LOTUS

# 1 2 3 ™

## revealed

MACROS
GRAPHICS
SPREADSHEET
DATA BASE

# DAN SHAFFER

THE GUIDE THAT PUTS
THE POWER OF 1-2-3
AT YOUR FINGERTIPS

# 1-2-3™ Revealed

Daniel N. Shaffer

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# 1-2-3™ Revealed

# Preface

This book is written to help others discover the richness of the 1-2-3™ program. 1-2-3 is a computer program that has become very popular because of its many uses and its integration of three popular functions: (1) spreadsheets, (2) graphs, and (3) data management. The program also contains a powerful typing alternative called the keyboard macro.

One of the aims in writing this book is to encourage 1-2-3 users to go beyond the basic functions of a spreadsheet program. In particular, the book focuses on applying 1-2-3's keyboard macro facility to spreadsheets, graphics, and data management tasks.

For those who are interested in 1-2-3 but who do not yet own it, the book is intended to illustrate the capabilities of the program so that they may evaluate it.

I congratulate the designers of 1-2-3, Mitchell Kapor and Jonathan Sachs and their team, on the creation of a fine program that is a joy to work with. I also want to thank Steven E. Miller of the Lotus Development Corporation and Donald H. Beil for their review of much of the manuscript and their helpful suggestions. For their support and help in completing this book, special appreciation is extended to Larry Benincasa and Linda Zuk of Reston Publishing Company.

Finally, I salute the members of my team at Shaffer and Shaffer, Applied Research and Development, Inc. who contributed to the book. Special recognition is extended to Lois Augenstein for her help in editing the manuscript, Richard Sentieri for testing the procedures, and Kathy Planton for preparing the manuscript.

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# Contents

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# Introduction

$W$elcome to the world of 1-2-3™. This book is intended to help you use the unique features of 1-2-3 to:

1. Develop 1-2-3 worksheets faster,
2. Make completed 1-2-3 worksheets easier to use, and
3. Make your 1-2-3 worksheets more powerful.

If you already own 1-2-3, try reading some or all of the 1-2-3 manual before reading this book. At a minimum, you should work through the 1-2-3 electronic tutorial that came with your 1-2-3 program. The tutorial will teach you the basics of 1-2-3, and will help you get the most out of this book.

If you don't own 1-2-3, but you have some experience working with a spreadsheet program such as VisiCalc®, read on. We will show you why 1-2-3 is rapidly becoming one of the most popular personal productivity software products.

To set the stage for what we hope will be an enjoyable as well as profitable learning experience, let's review quickly the capabilities of 1-2-3. First of all, 1-2-3 offers an electronic worksheet organized into 2048 rows and 256 columns. The columns are labeled A, B, C,..., AA, AB,..., IV, and the rows are labeled 1, 2, 3, 4,..., 2048. This worksheet contains many cells, each identified by a particular row and column. Each cell can contain a number, a formula, or some textual information.

As you know, such an electronic worksheet allows you to solve many business problems; it has also become "standard equipment" for the personal computer owner. 1-2-3, however, offers far more than this electronic worksheet. As one example, in addition to the standard row and column single-cell identification (e.g., A10), 1-2-3 also allows you to label various rectangular areas of your worksheet. These areas are called ranges and can

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vary in size from a single cell to the entire area of the worksheet with which you are working. This is one of several very powerful features of 1-2-3.

As a second major capability, 1-2-3 can produce high quality graphic presentations of worksheet information. With a few keystrokes, 1-2-3 can produce line, bar, stacked bar, pie charts, and XY graphs. If you keep things simple, the speed of the 1-2-3 graphing function allows you to study your worksheets in dramatic, graphic form. If you use all of the "bells and whistles," with a little more effort you can fully annotate axes and other areas on the graphs. You can produce these graphics at any time without leaving the worksheet you are working on. This allows you to create presentations which have more impact and reveal more information than a standard printed result.

Third, 1-2-3 allows you to process areas of your electronic worksheet as if they contained records in a file. The rows of your worksheet function as the "folders" in your electronic file cabinet, where each folder contains information about a particular item (a personnel folder is an example). You can label worksheet columns so they function as field names (such as "NAME," "ADDRESS," and "PHONE NUMBER") for the information contained in each row below. This allows you to sort, find, extract, and delete data in rows of your worksheet with a minimum amount of effort.

Finally, 1-2-3 has another unique and powerful capability known as the "typing alternative," or keyboard macro facility. This facility allows you to shift 1-2-3 into automatic pilot. In this mode, 1-2-3 can "read" instructions from the worksheet itself. You can automate the typing of commonly used words, commands, or even numbers encountered when developing worksheets. In addition, the keyboard macro facility allows you to make a completed worksheet that is much easier for other people to use than those created from spreadsheet programs without this capability. Finally, it can help you make your worksheets much more powerful by increasing the number of computations performed without your direct intervention.

## An Overview of 1-2-3

Before going on to reveal the more powerful 1-2-3 features to you, we want to briefly discuss the 1-2-3 program, the terms used to describe its features and operations, and point out in more detail why 1-2-3 is *not* just another spreadsheet program.

1-2-3 is operated by: 1) typing entries into cells of the worksheet, 2) using the slash commands (/) to direct 1-2-3 to perform tasks, and 3) using the special function keys on your IBM Personal Computer keyboard. To make this easy, Lotus has provided a plastic template for you to place on your keyboard to help you remember what each key does. The / commands make menus appear, from which you select your choice.

Load your 1-2-3 program now and look at the first menu. It should look like Figure 1_1, (it will have slightly different labels if you have 1-2-3 release 1.A) and it is called the Lotus Access System menu. This menu provides you with access to your IBM Personal Computer's Disk Operating System routines for disk management and file management. This is a nice feature of 1-2-3 that doesn't exist in most other spreadsheet programs.



*Figure 1_1*   *Access System Menu*

Usually, you will probably just select the "1-2-3" option on the Access System menu and plunge ahead. However, as shown in Figure 1_2, the Access System menu provides you with many valuable functions. We'll use it later to prepare a diskette to use with 1-2-3. Notice the highlighted option on the menu? It appears as black letters on a bright white background (reverse video). This is the current location of the "menu pointer." The menu pointer identifies the option of the menu which will be selected if you press the [Enter] key (this key is located on your IBM Personal Computer keyboard as shown in Figure 1_3).

Okay, let's go beyond the Access System menu and hit the high points of 1-2-3 itself. Make sure the menu pointer is on the "1-2-3" option and press the **[Enter]** key. Shortly, you will see the familiar 1-2-3 logo superimposed over its electronic spreadsheet (or just the name 1-2-3 and a copyright notice if you have release 1.A). Press any key to clear the decks for action. What you see now looks like an ordinary spreadsheet program's row and column matrix. However, as you will soon learn, 1-2-3 allows you to process information in your own "worksheets" in many ways not available in "nor-

| This Selection | Allows These Options |
|---|---|
| 1-2-3 | • (access to 1-2-3 spreadsheet/graphics/ database program) |
| File-Mgr (File-Manager on release 1.A) | • Disk-Drive (establish source drive)<br>• Copy (copy files from one disk to another)<br>• Erase (erase a file off of a disk)<br>• Rename (rename an existing disk file)<br>• Archive (make a copy of a file on the same disk using a new name)<br>• Sort (rearrange files on a disk) |
| Disk-Mgr (Disk-Manager on release 1.A) | • Prepare (prepare a disk for use as a data disk)<br>• Disk-Copy (make a copy of one disk onto another)<br>• Compare (compare two disks to ensure they are identical)<br>• Status (receive overall disk usage statistics and check files on directory) |
| GRAPH (Print Graph on release 1.A) | • (access to GRAPH.EXE file stored on GRAPH program disk to let you print or plot graphs) |
| Translate | • (transfer of files between 1-2-3 and other programs) |
| PC-DOS (Exit on release 1.A) | • (access to Disk Operating System program) |

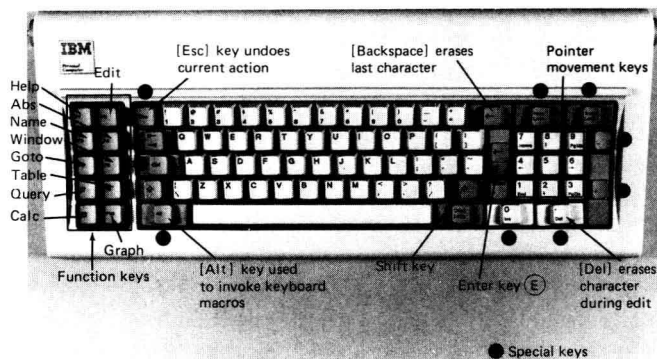*Figure 1_2*   Access System Functions



*Figure 1_3*   IBM PC Keyboard

mal" spreadsheet programs. (1-2-3 manuals use the term "worksheet" instead of "spreadsheet," and we will adopt this word throughout the book.) Figure 1_4 illustrates some terms we will use throughout this book to describe areas of your screen.
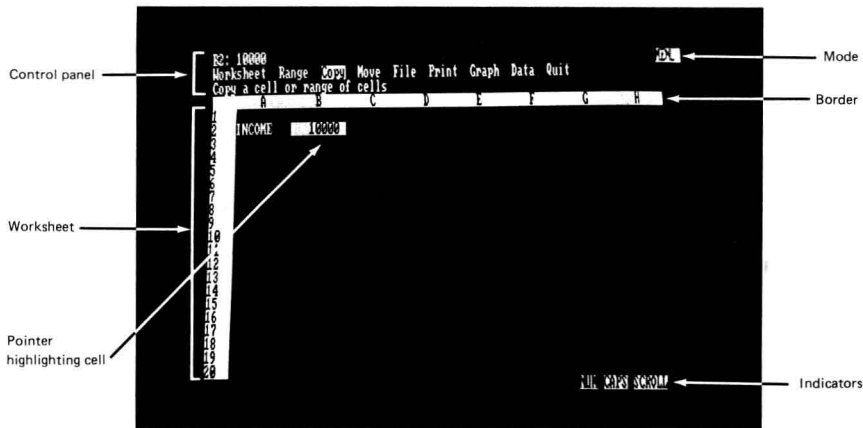


**Figure 1_4**  *Common Descriptive Terms for the 1-2-3 Screen*

In fact, we will use one of these terms right now! Type a / on your keyboard and look at 1-2-3's "control panel." This area at the top of your screen is used to: 1) select options from menus, 2) let you see and edit data items you've typed into your worksheet, and 3) let you know what 1-2-3 is up to. There are three lines in the control panel, known as (you guessed it) lines 1, 2, and 3. Right now, you should be looking at the main menu (so called because it is the first menu) of 1-2-3 commands. Slowly press the [→] (right arrow) key to move the menu pointer to each option. While doing this, read carefully the descriptions appearing in the third line of the control panel. Take special notice of the "Data" and "Graph" functions which appear!

Figure 1_5 shows the main menu options, which should give you a strong indication that 1-2-3 is not like any other spreadsheet program. The "Data" function allows you to *process* data from personnel files, price lists, customer files, or anything else stored in the worksheet—like records in a database. You can sort the information, find records you're looking for, delete unneeded information, and move the records to other areas of your worksheet. In Chapter 13 we will encourage you to try it out.

Another function built into 1-2-3 is the "Graph" capability. If you haven't ever tried it, you're missing out on a good time! We'll make sure you get your feet wet using the graph feature in Chapter 11. The other options look pretty similar to other spreadsheets you're familiar with, and they are—on the surface. However, for example, with 1-2-3 you can protect cells from erroneous entries, adjust column widths of individual columns, and

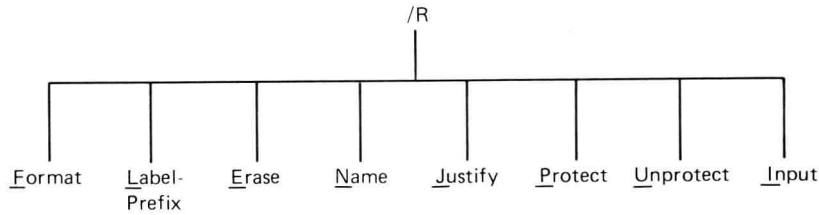| Main Menu Selection | First Level Sub-functions |
| --- | --- |
| Worksheet | Global, Insert, Delete, Column-Width, Erase, Titles, Window, Status |
| Range | Format, Label-Prefix, Erase, Name, Justify Protect, Unprotect, Input |
| Copy | -- |
| Move | -- |
| File | Retrieve, Save, Combine, Xtract, Erase, List, Import, Disk |
| Print | Printer, File |
| Graph | Type, X, A, B, C, D, E, F, Reset, View Save, Options, Name, Quit |
| Data | Fill, Table, Sort, Query, Distribution |
| Quit | -- |

**Figure 1_5** *Main Menu Functions of 1-2-3*

center labels automatically. Such features are not found in all spreadsheet programs.

1-2-3 also has an invisible option on its main menu—the "X" option. This capability is available *only* to the keyboard macros, which you will learn about in Chapters 2 through 8 of this book. The X commands allow you to customize 1-2-3 to your own needs and is an exciting, though (for now) somewhat mysterious, capability.

Finally, you see on 1-2-3's main menu one other option which you probably haven't seen before: the "Range" option. This option is *very* important for you to understand as a 1-2-3 user. If you don't learn to use it, you will never get the most out of 1-2-3.

Figure 1_6 shows you the subcommands available with the Range command. The format and label prefix subcommands allow you to use a variety of display formats for various areas (ranges) in your worksheet. The justify subcommand helps you use 1-2-3 as a simple word processor. Finally, the protect and unprotect subcommands allow you to designate areas of the worksheet where input is not allowed. The input subcommand is also useful in getting data into a worksheet area easily. We will discuss several of these uses later in the book. For now, it's the range *name* and *erase* subcommands which are important for you to understand because they are used in the very next chapter. Since a lot of the tips and techniques you'll learn in this book depend on the use of "named ranges," we're going

```
                                    /R
                                     |
    ┌───────┬───────┬───────┬───────┼───────┬───────┬───────┬───────┐
    |       |       |       |       |       |       |       |       |
 Format  Label-   Erase   Name   Justify  Protect Unprotect Input
         Prefix
```

| Range Command Sub-functions | Allow You to: |
| --- | --- |
| Format | Format a cell or range of cells |
| Label-Prefix | Align a label or range of labels (Left, Right, or Center) |
| Erase | Erase a cell or range of cells |
| Name | Create, delete, or modify range names |
| Justify | Adjust width of a column of labels |
| Protect | Disallow changes to a range if protection is enabled |
| Unprotect | Allow changes to a range |
| Input | Enter data into the unprotected cells in a range |

**Figure 1_6**   *Range Command Functions*

to take some time right now to tell you what they are, how you create them, and what they are good for.

Look at Figure 1_7. Note that we've labeled certain areas of interest on a simple worksheet. 1-2-3's range capability allows you to name areas like these on your own worksheet and *use* the names (instead of cell coordinates) in formulas and commands as you develop your worksheets. These areas can be as small as a single cell (called a one-cell range), or as large as your entire worksheet area. A range is defined by the upper left and lower right cell of a rectangular area. Range names can be created with the 1-2-3 "Range" command. To make naming single cell ranges easy, 1-2-3 allows you to associate labels (to be used as range names) in one column or row with the cells immediately beside them. The "Range" command also allows you to delete particular range names or reset all range names to wipe the slate clean.

You can use range names to make formulas more readable (e.g., ⊕SUM(INCOME) instead of ⊕SUM(B3..B9)), print out areas of the work-

| | Range B3 to B8 named INCOME | Range C3 to C8 named EXPENSES | Range D3 to D8 named PROFIT |
|---|---|---|---|

| | A | B | C | D |
|---|---|---|---|---|
| 1 | MONTH | INCOME | EXPENSES | PROFIT |
| 2 | -------- | -------- | -------- | -------- |
| 3 | Jan | $10,500 | $7,500 | $3,000 |
| 4 | Feb | $12,000 | $7,900 | $4,100 |
| 5 | Mar | $13,300 | $8,200 | $5,100 |
| 6 | Apr | $12,500 | $7,900 | $4,600 |
| 7 | May | $12,900 | $8,100 | $4,800 |
| 8 | Jun | $12,600 | $7,700 | $4,900 |
| 9 | -------- | -------- | -------- | -------- |
| 10 | TOTALS | $73,800 | $47,300 | $26,500 |
| 11 | | | | |
| 12 | | | | |

Formula in B10: @SUM (INCOME)      Formula in C10: @SUM (EXPENSES)      Formula in D10: @SUM (PROFIT)

**Figure 1_7**   *An Example Worksheet*

sheet, find areas within large worksheets, and do a host of other tasks which you'll learn about later in this book.

Although there are lots of other nifty features of 1-2-3, we wanted to point out in this introduction that the Data, Graph, Range, and the keyboard macro commands ("X") can tremendously expand your use of 1-2-3 beyond the basic electronic spreadsheet function. Also, later in the book, we will discuss the Print command in some detail due to its flexibility and associated complexity.

# What You Will Learn

The purpose of this book is to help you get the most from your 1-2-3 program. Since the keyboard macro can be used in conjunction with many of the other powerful features of 1-2-3, we'll cover it first. Then we'll introduce you to the input, printing, and graphics features of 1-2-3, which will make your 1-2-3 worksheets easier to use. Finally, you'll learn how the built-in calculation and database features of 1-2-3 can help you make more powerful worksheets.

In the first part of the book, we will show you how to create macros and how you can put them to work for you. After the basics in Chapter 2, you will progress in Chapters 3 through 6 to macros which can accept data from you and which allow you to add new 1-2-3 menus. For your convenience, Chapter 7 summarizes this information in a set of step-by-step guidelines. In Chapter 8 you will learn how to develop 1-2-3 worksheets faster by using your own personal macro library to save keystrokes. We will illustrate several useful macros and give some ideas for making and using your own macro library.

In Chapters 9, 10, and 11 you will learn some methods for easy data input, report printing, and graphics that will allow you to make your worksheets easier to use—for yourself and for others. We will show you how to automatically update your worksheets monthly, quarterly, or as other data becomes available.

Then, in Chapters 12, 13, and 14 you will learn methods to make your worksheet more powerful. There are also illustrations of 1-2-3's powerful logic and math functions, and you will receive some tips on using the 1-2-3 database facility. We also include ways of using 1-2-3's automatic calculation features. Finally, you will learn how to overcome some common calculation difficulties using 1-2-3's recalculation methods. Chapter 15 concludes this book, but at that point you will be just be starting to realize the potential of your 1-2-3 program.

# How to Use This Book

You should first read Chapters 2 through 7 in order to get a good grasp of what the macro facility is and how to use it. After completing these chapters, you can read Chapters 8 through 14 in order of interest to you. Each of the remaining chapters is self-contained, dependent only on the information contained in Chapters 2 through 7. Read Chapter 15 last. When you are finished, select one of your 1-2-3 worksheets and use some of the tech-