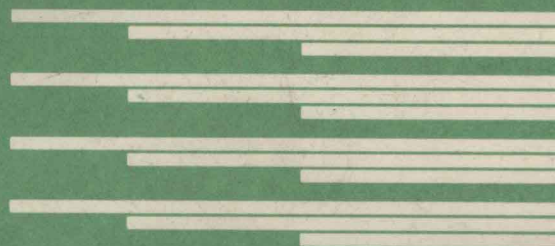


MICROSOFT[™] MULTIPLAN[™]

Electronic
Worksheet



For MS-DOS

Microsoft® Multiplan™

Electronic Worksheet

for MS™-DOS

Microsoft Corporation

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Before you begin

Read the "Getting Started" section.

This section tells all you need to know to get Multiplan started correctly, including instructions to:

- Format several disks.

- Make copies of Multiplan disks, then store the originals.

Note that Multiplan shows messages on the screen.

These messages explain either what to do next or what is wrong. If you do not understand a message, look in the chapter called "Message Directory" for a full explanation of the message, why it appears, and what to do next.

Locate the following keys.

CANCEL The CANCEL key lets you stop what is happening and get out of what you are doing at any time. See "The Keyboard" in the "Getting Started" section.

HELP The HELP key (?) gives you specific information to help you with the command you are using. You can use the HELP key any time.

Preface

Microsoft® Multiplan™ is a personal productivity tool that will help you analyze data. As an aid for both business and personal needs, Multiplan is one of the most powerful modeling and planning tools ever invented. With Multiplan you can do the capital budgeting for a small company; you can make major sales force decisions or analyze product planning; you can plan your personal investments and put together a budget for your family . . . and much more.

Multiplan is easy to learn, and its versatility is enhanced by the skill of its user. As you become more familiar with Multiplan, and better able to exercise its powers, you'll be surprised at how quickly and efficiently you'll accomplish various tasks.

The two parts of this manual are designed as a tutorial and a reference guide to Multiplan. Part 1 is the tutorial, which gives you an overview of the features of the system. Part 2 is a detailed reference guide to all Multiplan features. Parts 1 and 2 complement one another; together, they will teach you both the concepts and uses of Multiplan.

The design of Multiplan allows you to work intuitively; its capabilities allow you to accomplish a wide variety of tasks.

Welcome! We hope you enjoy working with your powerful new assistant: Microsoft Multiplan.

Introduction

Microsoft Multiplan is an electronic worksheet—a large grid of entries, each of which can be words, numbers, or formulas. You can set up the Multiplan worksheet with titles and numbers. But more, Multiplan can replace your pen and paper and your calculator because Multiplan can perform the calculations for you.

Multiplan frees you from the limitations of more traditional methods of calculation. Because Multiplan remembers the relationships between entries on the worksheet, it can automatically perform calculations—and this is where the real power comes from. You get a chance to ask “What if?” to test out plans and to forecast. What if one number changes? What is the effect on the Worksheet?

For example:

What if costs rise by 10% for one item and 6.5% for another?

What if production increases?

What if sales of one item skyrocket?

What if home utility bills soar?

Is it worth it to pay express freight to get a product early?

Is it worth it to give a discount to marginal buyers?

Alter a critical number and watch the figures change across your worksheet; observe the effects over time of a small change here, an improvement there. You can run sensitivity analyses, do budget and resource planning, and schedule more efficiently. You'll soon agree that Multiplan is a vast improvement over “hand calculating” methods.

Multiplan overcomes the limitations of paper worksheets. Multiplan offers you a worksheet 255 rows long and 63 columns wide for words, numbers, and formulas. Multiplan allows you to

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connect several worksheets so that you can build up a chain of sheets that provide information to each other. You can, as necessary, instantly move, insert, or erase data; widen or shrink columns; or insert or delete space; thereby eliminating the costly and tiresome work of typing or hand printing the worksheet over and over. The Multiplan worksheet is always very flexible.

Multiplan communicates with you as directly and naturally as possible, providing many aids to help you accomplish your objectives. You will soon learn how to manipulate data to obtain the answers you need.

How to Proceed

An interactive program like Multiplan can be learned only by use. This manual is designed to be read and used as you use Multiplan. It's important that you try, test, and experiment as you learn. You'll be surprised at how quickly it all falls together. Nothing you type can damage the computer or Multiplan, so don't hesitate to experiment.

Part 1, "Using Multiplan," introduces Multiplan in a tutorial manner, in simple steps with many practical examples. You'll learn by using Multiplan to make a financial analysis of a model firm—Spencer Ceramics. The tutorial demonstrates the main Multiplan features as they are commonly used.

Begin by working through Part 1. Chapter 1, "Fundamentals," and Chapter 2, "Building a Worksheet," help you become familiar with the keyboard and screen display and introduce you to the Multiplan typing aids.

"Entering Formulas" and "Naming Cells and Copying," Chapters 3 and 4, lead you further into the use of Multiplan. When you complete these chapters you'll have used some of the most important Multiplan commands and features.

