0 for continuous form.)
    (Now 66 lines)
W = Change page width
    (now 132 chars)
A = Change Auto Form Feed Setting
    (now OFF)
D = Change Double Space Report Setting
    (now OFF)
S = Manual setup codes
P = Print report
CTRL Z to cancel /O command
```

Screen 3-37: Output Format Options

and their default values. **L**ength changes the number of lines the SuperCalc² program outputs per page; **W**idth is the number of characters per line output; and Manual **S**etup codes are a sequence of characters, probably control characters, that need to be sent to your printer to initiate special functions.

For example, on an Epson MX-80 printer you can get compressed type, (which allows you to get more characters per inch) by sending a (CTRL O) to the printer before printing. To do this you would enter, for example:

/Output,**D**isplay,**ALL**, (↵), **S**etup,**S**etup,(CTRL O), (↵), **W**idth,**233**, (↵), **P**rint.

This command line sets the MX-80 printer to print compressed type, increases the number of characters per line (if you want to print more than 132 characters), and prints. These parameters are in use until you change them or quit the SuperCalc² program. To return the printer to standard printing, send the appropriate code (or turn the printer off and then back on). When entering manual setup codes, enter the actual control sequences, *not the Hex values* for those sequences. *Make sure your printer is turned on and on-line.*

Let's try something else. Enter **/O**utput,**C**ontents, and specify **A1:F7** (↵) for the range. Enter **P** for Printer. If you don't have a printer enter **C** for **C**onsole.

If you do not have a printer connected to your computer, or if the printer is not switched on and on line, SuperCalc² will try to send the output anyway. SuperCalc² will not respond to the keyboard during this time. After a short time, SuperCalc² will resume its normal operation.

The content report gives us a list of the actual contents of the specified cells, and any special format for each cell. The contents will be quite different from what you see on the spreadsheet. The output will look the way the Active Cell contents do when displayed on the Status line.

The last option is **D** for **D**isk. In some ways it is like the value option of the **S**ave command, but not really. When you choose this option your display is output to a disk file, but the resulting disk file is different from the normal SuperCalc² file. The file is an exact copy of what would be output to a printer, in ASCII, or character, format, with a **.PRN** extension rather than **.CAL**. The disk file has the same parameters as created in **S**etup; and therefore can be printed later with whatever print utility you want to use and in the format that you want.

The **.PRN** files, or *print* files can be very useful. You can print or edit .PRN files using system programs. You can use SuperWriter™ or your text editor program to add information and notes, to reformat your reports, or to incorporate your reports within another document being edited by changing the extension and just loading the file in. These edited reports can then be printed.

What have you learned in this lesson?

You have learned:

- How to send *output* to a printer, the console, or a disk file.
- How to *setup* for special printers or report formats.
- The difference between display and content reports and how to specify them.
- The use of .PRN files in other programs and documents.
- How to turn off the border display.

The screen looks like this:

	A	B	C	D	E	F
1	Check Register					08/18/83
2			Thursday			
3						
4				Check	Deposit	
5	Number	Date	Description	Amount	Amount	Balance
6	==========	==========	==========	==========	==========	==========
7			Beginning Balance			$1,150.00
8		2000	Phone Company	930.00		$220.00
9		2001	Cleaners	140.00		$80.00
10		2002	Department Store	100.00		($20.00)
11					250.00	$230.00
12		2003	Pharmacy	65.00		$165.00
13		2004	Electric Company	250.00		($85.00)
14					900.00	$815.00
15						
16						
17						
18						
19	==========	==========	==========	==========	==========	==========
20	Totals			1,485.00	1,150.00	($335.00)

Screen 3-38: Check book Spreadsheet

Let's first look at how the check book formulas work.

Move the spreadsheet cursor to F8 and examine the cell contents as shown on the Active Cell Status line. It is:

IF(OR(D8,E8),F7-D8+E8,0)

This formula means: If either cell D8 or cell E8 does not equal zero (blank), then subtract the amount of the check (cell D8) and add the value of the deposit (cell E8) to the previous balance (cell F7). If both cells are blank, then enter 0.

Notice that the check numbers are automatically entered based on the number in cell A8. Move the cursor to cell A13 and examine the formula:

IF(D13<>0,MAX(A8:A12)+1,0)

LESSON 10

Advanced SuperCalc² Features

SuperCalc² Advanced Features

This lesson introduces you to some advanced features of the SuperCalc² program. We will use a simple checkbook register to illustrate the following features:

User-defined formats
The Calendar functions
The Lookup function
Textual values
The Arrange function
The Hide format

Our example is a small checkbook register. After you have completed this example, you may want to enlarge the spreadsheet for your own use.

In this lesson we will be using the calendar functions of SuperCalc². We must set the system date so that SuperCalc² can access it. This example was prepared with the system date set to 8/18/83. Use that date to match the examples you will see. See Chapter 2 for instructions on setting your system date.

Begin SuperCalc² in the usual way.

Let's *load* the checkbook register into the spreadsheet. The filename is *CHECKS.CAL*.

/Load,**CHECKS,A**ll

This formula increments the check number each time a check is entered. When a deposit is entered, the cell remains zero (and displays blank).

User-defined formats

SuperCalc² allows you to specify User-defined formats. Let's look at the format for Column F. To access the User-defined format table enter the command:

/Format,**D**efine

and SuperCalc² displays the format table. Each column gives you an opportunity to change seven characteristics for any range of cells you later specify. The seven characteristics are those named at the left of the format table.

	User-defined formats							
	1	2	3	4	5	6	7	8
Floating $	N	N	Y	Y	Y	Y	Y	Y
Embedded Commas	N	Y	Y	Y	Y	Y	Y	Y
Minus in ()	N	N	Y	N	N	N	N	N
Zero as Blank	Y	N	Y	N	N	N	N	N
%	N	N	N	N	N	N	N	N
Decimal Places	0	2	2	2	2	2	2	2
Scaling Factor	0	0	0	0	0	0	0	0

CTRL Z to return to spreadsheet.

Screen 3-39: User-defined Format Table

The format table provides eight columns so you can set up to eight different special formats. You can change the characteristics in any column of the format table by moving the cursor to the appropriate location and changing the settings to Y (yes) or N (no) in the first five rows, or to 0 to 7 in the last two rows.

On our checks spreadsheet, column F was assigned User-defined format 3 by the designer. First, he entered **/F**ormat,**D**efine to set the format at the format table (column 3), then later he entered a **/F**ormat,**C**olumn,**F,U**ser-defined**3** command sequence. Look at the settings selected under format 3 on the format table. The display for User-defined format 3 specifies Floating $, Embedded Commas, Minus in ( ), Zero as Blank, and two decimal places.

The *Zero as Blank* option causes the balance of rows not containing a check amount or deposit to be displayed blank, rather than zero.

In our checkbook example, User-defined format 1 was assigned to cells A8:A20, User-defined format 2 to D8:E20 and User-defined format 3 to F8:F20.

Experiment with changing the options for User-defined Format 3 to observe their effect on column F. For example, change the *Zero as Blank* format for User-defined format 3 to N(o). Enter CTRL Z and observe the effect on column F. Then go back to the User-defined table and return the value to its original Y(es) setting.

Calendar Function:

Recall that you set the system date before starting SuperCalc². Now position the cursor at F1 and enter **TODAY**. The system date displays in F1.

Now, let's put dates in for our checks. GoTo B8 and enter a date using the formula:

DATE(MM,DD,YY)

Note: You must use commas to separate the month, day, year at the data entry line, but the date displays with slashes on the spreadsheet.

Proceed to enter dates through column B using the Date function.

You could enter the TODAY function for any of these cells. However, when you set the system date to another value, the new system date will appear in those cells. This is probably not what you want.

The SuperCalc² Calendar contains other date functions as well as those you have seen here. They are:

TODAY	Returns the System Date.
DATE(MM,DD,YY)	Enters the date specified.
MONTH(Date Value)	Month of the specified date value.
DAY(Date Value)	Day of the specified date value.
YEAR(Date Value)	Year of the specified date value.
WDAY(Date Value)	Number of the day of the week.
JDATE(Date Value)	Modified Julian date.
DVAL(Numeric Value)	Date value from a numerical value.

Text for Look Up Tables

Notice that the day of the week appears in cell C2.

Three features of the SuperCalc² program are used to create this. Move the cursor to C2 and look at the formula:

LOOKUP(WDAY(F1),G2:G8)

Let's first consider WDAY. WDAY returns the number of the day of the week. Sunday is 1, Saturday is 7.

The English name for the day of the week is contained in a *lookup table.* GoTo (=) G1 and look at the contents of cells G1:H7. They are as follows:

```
:    G   .:    H   :
         1    Sunday
         2    Monday
         3   Tuesday
         4Wednesday
         5  Thursday
         6    Friday
         7  Saturday
```

Screen 3-40: Look Up Table

SuperCalc² does the following: First it evaluates WDAY(F1) as 5. Then, it looks down column G until it finds the number 5. It returns the *lookup* value that is in the adjacent column H as Thursday.

Similarly, you can use the *MONTH* function and another lookup table to return the name of the month for a given date.

Text Function

The contents of column H are not regular text. They were entered as *Textual Constants*. Textual constants are character strings enclosed in double quotes and parentheses. For example, H5 contains the entry:

("Thursday")

The difference between *Text* and a *Textual Value* is that a textual value may be propagated like any other value, and may be used in some expressions. This means that the value of a textual constant may be referenced or transferred to another cell.

Text entries, on the other hand, have a *value* of zero. The zero is propagated whenever a text entry is referenced in a formula.

Textual constants are especially useful in constructing lookup tables.

Note: Text Strings do not work in a lookup table. Another important use for a textual value is within an IF function. Consider the following example.

IF(A1<0,("DEBIT"),A1)

This formula displays the value of A1 if A1 is zero or positive, but displays the text DEBIT if A1 is negative.

Arrange

The **A**rrange function sorts the spreadsheet by rearranging rows or columns according to a *key* column or row. For our example we will arrange our checks alphabetically by payee. The following command demonstrates some of the **A**rrange options. Enter the command:

/Arrange,**C**olumn,**C,8:18,A**scending,**N**o

and SuperCalc² sorts the spreadsheet by payee.

- We have selected to specify some options which may have been defaulted by entering ↵ after the **C**olumn,**C**, was specified. We have done this to show how to limit the sort to a range of row or columns.
- **N**o Adjust was selected to preserve the original formulas of the check numbers in column A.

You can experiment by sorting on the Check amount or Balance columns.

Column I has numbers that correspond to the original row order. These were put in the spreadsheet deliberately to give us a means of easily returning the spreadsheet to its original order. Use the following command to return the spreadsheet to its original order.

/Arrange,**C**olumn,**I** ↵

Hide

SuperCalc² has a display format option that hides the value and contents of cells. The Hide format also prevents the cells from being printed.

To hide the Lookup tables and column I before printing enter the following:

/Format,**C**olumn,**G:I,H**ide ↵

This removes the values from display but not from the cells. To redisplay them just set any of the other legitimate display formats (I,G,E,$,*,U(1-8) or D) to replace Hide.

The hide format does not affect column width. The same amount of space is allocated for the column both on screen and when printed.

Print:

We can now print the check register. Issue the following command to turn off the border before printing.

/Global,**B**order

Then print:

/Output,**D**isplay,**All,P**rinter

Finally, Quit SuperCalc².

/Quit,**Y**es

LESSON 11

A Sample Projection Spreadsheet

By now you know enough about the SuperCalc² program to be able to use it without step-by-step instructions. With this lesson we will give you some general guidance and let you put what you have learned to work.

Experiment with the sample spreadsheet. Make changes and see their effects. You will find that some changes to values of formulas will have only minor effects on the rest of the spreadsheet, but others will have major consequences. It can be surprising to see how even a slight change in a percent figure in one formula can make a great difference to the final total.

This sort of experimentation is what helps make *intuition visible*, as we suggested in the first chapter. You will find it useful in developing your own work.

This example is called SAMPLE. It will look familiar, because we used it in Lesson 7.

Make sure you **/Z**ap your spreadsheet. Load SAMPLE now by entering:

/Load,**SAMPLE,A**LL.

Let's take a closer look at the spreadsheet. What can you find out about it? How far does the information extend? Is there a title lock present? How is it formatted?

Move your cursor to the right until you find the last column of data. The last column is N. The data ends at row 20. An easier way of determining the size of a spreadsheet is by looking at *Last Col/Row:* on the Status Line. This shows you the lower right corner of your spreadsheet.

Notice that while you were scrolling, the titles scrolled too. There is no title lock.

How about format? GoTo B3. The Status Line says: P Text = "Jan. What does this tell us? The *P* indicates that the cell is protected, and if you have a terminal so equipped you will have noticed that this cell, as well as the other labels in row 3 and column A are half intensity or in a different color.

As you scrolled around, you may have found that most of the figures for the months of February through December are formulas. Set the formula display to display the formulas, if you haven't already done so, and notice that all figures for the months of February through December are formulas that depend on prior months. This seems to be a yearly projection for a company. Now, set the formula display to display the values again.

The spreadsheet is a projection based on the January figures. Operating Expenses (research, marketing and administrative), taxes and net profits are projected. For example, in row 4 we see the assumption that sales will grow steadily at 10% per month. In row 18 we see that taxes are a constant 40%.

What happens if you change some of these assumptions? They can be changed easily.

You can change the constant figures in January, which the assumptions are based on. You can also change the February value for formulas, and then replicate across March through December (without options, so that the SuperCalc² program adjusts automatically).

You will notice that slightly raising or lowering constant relationships, such as taxes (row 18), has a fairly predictable effect. But slightly changing the expected percentage increase in sales (row 4) can have a more marked effect. There are other places where a slight change in a value will have a significant effect, because it causes a change in trend. For example, rows 6, 10, 11 and 12.

What is the effect of a decline in sales (row 4)? An increased rise in marketing expenses (row 11)?

This spreadsheet is typical of a spreadsheet developed to give a quick impression of a possible project or of the prospects for an existing project. You could adapt the example for similar projections of your own. For many applications, it would be more realistic to assume seasonal changes than it is to assume constant changes (like the 10% sales growth). You might see what happens if you make sales and their associated values rise in summer and fall in winter, or some similar pattern.

In a more realistic forecast, other values might change at intervals. Certain costs might increase once in the middle of the year. Taxes might rise when sales increased beyond a certain amount.

LESSON 12

Break-Even Analysis

The idea behind a break-even analysis is a simple one. When you market a product, there are two kinds of costs. There are fixed costs, such as development and overhead; and there are variable costs associated with making the product, such as parts and labor. When you sell the product, you want to price it in such a way that you recover your fixed costs, your incremental, or variable costs, and make a profit. The break-even point is the point where you switch from loss to profit.

If you haven't already done so, **/Z**ap the spreadsheet from Lesson 11.

This example is called BRKEVN. Load it and see what it looks like.

Enter **/L**oad,**BRKEVN** ↵, **A**ll.

The setup is simple. Let's step through an example. You will probably want to set recalculation to **M**anual mode until you have entered all of the variables. Otherwise there is more of a delay between each entry for recalculation. Enter **/G**lobal,**M**anual.

Set the retail price in B3 and the discount rate in B19. Enter any numbers you wish. In B18 set the quantity increment, such as 50, 100, or 1000, or whatever is suitable for the sale of the particular product. Then, enter your fixed and variable costs. At this point, calculate the results with ! and see the break-even point. How did we do?

Now let's tinker a bit and see what happens. You may want to return to automatic recalculation at this point by entering **/G**lobal,**A**utomatic.

Try changing some of the fixed costs, then some of the variable ones.

You will notice, for example, that increasing fixed costs delays the point where you break-even, but does not have a great effect on your eventual profits. Changing variable costs has a continuing effect.

Try changing Retail Price and Discount. You can see how the profits can mount up if you chose right—or how miserable the prospects are if you chose wrong.

You can use the SuperCalc² conditional function (IF) to test a given value and increase the tax rate when the total exceeds a certain amount. One way to do that is to test the taxable income figure for each column (row 18).

Try this experiment. Let's say that if the taxable income is greater than $350, the tax rate rises from 40% to 42%. Insert a row at 18 and put the title **TAX RATE** at A18. Now put the following formula in B18: **IF(B16 = 350, .40, .42)**. **R**eplicate the formula, without options, across the row from February through December.

The spreadsheet is in integer format. To show the percentage tax rate, type **/F**ormat,**R**ow,**18**,**$**. Now the tax rate will be 40% when the taxable income is $350 or less, and 42% when it is greater. In what month does the rate increase?

Next we must change taxes (row 19). Change B19 from **B16*.40** to **B16*B18**. **R**eplicate this change, without options across row 19 from February through December.

As we mentioned above, the true and false portion of an IF statement can be a formula as well as a value. Using this, we could have done the above example without inserting a new row. This could have been done by modifying the formula in row 18. Instead of the formula that was there, we could have placed **IF(B16 = 350, B16 * .40, B16 * .42)** in B18. Then, Replicate this formula across row 18 from March through December.

The IF statement we used above has three components. These are: the expression (in this case B16 = 350); the formula to use if the expression is true (in this case .40 which is a value as a formula); the formula to use if the expression is false (.42 in this case). Where we used the = you could have used = or >= as well to suit your needs. With this information, you can modify the above formulas to suit most of your applications.

This is what you have learned in this lesson:

- How to determine the characteristics of a spreadsheet.
- How to use the IF statement.

If you're making successive changes to a cell you might try entering **/G**lobal, then **N** for **N**ext. This disables the use of return for moving the cursor in the current direction. Notice that the direction arrow at the very left of the status line is now gone. This way you can make successive changes to a single cell without moving the cursor back every time. If you wish to move the cursor simply press the arrow keys.

Now let's look at how the spreadsheet is built. Set formula display by entering **/G**lobal,**F**ormula.

Take a look at column C, Units Sold. C2 starts with B18, which is quantity increment. C3 is C2 plus quantity increment, and so on down the column. The formula for each value consists of the value above plus the increment.

Is there an easy way of accomplishing this? Yes. Enter the initial quantity in C2 and C2 plus the increment in C3. Then **R**eplicate the formula in C3 down the column using the **A**sk for adjustment option. Enter **/R**eplicate,**C3,C4:C254,A**. You will then be asked whether to adjust each of the cells referenced in the formula being replicated. For C2 answer **Y**, for B18 answer **N**.

Now look at column D, Profit and Loss. These formulas may look rather foreboding, but once we have figured them out, we will see that the calculation is straightforward.

Let's start with a look at D2. The formula is:

C2*B3*(.01*(100 - B19)) - (B9 + (B16*C2))

Scrolling down that column, we see that the other formulas are similar. In D3, the formula has C3 in place of C2, but all other values are the same. This pattern continues. For each entry in column D, column C refers to the adjoining Units Sold value.

So the formula in D2 starts out with Units Sold times Retail Price (that is, C2*B3).

The .01*(100 - B19) simply subtracts the discount rate (B19) from 100 and makes it a percentage. If B19 contains 40, then .01*(100 - B19) is equal to 60. In other words, this expression is the percentage of our retail price that we get to keep. It is our wholesale price.

What about (B9 + (B16*C2))? B9 is the sum of our fixed costs. B16 is the total variable costs. B16*C2 is the total variable costs (B16) times the units sold for this particular row.

So the formula in D2 turns out to be quite straightforward: it is the Units Sold x Price - Cost.

Like the other examples in this chapter, this spreadsheet is realistic but simplified. You can use it *as is* in order to get a general idea of the effects of pricing policy on a product or to do short-term forecasting. But in actual marketing, costs and prices change.

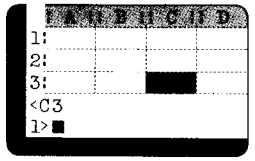
There are two ways that you might adapt this spreadsheet to show the effect of changes in prices and costs.

One way is to put changes at intervals in the spreadsheet. For example, have the numbers in the spreadsheet represent the cost for a 6 month interval of production. Change your costs, prices, and even your incremental values for production (you are producing more efficiently).

A second way is to use conditional expressions as described in the prior lesson on the Projected Balance Sheet. You could test the number of units produced. Based on that test, you could specify adjustment factors for prices and costs. Then you multiply your price and cost information by the adjustment factors, and refer to the adjusted figures in your other formulas.

This is what you have learned in this lesson:

- How to use the **G**lobal recalculation options Manual and Automatic.
- How to use the Next option of the **G**lobal command.



4. The Spreadsheet and Cursors

The Spreadsheet

SuperCalc² uses your computer's memory as a large spreadsheet. The spreadsheet consists of cells organized into a rectangular grid containing 63 columns and 254 rows. Columns are designated by letters (A...Z,AA...AZ,BA...BK) and rows by numbers (1...254).

The location of a cell within the grid defines its *cell address*. You reference a cell by naming its coordinates, first the column letter, then the row number. For example, A1 is the upper left corner cell and BK254 is the lower right corner cell.

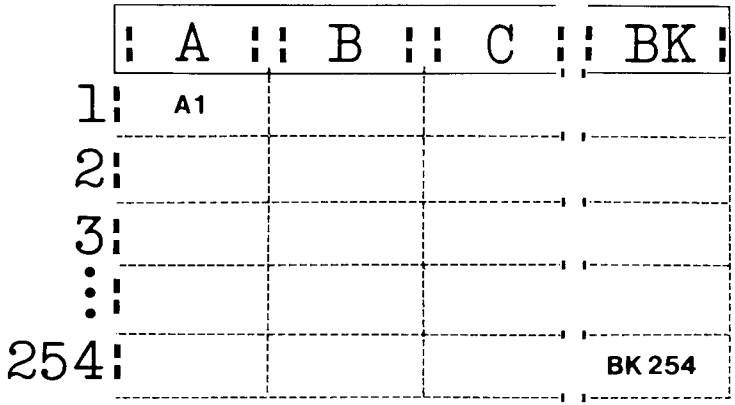
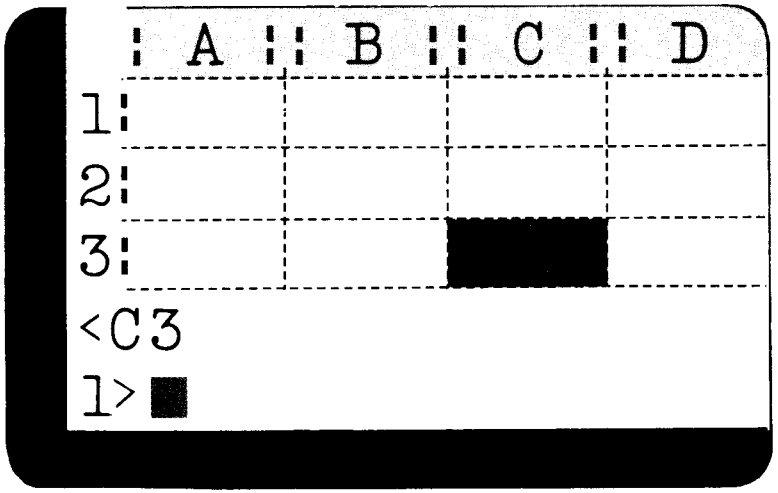
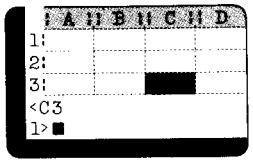


Illustration 4-1: The SuperCalc Spreadsheet



The Spreadsheet andCursors

4



You may split the screen to display two portions of the spreadsheet at a time.

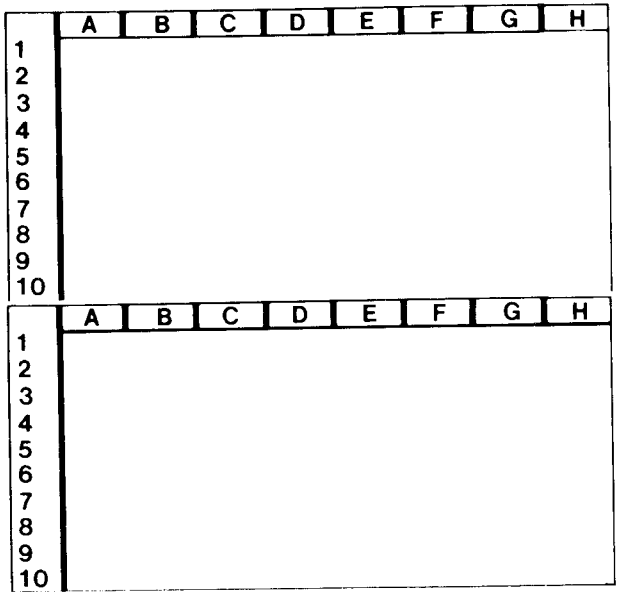
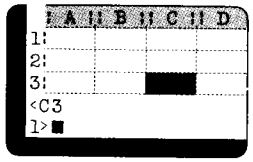


Illustration 4-3: Split Screen



THE SPREADSHEET AND CURSORS

The Spreadsheet

Display Window

The spreadsheet is far too large to be displayed on your terminal screen at one time. Your screen acts as a *display window* that moves over the spreadsheet showing you a portion at a time.

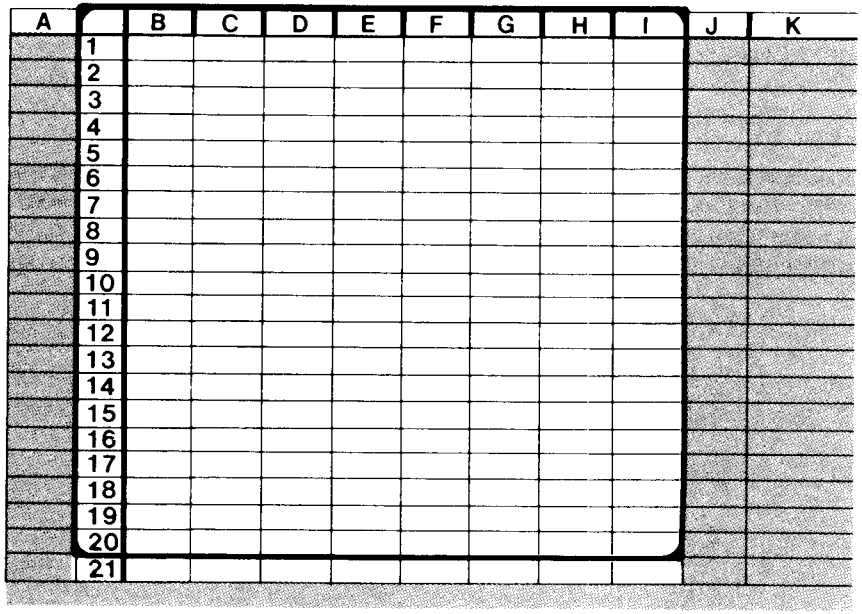
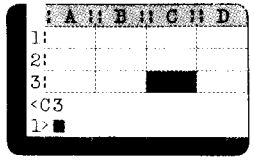


Illustration 4-2: The Display Window



The Active Cell

The *Active Cell* is the cell affected by data entry at the present time. The *Spreadsheet Cursor* identifies the Active Cell. Only one cell is active at a time and it always displays.

- The Active cell is called the *Current Cell.*
- The column containing the Active Cell is the *Current Column.*
- The row containing the Active Cell is the *Current Row.*

The form of the spreadsheet cursor depends on your terminal. The cursor displays as:

An Underline _____

In inverse video.

A set of brackets. < >

The spreadsheet cursor can be set to either move automatically to an adjacent cell or to remain in the current cell upon data entry. When set to move automatically, it moves in the direction of its previous move to the adjacent cell, which then becomes the Active Cell. When set to remain stationery, the cursor does not move upon data entry.

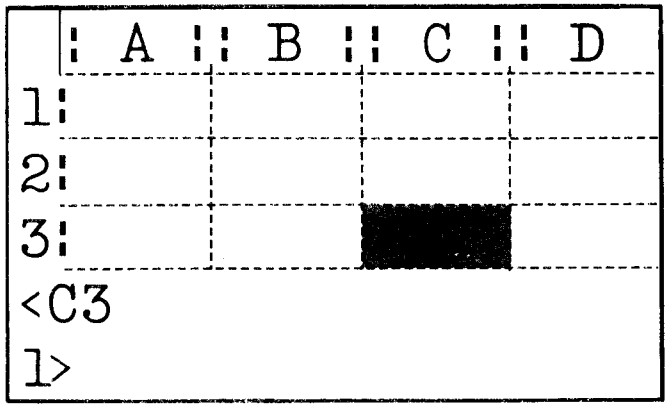
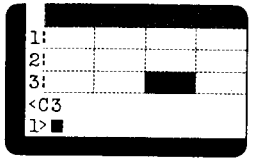


Illustration 4-5: The Active Cell



Border

The screen border identifies the currently displayed columns and rows. The top border contains column letters and the left border contains row numbers. You may turn the border on or off as desired. When the border is on, it displays on screen and prints on the printer. When it is off, it does not display on screen nor print on the printer.

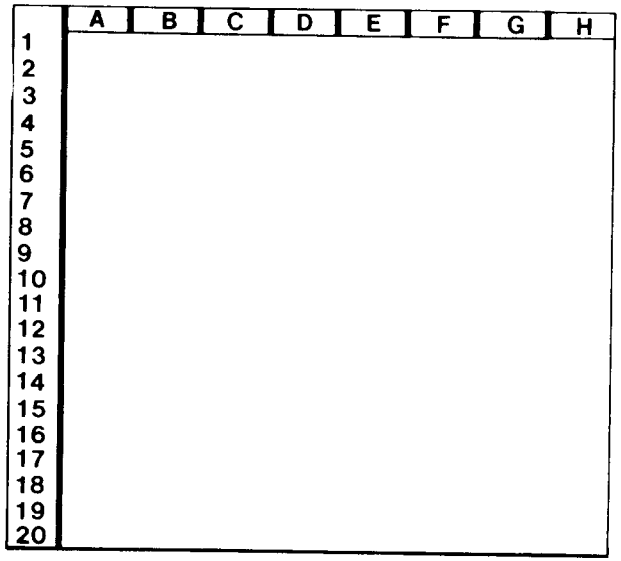
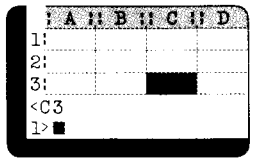


Illustration 4-4: Border



The Active Cell Status Line

The Active Cell Status line displays information about the Active Cell. A sample Active Cell Status Line looks like this:

>A1 L$TR P Text="February Formula ERROR

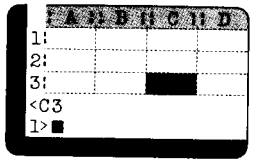
- > – Cursor direction. The first character indicates the current direction of motion of the spreadsheet cursor. When you press (↵) to enter data into the Active Cell, the cursor moves to the adjacent cell in the direction indicated. This direction is always that of the previous cursor move. You may turn the *Next* option on and off. (See the **/G**lobal command.)
- A1 – Active Cell Address. The coordinates of the active cell display here. Commands that reference current columns or current rows use the column/row containing this cell.
- L$TR – Cell Format **E**ntry Options. Displays the options set with the **/F**ormat command at the **E**ntry level. (See the **/F**ormat command.)
- P – Protected Entry. A *P* indicates the Active Cell is protected. This position is blank for an unprotected cell. (See the **/P**rotect command.)
- Text = – Data Type. SuperCalc^2 recognizes three types of data:

  Text = String Text

  Rtxt = Repeating Text

  Form = Formula Entry

- "February – Cell Content. Displays the literal content of the cell.
- Formula ERROR – Error Message. If an error occurs, an error message displays on the far right of the line. Press any key except (↵) to delete it and proceed.



The Current Status Lines:

The bottom three lines display the Current Status.

Active Cell Status
Global Status/Prompt
Data Entry/Command

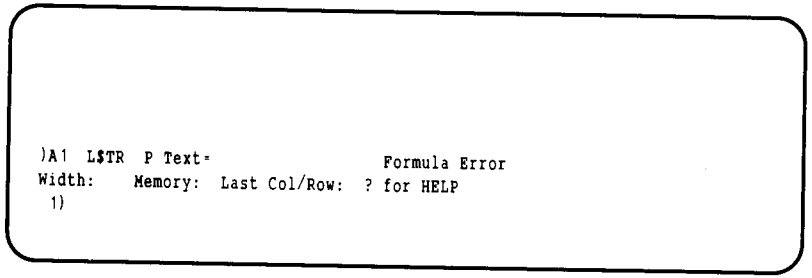


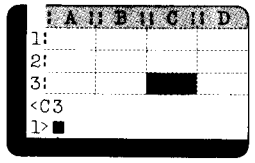
Illustration 4-6: The Current Status Lines

You enter all data and commands on the Data Entry/Command line. This line contains the Edit Cursor.

The Active Cell Status and Global Status/Prompt lines display information only. You cannot move either the edit or spreadsheet cursors into the Active Cell Status or Global Status/Prompt lines.

The Global Status/Prompt and Data Entry/Command lines work together as a pair.

- When the Data Entry/Command line is in Data Entry mode, the Global Status/Prompt line displays the Global Status.
- When the Data Entry/Command line is in Command mode, the Global Status/Prompt line displays the current prompt.



- The Data Entry mode enters data directly into the Active cell. The first character indicates the type of data. Any character except those that begin text and commands result in a Formula Entry.

  `"` Begins Text

  `'` Begins Repeating Text

- The Command mode performs specific functions. Four keys access the command mode.

  `=` The *GoTo* command moves the cursor directly to the designated cell.

  `!` The *Recalculate* command forces a recalculation of the entire spreadsheet.

  `;` The *Switch Window* command positions the spreadsheet cursor in the alternate window on a split screen.

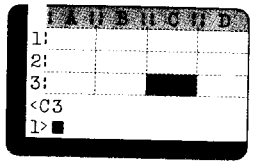
  `&` The eXecute *Resume* command returns control of the spreadsheet back to the current execute (.XQT) file.

  `/` Selects the (/) commands. See Chapter 7 for a complete description of the (/) commands.

- You cannot go directly between the Command and Data Entry modes, rather, you must return to the Spreadsheet mode first.

The SuperCalc² Cursors

Supercalc has two cursors, the spreadsheet cursor and the edit cursor. Both are always visible. The spreadsheet cursor occupies the current Active Cell and moves to any cell on the spreadsheet. The Edit cursor resides on the Data Entry/Command Status line and moves along this line only.



Global Status/Prompt Line

The Global Status/Prompt is the middle Status line.

When the Data Entry/Command line is in Data Entry mode, the Global Status/Prompt line displays the Global Status.

When the Data Entry/Command line is in Command mode, the Global Status/Prompt line displays the current prompt.

The Global Status line contains the following data:

- Width:

  The column width of the Active cell. The default column width is 9.

- Memory:

  The amount of unused computer memory available in *kilobytes*. A kilobyte is 1024 characters or *bytes*. The available memory decreases as you add to your spreadsheet.

- Last Col/Row:

  The intersection of the last column and row that contains data. The cell named need not contain data. It is the composite of the last column and last row that have a non-blank cell.

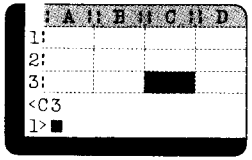
- ? for Help

  A reminder that typing (?) always gives an explanation of your current options.

Data Entry/Command Line

The Data Entry/Command line contains the Edit Cursor. The number at the left indicates the current Edit Cursor position.

The Data Entry/Command line serves two functions. The character you enter into position #1 on the Data Entry/Command line determines its mode. A (CTRL | Z) or (CTRL | C) or (F2) erases (or clears) the entire Data Entry/Command line.



Spreadsheet vs Edit Cursors

Only one cursor is active at a time. The spreadsheet cursor is active provided nothing has been entered on the Data Entry/Command line. The Edit Cursor becomes active when you begin to use the Data Entry/Command line for either Data Entry or a Command and remains active until you do one of the following:

1. Enter data into the Active Cell.
2. Execute a command.
3. *Back out* of the Data Entry/Command line using a left cursor command.
4. Use the (ESC) for current cell function.
5. Clear the Data Entry/Command line with (CTRL Z) or (CTRL C) or (F2).

Cursor Commands

You control both cursors using two groups of cursor control keys. The groups are equivalent and may be used interchangeably.

- The arrow keys move the cursor in the direction they point.
- The Cursor Diamond keys work with the Control key. Press the Control Key and one of these keys simultaneously.

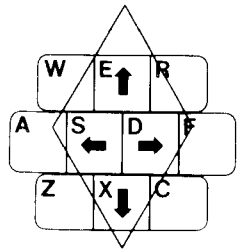


Illustration 4-7: Cursor Command Keys

Note: Some terminals do not have arrow keys. On some computers you may have to press the (NUM LOCK) key in order to activate the arrow keys.

Moving the Spreadsheet Cursor

The spreadsheet cursor moves to any cell on the spreadsheet, but not past the spreadsheet limits. When you move the cursor to a cell outside the display window, the spreadsheet scrolls to display the new location and the border adjusts to the new display window.

The cursor movement keys move the cursor one cell at a time. Use either the arrow keys or the Cursor Diamond Control Keys, whichever are more convenient.

The *GoTo* (= ¦cell address¦ (↵)) command moves the cursor directly to the designated cell.

- If the designated cell is on the display, the cursor moves directly to it.
- If not on the display, the window adjusts to position the designated cell in the upper left corner.
- If you enter *GoTo* without a cell address (= (↵)), (or specify the current cell) the Active Cell is positioned in the upper left corner.

Moving the Edit Cursor

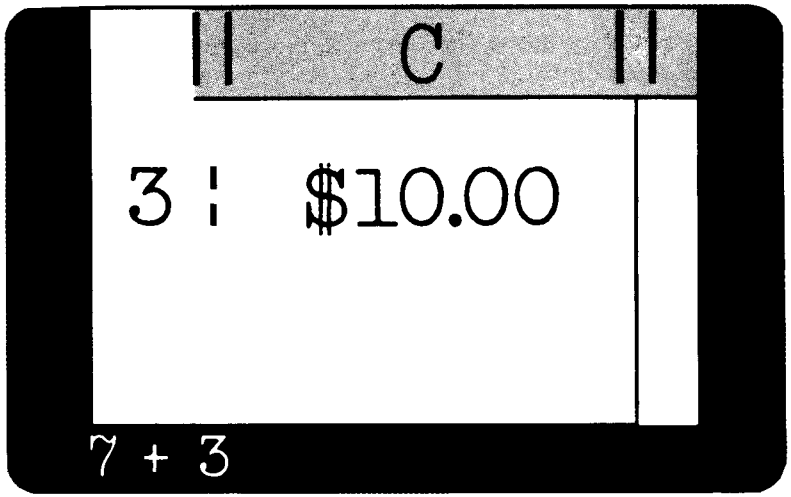
The Edit Cursor moves left and right along the Data Entry/Command line. When you enter a new character, it replaces the one directly beneath the cursor. The Interpretive Prompting of the Command mode supplies characters for some commands. You only need to type the first letter of the command and SuperCalc² fills in the rest for you.

The edit cursor keys are the same arrow or Cursor Diamond keys as the spreadsheet cursor keys, but they behave differently.

The Left and Right Cursor keys move the cursor along the Data Entry/Command line without changing the line.

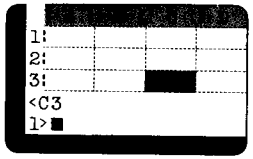
The Down Cursor key deletes the character at the cursor position and moves the remainder of the line one character to the left.

The Up Cursor key inserts a blank space at cursor position. You can enter a character into this space.



Cells

5

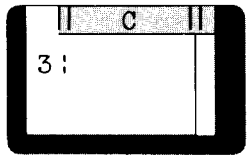


THE SPREADSHEET AND CURSORS

The SuperCalc² Cursors

- The (TAB) key moves the Edit cursor to either the beginning or the end of the entry line.
- The (TAB) key works in Data Entry mode and with the **/E**dit command.
- If the cursor is at the beginning of the edit line, the (TAB) key places the cursor at the end of the line.
- If the cursor is anywhere else in the line the (TAB) key places the cursor at the beginning of the line.

The entire Data Entry/Command line is entered when you press (↵) regardless of the position of the edit cursor.



5. Cells

The cell is the basic unit of the SuperCalc^2 spreadsheet. A cell coordinate is the location of the cell specified by column and row. Each cell has a unique coordinate. A cell contains three types of information: (1) the Cell Content, (2) the Cell Value, and (3) the Display format. The spreadsheet area displays either the cell contents or the cell values. You may designate the display format for the cell values. The format options are displayed on the Global Status line for cells formatted at the **E**ntry level. The format options for cells formatted at the global, row or column level do not display.

Cell Content

The Cell Content consists of the basic data that a cell contains. It is entered into the cell in one of two ways.

- Manually from the Data Entry line.
- Automatically from another cell using the **C**opy, **R**eplicate, **M**ove or **L**oad commands, possibly with formula adjustment.

A cell may be empty, contain text, repeating text or a formula.

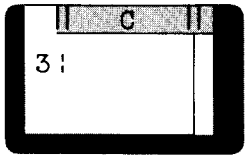
Empty Cell

All cells are initially empty. A cell remains empty until you enter something into it.

Text String

A leading double quotation mark (") designates a text string. A text string can contain a maximum of 115 characters.

The default format for text is left justification and can optionally be set to right justification. If the text is longer than the column width and is left justified, it will continue into adjoining cells. If these cells are occupied, SuperCalc^2 displays as much as it can. Consider the following example. Cells A1, A2, and A3 each contain the same text string. Cells C2 and B3 each contain a numerical entry.



Cell Value

The Value of a cell is the result obtained by evaluating the contents of the cell. All cells have a value. There are five types of values:

- Numeric
- Date
- Textual
- Not available
- Error

Each of the four types of cells may take on certain types of values.

- An *Empty* cell has a numeric value of zero.
- A *Text String* cell has a numeric value of zero.
- A *Repeating Text* cell has a numeric value of zero.
- A *Formula* cell may have a numeric, date, textual, not available, or error value . Note that a textual value is different than a text string. See Chapter 8.

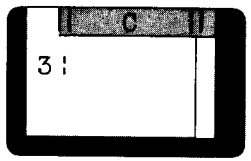
Cell values and types propagate. This means that the cell value may be referenced by a formula in another cell. Such a reference is to the value of the original cell, not to its content (formula).

Note: Although the cell content cannot be referenced by other cells, it may be replicated or copied.

Example: Suppose that cell A5 contained the formula 2*3 and the current cell contained the formula 2*PI*A5. The value of 6 will be used in the formula to evaluate the current cell.

Cell Format

SuperCalc² allows you to specify a wide array of display formats for the cell values. Altering the display format in no way alters the contents or the value, only the way it is displayed on the console or printed on the printer.




```
  ! A !! B !! C !! D !
1! SuperCalc² is a versatile electronic spreadsheet.
2! SuperCalc² is a versatil          250
3! SuperCalc²   4/15/83
<C3
1>
```

Illustration 5-1: Text String With Occupied Cells

Repeating Text

Repeating Text begins with a single quote ('). Repeating text displays from the active cell onwards to the right until it reaches a non-empty cell or Column BK.

Repeating text displays through column BK if not interrupted. However, it does not affect the *Last Col/Row*. When printed, the repeating text extends or prints only through the boundry imposed by the *Last Col*. It will only repeat when the row is set to TextLeft. It can be a repeat of more than one character (for example '-+- +). You can stop the display by creating a blank cell (e.g. '') at the boundary you want to set.

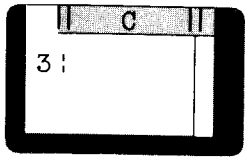
Formula Entries

A formula is a mathematical expression that calculates a numerical value. It consists of numerical constants, cell references and function references, connected by operators. A formula may contain a maximum of 116 characters.

When a formula is entered into a cell, the value may be calculated and displayed. Calculation is controlled by the **/G**lobal,**M**anual**/A**uto command. Cell contents (formula) or value display is controlled by the **/G**lobal,**F**ormula command.

The Operation Modes

6



CELLS

Current-Cell Reference Key [ESC]

When you format a cell you tell SuperCalc² how you want the cell value to look on your screen. You can specify a format for an individual cell, a group of cells, rows, columns, or the entire spreadsheet.

The display format options are described in detail under the **/F**ormat command (Chapter 7).

Current-Cell Reference Key [ESC]

The current-cell key is the (ESC) key. The current-cell key is a great time saver and convenience. When you press it, the SuperCalc² program puts the location of the active cell onto the entry line for you to use in a command or expression. After you press the current-cell key, the arrow and alternate diamond keys control the spreadsheet cursor. If you move the spreadsheet cursor, the Active Cell address on the entry line changes dynamically to reflect the new location. When you press (ESC) again, the address stops changing, and the arrow and diamond keys can again be used for editing.

Pressing (:) after the Active Cell address is a special case. The SuperCalc² program places another Active Cell address after the colon. The address before the (:) is fixed; the address after the (:) can still be dynamically changed. For an example of how to use this feature, see Lesson 4 in Chapter 3.

The new Active Cell location is temporary. When you press (↵) to enter the command or expression, the spreadsheet cursor will return to the prior active cell location. If you are entering data into a cell, it will go into that prior location.

6. The Operation Modes

SuperCalc^2 operates in three distinct modes.

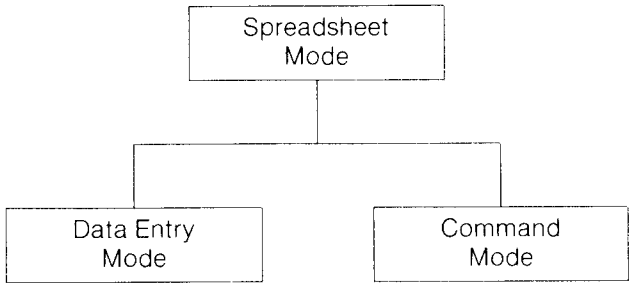


Illustration 6-1: SuperCalc^2 Operation Modes

When you first enter SuperCalc^2, you are in Spreadsheet mode. You *can* move to Data Entry or Command mode. You *cannot* go directly between Data Entry and Command modes, rather you must return to Spreadsheet mode first.

Spreadsheet Mode

In Spreadsheet mode the spreadsheet cursor is active and the edit cursor is inactive. You can move the spreadsheet cursor around the spreadsheet to view cell contents and values.

The Status lines display the following:

Active Cell Status
Global Status Mode
Edit Cursor Position (The line is not used in this mode.)

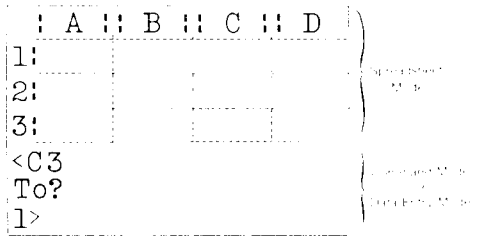


Illustration 6-2: Active Cursor

A formula can contain up to 116 characters. Numeric constants can have 16 significant digits plus a decimal point. Scientific, or exponential numbers can have 16 significant digits and a decimal point, all raised to a power of ten. The limit is the 63rd power of 10. If a number is greater than 16 digits, the right-most digits after the 16th are converted to zeros.

In-Line Editor

You edit data on the Data Entry line.

- The Left and Right arrows or (CTRL S) and (CTRL D) move the edit cursor non-destructively along the edit line.
- The Down arrow (CTRL X) deletes the character immediately under the edit cursor.
- The Up arrow (CTRL E) inserts a blank character between the previous character and the present cursor position.
- (ESC) enters the Active Cell coordinates at the edit cursor position.
- (↵) enters the entire data line into the Active Cell.
- (TAB) moves the cursor to the end of the edit line if the cursor is at the beginning, or to the beginning of the edit line if the cursor is anyplace else.
- (CTRL Z) or (CTRL C) deletes the entire Data Entry line and returns you to Spreadsheet Mode.

You can back out of the Data Entry line and into the spreadsheet mode by moving the cursor one character to the left of the beginning of the line.

Limits for Data Entry

Numbers can have up to 16 significant digits plus a decimal point and an optional sign. Exponential numbers (scientific notation) can have up to 16 significant digits, a decimal point and sign, and a signed exponent between -63 and +63. Numbers are rounded and displayed to a maximum of the 62nd power of 10 or to a minimum of the -64th power of ten.

Data Entry Mode

Data Entry mode enters data directly into the Data Entry line. A (↵) enters the data in the Data Entry line into the Active Cell. The Status lines display:

Active Cell Status
Global Status
Data Entry mode

You enter Data Entry mode by typing a Text or Formula entry. Begin the entry with any letter, number or one of the characters ' " (+ - .). A (↵) enters the content of the Data Entry line into the Active Cell and returns SuperCalc² to the Spreadsheet mode.

A Text entry begins with a double quote (") character. Any printable character on the keyboard may be used in text. A text entry may be up to 115 characters.

Repeating text begins with a single quote ('). The text repeats toward the right until a non-blank cell or the right edge of the spreadsheet (column BK) is encountered. Repeating text may contain any keyboard character and be up to 115 characters. When the cell is formatted TL (Text Left) the text repeats. When formatted TR (Text Right) the text does not repeat.

SuperCalc² checks that your entry constitutes a legitimate formula when you press (↵) and displays a Formula ERROR message if it is not. Formulas, then, may begin with any of the following:

A numeric constant — The characters (0-9) (+ - .) begin numeric constants.

A cell reference — Cell coordinate.

A mathematical function.

A calendar function.

A special function.

A textual constant.

Largest

number	9999999999999999
exponential number	9.999999999999999e62
negative number	-1.0e-64

Smallest

number	-9999999999999999
exponential number	-9.999999999999999e62
positive number	1.0e-64

Command Mode

Command mode directs SuperCalc² to perform an action. You enter command mode with one of five command keys from the spreadsheet mode.

!	Recalculate
;	Switch Window
=	GoTo
&	Resume Execute
/	Slash Commands Access
? or (F1)	AnswerKey (Use from anywhere in SuperCalc²)

Recalculate (!)

The (!) key forces recalculation of the entire spreadsheet. In **/G**lobal,**M**anual mode, this command is the only way to recalculate values. In **/G**lobal,**A**utomatic mode, the command provides an additional recalculation. (See the **/G**lobal command.)

Window Cursor Jump (;)

The (;) key switches the spreadsheet cursor between windows on a split screen. (See the **/W**indow command.)

GoTo (=)

The (=) key moves the spreadsheet cursor directly to the cell specified. When you press (=), the bottom status line prompts for a cell address. A (↵) executes the command. The spreadsheet cursor moves to the cell specified if it is currently displayed. If not in the display window the specified cell becomes the upper left cell of the display window. The command without a cell specified shifts the display window to put the Active Cell in the upper left.

Resume Execute (&)

The (&) key returns control of the spreadsheet back to the current execute (.XQT) file.

The Slash Commands

The SuperCalc² Slash Commands perform all other functions. You never have to remember a long list of commands. When you enter the (/) key, SuperCalc² prompts with the first letter of each command. You enter the first letter and SuperCalc² immediately fills in the rest of the word on the command line.

Chapter 7 describes the slash commands in detail. They are:

/**A**rrange
/**B**lank
/**C**opy
/**D**elete
/**E**dit
/**F**ormat
/**G**lobal
/**I**nsert
/**L**oad
/**M**ove
/**O**utput
/**P**rotect
/**Q**uit
/**R**eplicate
/**S**ave
/**T**itle
/**U**nprotect
/**W**indow
/**X**(eXecute)
/**Z**ap

When you press the / key, three things immediately happen.

- The bottom status line enters Command mode. The position number of the edit cursor displays first, then the / character.
- The middle status line changes from Global Display mode to Prompt mode. The slash command prompt displays:

  Enter A,B,C,D,E,F,G,I,L,M,O,P,Q,R,S,T,U,W,X,Z,?
- The edit cursor becomes active and the spreadsheet cursor inactive.

Most commands have several entry levels. When you enter a command letter, the prompt line changes to the appropriate prompt. SuperCalc² continues to prompt you through the sequence of options until you execute the command.

AnswerKey ? or F1

Whenever you need help press the AnswerKey ?. SuperCalc² explains on screen your current options, then with a touch of any key, returns you to where you were to continue your work.

You edit commands, like data and formulas, with the in-line editor.

The Arrow keys or Cursor Diamond keys control the edit cursor.

- The Right Cursor key moves the cursor to the right without erasing characters. When the cursor is at the right-most character of a command, the Right Cursor key is inoperative.
- The Left Cursor key moves the cursor to the left within a command option and erases the option if you go *too far*. Within a command specification, such as a filename or cell range designation, the Left Cursor key does not erase characters.
- The Down Cursor key deletes the current cursor character.
- The Up Cursor key inserts a blank space at the cursor position.
- ESC enters the Active Cell into the current cursor position on the edit line.
- ↵ executes a command. Everything on the line executes, not just the information to the left of the cursor.

, specifies that the current option is complete and proceeds to the next option of the command. If the option is the last option, the command executes.

You can *back out* of your current entry by using the Left Cursor key. In fact, you can back entirely out of a command without executing it by moving the cursor one position to the left of the slash / character.

7. The Slash Commands

Introduction to the Slash (/) Commands

The slash commands are so named because they begin with the slash (/) key. When you type the first letter of a slash command, SuperCalc²'s interpretive prompting completes the rest of the word on the entry line. For example, when you enter (/B), the Command line reads **/B**lank,. Notice that the interpretive prompting also includes the comma separating command options. When you enter the (/), the prompt line displays all the possible one letter entries. Whenever you wish further information about your option at any given moment, press the AnswerKey (?).

Most commands have several levels of entry. When you choose one of these, the prompt line changes to show the choices available for that particular command. You are prompted through the entire sequence of options.

Commands, like data, can be edited with the in-line editor. Remember that when you press (↵), everything visible on the Command line is entered--not just the part of the command to the left of the cursor.

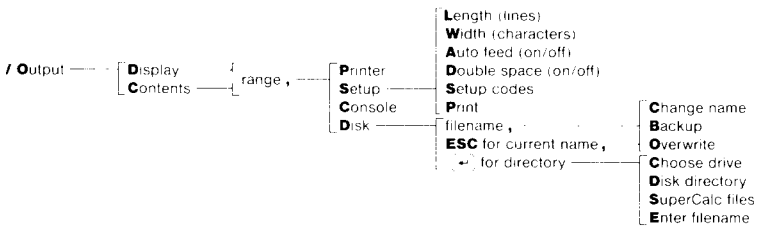
This chapter describes each of the slash commands. The commands are presented in alphabetical order, just as on the Prompt line. All of the options are presented in the box at the beginning of each command description. The options available at any particular point in defining a command are presented vertically. You select one of them and SuperCalc² moves to the next set of options, listed in the column adjacent to the right.

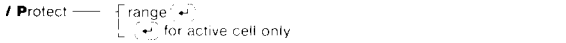
Slash Command Map

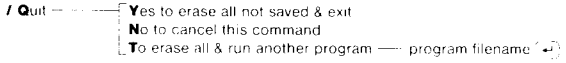
The SuperCalc² Slash Commands Map on the next two pages shows the route to every command. This overview shows the big picture of the SuperCalc² command structure. Use it to assist you in moving through the program. Each command described in this chapter begins with its portion of the command map.

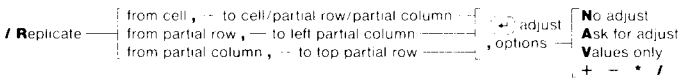
The Slash Commands

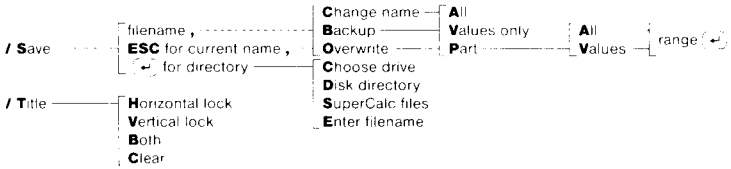
7

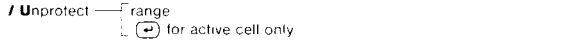


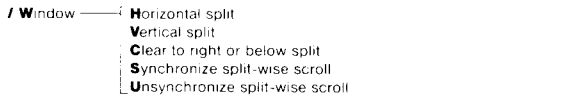


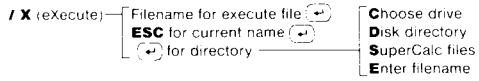


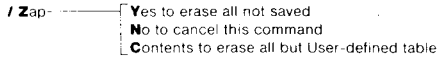






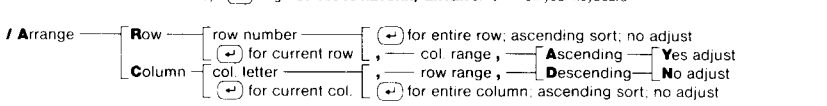


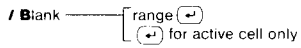


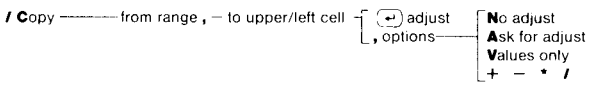


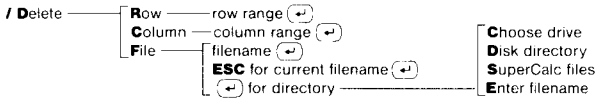
SuperCalc² Slash (/) Commands

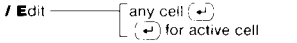
Key ↵ might be labeled **RETURN**, **ENTER** or ← on your keyboard

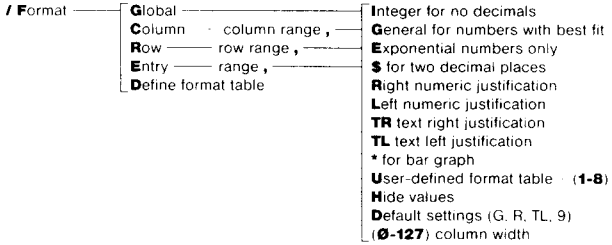


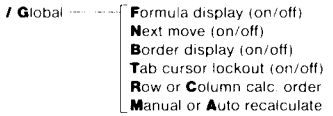


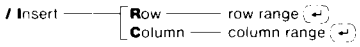


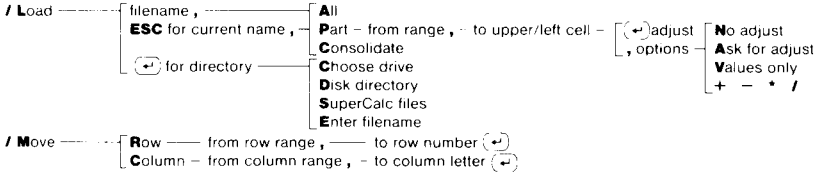












An empty range (entering just (↵)) means the current cell, row or column.

All means the range A1:<Last Col/Row>

(ESC) allows the arrow keys or the (CTRL S), (CTRL E), (CTRL D), (CTRL X) keys to be used to point to a cell.

Note: A cell range may be specified in ascending or descending order. For example, D10:A6 is equivalent to A6:D10.

The Cell Range:

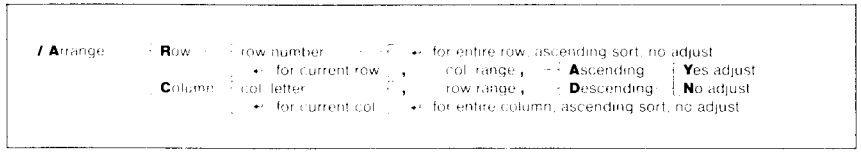
Many commands require you to specify a cell range. The term *Range* means that you can enter more than one cell at once. Some prompts specify a *Row Range* or *Range*. SuperCalc^2 uses the following range designators.

Cell	A column followed by a row. Example: J10
Column	A letter (or pair of letters) from A through BK. Example: AF
Partial Column	Two cells in the same column, separated by a colon. Example: The range N2:N15 includes all cells in Column N from N2 through N15.
Column Range	Two columns separated by a colon. Example: The range A:BC includes all columns from A through BC.
Row	A number from 1 through 254.
Partial Row	Two cells in the same row, separated by a colon. Example: The range N2:T2 includes all cells in row 2 from N2 through T2.
Row Range	Two rows separated by a colon. Example: The range 6:88 includes all rows from 6 through 88.
Block	Two cells, separated by a colon. Example: The range D5:AP75 includes all cells in the block between D5 in the upper left and AP75 in the lower right.

Arrange

Synopsis:

Sorts the spreadsheet by a column or row.



Command Description:

The **A**rrange command sorts your spreadsheet based on the cell values of a column or row. The **A**rrange options are:

- Sort based on the values in either a row or column. When you sort by a row, the columns are arranged, when you sort by a column, the rows are arranged.
- Specify a partial column or row. You specify a partial column for a row sort or a partial row for a column sort.
- Specify the sort order, either ascending or descending.
- Specify whether to adjust or not adjust formulas.

Column Sort

A sort by **C**olumn rearranges the spreadsheet rows so that the *key* column is in ascending or descending order.

When you select a column sort, you first specify the key column letter. A ↵ enters the current column and begins the sort. The following defaults apply:

All rows are sorted.
Ascending sort order.
No formula adjust.

The SuperCalc² File Directory

The following commands have an option that allows you to view the disk directory prior to selecting a filename:

/Delete
/Load
/Output
/Save
/X(eXecute)
/Quit,**T**o

When you select the *CR for file directory* option, your spreadsheet disappears and you see a menu that gives you four choices:

C(hoose) alternate disk drive
D(isk) directory, All files
S(uperCalc) format files only
E(nter) filename

The information at the top of the menu tells you the name of the last file that you loaded, your current work disk, and your current work file, if any.

The **C**(hoose) option allows you to change the current work disk.

The **D**(isk) option shows you the files in the directory of your current work disk. To get back to the menu press any key.

The **S**(uperCalc) option displays SuperCalc² .CAL files only. This option also shows the textual contents of cell A1 and the SuperCalc² version used to create the file.

The **E**(nter) option returns you to the command line to enter a filename.

Use a CTRL Z (or CTRL C) to quit the current command and return to the spreadsheet.

Row Sort

A sort by **R**ow rearranges the spreadsheet columns so that the *key* row is in ascending or descending order.

For a row sort, you specify the key row. A ↵ enters the current row and begins the sort. The following defaults apply:

All columns are sorted.
Ascending sort order.
No formula adjust.

To select non-default values, enter the row/column then a comma ,. SuperCalc² prompts for all of the following options:

Enter the range of the row/column you want.

- If you are sorting by a column, specify the row range to be included in the sort.
- If you are sorting by a row, specify the column range to be included in the sort.
- You may enter *All* to specify the entire row/column range.
- While you may specify a partial sort using one row/column by a ↵, such a sort results in no effective change in the order of your spreadsheet.

Select the sort order.

- You may select between **A**scending or **D**escending sort order. SuperCalc² arranges data first according to the type of data a cell contains, then according to the cell value.
- Regardless of the sort order, cells are arranged in groups by contents and value types:

  Text Cells
  Textual Value Cells
  Date Value Cells
  Error Cells
  Not Available
  Numerical Value Cells
  Blank (Empty) Cells

- Within those groups, cells are arranged in ascending or descending order, with numerical and date values in order, and Text cells and textual values in the following order:

  Space
  Other characters in ASCII order
  Alpha characters, with lower case characters preceding their upper case counterparts (aAbBcC...zZ)
  Numeric characters

Note: See Appendix C for the complete Sorcim sort order. This order is very similar to that used in a dictionary or phone book.

Adjust **Y**es or **N**o?

You may select whether to adjust cell formulas.

- If you select **Y**es, SuperCalc² sorts your spreadsheet, then adjusts the formulas and recalculates if **G**lobal,**A**uto is in effect
- If you select **N**o, SuperCalc² does not alter the cell formulas or recalculate values. This is the default.

Examples:

To arrange the current row (default options are ascending sort order and no formula adjust):

/Arrange,**R**ow ↵

To arrange the current column (default options are ascending sort order and no formula adjust):

/Arrange,**C**olumn ↵

To arrange a different row (default options):

/Arrange,**R**ow,**14** ↵

To arrange a different column (default options):

/Arrange,**C**olumn,**E** ↵

Blank

Synopsis:

Erases the contents and resets the formatting of the cell range.

/ **B**lank [range] ↵
for active cell only

The **B**lank command deletes the contents of all unprotected cells in the specified range. The display format is reset to the default settings for cells formatted at the **E**ntry level. Column, Row, and Global display formats are unaffected.

Omit the Range to blank the Active Cell.

Examples:

Blank single cell:	**/B**lank,**C7** ↵
Blank partial row:	**/B**lank,**C7:H7** ↵
Blank block of cells:	**/B**lank,**C7:H12** ↵
Blank entire column:	**/B**lank,**C** ↵
Blank all unprotected cells:	**/B**lank,**ALL** ↵

Special Considerations:

1. **B**lank sets the default display format conditions for cells that are formatted at the **E**ntry Level only. **B**lank does not affect the cell format of cells formatted at the **R**ow, **C**olumn or **G**lobal levels.

To arrange a partial row in ascending sort order with no formula adjust.

/Arrange,**R**ow,**7,C:G,A**scending,**N**

To arrange a partial column using descending sort order and to adjust formulas:

/Arrange,**C**olumn,**D,7:19,D**escending,**Y**

Special Considerations:

1. If you think you may want to return your spreadsheet to its original sort order, use the **R**eplicate command to create a separate row or column containing sequential numbers prior to using **A**rrange.
2. When you **A**rrange a spreadsheet you are in fact declaring that the relationships among the cells are no longer needed (at least temporarily), and that you prefer a new arrangement determined by the current values of a row or column. Therefore, in most cases there is no meaningful formula adjustment possible. For example, the formula SUM(A1:A6) can't be adjusted properly if those five columns are no longer contiguous. For that reason, it is usually best not to adjust formulas during an **A**rrange, and accordingly, the default is **N**o. Re-sorting on the extra row or column (See Special Consideration 1) restores the original formula and cell relationships. In those cases where an adjust may be meaningful, you can override the default.
3. To protect yourself against changing your spreadsheet in ways that you do not anticipate, **S**ave the spreadsheet to a disk file prior to using **A**rrange.

Copy

Synopsis:
Duplicates cells into a new spreadsheet location. Options allow a choice of formula adjustment or consolidation arithmetic.

Command Description:

The **C**opy command makes a one-to-one duplicate of the Source Range into the Destination Range. **C**opy duplicates the cell contents, cell values and display formats exactly. The Source Range remains intact.

The Destination Cell becomes the upper left corner of the Destination Range. The Destination Range takes on the same size and shape as the Source Range.

The options allow you to specify Formula Adjustment or Consolidation arithmetic for the Destination Range. A ↵ provides the default option, formula adjustment. To select another option, enter a comma (,) and specify the remaining options.

↵ Formula Adjust – The default selection copies and adjusts formulas to their new location.

N **N**o Adjust – Copies cell contents literally with no formula adjustment.

A **A**sk for Adjust – Prompts for formula adjustment for each cell copied. The Command line displays the formula and the Prompt line displays the source cells. SuperCalc^2 prompts for each cell reference adjustment.

V **V**alues – Copies cell values only as numeric constants. Formulas are evaluated and their values only (not the actual formulas) are copied. Dates change to their DVAL function value.

+ Adds each source cell value to the corresponding destination cell value and enters the sum into the destination cell as a numeric constant.

- Subtracts each source cell value from the corresponding destination cell value and enters the difference into the destination cell as a numeric constant.

* Multiplies each source cell value with the corresponding destination cell value and enters the product into the destination cell as a numeric constant.

/ Divides each destination cell value by the corresponding source cell value and enters the quotient into the destination cell as a numeric constant.

Examples:

Copy cell to cell:

/Copy,**B9,C12** ↵

Copy partial column to partial column:

/Copy,**B9:B12,H9** ↵

Copy partial row to partial row:

/Copy,**B9:G9,H12** ↵

Copy block to block:

/Copy,**B9:G15,K20** ↵

Copy without adjustments:

/Copy,**B9,C12,N** ↵

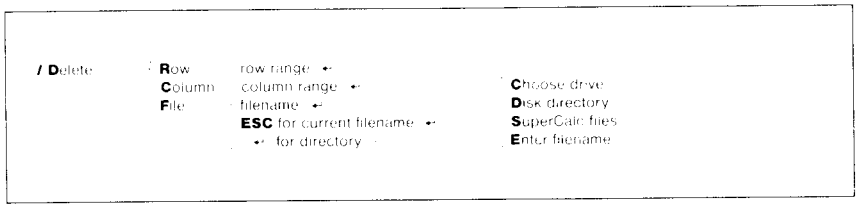
Copy, ask for individual choice of adjustments:

/Copy,**B9:B15,E9,A** ↵

Delete

Synopsis:

Erases a row range, column range or disk file.



Command Description:

The **D**elete command erases a row range or column range from your spreadsheet, or a file from your disk.

Delete erases the row range or column range, then moves the adjacent rows or columns to fill in the gap created. Formulas adjust to compensate.

The **D**elete,**F**ile

option erases a file name from the disk directory of a disk. If the (ESC) key is pressed in response to the filename prompt, the name of the last file **L**oaded is placed on the entry line. If a (↵) is entered, SuperCalc^2 allows you to examine the directory of files on your disk.

Examples:

To delete row 5:

/Delete,**R**ow,**5** (↵)

To delete column E:

/Delete,**C**olumn,**E,** (↵)

To delete file *WORK1.CAL* from drive B:

/Delete,**F**ile,**B:WORK1** (↵)

Special Considerations:

1. The +, -, *, / options do not affect a cell that does not contain a *Form* (formula) entry with a numeric value.
2. The +, -, *, / options perform the indicated calculation between cells, and replaces the destination cell contents with the calculated value as a numeric constant.
3. The Left Cursor key *Backs Out* of the option list to let you select the default (↵). See Chapter 4.
4. See The **L**oad command for more details on Consolidation.
5. Cells can be copied into themselves. This can be used for such things as freezing values, or for saving memory. For example, you can generate a series such as 1...20 without using computer memory for a formula with the following sequence.

    1. Enter (1) in A1.
    2. **/R**eplicate,**A1,A2:A20** (↵)
    3. **/C**opy,**A1:A19,A2,+**

    Then, to generate a table of numeric squares.

    4. **/C**opy,**A1:A20,A1,***

Edit

Synopsis:

Edits the contents of a cell and places it in the Active Cell.

Command Description:

The **E**dit command is used to alter the contents of a source cell and place it into the Active Cell. **E**dit copies the source cell contents to the Edit line where it may be altered as any other data entry. A ↵ places the data on the edit line into the active cell.

You may specify any cell as the source cell. If you do not specify a source cell, e.g., press the ↵, the Active cell becomes the source cell.

Edit uses the in-line editor. The editing commands are identical to Data Entry.

Example:

The Active Cell contains "Janaurry. **/E**dit and ↵ brings this to the entry line. Use the left arrow to move the cursor to the second *a* in Janaurry. Type *ua*. Move cursor to either *r* in Januarry. Press the down arrow to delete it, and press ↵. (Remember, pressing ↵ puts the entire entry into the cell no matter where the cursor is position.) The Active Cell now contains "January.

Special Considerations:

1. See the section on Edit Cursor Control for a detailed description of the cursor commands available. (Chapter 4.)
2. You cannot edit into a protected Active Cell, but you may edit another protected source cell.

To delete multiple rows:

/Delete,**R**ow,**5:10** ↵

To delete multiple columns:

/Delete,**C**olumn,**B:F** ↵

Special Considerations:

1. Formulas adjusted into cells that no longer exist are considered an ERROR. See Chapter 8 for more information on ERROR.
2. There is no provision to not adjust formulas.
3. If a deleted row range or column range is within the block range specified by a function reference (such as SUM(A1:D10)), the formulas adjust. If a deleted row/column range includes one of the extreme rows/columns of the block range specified by a function reference (such as SUM(A1:D10)), an error message results. You can then use the in-line editor to modify the command.
4. If a deleted row or column contains a protected cell, an error message results.
5. Rows or columns containing data cannot be reaccessed once they are deleted.
6. Files are deleted permanently; they cannot be restored even with a disk-fixing utility.

3. The Current Cell (ESC) key may be used to specify a source cell. Press (ESC) to enter the current cell function, then move the spreadsheet cursor to the source cell and press (ESC) again to enter that cell. See the *ESC for Current Cell* section in Chapter 4.

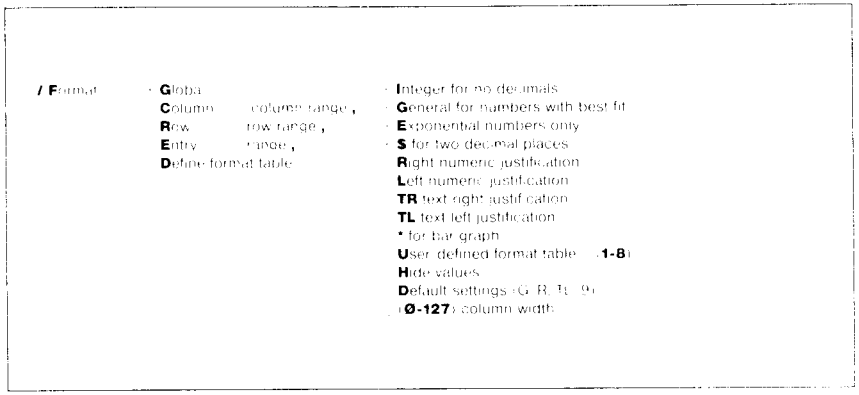
4. The (TAB) key moves the cursor to the beginning of the edit line. If it is already at the beginning the cursor moves to the end of the line.

Format

Synopsis:

(1) Sets the cell display format on four levels, global, column, row and entry.

(2) Defines the User-defined formats.



Command Description:

The **F**ormat command specifies display format characteristics. To select the display format options you first select the level of format.

Format only affects the display of the cell value. It does not affect the cell value itself or the cell content. The display format controls both the screen image and the printed output.

Successive formatting commands may result in a conflict of formats for a given cell. For example, you may format an entire spreadsheet using **G**lobal and then specify a different format for a **R**ow. Or you may format a **R**ow and a **C**olumn differently. Where formats differ, SuperCalc^2 uses the following order of precedence.

1. **E**ntry
2. **R**ow
3. **C**olumn
4. **G**lobal

Thus, if you specify options using the **G**lobal level, then later select different options for a **C**olumn, the **C**olumn options override the **G**lobal options for that column. Similarly, if you select options for a **R**ow, the cell that intersects the column takes on the row options. Finally, any cells specified using **E**ntry override all other specifications.

SuperCalc^2 prompts with the format options.

(I,G,E,$,R,L,TR,TL,*,U(1-8),H,D,Column width)

I Integer -- Displays numbers as integers, rounding as necessary to produce whole numbers No decimal point displays.

G General -- Displays numbers as an integer if the number is an integral value, or in decimal format if the column width allows. Numbers larger than the column width display in Exponential format.

E Exponential -- Displays numbers in exponential form using conventional scientific notation. Numbers are expressed as a power of ten containing one significant figure to the left of the decimal point. The letter *e* delineates the numeral from the order of magnitude. For example, 1776 is 1.776e3.

$ Money -- Displays numbers with two digits after the decimal point. The character (S) does not display. To display the $, use the *Floating $* User-defined format option.

R Right justifies formula values including dates and textual values.

L Left justifies formula values including dates and textual values.

TR Right justifies text entries.

TL Left justifies text entries.

***** Graphic Format -- Displays asterisks to represent numbers. Use this format to create a bar graph. For example the number 1 displays as 1 asterisk, the number 5 as five asterisks, etc. For an example, see Lesson 6, Chapter 3.

U(1-8) User-defined format – Displays the cell value according to the characteristics defined in the selected column of the User-defined format table.

H Hide causes the cell to display as blank. The value does not display on screen nor print on the printer. The Cell Content is not affected.

D Removes previously set format options at the level and for the range specified. At the Global level Default returns the display format to its initial settings:

G	General
TL	Text Left Justification
R	Right numeric justification
9	column width

(0-127) Enter a number (0-127) to set the column width between 0-127. Column width can be set for **G**lobal and Column formats only, not for **R**ow and **E**ntry formats.

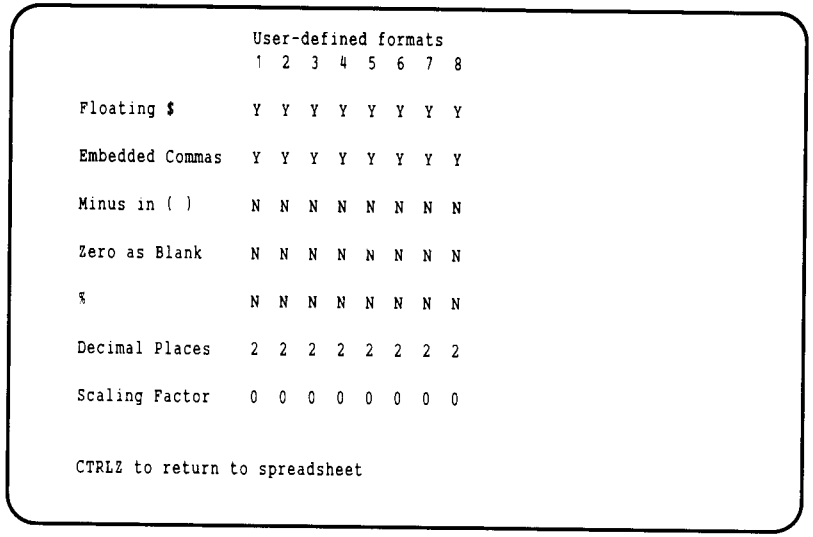
User-Defined Formats

The **D**efine option specifies seven display properties for eight User-defined formats. Any of the eight User-defined formats may contain any combination of properties.

The User-Defined format has two aspects.

1. You specify the properties for each format using a built-in table of options.
2. You assign the formats to the cells that you want to contain those properties. To change the properties of a group of cells, all you need to do is redefine the format in the format table. The displays are changed automatically.

The **D**efine option shows you the default User-defined format table. You can move the cursor to any location in the format table and your choices display in the prompt line.



```
                    User-defined formats
                    1  2  3  4  5  6  7  8

Floating $          Y  Y  Y  Y  Y  Y  Y  Y

Embedded Commas     Y  Y  Y  Y  Y  Y  Y  Y

Minus in ( )        N  N  N  N  N  N  N  N

Zero as Blank       N  N  N  N  N  N  N  N

%                   N  N  N  N  N  N  N  N

Decimal Places      2  2  2  2  2  2  2  2

Scaling Factor      0  0  0  0  0  0  0  0


CTRLZ to return to spreadsheet
```

The prompt line shows the valid choices, either Y/N or 0-7. Each property is described below.

Floating $

- **Y** Precedes numeric values with a Dollar Sign ($).
- **N** A Dollar Sign is not used.

Note: This property is not the same as the $ option from the **/F**ormat options list, which displays numbers using 2 decimal places, but without a dollar sign.

Embedded Commas

- **Y** Enters a comma between every third place to the left of the decimal for a numeric value.
- **N** No commas are entered into numeric data.

Minus in ( )

- **Y** Encloses negative numeric values in parentheses. Positive numbers are shifted one place to the left to align the decimal point with negative numbers in the same column. Note that on some equipment negative numbers also display in red.
- **N** Precedes negative numeric values with a minus sign (-).

Zero as Blank

- **Y** Displays a blank if the numeric value of the cell is zero.
- **N** Displays a zero if the numeric value of the cell is zero.

%

- **Y** Multiplies a numeric value by 100 and expresses it as a percent with a (%) appended.
- **N** The numeric value is unaffected.

Decimal Places (Alignment)

- **0-7** Specifies the number of digits displayed after the decimal point. Internally, SuperCalc^2 continues to work with 16 decimal places.

  Note: Setting this value to 2 has the same effect as the **F**ormat,**$** option.

Scaling Factor

- **0-7** Specifies the power of ten by which the number displayed is scaled down. The cell value is divided by the power of 10 indicated. For example, a scaling factor of 3 displays the actual cell value divided by 1000 (in *thousands*).

Format Types

There are four types of display format characteristics. Each cell has one and only one format characteristic from each category in effect at any given time. When you assign a new display format option, it replaces the current one for that category.

1. Numeric representation (in value display mode)

I	Integer
G	General
E	Exponential
$	Money format
*****	Graphic display
U(1-8)	User-defined format
H	Hide (Note: Also hides *Text* and *Rtxt* entries).

2. Formula justification, including numeric, date and textual value (in value or formula display mode).

R	Right numeric justification
L	Left numeric justification

3. Text justification

TR	Right text justification
TL	Left text justification

4. Column width

(0-127)	Set the column width to the designated number.

5. The **D**efault option sets the following options, one from each category.

G	General
R	Right numeric justification
TL	Left text justification
9	column width

Examples:

Format column E to be 12 characters wide:

/Format,**C**olumn,**E,12** ↵

Format rows 7 to 12 to be TextRight:

/Format,**R**ow,**7:12,T**ext**R**ight, ↵

Globally format spreadsheet for money format and 11 character column width:

/Format,**G**lobal,**$,11,** ↵

Format block for exponential format:

/Format,**E**ntry,**A7:H8,E**xponential, ↵

Special Considerations:

1. A cell takes on the format of the highest format option used to define it. The precedence order is:

   Entry
   Row
   Column
   Global

   When you select the **F**ormat,**D**efault option, the cell takes on the properties of the level under it.

2. You may specify as many options as you wish on the **F**ormat command line. However, only the last option you specify from each format type category will be in effect.

3. When SuperCalc^2 first loads, without any resident spreadsheet, all cells display as if the **F**ormat,**G**lobal,**D**efault, command has been issued from the keyboard. This default sets the following:

G	General
R	Right numeric justify
TL	Left text justify
9	Column width

4. To cope with *narrow* columns when displaying numeric values, SuperCalc^2 has several tactics:

   a. Round off and drop the right most mantissa digits (the digits to the right of the decimal point).

   b. Omit the decimal point, i.e. display in Integer format.

   c. Display >>>> characters when the integer will not fit in the column.

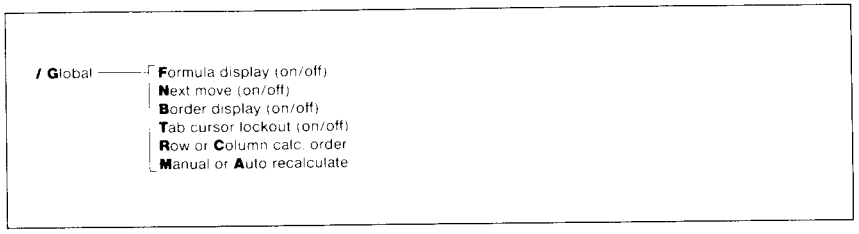
5. The number of decimal places displayed is affected by the display option and the column width selected. SuperCalc^2 always uses a full 16 digits when calculating. This may result in displayed numbers not *adding up*, when, for example, the **F**ormat,**$** is used. The ROUND function (Chapter 8) may be used to force SuperCalc^2 to calculate to a certain limited precision (for example pennies).

6. The User-defined format table is **S**aved with the spreadsheet on disk, and is reset to the default state (all Floating Dollar, Embedded Commas and two decimal places) by **Z**ap,**Y**es. **Z**ap,**C**ontents preserves the state of the table.

Global

Synopsis:

Set the spreadsheet global options.



Command Description:

The **G**lobal command specifies the global display and calculation options. These options specify settings for the entire spreadsheet.

F The **F**orm. option alternates the spreadsheet between displaying the cell contents and the cell values. The cell contents is the literal data entered into the cell, such as a formula or a number. The cell value is the result of evaluating the cell content, such as the number produced by evaluating the formula.

- When F is off, Formula cells display the cell values.
- When F is on, Formula cells display the cell contents.

N The **N**ext option turns off/on the spreadsheet cursor *auto-advance*. The default is *on*.

- When Next is on, the spreadsheet cursor advances in the current direction after an entry of data with a (↵). The current direction displays in column one of the Active Cell Status line. It is determined by the direction of the prior cursor move.
- When Next is off, the spreadsheet cursor does not advance. The cursor direction indicator is absent from the Active Cell Status line.

B The **B**order option turns on/off the display of the column/row borders. The border is the number column along the left side and the letter row along the top of the spreadsheet. The default is *on*.

- When the border is on, it is displayed on the console and printed with the report.
- When the border is off, it does not display on the console, nor print with the report.

T The **T**ab option turns on/off the cursor lockout option. In the **T**ab mode, the cursor automatically jumps to only non-blank, non-protected cells. The **T**ab option is useful to speed data entry by skipping designated cells. The default is off.

- When the tab option is off, the spreadsheet cursor may be positioned in any cell.
- When the tab option is on, the spreadsheet cursor keys can position the cursor in non-blank, non-protected cells only.

See the **X**(eXecute) section for details on how to construct a *black box* or *canned* application using **G**lobal, **T**ab and **X**(eXecute).

Note: The *GoTo* (=) command can position the cursor at any cell, even when the **T**ab option is on.

R,C Specifying **R**ow or **C**olumn determines the order that SuperCalc^2 calculates your spreadsheet. All calculations begin with cell A1. The default is Row-wise calculation.

R **R**ow calculates cells across a row from left to right before moving down to the next row.

C **C**olumn calculates cells down a column from top to bottom before moving right to the next column.

M,A Specifying **M**anual or **A**uto determines when SuperCalc^2 recalculates your spreadsheet. The default is Auto.

A **A**uto automatically recalculates the entire spreadsheet each time new data are entered or after an **A**rrange, **B**lank, **C**opy, **D**elete, **L**oad, **M**ove or **R**eplicate command is executed.

M **M**anual requires you to use the (!) command to force recalculation.

Note that since the **M**anual/**A**uto status is saved with the spreadsheet on disk, the calculation after a **L**oad,**A**ll depends on the state in which the spreadsheet was saved.

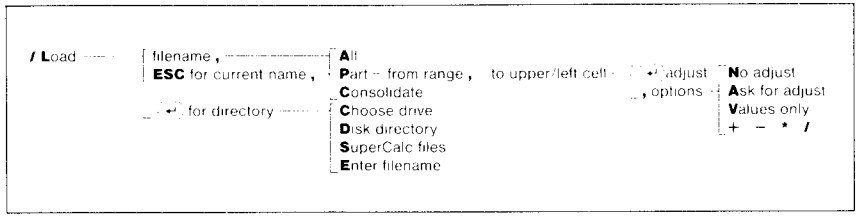
Special Considerations:

1. The **M**anual option is especially helpful when you have a large spreadsheet and are entering a significant amount of data as you do not have to wait for recalculation each time. On the other hand, **A**uto recalculation always keeps your spreadsheet up-to-date.
2. When both the **T**ab option and **N**ext option are on, the cursor moves automatically to the next unprotected, non-blank cell after data entry.
3. See the **X**(eXecute) command.

Load

Synopsis:

Load the spreadsheet contents, values and format settings from a disk file. You may load all or part of the spreadsheet at a location you specify. Options give a choice of formula adjustment or values only or consolidation arithmetic.



Command Description:

The **L**oad command reads the cell contents, cell values and format settings from a disk file into the current spreadsheet. You may load **A**ll or **P**art of a spreadsheet.

Enter the name of the file you wish to load preceded by the disk drive, if necessary. SuperCalc^2 looks for a file with the .CAL extension unless you specify otherwise.

If the (ESC) key is pressed in response to the filename prompt, the name of the last file **L**oaded is placed on the entry line. If a (↵) is entered, SuperCalc^2 allows you to examine the directory of files on your disk.

When you load **A**ll of the spreadsheet it loads exactly in the form in which it was saved.

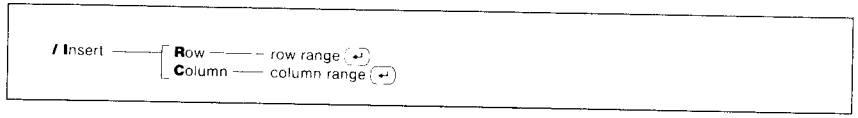
Consolidation of Spreadsheets

The **C**onsolidate option sums the contents of corresponding cells of a disk file with the contents of the spreadsheet file. When you select the consolidate option, corresponding cells of the disk file are added to the value of the spreadsheet file and the sum replaces the contents of the spreadsheet cell.

Insert

Synopsis:

Inserts an empty row range or column range and adjusts formulas.



Command Description:

The **I**nsert command adds a row range or column range and adjusts the formulas for the remainder of the spreadsheet. Columns move to the right of the inserted columns and rows move down from the inserted rows. If there are cells in any row that would be pushed past 254 or column past BK, SuperCalc^2 won't allow the insert. You must first delete an appropriate number of rows/columns, then retry the insert.

Examples:

Insert a row between rows 4 & 5:

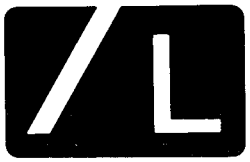
/Insert,**R**ow,**5** ↵

Insert 3 columns between columns D & E:

/Insert,**C**olumn,**E:G** ↵

Special Considerations:

1. There is no provision to not adjust formulas.



To load a partial spreadsheet, first specify **P**art, then specify the source cell range. The destination cell becomes the upper left corner of the region to be loaded. SuperCalc^2 assumes that the range of the destination will be the same size as the source range. **C**olumn, **R**ow, **G**lobal, **U**ser-defined formats and settings such as **G**lobal,**M**anual, Active Cell position, Current cursor direction and **W**indow and **T**itle information are not loaded with a partial load. Cell **E**ntry formats are loaded.

The options allow you to specify Formula Adjustment or Consolidation arithmetic for the Destination Range. A ↵ provides the default option, formula adjustment. To select another option, enter a comma , followed by the option.

Formula Adjustment Options

↵ Formula Adjust – The default selection copies and adjusts formulas to their new location.

N **N**o Adjust – Copies cell contents literally with no formula adjustment.

A **A**sk for Adjust – Prompts for formula adjustment for each cell copied. The Command line displays the formula and the Prompt line displays the source cells. SuperCalc^2 prompts for each cell reference adjustment.

V **V**alues – Copies cell values only as numeric constants. Formulas do not copy. Dates change to their DVAL function value.

Consolidation Arithmetic Options

\+ Adds each source cell value to the corresponding destination cell value and enters the sum into the destination cell as a numeric constant.

\- Subtracts each source cell value from the corresponding destination cell value and enters the difference into the destination cell as a numeric constant.

* Multiplies each source cell value with the corresponding destination cell value and enters the product into the destination cell as a numeric constant.

/ Divides each destination cell value by the corresponding source cell value and enters the quotient into the destination cell as a numeric constant.

The effect of a consolidation arithmetic operation depends upon the contents of the corresponding spreadsheet and disk file cells. There are four cases to consider.

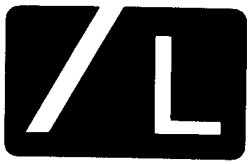
- A blank spreadsheet cell and a blank disk file cell result in a consolidated blank cell.
- A blank spreadsheet cell and a non-blank disk file cell result in a consolidated blank cell.
- A non-blank spreadsheet cell and a blank disk file cell result in a consolidated cell that is unchanged from the formula spreadsheet cell.
- A numeric spreadsheet cell and a numeric disk file cell result in a consolidated cell that is the result of performing the selected operation.

The following table summarizes the above.

SPREADSHEET	DISK: Blank	DISK: Formula*
Blank	Blank	Blank
Formula*	Spreadsheet Content	Spreadsheet + Disk File Value

Note: The following types of cells are not affected:

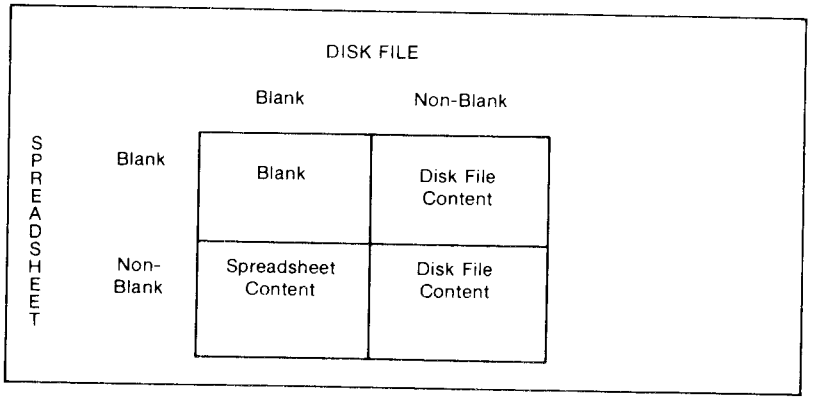
Text String cells	Textual Value cells
Protected Formula cells	N/A cells
Date cells	ERROR cells



You can *Load* a disk file on top of a spreadsheet file. Corresponding cells of the disk file replace those of the current spreadsheet file. There are four cases to consider.

- A blank spreadsheet cell and a blank disk file cell result in a blank cell.
- A blank spreadsheet cell and a non-blank disk file cell result in the contents of the disk file cell.
- A non-blank spreadsheet cell and a blank disk file cell result in the contents of the non-blank spreadsheet cell.
- A non-blank spreadsheet cell and a non-blank disk file cell result in the contents of the non-blank disk file cell.

The following diagram illustrates each case:



Examples:

To load an entire file from the system drive:

/Load,**QUARTER,A**ll

To load part of a file on drive B:

/Load,**B:INCOME,P**art,**F4:F25,A4,V**alues

To replace a section of the current contents of the spreadsheet with that of a disk file:

/Load,**filename,P**art,**C3:F20,C3** ↵

To sum the values of the current spreadsheet with those of a disk file:

/Load,**filename,C**onsolidate

To sum the values of a section of the current spreadsheet with those of a disk file:

/Load,**filename,P**art,**C3:F20,C3,+**

Note: This method is a good way to link spreadsheets together if one large spreadsheet is too large to fit in memory. For example, load the first spreadsheet, then delete everything but its *bottom line*. Then load the next spreadsheet which references the first bottom line for its calculations.

Special Considerations:

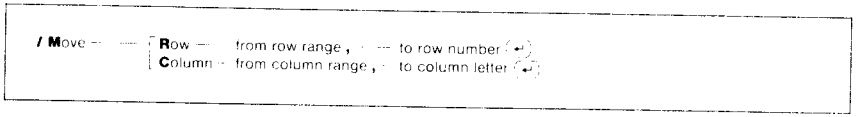
1. If there are protected cells in the destination area, they will remain unchanged.
2. See the SuperCalc^2 File Directory section at the beginning of this chapter.
3. The following two commands options produce identical results:

   /Load,**filename,C**onsolidate
   /Load,**filename,P**art,**A1:BK254,A1,+**

Move

Synopsis:

Moves a row range or column range to a new location and adjusts the formulas.



Command Description:

The **M**ove command transfers the column range or row range to a new location. The formulas adjust without destroying any data or formatting. You move a column range left or right. The columns between the old and new locations move in the opposite direction to fill in the space. You move a row range up or down. The rows between the new and old location move in the opposite direction to fill in the space.

Formulas on the spreadsheet adjust as necessary to preserve references to cell contents at the new locations.

Examples:

Move row 5 between rows 11 and 12:

/Move,**R**ow,**5,12** ↵

Move columns C to E between columns I and J:

/Move,**C**olumn,**C:E,J** ↵

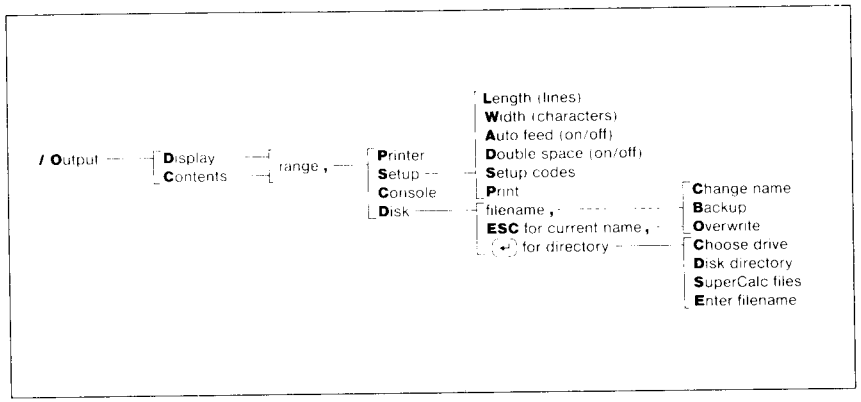
Special Considerations:

1. There is no provision to move without formula adjustment.
2. See the **D**elete and **I**nsert commands.

Output

Synopsis:

Writes all or part of the spreadsheet to the printer, the terminal or a disk file. Options allow writing the displayed information or the cell contents listing.



Command Description:

The **O**utput command writes all or part of the spreadsheet to the printer, the terminal, or a text file on disk. If you write your report to a disk file, you can use the SuperWriter™ program (or other word processing programs) to edit or reformat your report before printing. You can include SuperCalc² reports in other documents as you wish.

Your first option selects the mode of the output.

D The **D**isplay option outputs the spreadsheet as it displays on the terminal. You may display the cell values in any display format or display the cell content.

C The **C**ontent option lists the cell contents one per line. The information includes the display format (entry level only), the protection status, and the cell content.

Your next option selects the range to output. Specify a cell, partial row, partial column, block or *All* for the entire spreadsheet.

Your third option selects the output device.

P **P**rinter sends your report to the printer. The default line length is 132 and the page length is 66. If your spreadsheet exceeds the line length, SuperCalc² prints as many columns as it can on one page and prints the excess columns on another page. Use **S**etup to alter the defaults before printing.

S **S**etup allows you to change the default printing specifications. You may change any or all of these specifications. Use this option before printing to change such things as print 80 columns and compressed format.

L **L**ength specifies the number of lines per page. The default is 66. You may select from 0-255 lines. If you specify zero, the report prints continuously with no top or bottom margins.

W **W**idth specifies the number of characters per line. The default is 132. You may select from 0-255 characters. Width does not affect the terminal display width. You can alter the display width on a file written to disk. See Special Consideration 4.

A **A**uto Form Feed. When Auto Form Feed is off, you must press the space bar after each page to continue printing. When auto form feed is on, the printer does not stop after printing each page. The default is off.

D **D**ouble Space Report Setting. When Double Space is off, you get a single spaced report. When Double Space is on, you get a double spaced report. The default is off.

S **S**etup specifies any initialization string to send to your printer to initiate special functions, such as compressed type or bold face type. These specifications remain in effect until you either change them or quit SuperCalc², in which case the defaults are reset. They are not stored on disk with the file. When entering manual setup codes, enter the actual control sequences, not the Hex values for

those sequences. The proper sequences are in your printer operator manual. Make sure your printer is turned on and on line before setting these options. For example, to put an Epson MX80 printer into compressed print mode, enter a (CTRL | O). The screen does not display anything, but the (CTRL | O) is sent to the printer. You may send a string of any length, terminated with a (↵).

P **P**rint sends your report to the printer using the specifications you have set.

C The **C**onsole option displays the output on your terminal or *console*. This option is useful for checking your report before printing.

D **D**isk sends your report to a disk file. The report is saved on the disk in the same form as it appears on your console or prints on the printer. SuperCalc² gives the filename the .PRN extension unless you specify otherwise in the filename. If the file already exists, SuperCalc² gives you the following options.

If the (ESC) key is pressed in response to the filename prompt, the name of the last file **L**oaded is placed on the entry line. If a (↵) is entered, SuperCalc² allows you to examine the directory of files on your disk.

If you specify the name of an existing file, SuperCalc² gives you the following options.

C **C**hange Name. You may edit or change the name of the file here.

B **B**ackup changes the extension of the existing file to .BAK and then writes your spreadsheet onto the disk using the .CAL extension. Your old file remains unchanged and is available as a backup. If a .BAK file already exists, it is deleted permanently from the disk prior to the renaming.

O **O**verwrite erases the old file from the disk and creates a new file of the same name containing your current spreadsheet.

A .PRN text file may be used in conjunction with other programs such as SuperWriter. You can enhance the report, include it in your documents and/or otherwise use the full range of editing capability of your text editor.

Note: The .PRN file produced is not the same as the .CAL file produced by the **S**ave command. The .PRN file is an ASCII file that can be edited using SuperWriter or other text editor. SuperCalc² cannot *load* a .PRN file. A .CAL file is a binary file and cannot be edited with SuperWriter.

Examples:

Output display report to the printer:

/Output,**D**isplay,**ALL,P**rinter

Output content report of row B to printer, changing to print on continuous forms:

/Output,**C**ontents,**B,S**etup,**L**ength,**O,**(↵),**P**rint

Remove borders and output to a disk file:

/Global,**B**orders
/Output,**D**isplay,**A1:J23,D**isk,**B:WORK1** (↵)

To send an initialization string to your printer to perform special functions: (In this case (CTRL | O))

/Output,**D**isplay,**ALL,S**etup,**S**etup,(CTRL | O)
(↵),**W**idth,**233,P**rint

This command line sets some printers to print compressed type, increases the number of characters per line (if you want to print more than 132 characters), and prints. These parameters are in use until you change them or quit the SuperCalc² program. When entering manual setup codes, enter the actual control sequences, not the Hex values for those sequences. You will find these in the manual for your particular printer. Make sure your printer is turned on and on-line.

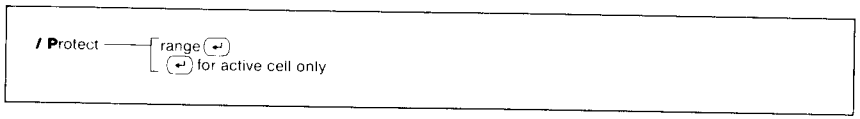
Special Considerations:

1. See **X**(eXecute) for .XQT files that can be created on a spreadsheet, then saved using the **/O**utput command.
2. See **L**oad and **S**ave for .CAL files
3. See the SuperCalc² File Directory section at the beginning of this chapter.
4. You can alter the width on a file written to disk. Select the Setup Option, and specify the width. There is no disk file option here, so use (CTRL | Z) to go back to the spreadsheet. The width setting still is in effect, so now use **/O**utput again and select the Disk write option.
5. The Automatic Carriage Return/Line Feed may be configured using the INSTALL program. This sets the default setting of the Auto Form Feet Setup Option.
6. Text cell entries that extend past the last column specified (or the last column that contains an entry if **A**ll is specified) are *clipped* to the end of the last column.

Protect

Synopsis:

Protects the cell contents and formatting of a cell range from change.



Command Description:

The **P**rotect command prevents the cell contents and display formats of non-blank cells in a cell range from change. Data may not be entered, edited or the format changed for cells that are protected.

Omit the range to protect the Active Cell singularly.

Examples:

Protect a specified cell:

/Protect,**C3** ↵

Protect a partial column:

/Protect,**C3:C9** ↵

Protect a partial row:

/Protect,**C3:G3** ↵

Protect a block:

/Protect,**C3:G9** ↵

Protect the Active Cell:

/Protect ↵

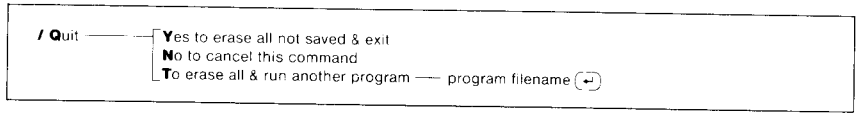
Special Considerations:

1. **B**lank, **C**opy, **R**eplicate and **L**oad all bypass protected cells. The commands operate normally on surrounding cells but leave the protected cells unchanged.
2. **D**elete does not work on rows or columns containing a protected cell.
3. **Z**ap overrides protected cells to delete the entire spreadsheet. **P**rotect has no effect on **Z**ap.
4. There is no error if you attempt to **P**rotect cells that are already protected.
5. See the **U**nprotect command which is used to reverse the protect.
6. Protected cells display with a different attribute (intensity, color) from non-protected cells on some computers.

Quit

Synopsis:

Exits from SuperCalc² to the operating system.



Command Description:

The **Q**uit command exits SuperCalc², returning you to the operating system.

Yes returns you to the operating system. The spreadsheet is erased from the computer's memory. **S**ave it before **Q**uit if you want to keep it.

No cancels the **Q**uit command and returns you to SuperCalc².

To allows you to go directly from SuperCalc² to any other program. Specify the name of the file you want to run (precede the name with a disk drive if necessary). SuperCalc² exits and the program you name begins.

If the ESC key is pressed in response to the filename prompt, the name of the last file **L**oaded is placed on the entry line. If a ↵ is entered, SuperCalc² allows you to examine the directory of files on your disk.

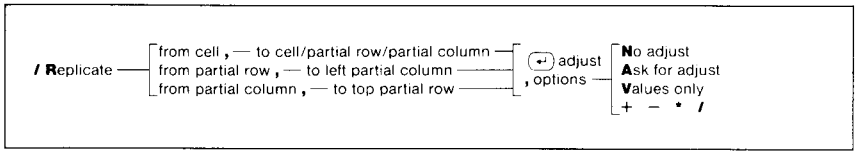
Special Considerations:

1. You can also cancel the **Q**uit command using CTRL C or F2 or CTRL Z. Both have the same result as a **N**o reply.

Replicate

Synopsis:

Makes a one-to-many copy of a cell to a group of cells, a partial column to a group of partial columns, or a partial row to a group of partial rows. Options give a choice of formula adjustment, values only, or consolidation arithmetic.



Command Description:

The **R**eplicate command duplicates a one-to-many copy of the source into a destination that is equal to or larger than the source. The source may be a cell, partial row or partial column but not a block. **R**eplicate can make the following duplications:

- A single cell into a partial column or partial row.
- A partial column into a group of partial columns. Specify the destination range by the left and right cells on the top row of the destination group.
- A partial row into a group of partial rows. Specify the destination range by the upper and lower cells for the left column of the destination group.

The options allow you to specify Formula Adjustment or Consolidation arithmetic for the Destination Range. A ↵ provides the default option, formula adjustment. To select another option, enter a comma , and the desired option.

↵ — Formula Adjust — The default selection copies and adjusts formulas to their new location.

N — **N**o Adjust — Copies cell contents literally with no formula adjustment.

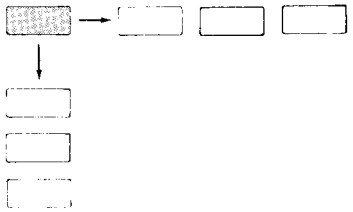


Illustration 7-1: Replicate a single cell

Replicate a partial column into a group of partial columns:

/Replicate,**B3:B7,D3:J3** ↵

In this example, the partial column is five cells deep. The result will be a block of cells repeating that partial column seven times. The top of that block is on row 3.

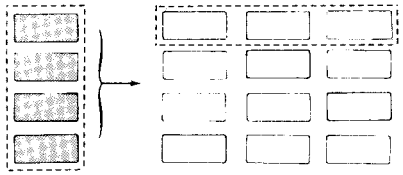


Illustration 7-2: Replicate a partial column.

Replicate a partial row into a group of partial rows:

/Replicate,**B3:F3,G3:G5** ↵

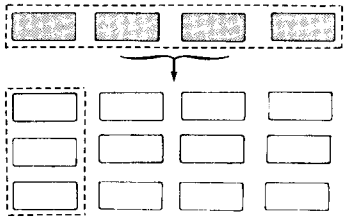


Illustration 7-3: Replicate a partial row.

A **A**sk for Adjust – Prompts for formula adjustment for each cell copied. The Command line displays the formula and the Prompt line displays the source cells. SuperCalc^2 prompts for each cell reference adjustment.

V **V**alues – Copies cell values only as numeric constants. Formulas are evaluated and their values only (not the actual formulas) are copied. Dates change to their DVAL function value.

+ Adds each source cell value to the corresponding destination cell value and enters the sum into the destination cell as a numeric constant.

- Subtracts each source cell value from the corresponding destination cell value and enters the difference into the destination cell as a numeric constant.

***** Multiplies each source cell value with the corresponding destination cell value and enters the product into the destination cell as a numeric constant.

/ Divides each destination cell value by the corresponding source cell value and enters the quotient into the destination cell as a numeric constant.

Examples:

Replicate a cell into a partial column:

/Replicate,**B12,E3:E8** ↵

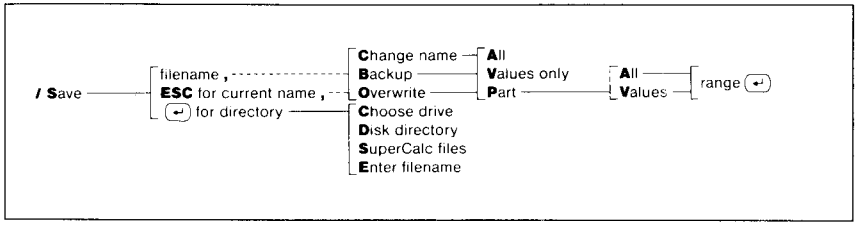
Replicate a cell into a partial row:

/Replicate,**B12,E3:J3** ↵

Save

Synopsis:

Writes the spreadsheet on a disk file. Options give a choice of saving the entire spreadsheet or values only.



Command Description:

The **S**ave command writes the spreadsheet onto a disk file while retaining it in computer memory. You may write the entire spreadsheet or only a portion of it. You may save the cell contents or only the values.

Enter the name for your file. SuperCalc^2 appends the file extension .CAL to the file unless you specify another.

SuperCalc^2 saves the file on the disk on which SuperCalc^2 resides unless you specify another. If the (ESC) key is pressed in response to the filename prompt, the name of the last file **L**oaded is placed on the entry line. If a (↵) is entered, SuperCalc^2 allows you to examine the directory of files on your disk.

If you specify the name of an existing file, the program gives you the following options.

C **C**hange Name. You may edit or change the name of the file here.

B **B**ackup changes the extension of the existing file to .BAK and then writes your spreadsheet onto the disk using the .CAL extension. Your old file remains unchanged and is available as a backup. If a .BAK file already exists, it is deleted permanently from the disk prior to the renaming.

The partial row here is five cells across. The result will be a block of cells repeating the partial row three times. The left side of that block is column G.

Replicate without adjustment:

/Replicate,**B12,E3:E8,N**

Replicate, ask for individual choice of adjustment:

/Replicate,**B12,E3:J3,A**

Special Considerations:

1. Using **R**eplicate to make a one-to-one copy provides results identical to the **C**opy command.
2. **R**eplicate can make multiple copies of a cell, row or column. **C**opy makes only single copies of a cell, row, column or block. **C**opy can do one thing **R**eplicate cannot do. **C**opy can duplicate a block.

Note: To load a .BAK file, you must specify the .BAK extension.

O **O**verwrite erases the old file from the disk and creates a new file of the same name containing your current spreadsheet. Use with caution!

You then specify the part of the file to save

A **A**ll saves the entire file on disk. The cell contents, cell values and display formats are saved. Also, the global options, title locking, window splitting and Active Cell location are saved.

V **V**alues -- The Cell Values are saved as numeric constants. Display formats are also saved. The Cell Contents are not saved.

P **P**art saves the portion of the spreadsheet you specify.

- **A** **A**ll saves all the cell data for the partial spreadsheet.
- **V** **V**alues saves only the values for the partial spreadsheet. Dates are stored as their DVAL value.

SuperCalc^2 then prompts for the Cell Range.

Examples:

Save the entire file:

/Save,**WORK5,A**ll

Save the values of the spreadsheet on drive B:

/Save,**B:WORK5,V**alues

Special Considerations:

1. See the SuperCalc^2 File Directory section at the beginning of this chapter.
2. For the **B**ackup and **O**verwrite options, SuperCalc^2 deletes an existing file permanently from the disk, not just from the disk directory. Recovery is not possible, even with a disk utility program.
3. **S**ave writes the file in binary format on the disk. That is, the file is readable by SuperCalc^2 but not by the SuperWriter program (or by other word processing programs).
4. Use the Sorcim program *Super Data Interchange* to convert a .CAL file to a .CSV file. The .CSV file can be edited with SuperWriter. it can also be used for any other applications program that uses comma separated values, such as a BASIC program.
5. See the **O**utput and **X**(eXecute) commands.

Special Considerations:

1. Any subsequent command that makes a title lock impossible to display, such as a **/F**ormat or **/W**indow command causes SuperCalc^2 to clear the title lock. A message displays on the Active Cell Status line.

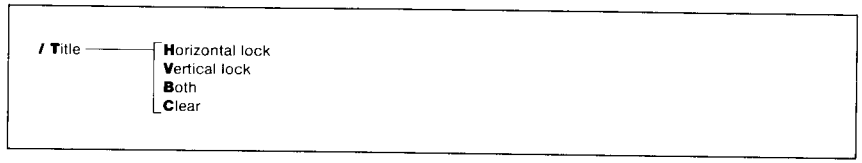
2. The title lock display is stored on a disk file. It does not transfer to the output such as to the printer or to a .PRN file. To print titles on other than the first page, you must move (or copy) the title column/rows to the desired location prior to printing. You will most likely need to print a rough draft to determine the proper column/row.

3. An alternate method to print titles for other than the adjacent column to the title lock is to format *intervening* columns to a column width of zero, then print the spreadsheet.

Title

Synopsis:

Locks columns, rows, or both into place on the display window.



Command Description:

The **T**itle command locks columns/rows on the display window.

- A locked column scrolls vertically but not horizontally.
- A locked row scrolls horizontally but not vertically.
- A combination column/row lock does not scroll.

The **T**itle options are:

H **H**orizontal locks the current row and all rows above it.

V **V**ertical locks the current column and all columns to the left of it.

B **B**oth locks the current row and column, and all rows above and columns to the left.

C **C**lears the title lock.

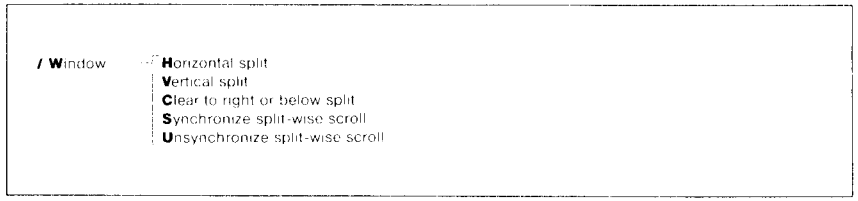
Specifying a new title lock replaces a prior one.

The cursor commands cannot move the spreadsheet cursor into a title lock area. Use the *GoTo* (=) command to do this.

Window

Synopsis:

Split the display window into two portions, horizontally or vertically.



Command Description:

The **W**indow command splits the display window into two separate parts. Each portion can have separate **F**ormat and **G**lobal options. **W**indow uses the current row or column to determine where to split the display.

You move the cursor between windows with the (;) command from the spreadsheet mode.

The **W**indow options are:

H Horizontally splits the screen. The current row moves down and the new border replaces it. The Active Cell moves down into the newly created screen.

V Vertically splits the screen. The current column moves right and the new border replaces it. The Active Cell moves right into the newly created screen.

C Clears the split screen. The window that is above or on the left displays in full. The global display options for that window remain in effect.

S **S**ynchronizes scrolling in display windows when the cursor moves parallel to the split.

U **U**nsynchronizes scrolling. The display windows scroll independently.

Some global options can be set independently in each display window.

Unprotect

Synopsis:

Removes protection from a cell range.

Command Description:

The **U**nprotect command removes protection from a range. There is no error if you attempt to unprotect cells that are not protected.

Examples:

To remove protection from a cell:

/Unprotect,**C3** (↵)

To remove protection from a partial column:

/Unprotect,**C3:C9** (↵)

To remove protection from a partial row:

/Unprotect,**C3:G3** (↵)

To remove protection from a block of cells:

/Unprotect,**C3:G9** (↵)

Special Considerations:

1. See the **P**rotect command.

Special Considerations:

1. Each portion has separate **T**itle lock and global display options, i.e. (**F**ormulas, **N**ext, **B**order, and **T**ab).

2. Your spreadsheet can be **S**aved with the windows set, but cannot be **O**utput showing both windows.

   Note: You can print any or all of the spreadsheet regardless of which window contains the Active Cell. However, the window containing the spreadsheet cursor controls the print display format.

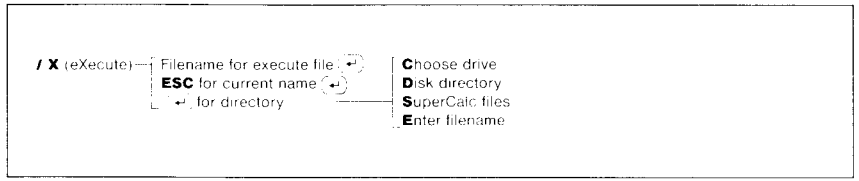
3. SuperCalc^2 can display the same cell in each window using different display **F**ormats or **G**lobal display options, thus the same region of the spreadsheet may be viewed as formulas and values simultaneously.

4. Each **W**indow of a split-screen display has its own **T**itle lock specification. Any lock that is meaningful is retained in both windows after a screen is split.

eXecute

Synopsis:

Reads and executes commands from a disk file.



Command Description:

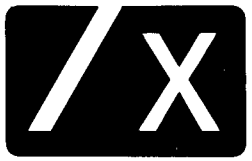
The **X**(eXecute) command enables you to create a disk file with commands and data that perform SuperCalc^2 operations automatically, without any keyboard entry. It has a suspend and resume feature that lets you pass control back and forth between the execute file and the keyboard (for example, to *black box* applications). By using **X**(eXecute) with suspend and resume, you can automate parts of the spreadsheet process such as loading and printing a pre-built file, while retaining the ability to accept keyboard entry, perhaps for data to be entered by an untrained user.

An execute file contains the exact characters you would type at your keyboard. Each line of the file contains exactly the characters you would press to execute a specific command. Characters that SuperCalc^2 supplies through its interpretive prompting must NOT be in the file. For example, for the **Z**ap command, enter **/Z** into the execute file, not **/Z**ap or /Z(ap). Every SuperCalc^2 operation is available, including cursor movement (represented by the keys ∧, ∨, <, > for up, down, left, and right) and data entry.

To start an **X**(eXecute) file, enter **/X**(eXecute) on the command line and then at the prompt specify the filename that you are using for your **X**(eXecute) file. The commands in the file will be carried out. You need only specify the name of the file since SuperCalc^2 will automatically seek that name in combination with the filename extension .XQT.

You can also specify an execute filename directly when you load SuperCalc^2 from your operating system. For example, to execute the file SAMPLE.XQT from the command line enter the following at your system prompt:

SC2 SAMPLE



SuperCalc² loads and executes the instructions located in the .XQT file. To stop execution, press (CTRL C).

Execute Suspend/Resume

To suspend automatic operation of an execute file and *unlock* the keyboard for data entry, include an ampersand (&) in the execute file. When the message *Awaiting keyboard entry* appears, the keyboard unlocks, and you can type in data or any SuperCalc² command.

There are two ways to resume automatic operation at the next character of the execute file:

1. Type an ampersand (&) command. The ampersand is recognized when the SuperCalc² program is in Spreadsheet mode (i.e. such as when a (/) command would be recognized).
2. When the last unprotected cell of the spreadsheet is entered, with **G**lobal **T**abs and **N**ext on (See the **G**lobal command), the execute file automatically resumes.

Creating An Execute File

Execute files may be created directly from SuperCalc², or you may use SuperWriter or another word processing program. You may create *libraries* of execute files, and *call* them with the eXecute command.

To create an execute file from SuperCalc², enter the command key strokes as text in column A, one command per cell. **O**utput the file to disk giving it the .XQT extension. If you don't specify an extension, SuperCalc² automatically gives it the .PRN extension.

When you write an **X**(eXecute) command file to a disk, remember the following:

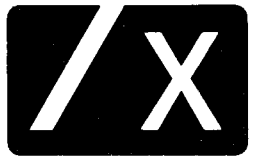
- The Border must be off. Use the **/G**lobal,**B**order command.
- The column width of Column A must be greater than the largest command string or commands will be truncated.
- **S**ave the file as a .CAL file before outputting it in case you want to edit it later. Use the **/S**ave command.

- **O**utput the file to disk giving it the .XQT extension. Use the **/O**utput command.

Examples:

This example shows a command file that consolidates twelve monthly statements into a yearly summary. First enter **/G**lobal,**B**order and **/F**ormat,**G**lobal,**20** (↵). Then enter the following data into column A as text. Remember that you begin a text entry with double quotes (").

```
/zy
/FG$TR
/FR51,TL
/FCI,12
=A1
"JANUARY
"FEBRUARY
"MARCH
"APRIL
"MAY
"JUNE
"JULY
"AUGUST
"SEPTEMBER
"OCTOBER
"NOVEMBER
"DECEMBER
"TOTALS
=A1
/LJAN,PK2:K50,A2,V
/LFEB,PK2:K50,B2,V
/LMAR,PK2:K50,C2,V
/LAPR,PK2:K50,D2,V
/LMAY,PK2:K50,E2,V
/LJUN,PK2:K50,F2,V
/LJUL,PK2:K50,G2,V
/LAUG,PK2:K50,H2,V
/LSEP,PK2:K50,I2,V
```



/LOCT,PK2:K50,J2,V
/LNOV,PK2:K50,K2,V
/LDEC,PK2:K50,L2,V
=M2
SUM(A2:L2)
/RM2,M3:M50
=A51
'-
/FCL,12
=L52
"GRAND TOTAL
SUM(M2:M50)
/SYEAR1,A

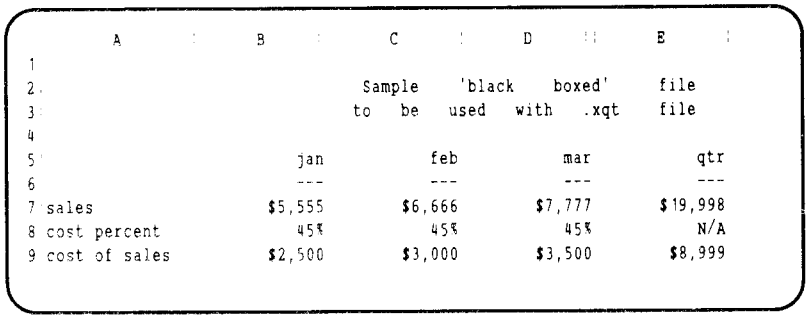
Notice that at the end of our command file, we have saved the summary with the filename of YEAR1.XQT.

The second example is a spreadsheet application that uses an execute file to load the model, await keyboard entry for sales and cost of sales figures, then print the calculated results and exit from SuperCalc^2.

/LAUTOFILE,A
/GB&
/ODALL,P
/QY

Spreadsheet before executing, with formulas displayed (**/G,F**):

	A	B	C	D	E
1					
2			Sample 'black boxed'		file
3			to be used with .xqt		file
4					
5		jan	feb	mar	qtr
6		---	---	---	---
7	sales	0	0	0	SUM(B7:D7)
8	cost percent	0	0	0	N/A
9	cost of sales	B7*B8	C7*C8	D7*D8	SUM(B9:D9)



Notice that:

1. **G**lobal **N**ext is set on, as is **G**lobal,**T**ab.
2. The entire spreadsheet is **P**rotected except for the cells for which data are to be entered (cells B7, C7, D7 and B8). These cells require an initial value of zero for the **G**lobal **T**abs to make the cursor stop in them.
3. User-defined formats are used to translate the initial zeros to blank, and the subsequent numbers to their proper format. In this example, the following User-defined settings were in effect:
   - U1 – floating dollars, commas, zeros as blanks, and 0 decimal places is used for Rows 7 and 9.
   - U2 – zeros as blank, 0 decimals is used for Row 8.

Special Considerations:

1. See the SuperCalc^2 File Directory section at the beginning of this chapter.
2. See **O**utput and **S**ave.
3. An execute file must be an ASCII file. A binary file such as the .CAL files produced by the **S**ave command cannot be executed.

Spreadsheet after executing:

	A	B	C	D	E
1					
2			Sample 'black boxed'		file
3			to be used with .xqt		file
4					
5		jan	feb	mar	qtr
6		---	---	---	---
7	sales	$5,555	$6,666	$7,777	$19,998
8	cost percent	45%	45%	45%	N/A
9	cost of sales	$2,500	$3,000	$3,500	$8,999

Zap

Synopsis:

Sets the entire spreadsheet to empty cells and resets all format settings. Equivalent to a fresh start.

```
/Zap        Yes to erase all not saved
            No to cancel this command
            Contents to erase all but User-defined table
```

Command Description:

The **Z**ap command erases the cell contents and resets the display format for the entire spreadsheet. The User-defined format table is reset to the default settings. **Z**ap overrides protected cells.

Zap is equivalent to a fresh start. All cells become empty and all format settings and modes of operation revert to their standard settings.

The **C**ontents option erases the spreadsheet and resets the display format settings. The User-defined format table retains its current settings.

Examples:

/Zap,**Y**
/Zap,**N**

Special Considerations:

1. **Z**ap is the only command that overrides protection of cells.
2. Remember, when you zap the spreadsheet, nothing remains.
3. It is a good practice to use the **Z**ap command when changing spreadsheets rather than just loading a new one on top of the old one.

4. CTRL D in an execute file results in a 1/2 second delay in processing. You can use consecutive CTRL D s to produce the delay time you want.

   Note: SuperCalc² cannot enter a CTRL D into an .XQT file. You can enter the CTRL D using SuperWriter (or your text editor).

5. When the execute file operation is suspended, any SuperCalc² command can be typed from the keyboard; however, many will make no sense, or may even be destructive (for example, you could **Z**ap the current spreadsheet, or **Q**uit the program).

6. The ampersand can never be placed into a cell from the execute file. It is always interpreted as suspending operation and can never be used as a literal.

7. The ampersand can appear:

   - As many times as you want in the execute file.
   - At any place on any line in the execute file (in fact, if you put it on a separate line in the execute file, it will be interpreted as & ↵).

8. An ampersand entered into a cell as text does not pass control back to the execute file.

9. When **G**lobal Tabs are on, you can use combinations of &s and GoTos to set up interactive prompting for data values by insuring that each GoTo expands the size of the spreadsheet. For example, the command file might look like this:

   ```
   =A2&
   =B3&
   ```

   If cells A1 and B2 contained prompts (such as enter sales -- or cost of sales -- now), after each prompt, the user would be allowed to type data, which would be in the last current open cell, and which would resume operation of the execute file at the next line, thus moving the cursor to the next prompt and data entry cell, and so forth.

10. To terminate the execution of an .XQT file, and return control to the keyboard, enter a CTRL C from the keyboard.