Chapter 5, “Windows, Copying Formulas, and Options,” introduces the finer points of the Multiplan screen display. After completing it, you’ll be ready to print some samples of your work. Chapter 6, “Printing a Worksheet,” tells you how. The final chapter in the tutorial, Chapter 7, “Using Multiple Worksheets,” takes you beyond working with a single sheet. You learn how to organize data on multiple sheets and to draw data from them for use on another sheet.

As you work through Part 1, you’ll find it helpful to refer to Part 2, “Reference to Multiplan.”

Part 2, “Reference to Multiplan,” begins with Chapter 8, “Elements of Multiplan,” which explains in depth the Multiplan worksheet, how to enter commands, how to edit, what formulas are, how access to files works, and what happens when the worksheet undergoes changes that move data.

Part 2 also contains detailed descriptions of all Multiplan commands in Chapter 9, “Command Directory,” of all mathematical and statistical functions in Chapter 10, “Function Directory,” and of all messages Multiplan displays in Chapter 11, “Message Directory.”

At the end of Part 2, you’ll find appendices that contain additional information you’ll find helpful. Appendix 1, entitled “Helpful Hints,” is the most important. These hints suggest ways to make your Multiplan sessions more efficient and effective; if you follow the hints, you’ll save time and space.

Included also is the Multiplan Quick Reference Guide, which summarizes Multiplan for quick, easy reference.

Begin applying Multiplan to simple tasks, making frequent use of Part 2. As you gain experience, use Multiplan for more complex tasks, such as organizing multiple worksheets. You’ll soon find that you have a firm grip on a powerful tool.

Getting Started

This section tells you what you need to know and do before running Multiplan. It covers these topics:

What You Need

Format Several Disks

Copy the Multiplan Program and Install Disks

Run the Install Program

How to Start Multiplan

The Keyboard

What You Need

To work with Multiplan, you need:

1. A computer with at least 64K of memory
2. An MS-DOS operating system disk
3. The Multiplan Program disk
4. The Multiplan Install disk
5. Several blank disks
6. A printer (optional)

Format Several Disks

MS-DOS can store and find information only on a formatted disk. So format several blank disks for your work with Multiplan. Use the Format command. See your MS-DOS manual for details.

You can use formatted disks just as they are as data disks for storing the worksheets you build with Multiplan.

Copy the Multiplan Program and Install Disks

Disks can be damaged by heat, magnetism, dust, or careless handling, or they can be lost. Eventually they will wear out. The Multiplan Program disk is “write-protected” so you can’t run the Install program on it or store any new information on it. But you can run the Install program on a copy, and you can store a small amount of information on it. So make copies of the Multiplan Program and Install disks before you do anything else.

You’ll find it more convenient if your copy of the Multiplan Program disk is an MS-DOS “system disk” (sometimes called a “bootable disk”). The Diskcopy command will copy the entire Multiplan Program disk including the “system” portion of MS-DOS. See your MS-DOS manual for details. You can use your Multiplan system disk to start both MS-DOS and Multiplan without having to change disks.

Since the Install disk is not a system disk, you need to format a system disk before you copy the Install files. See the Format command in your *MS-DOS User’s Guide* for how to format a system disk. Then use the Copy command to copy the Install files.

Label your copies clearly, and from now on, use the copies. Store the original disks in a safe place.

Warning Never turn the power on or off when there is a disk in any drive. This can destroy the data on your disk. Always remove all disks before turning the power on or off.

Run the Install Program

To run correctly, Multiplan needs information about how your terminal works. Install is the program that inserts this information into the Multiplan program file. When you run Install, it asks you questions about your terminal. You type your answers and Install does the rest.

Fortunately, Install already has information on many popular terminals. If it has information on yours, you'll only need to answer one question. If Install doesn't have information on your terminal, you'll have to supply it. See "Details on Install" in the "Operating Information" section.

1. Use your copy of the Install disk to start MS-DOS (you should see the system prompt: A>).

2. Type:

INSTALL

3. Press the RETURN key.

The text on the screen describes Install.

4. Press any letter key.

Install will ask you to put the "product" disk in the current drive.

5. Put your copy of the Multiplan Program disk in drive A and press the RETURN key.

Install shows you a list of terminals. This list is longer than it looks—if your terminal is not listed, press RETURN to see the next screen of the list.

6. If your terminal is not on the list, see "Details on Install" in the "Operating Information" section.

If your terminal is on the list, type the number corresponding to your terminal and press the RETURN key.

Install asks you to put the Install disk in the current drive.

Getting Started

7. Remove the Multiplan disk from the drive.
8. Put in the Install disk.
9. Press the RETURN key.

In a few minutes Install asks you to insert the “correct” disk.

10. Remove the Install disk.
11. Put in the Multiplan disk.
12. Press the RETURN key.

When the Install program finishes, it displays “Install complete.”

13. Make a backup copy of the newly installed Multiplan Program disk. See the *MS-DOS User's Guide* for how to copy disks.
14. Store the Install disk and backup copy of the Multiplan Program disk in a safe place and go on to the next section.

Important If you make a mistake, press CTRL-C, then press Y to exit the Install program. Now run Install from the beginning. If you have any trouble with the Install procedure, see “Details on Install” in the “Operating Information” section.

How to Start Multiplan

To run Multiplan, you need a copy of the Multiplan Program disk on which you have run the Install program, plus several formatted disks for storing worksheets.

If MS-DOS is not running:

1. If the computer is on, turn it off.
2. Put your copy of the Multiplan program disk in drive A, but leave the drive door open. (This is to prevent damage to your disk when you turn the power on.)
3. Turn on the computer.
4. Close the door to drive A.
5. Type the date and press the RETURN key (or just press the RETURN key to accept the proposed date).
6. Type the time and press the RETURN key (or just press the RETURN key).
7. When you see the A>, type:

MP

8. Press the RETURN key.

If MS-DOS is already running:

1. Put your Multiplan Program disk in drive A.
2. Hold the CONTROL key and press C at the same time.
3. When you see a new A>, type:

MP

4. Press the RETURN key.

Now you're ready to work with Multiplan. Turn to Chapter 1 and begin learning about Multiplan. The following section explains the keyboard—refer to it as you work with Multiplan. You don't need to read the "Operating Information" section yet; you'll find it useful after you've gone through the examples in Chapters 1 through 7.

The Keyboard

In Multiplan, some keys have special names. These names describe what the keys do rather than what appears on the key itself. For example, CANCEL is the name for a key that stops Multiplan and lets you stop what you are doing at the moment. Some terminals have a key labeled Cancel. On some terminals, you press a key labeled Esc. On other terminals, you hold the CONTROL key and press *C*.

The chart below lists the standard keys for MS-DOS Multiplan. This chart is also available within Multiplan with the Help command:

1. When the main command menu is on the screen, press *H* for Help. (When the main command menu is not on the screen, press the HELP key.)
2. Press *K* for Keyboard.
3. Scroll through the chart by pressing *N* to see the next screen and *P* to see the previous screen.
4. To return to Multiplan, press *R* for Resume.

Important Some keys may differ on your terminal. Look at the keyboard chart with the Help command to see if there are exceptions for your terminal. Note any differences on the chart below and in the Quick Reference Guide.

If your terminal has up, down, left, and right arrow keys, they move the cell pointer. If your terminal has a HOME key, it moves the cell pointer to R1C1.

Move the Cell Pointer

Up	CTRL-E
Down	CTRL-X
Left	CTRL-S
Right	CTRL-D
Next Window	CTRL-W, ;
Next Unlocked Cell	CTRL-F, LINEFEED

Scroll the Window

Page Up	CTRL-R CTRL-E
Page Down	CTRL-R CTRL-X
Page Left	CTRL-R CTRL-S
Page Right	CTRL-R CTRL-D
Home	CTRL-Q
End	CTRL-Z

Select and Execute Commands

Cancel	CTRL-C
Do this command	RETURN
Select next item on menu	SPACE BAR
Select previous item on menu	BACKSPACE, CTRL-H
Tab to next field in command	TAB, CTRL-I, CTRL-A
Help	?
Recalculate	!

Edit Cells and Commands

Delete	DELETE, CTRL-Y
Backspace	BACKSPACE, CTRL-H
Character Left	CTRL-K
Character Right	CTRL-L
Word Left	CTRL-O
Word Right	CTRL-P
Reference	@

Operating Information

You will find the information in this section useful once you have a feel for Multiplan. It covers the following topics:

Files and Filenames

The Disk Directory

Memory

The Startup Drive

Data Drives

When to Change Disks

Using Several Drives

Printing Multiplan Files

The Worksheet Display

How to Start Multiplan for Mode Conversion

Details on Install

Files and Filenames

Computer files, like files of paper documents, are collections of information. This information may be data (numbers, text, formulas, and so on), computer programs, or a combination of the two.

When you run Multiplan, you use the files containing Multiplan programs and data: MP.COM, MP.LOD, MP.SYS, MP80.DAT, MP40.DAT, and MP.HLP. When you build and save a worksheet, you create a new file. This file is a record of the information you put on the worksheet.

Filenames may be up to eight characters long. To further distinguish files, add a period and up to three additional characters to a filename. This part of the filename is called its extension. Using filename extensions helps you spot files with the same type of data at a glance.

Begin filenames with a letter, followed by any combination of letters (A-Z), numbers (0-9), and the following characters:

\$ & # % ' () -
@ ^ { } ~ ` !

MS-DOS translates lowercase to uppercase. It doesn't matter if you type *file.ext* or *FiLe.ExT* or *FILE.EXT* or any other combination of uppercase and lowercase. MS-DOS regards them as the same.

The Disk Directory

When you see A> (or B> or any other letter and a >), MS-DOS is running and waiting for instructions. To see a list of the files on the disk in drive A, type:

DIR A: