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FINANCIAL PLANNING WITH MICROCOMPUTERS:

A Guide for Cities

for Multiplan and IBM PC or Apple IIe

Minnesota State Planning Agency

FINANCIAL PLANNING WITH MICROCOMPUTERS:

A GUIDE FOR CITIES

June, 1984

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Acknowledgments

FINANCIAL SPREADSHEET ERRATA DOCUMENT - August, 1984

Experience with this manual has shown that the following changes are indicated.

page #	required change and/or general comment
n/a	the disk furnished with this manual contains several worksheets described in chapter 5 - you may use this disk to store your actual data and/or reduce the time required to create these worksheets - you will find both the IBM and Apple versions of this disk, select the appropriate side
5	when working with the Apple version you will need to insert the <u>boot</u> disk prior to bringing up Multi-plan
12	item 1. should explain that there are two possible operating systems for the Apple version, <u>CP/M and DOS</u>
15	the second paragraph, should refer to 14, <u>not</u> to page 3
38	when working with the Apple version and desire to access drive 2 (your data disk) the format to use is: EXAMPLE,D2 where EXAMPLE is your worksheet name
74	if you have any questions about <u>any</u> of the Multi-Plan commands, use the Multi-Plan manual for clarification, it may be most appropriate to review the Multi-Plan manual write-up titled, <u>"Using Multiple Worksheets"</u> prior to using the Xternal command (X)

Further experience with this manual will produce other useful observations on improvements to the text. In order to facilitate communication of these improvements please do the following:

     1.   send you name and address, mentioning your acquisition of <u>FINANCIAL PLANNING WITH MICROCOMPUTERS</u> , to IISAC, COB-5th floor, 658 Cedar Street, St. Paul, MN 55155 (so we can send you an updated errata sheet, when applicable)

     2.   send your complaint and/or suggested improvement to the above address.

CHAPTER ONE : INTRODUCTION

CHAPTER 1: INTRODUCTION

Financial Planning with Microcomputers: A Manual for Cities is a
guide for local government finance officials and staff who want
to make the most of the microcomputers available to them. The
manual will take the first time user step-by-step through the
process of setting up a municipal operating budget on a
microcomputer.

This guidebook is written especially for the city or town
official with little or no computer experience. It is designed
to enable you to set up your municipal budget by following the
step-by-step instructions. It is written for a popular,
inexpensive and readily available program called "Multiplan".
It is also written specifically for the IBM PC and the Apple IIe
microcomputers, although the instructions could be easily
adapted for any of the microcomputer systems compatible with
Multiplan.

Multiplan is just one of a family of programs known as
spreadsheet software ("software" is what we call the electronic
instructions which tell the computer what to do). It can be
thought of as an easy-to-learn language with which you can write
your budget. All spreadsheet software packages are based on the
same principles: the program is simply an electronic substitute
for the accountants' columnar pad, a pencil, and a calculator.
Any activity that requires computations and that can be set up
on a page in rows and columns is appropriate for the electronic
spreadsheet or "worksheet".

The worksheet has numbers along the side to indicate rows, and
numbers across the top to specify the columns. On the computer
screen it will look like this:

```
 #1       1        2        3        4        5        6        7
  1
  2
  3
  4
  5
  6
  7
  8
  9
 10
 11
 12
 13
 14
 15                                          ʼ
 16
 17
 18
 19
 20
 COMMAND: Alpha Blank Copy Delete Edit Format Goto Help Insert Lock Move
          Name Options Print Quit Sort Transfer Value Window Xternal
 Select option or type command letter
 R1C1                                 100% Free       Multiplan: TEMP
```

1) At the intersection of each row and column is a blank space called a "cell".

2) Within any cell, you can type a label, a number, or a formula.

3) These labels, numbers, and formulas become the building blocks of your municipal budget.

4) As you set up your budget, the computer holds it in memory.

5) Until you change any of the labels, numbers, or formulas, they remain the same.

6) Calculations are made at your command any time you enter data into the model.

7) When you finish, the budget can be stored and later retrieved when you need it.

We'll go into all of this at much greater depth later in the book.

Why Multiplan?

More than 40 spreadsheet software packages are now on the market: you may have heard of or even used such programs as VisiCalc or SuperCalc. Several Minnesota cities have been using these programs for budget and other financial applications. Multiplan was based on these popular spreadsheets, but in many respects it is a vast improvement on them. We chose to use Multiplan in this manual because it is both sophisticated and easy to learn and use; it is relatively inexpensive; it allows you to ask for and receive help from the computer at any time; and it can be used on a variety of popular microcomputers including the IBM PC and the Apple IIe. It is now considered a standard by which other spreadsheet packages are judged.

Once you learn the basic commands, Multiplan will allow you to create, on the microcomputer screen, an electronic worksheet to display numbers for almost any kind of financial problem, to change those numbers, and to see the impact of the change instantly. The ability to test different numbers, to play "What if?" with many different figures and to work out solutions to financial problems is what makes Multiplan and other spreadsheets so popular. These features help you do many of the same things you do now, faster, and manage municipal resources better.

All of this may seem overwhelming, but don't worry. We will take you, step-by-step through all of the commands you need to know to become proficient. You'll be amazed at how easy it is to use this powerful tool and at how much time and effort you can save once you work your way through this book.

What Can Multiplan Do?

You might at this point be wondering what you can do with Multiplan and a microcomputer that you can't already do with pencil, paper, and calculator.

For the answer to that question, imagine that you are a municipal clerk and that you have prepared an annual line-item and departmental budget summary for your council. On the day before the council meeting, you are informed that Local Government Aid for your city will be 6% less than you had previously been led to believe. The task before you is to allocate that decrease among city departments, a tedious chore which may keep you up all night doing your calculations in the cramped margin of your budget sheet. Now multiply the time you've spent recalculating by the number of times a revenue estimate or the price of a key expenditure item changes. You can see that much of your time between the day you prepare your budget and the day your council adopts it would be taken up with recalculation.

Actually, many of you already know what that's like. At a time when revenue sources and expenditure costs are fluctuating, it's impossible to know that the budget you prepare now will still apply when your council adopts it.

If you had already put together your budget using Multiplan, you could simply enter the new figures in the appropriate cells and the spreadsheet would show instantly the impact of your revenue or expenditure changes. While a good deal of work is involved in setting up the budget the first time, you will find that you can save your up front work and return to it again and again to change the budget information as expenditure and revenue conditions change.

This is only one example of the many things you can do if you budget with Multiplan. Many other "What if?" applications (where you see "what" will happen "if" you make a certain change in revenue or expenditure figures) are possible. You can monitor the impact of changes in fringe benefit formulas or project the effect of gasoline price increases on the municipal budget. Multiplan's "what if" capabilities make it particularly useful for budgeting at a time when revenue projections and the costs of certain expenditure items seem to change every week.

What you will be doing with Multiplan:

The concepts involved in using Multiplan, or any other
spreadsheet for that matter, are fairly simple.

LOAD
1. Each time you want to use the spreadsheet, either a blank
spreadsheet or one you have previously worked on and stored,
you will first LOAD the program from its storage diskette
and then LOAD the spreadsheet you wish to use from another
storage diskette (this latter step is unnecessary when
starting a new spreadsheet).

DISK DRIVE
2. Loading is accomplished by sliding your program diskette
into one DISK DRIVE (a disk drive is the small black box
with the horizontal opening), punching a few keys, and
watching the Multiplan program appear on the screen; once
the Multiplan program is up, you may load your data or
storage diskette by sliding it into the other disk drive and
entering the appropriate information.

ENTER
3. You will then ENTER any information you want by using the
keyboard and the instructions contained in this manual and
the Multiplan manual. You can enter, change, or erase any
information at any time.

SAVE
4. When you are finished using the spreadsheet, you must
always SAVE (or "store") it on your data diskette.

PRINT - RETRIEVE
5. You will then be able to PRINT the spreadsheet if you
wish, or you can RETRIEVE it at a later time to make changes
in the data or text ("text" means any labels, letters, etc.
other than numbers, that you write on the spreadsheet).

There is one more important concept you should keep in mind
whenever you use your microcomputer. Microcomputers and
diskettes are not perfect, and there may come a time when your
program or storage diskette is damaged, or a power surge or
power failure destroys the information on your diskette. If
your budget file is lost through such an accident, it could cost
you many hours to reenter the budget, if you can replicate it at
all.

BACK UP
6. The only way to avoid this kind of disaster, aside from
exercising great caution in storing your diskettes and in
turning your computer on and off, is to make BACK UP copies
of your Multiplan program and all of your data diskettes.

Another reason to make backup copies is that normal wear and
tear will eventually reduce the effectiveness of your disks.

How to Get the Most From this Book

This manual will provide you with two things:

      1.) instructions on how to use Multiplan, and

      2.) a budget model you can enter into your microcomputer as
      soon as you have a grasp of the Multiplan basics.

Once you feel comfortable using Multiplan and the budget, you
can use the spreadsheet for a wide variety of municipal
financial applications.

It is divided into the chapters identified in the outline
below. Each chapter contains a series of lessons which will use
the writing of the sample budget as the vehicle for teaching you
the commands of the Multiplan program. When you've finished
with each lesson, you will be a little more proficient in using
Multiplan and a few steps closer to finishing your general fund
operating budget. Each chapter will also contain a brief
summary at the end so you can review what you have learned.
Work through each lesson at your own speed. If you run into
problems that are not covered in this manual, refer to the
Operating Manual provided with your Multiplan program. It's a
good idea to familiarize yourself with the Operating Manual
anyway since it can answer many of the questions you might have
about Multiplan.

We will begin by introducing you to the concepts behind the
electronic spreadsheet and familiarizing you with the ways to
move around on and use the computer screen.

Next, you will get a chance to enter the labels and formulas for
a sample worksheet.

In Chapter 3, you will use the skills gained in the first two
Chapters to set up a Department Budget Worksheet for the General
Government department.

All other worksheets are provided for you on a data disk which
comes with this manual. Chapter 4 will draw them all together,
and Chapter 5 will show you how to use the budget model.

How the Budget Model Works

As soon as you've mastered a few basic skills, we take you right
into the work of setting up a sample operating budget. You will
use your new skills to construct a budget system. The budget
system is illustrated below.

```
┌─────────────────────────────────────────────────────────────────┐
│   ┌───────────────────────────────────────────────────────┐     │
│   │          Department: General Government               │     │
│   ├───────────────────────────────────────────────────────┤     │
│   │  ┌─►Department Budget Summary                          │     │
│   │  │                                                     │     │
│   │  ├──Personal Services Table                            │     │
│   │  ├──Personal Services Worksheet                        │     │
│   │  ├──Supplies Worksheet                                 │     │
│   │  ├──Other Services & Charges Worksheet                 │     │
│   │  ├──Capital Outlay                                     │     │
│   │  └──Debt Service                                       │     │
│   └───────────────────────────────────────────────────────┘     │
└─────────────────────────────────────────────────────────────────┘
```
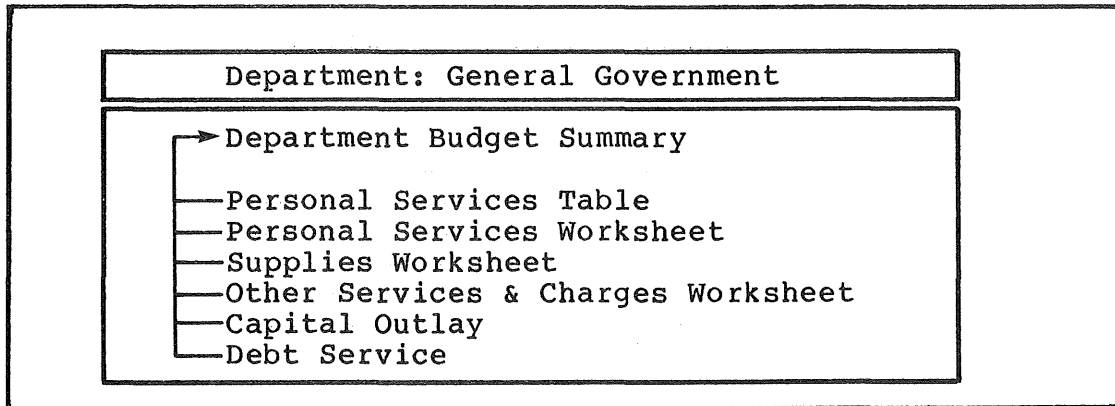
DEPARTMENT BUDGET WORKSHEET

Each of six city Departments has a Department Budget Worksheet
(some cities may have more or less than six Departments, and you
can add or subtract these worksheets accordingly). Each
Department Budget Worksheet contains budgets for Personal
Services, Supplies, Other Services & Charges, Capital Outlays,
and Debt Service. Subtotals are summarized at the top of the
Department Budget.
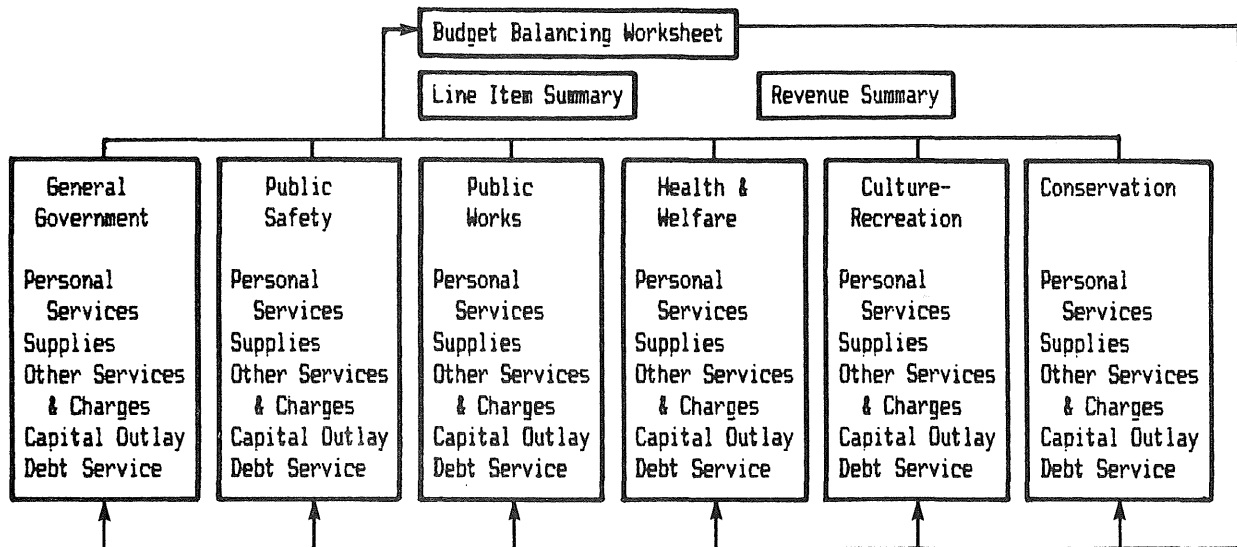
A separate worksheet, called the Budget Balancing Worksheet, is
provided on disk. It summarizes the Department totals and
allows you to test the impact of an increase or decrease in each
Department budget. When you have determined an appropriate
expenditure level for each department, you enter those figures
and they, in turn, are fed back into the Department Budget
Worksheets.

In the Department Budget Worksheets, the new expenditure total is broken down by line item. This line item breakdown is only a suggested expenditure breakdown. The final decision belongs to you and your council.

In addition, a Line Item summary worksheet is provided so that you can display the line item totals by department for the entire city budget. A revenue summary is also provided. Both of these worksheets are already entered for you on disk.

In the end you should have a general fund budget template which you can use again and again; you should also have the skill to change the budget model so that it fits the way your budget is set up in your city.

Outline of this Manual:

1. Introduction

2. Getting Started
Getting Started will provide you with an overview of the
electronic worksheet. It will acquaint you with the
concepts involved in using the worksheet and basic
operational steps including the process of setting up,
manipulating, storing, and printing with your
microcomputer. It will also include tips on learning the
worksheet structure, commands and functions of Multiplan.

3. Using Multiplan to Build Budget Worksheets
This section will include a detailed lesson on setting up
the operating budget worksheets for a single department:
General Government. The department budget worksheets are
the building blocks for the sample operating budget in this
manual. This Chapter will instruct you in the fundamental
commands of Multiplan, and will illustrate the workings of
our sample budget. Instructions for setting up summary
budgets and for completing the remaining department budgets
will be presented in later chapters.

4. Completing the Budget Worksheets
Chapter 4 finishes the work we began in chapter 3. It links
the Department Budget worksheets with the Budget Balancing
Worksheet provided on disk. When you finish with this
chapter, you should be able to set up your own budget.

5. Using the Budget: Balancing and Forecasting with
Multiplan
This Chapter demonstrates how you can use the Budget
Balancing Worksheet make budget projections with Multiplan
and our sample budget.

Appendix
The appendix contains a glossary of common terms, a copy of
each worksheet, and a list of cell contents for the
Department Budget Worksheet.

Now that you have been introduced, you can go on to Chapter 2,
Getting Started, and learn how to get the Multiplan program
going, how to move around in the program, and how to put it away
when you're finished.

CHAPTER TWO : GETTING STARTED

CHAPTER 2: GETTING STARTED

In this chapter, we will sit you down in front of the
microcomputer and get you into the Multiplan program. But
first, we have to cover some preliminaries.

An aside: At this point you should quickly skim the
Introduction and Getting Started sections of your Multiplan
manual. You will find the Multiplan manual a very useful
supplement to this guidebook; be sure to consult it
whenever you have questions about Multiplan. Eventually it
will help you go beyond the scope of this book in
developing other applications of Multiplan.

What you will need before you begin:

Before you start, you will need the following:

    1. An IBM PC microcomputer with an MS-DOS operating
    system diskette -or- an Apple IIe microcomputer.

    2. The Multiplan program disk and the Multiplan Install
    disk (for the IBM PC).

    3. The Multiplan manual (which came with the Multiplan
    disks).

    4. A copy of the disk provided with this manual.

    5. A printer.

Lesson 0: How to Use the Lessons in this Manual

Before you get going on the Lessons we should tell you a
little about how they are set up.

Each Lesson is designed to show you how to use a particular
part of Multiplan or, in later Chapters, how to set up the
model operating budget.

The Instructions:

The Lessons explain the "How-to" of Multiplan and they give
you step-by-step instructions. The instructions work like
this:

The spreadsheet is divided into rows, columns and cells, as
we mentioned in Chapter 1. Each cell is referred to by its
row and column number. For example, the cell at the
intersection of row 4 and column 8 is called R4C8. The
instructions begin by directing you to the cell in which
you will enter a label, number or formula. In the next
column you will find the "Entry" (i.e., the label, number,
or formula). Finally, we provide notes to help you
understand what you are doing.

Here's an example to show you what we mean:

When you see:

Cell	Entry	Notes
R4C8	A(lpha) Total <R>	"A(lpha)" indicates that you are entering text.

you go to cell R4C8, enter only the information shown under
"Entry" (in this case, type A for A(lpha), type in Total,
and press the Return Key (<R>)). The "Notes" give
additional information about that entry to guide you.

Do not type in the cell number. When you see a command
such as A(lpha) or C(opy), type only the first letter; do
not type the parentheses or the letters contained in the
parentheses. Those letters are included only to remind you
which command you are using.

The instructions throughout the book will be structured
like this. Cell, Entry, and Notes will be given for each
step. You'll learn more about these as you work through
the Lessons.

The Keyboard:

You will use certain keys on the keyboard quite often. The
keyboards of the Apple IIe and the IBM PC vary
considerably. In fact, the biggest difference between the
Apple IIe version of Multiplan and the IBM PC version is
the keyboard.

The keys you will use most often are the following. Get to
know them before you start:

IBM PC

The Backspace Key:

The Tab Key:

The Escape (Esc) Key:

The Return Key:

The Directional Arrow
(or cursor) keys:

Apple IIe

The Backspace Key:

The Tab Key:

The Escape (Esc) Key:

The Return Key:

The Directional Arrow
(or cursor) keys:

14
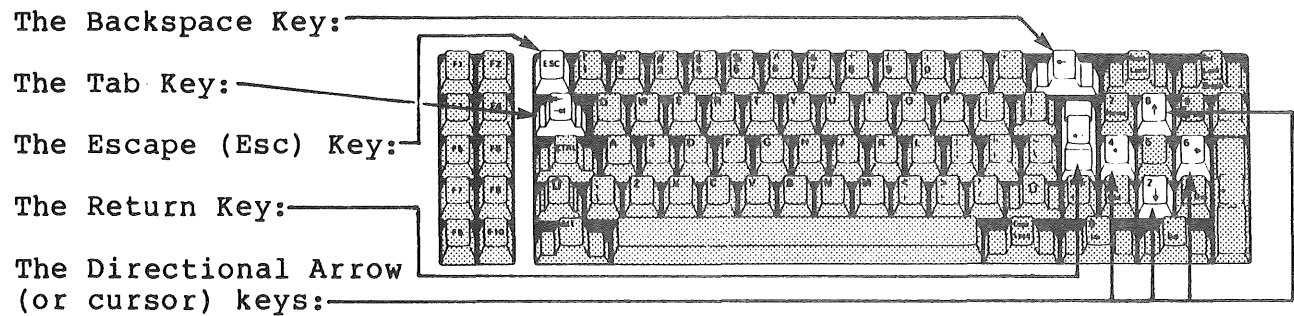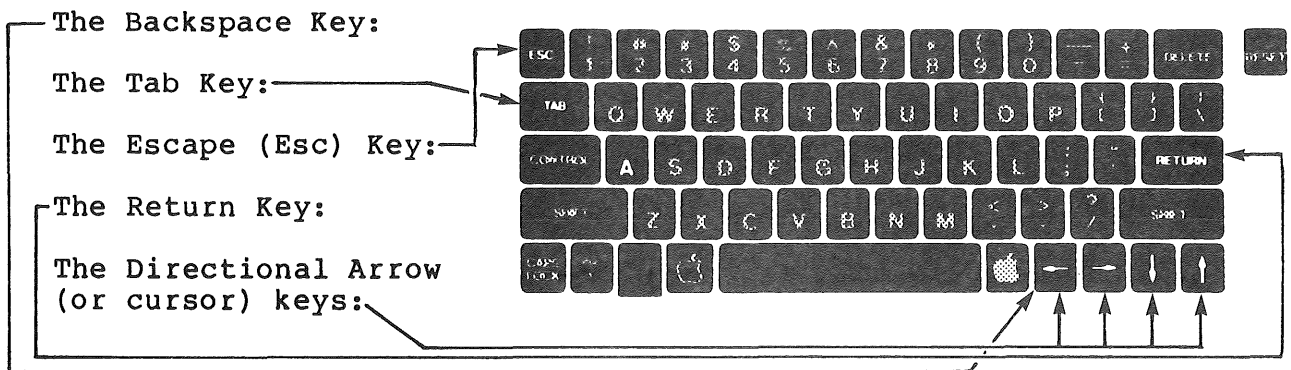
The following symbols correspond to the keys in the
instructions. When you see:

<Up>	it means:	press the "up" arrow key
<Down>	it means:	press the "down" arrow key
<Right>	it means:	press the "right" arrow key
<Left>	it means:	press the "left" arrow key
<R>	it means:	press the "return" key
<Tab>	it means:	press the "tab" key
>	it means:	press the space bar once

I recommend that you photo copy this page and page 3, and
refer to it whenever you are uncertain about the
instructions.

The Computer:

The IBM PC:

As you sit down in front of your IBM PC, the orange On-Off
switch is located on the right hand side of the computer.
The disk drives are the two black boxes facing you from the
bottom of the computer. The keyboard is the the typewriter
device you use to enter data into the computer. The
monitor screen is just like a TV screen. This is about all
you need to know about the computer hardware (that is, the
machine itself).

The Apple IIe:

On the Apple IIe, the On-Off switch is located on the back
side of the computer. The disks drives are separate from
the body of the computer, usually off to the side.

You will no doubt run into problems. You will try to enter
something and accidently press the wrong key. This happens
to beginners and experienced people alike. The best thing
you can do is be patient and learn the tricks for
correcting mistakes when you run into problems.

Remember that this manual is meant to be used with the
microcomputer and the spreadsheet program. Don't just read
it! Use it!█

Lesson 1: Starting the Multiplan program:

Starting Multiplan is as easy as switching on the
microcomputer and sliding the Multiplan diskette into Disk
Drive "A".

[Before you begin, you should make a back up copy of the
Multiplan program on a single, blank diskette. Follow the
instructions in the Multiplan manual. When you finish you
will have a working copy of everything you need to run the
Multiplan program on a single diskette! From now on, you
need only load your Multiplan backup disk and you're ready
to go.]

Instructions for the IBM PC

When you are ready, turn the microcomputer switch to on,
open the disk drives, and insert the Multiplan backup disk
in the A Drive with the printed side up and the notch
facing left. Insert a blank, formatted diskette in drive B
in this same fashion (with the printed side up and the
notch facing left). This will be the data (or "storage")
diskette on which you will store any work you do with
Multiplan.

Now, close the disk drives and wait for the computer to
prompt you (Note: you will have to do this quickly, but not
so quickly that you damage your diskettes. If you wait too
long to insert Multiplan, the computer will think you want
to program in BASIC, and that's another story entirely. If
the computer goes into the BASIC mode before you can load
Multiplan, just remove the diskettes, turn off the machine,
wait a few seconds, and start over).

The first thing you will see on the screen is a date
prompt. You are asked to enter the date, and punch the
return key when you are finished. This step is optional,
and if you don't wish to enter the date, just punch
<Return>. Similarly, a time prompt will follow your
<Return>. Proceed in the same manner, ending with a
<Return>.
(Remember: Whenever you see this <Return> or this <R>, just
push the Return key.)

Next you will see an "A>" on the screen.   Type in:

```
                 MP <RETURN>
```

and you're on your way (just think of "MP" as standing for
"Multiplan").

Instructions for the Apple IIe

Multiplan is easy to load with the Apple IIe. Simply open
Disk Drive 1, slide in the Multiplan disk with the label UP
and the notch to the left. Then start the monitor and the
computer (the On-Off switch is on the back of the computer)
and close the drive door.

When the screen tells you to insert the systems disk, just
press <Return>. The Multiplan screen should appear in a few
seconds.

The screen, as shown in Lesson 2, will appear before you.■

Lesson 2: The Computer is Ready: What Appears on the Screen

This is an important Lesson, since what you now see on the
screen is what you will see every time you use the
Multiplan program. Let's go over it carefully, line by
line.
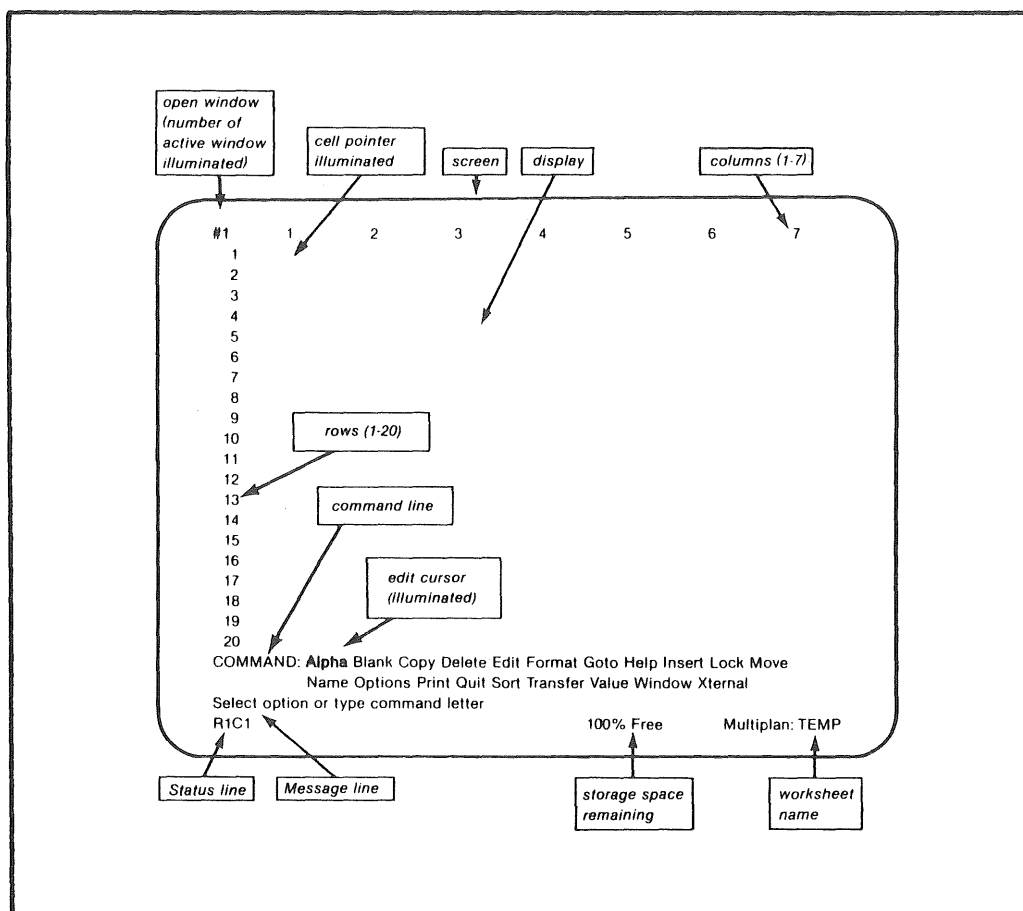
What you see in front of you is the basic Multiplan screen.
The heart of Multiplan is a worksheet composed of numbered
rows and columns; it will be helpful to remember that
columns are vertical and rows are horizontal.

The top line on the screen displays the "open window"
number (#1), and the heading numbers of columns 1 through
7. (Ignore the window number; we'll cover that later).

The next twenty lines are the top twenty rows in the
worksheet, as indicated by the numbers in the left hand
margin.

The following line is called the Command Line; it begins
the "menu" of possible commands you can use with
Multiplan. Read through the list of commands, beginning
with Alpha and ending with Xternal. We will go through
many of these commands in detail; for a quick reference you
will find the definitions of each command in the Appendix.
For now, it is important to remember that almost everything
you do with Multiplan begins with a command.

<center>The Command Line</center>

```
COMMAND: Alpha Blank Copy Delete Edit Format Goto Help Insert Lock Move
         Name Options Print Quit Sort Transfer Value Window Xternal
```

The second line from the bottom is called the Message
Line. The Message Line is a good point of reference
whenever you are unsure of what you should do. Here it
tells you to select an option or type a command; at other
points it may tell you to enter text or a value or a file
name, or prompt some other response. With a little
practice, you won't need to use it, but it's nice to know
you can refer to it when necessary.

<center>The Message and Status Lines</center>

```
Select option or type command letter
R1C1                            100% Free      Multiplan: TEMP
```

The last line is called the Status Line, because it
provides you with several items of information about the
status of the worksheet you are building or using. It
tells you the location of the active cell (as indicated by
the "pointer", that illuminated rectangle in the upper left
hand corner of the page), and its contents. Remember that
the "cell" is the intersection of a row and a column, and
is the space in which you enter your labels, numbers, or
formulae. In this case, the active cell is in Row 1,
Column 1 which appears as R1C1 on the Status Line.

(Note that all cells are referred to by their row and
column numbers. The cell at row 23, column 47 would appear
as: R23C47. This is the type of shorthand we will use
throughout this manual.)

Here, the active cell is blank, so nothing is shown to the
right of the active cell indicator, until you get to the
"100% Free" sign. This sign tells you how much room you
have left in storage. Check this number as you build your
worksheet; it will change as you fill the worksheet cells.

<center>19</center>

The final item on the Status Line shows the name of the
worksheet you are using. Naming a worksheet makes it
possible to store and retrieve a completed worksheet with
ease, and to perform a number of other functions. Multiplan
calls this worksheet "TEMP" (for "Temporary"), but you can
change it to any name you want. As soon as you're ready to
store the file, Multiplan will prompt you for a name. You
will refer to that name from then on whenever you want to
use that worksheet.

That covers what you <u>can</u> see on the screen, but what you
<u>can't</u> see is equally important. If that's confusing, note
that the worksheet is actually 255 rows long by 63 columns
wide. What you see on the screen are the first 20 rows and
the first seven columns of the worksheet. The screen then,
is a kind of "window" which moves over the worksheet at
your command.
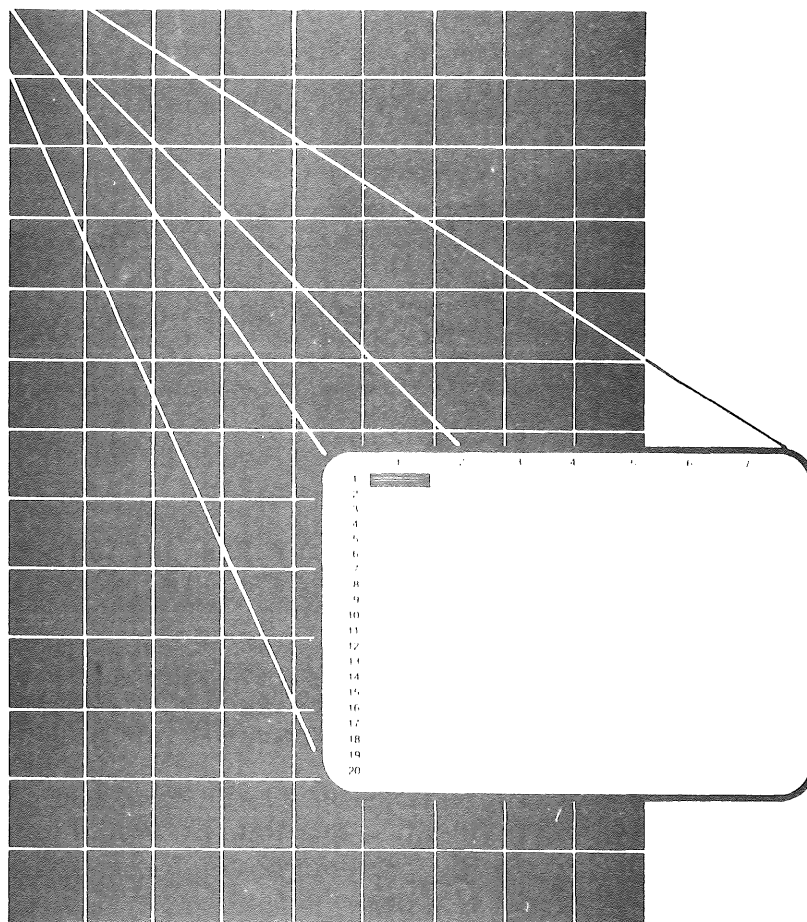
Once again, we're covering a lot of information quickly.
Try reviewing what you've read so far, or reading the early
chapters of the Multiplan manual which came with the
Multiplan program. Or keep working through the Lessons and
Chapters in the remainder of this manual. And by all
means, feel free to experiment with the Multiplan
worksheet; the best way to learn this program is to use
it. It will seem familiar in a very short time.■

Lesson 3: First Steps: Moving Around the Screen

Finally, after all the preparation and warning, you are ready to move.

If you haven't already loaded Multiplan, do so per the instructions in Lesson 2.

Let's start with the pointer. In the blank Multiplan screen you see when you first load the program, the pointer is located in the upper left hand corner at the intersection of Row 1 and Column 1, which is referred to as "R1C1". The pointer, as you already know, highlights the active cell, the cell in which you will work. (Those of you who have worked with VisiCalc or another spreadsheet program will know the pointer as the "cursor"; you will also note that, in Multiplan, the columns are numbered rather than lettered).

You have several different ways of moving the pointer.

1) Notice the directional keys on the right side of your IBM keyboard (the lower right corner of the Apple IIe).

Pressing any of these keys once will move the pointer one cell up, down, or over in the indicated direction. Try pressing the right directional key once.

[IBM PC users: If the number 6 appears on the screen when you press the right directional key, press the "Num Lock" key in the upper right side of the keyboard once and try again]

The pointer has moved one cell over, to Row 1, Column 2 (or R1C2). Also note that the Status Line indicates the change in the lower left hand corner of the screen.

Try moving the pointer around with the directional keys.

Now, if you haven't tried it already, try depressing either the right key or the down key. Watch the pointer jump from one cell to the next until you take your finger off the key. This illustrates one rapid method of moving around the screen, but it also shows something else. If you depressed the key long enough, you noticed that the pointer left the area covered by the original screen.

Although the screen doesn't look much different (because we haven't entered anything in the worksheet yet), the pointer has gone beyond the first seven columns or, if you moved down the worksheet, beyond the first twenty rows. You can see what we meant earlier when we said that the screen is a "window" on the worksheet, showing us only a small chunk at a time. Holding down a directional key is a good, quick way to get around the screen, but there are faster ways.

For example, use the down key to move the pointer down to row 12 column 1 (R12C1). Now, press the Home key (on the IBM PC: the number 7 key on the right hand keypad is the Home key; on the Apple IIe, hold down the Ctrl key and, while holding it down, press Q), and watch the pointer jump back to R1C1. Also, on the IBM, try the PgUp (for Page Up) and PgDn (for, you guessed it, Page Down) keys. You can quickly jump, screen by screen, up and down the worksheet. The comparable move on the Apple IIe can be accomplished by depressing the Closed Apple key, and, while its still down, pushing the appropriate directional key.
2) We'll briefly mention one more way to move around the screen. On the Command line, find the command "Goto" (for Go To). Using the space bar, move the edit cursor (the highlighted box behind the command "Alpha") until it highlights Goto. Press Return and watch the command line change to read:

    G(oto): Name Row-col Window.

Ignore the "Name" and "Window" for now, and type the following:

    R25 <Tab> 3 <Return>

(Remember: when you see <Tab>, press the Tab key.)

As you can see, Multiplan moved the pointer to row 25, column 3. This is a particularly helpful way to jump around the worksheet.▪

Lesson 4: Let's Get on with It: Entering Data

You are now ready to begin entering information on to the
worksheet. This first exercise (Lessons 4, 5, & 6) will
just be for practice; don't worry if you make a few
mistakes.

Move the pointer to R1C1.

Remember when we said that almost anything you do with
Multiplan requires a command? Anytime you want to enter
text (that is, words or letters), you must use the command
ALPHA. Note that the edit cursor is highlighting the Alpha
command. With Alpha highlighted you can either type <R>
-or- you can type the letter A (for Alpha). Typing the
initial letter of any command will get you from the command
menu into that command.

Press the letter A: the command menu disappears; the word
ALPHA: replaces it; and the message line tells you to:
Enter text.

Now, type in the word:

> **Budget**

Any text you write will appear to the right of the ALPHA:
on the command line.

When you have typed Budget, press <R>.

(Remember, when you see <R>, press the Return key).

```
#1      1       2       3       4       5       6       7
  1 Budget
  2
  3
```

The label "Budget" now appears in cell R1C1. Also note
that the command menu has returned. This will happen
whenever you use the <R> key because the <R> key activates
whatever command you choose. The Status Line, too,
reflects the entry by showing "Budget" to the right of the
active cell indicator, R1C1.

We've entered a label. Now let's try a number.

Move the pointer to R2C2.

Move the edit cursor (by using the <Space Bar>) until it
highlights the command "Value".

Value is the command to use any time you want to enter a number or a formula.

As an alternative to using the <Space Bar>, you could have used the <Back Space> key, or typed the letter V, or simply started entering a number. Entering a number while you are in the command menu tells the computer that you want to enter a value. It's not so simple with entering text, however.

[Caution: Always check the command line to make sure the correct command is in effect. For example, if the Alpha command was in effect, and you typed a V for Value, it would be interpreted as the letter V in text.]

Now, type:

<R>   "VALUE:" replaces the
                                 command menu.

Enter:

1540 <R>

```
#1      1       2       3       4       5       6       7
 1 Budget
 2              1540
 3
 4
 5
 6
```

1540 appears in cell R2C2!

(Note that Multiplan does not require the use of commas in number entries.)

Now move down one cell to R3C2 and enter: 460

but this time, press the Down directional key after you enter 460, rather than pressing <R>. The <Down> directional key is located on the right side of your keyboard.

As you can see, the directional keys act as both
directional keys _and_ as return or enter keys, when you are
entering labels, numbers or formulas. This will be very
useful to you later on when you have to key in a long
series of labels or numbers. Also notice that the command
line is set up so that you can easily enter either a value
or a label.

```
ALPHA/VALUE:


Enter text or value
R4C2                                99% Free      Multiplan: B:4-14
```

The active cell is now R4C2. To illustrate the arithmetic
capabilities of Multiplan, let's enter a formula. We'll
add the contents of R2C2 and R3C2.

Cell	Entry	Notes
R4C2	+R2C2+R3C2 <R>	The initial "plus" tells the computer that this is a value.

The contents of the two cells have been added, and the sum
is displayed in the active cell, R4C2.

```
#1       1        2        3        4        5        6        7
   1 Budget
   2              1540
   3               460
   4              2000
   5
   6
```

This is a good time to illustrate a very important feature
of Multiplan. The formula we wrote refers to the _contents_
of the two cells. At this point, the contents are 1540 and
460. But we could change the contents of one or both cells
at any time.

Let's try it and see what happens.

Move the pointer to R2C2.

Type V (for Value)

Enter:

```
                    2040 <R>
```

```
    #1        1          2         3        4        5        6        7
     1 Budget
     2                  2040
     3                   460
     4                  2500
     5
     6
     7
```

The contents of R2C2 have changed from 1540 to 2040, and
the sum in R4C2 changed instantly to reflect the change in
R2C2.

This is the feature we spoke about in Chapter 1 when we
said that one of the most powerful things about Multiplan
is its ability to show, almost instantly, changes from one
part of your budget in another. If you can imagine that
your municipal budget is set up in this way, you can see
how much time and effort you could save.

Try changing the numbers in R2C2 and R3C2 randomly, and see
how fast the sum in R4C2 changes. Keep playing with it
until you feel comfortable entering numbers.

This is the way you will enter most of the data for your
budget: using the Alpha and Value commands to enter labels,
numbers and formulas.

We've told you what you need to know for now; we'll expand
on it later!

But what if you make a mistake? What if Lesson 4 was lost
on you because you couldn't enter "Budget" correctly?

That's the subject of the next Lesson!

Lesson 5: Correcting Mistakes

This may be the handiest Lesson of them all. You can make
all kinds of mistakes with Multiplan: mistakes in choosing
a command, mistakes in typing an entry, mistakes in
location of an entry, etc. In this Lesson you will
intentionally make the mistakes we tell you to, and you
will find out how to correct them (how to avoid them is
your problem).

1. Our first mistake will be an incorrect choice of
command. You wish to press A for Alpha, but instead you
push F for Format. Press F

You are presented with a strange array of words on the
command line, and you can't imagine what to do next.

There are several quick ways out of this situation, and
they can be used whenever you want to get out of the
command you're in. The easiest is to press Esc, the Escape
key in the upper left hand corner of the keyboard. Esc
takes you out of the command you're in, and puts you back
in the command menu where you started.

So, if you haven't tried it yet, press the Esc key.

2. Now, type A for Alpha. You want to enter the label
"Budget", but you make a typing error and it comes out
"Budgef". Assuming that you caught this mistake before you
pushed the <R> key, you can correct it by moving the <Back
Space> key (<Delete> key on the Apple) backward until you
have erased the "f" in "Budgef". Type in "t" so that you
have "Budget", and your mistake is corrected.

3. Let's say that you typed "Budgef", as in mistake #2,
only this time you pushed the <R> key and now "Budgef"
appears in whatever active cell you're in. There are
several ways out of this one. One of them you already know
about. Remember when you typed 2040 in the cell occupied
by 1540 in the last Lesson? Entering 2040 had the effect
of replacing the previous contents of the cell. Here you
can type A (for Alpha, if necessary) retype "Budget", and
press <R>.

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Another way of changing the entry is to use the Edit
command. Position the edit cursor over Edit, or type the
letter E, and press <R>. Remember that the entry you wish
to edit must be in the active cell. Multiplan will respond
with:

> EDIT: "Budgef"

on the command line. Using the <Back Space> key (or, with
the Apple, hold down the Open Apple key and simultaneously
press the <Delete> key), back up over the letters in the
word until you have erased f". Now type in t" and <R>; you
must close the edit with a quotation mark or the program
will not accept it. This is necessary only in editing.

4. Finally, try typing the word Budget in cell R2C1. After
you've done this, you realize that you want to leave R2C1
blank. The quickest way to correct this is to:

    a.) position the pointer over R2C1, and

    b.) locate the Blank command, next to Alpha on the
    command menu.

Press <R> and the command line will read: BLANK cells:
R2C1. (Note that the program will automatically enter the
cell you are in; if you want to blank out a different cell,
you could enter its row and column numbers.) Since the
number of the cell you want to blank out has been provided,
you need only press <R>, and the cell will go blank.

There are other more complex ways to correct mistakes, but
the information covered in this Lesson should get you by
for now.

As we work through these Lessons, look up the commands we
cover in the Command Directory of the Multiplan manual.
Looking up commands will reinforce the process of learning
this new Language.■

Lesson 6: How the Formulas Work: The Simple Budget Example

Lesson 6 will introduce you to a few more features and
commands of Multiplan that you should know before you take
off with your operating budget. It will take you
step-by-step through the process of setting up a budget
sample in order to illustrate Multiplan's capabilities,
introduce the concepts of the electronic worksheet, and
give you some practice using Multiplan.

Let's start by loading Multiplan, if you haven't done so
already.

We are going to set up a small budget projection for one
function of city government: Personal Services. This
budget will list expenditure figures for two previous
years, calculate the percentage change between those two
years, and make a projection based on the percentage change
between the first and second year.

Start with a blank screen and the pointer on R1C1. Before
we enter a single label or number, we are going to
introduce you to a new command: Format. You will use
Format any time you wish to adjust the way the screen
displays your worksheet. For example, if you want to write
a label which is wider than the column, one way of fitting
it in is to use the Format command to change the column
width. That, in fact, is what we will do now, before we
enter the labels.

Type

```
    F(ormat)
```

Your options now are to choose among Cells, Default,
Options, and Width. You will choose width, since you are
trying to adjust the width of the column, by typing W (or
locating Width with the <Space Bar>) and <R>. Now type in
18 to indicate that you want the column to be 18 characters
wide. Multiplan knows that you're in column 1, so you
needn't write anything else. Press <R>: the column expands
to 18 characters and you are automatically returned to the
command menu.

Format has many other uses, some of which we will get to
before this Lesson ends.

The next step is to enter all the labels for the
worksheet. Starting with R1C1, enter:

Cell	Entry	Notes
R1C1	A(lpha) Budget Projection <Down Arrow>	When you see A(lpha), type only the initial letter A; this rule applies to all commands). When you see <Down Arrow> Press the downward facing arrow key on the left side keypad.
R2C1	Personal Services <R> <Down Arrow> <Right> <Right>	You should now be in R3C3.
R3C2	A(lpha) 19X1 <R> <Right>	
R3C3	A(lpha) 19X2 <Right>	
R3C4	% Change <R>	Note that after you pressed the <Right> key, you were given a choice of ALPHA or Value. Multiplan interpreted the "% Change label as an Alpha.

The screen should look like this:

```
#1          1          2        3        4        5        6
   1 Budget Projection
   2 Personal Services
   3                    19X1     19X2  % Change
   4
   5
   6
   7
```

Move the pointer to R3C5 and enter:

R3C5	A(lpha) 19X3 Projected

Now press <R> and notice that column 5 is not wide enough
for this label. Adjust the width using the Format command
instructions from earlier in this Lesson (Hint: make this
column a few characters wider than the label, i.e., roughly
18 characters; if you have trouble, reread the instructions
provided above).

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Now move the pointer to cell R5C1. Enter the following:

Cell	Entry	Notes
R5C1	A(lpha) Wages & Salaries <Down>	
R6C1	Fringe Benefits <Down> <Down>	
R8C1	TOTAL <R>	

Congratulations! You have successfully written the labels
for your first sample worksheet. Your screen should look
like this:

```
 #1           1            2       3       4       5          6
   1 Budget Projection
   2 Personal Services
   3                      19X1    19X2  % Change19X3 Projected
   4
   5 Wages & Salaries
   6 Fringe Benefits
   7
   8 TOTAL
   9
  10
  11
```

The next step is to enter data for 19X1 and 19X2. This
will involve entering numbers, the same thing you will do
when you set up your own budget.

Start by moving the pointer to R5C3. Enter:

R5C2	100000 <R>	Note that entering a number tells the program that you are entering a Value. you didn't have to press V first. Also, remember that commas are left out.

Moving the pointer down to R6C2, enter:

R6C2	25000 <Right>	
R6C3	30000 <Up>	
R5C3	110000 <R>	

You have finished entering the raw data for this brief
exercise. Your worksheet should look like this:

```
#1          1              2        3       4      5          6
  1 Budget Projection
  2 Personal Services
  3                       19X1      19X2   % Change19X3 Projected
  4
  5 Wages & Salaries    100000    110000
  6 Fringe Benefits      25000     30000
  7
  8 TOTAL
  9
 10
 11
 12
 13
```

Now comes the interesting part: you will type in a series
of simple formulas which will allow Multiplan to do your
work for you. In order to accomplish this we will
introduce you to some new Multiplan features. So get
ready; it will take a little time and practice for you to
master this Lesson, but once you do, you will have covered
the basics of Multiplan and will be ready to set up your
budget.

The first thing to do is to set up the formulas in the "%
Change" column. The formula you would normally use for %
Change would divide the difference between the values in
19X1 and 19X2 by the value in 19X1. In this case, that
would be:

> (110000 - 100000) / 100000

But we want the % Change calculation to apply no matter
what the contents of cells R5C2 and R5C3 are. So we could
write the formula as follows:

> (R5C3 - R5C2) / R5C2

If we entered this formula in cell R5C4, then the % Change
would reflect any change in the expenditure figures for
Wages & Salaries. Before you go ahead with this formula,
however, we will show you a short cut:

Entering Formulas Visually

You can enter formulas in Multiplan <u>visually</u>, by using the
directional keys, rather than the more confusing,
time-consuming method of typing in the row and column
numbers of the cells in the formula.

Let's try it.

Move the pointer to R5C4 and enter:

Cell	Entry	Notes
R5C4	V(alue) (<Left>-<Left><Left>)/ <Left><Left> <R>	

This part is a little tricky. "<Left>" indicates the left arrow key. Be sure to enter the parentheses and the slash marks.

The Status Line will look like this:

R5C4	(RC[-1]-RC[-2])/RC[-2]

Negative one and -2 refer to the distance from the active cell, R5C4 to the cells in the formula. That is, 110000 is on the same row (R) as the active cell, but it is one column (C) back from the active cell, and similarly for 100000, which is two columns behind the active cell. The formulas you build could refer to any cell on the worksheet, from R1C1 to R254C63.

Let's go over it once again, step-by-step:

1. The pointer starts out in the cell which will display the result (R5C4).

2. You start the formula by pressing V(alue), and entering a left parenthesis (since this particular formula requires parentheses).

3. Continue by moving the pointer to the cell which contains the first value in the formula (in this case, R5C3).

4. To enter that cell in the formula, you type the key of the function you want to perform (in this case, the "-" key).

5. Next, move the pointer to the cell you want to, in this case, subtract from cell R5C3.

6. Enter that cell by closing this part of the formula with a right parenthesis.

7. Place a slash (/) after the right parenthesis to indicate that division will take place.

8. The final figure to enter is the denominator: R5C2.
Point to that cell again using the same method you used
in 5.

9. When the pointer is highlighting R5C3, press <R>,
and the formula is complete.

This is a very quick and easy way to build formulas
visually. Practice it. You will be using it a lot when
entering the formulas in this manual. If it still seems
confusing, just follow the instructions and it will
eventually become familiar.

FORMAT, Again

Notice that R5C4 looks like this:

```
┌────────────────────────────────────────────────────────┐
│                                                        │
│      0.1                                               │
│                                                        │
└────────────────────────────────────────────────────────┘
```

This is not the clearest way to display percentages, so
let's use the Format command again, this time to change the
format of cell R5C4 to display the answer as a percentage.
With the pointer over R5C4, type the following:

Cell	Entry	Notes
Any Cell	F(ormat) C(ells) <Tab><Tab> % <R>	

Note that 0.1 is now 10%, reflecting a 10% increase in
Wages & Salaries from 19X1 to 19X2. Also notice that the
format key does not materially change the contents or the
formula of this cell. It simply re-expressed 0.1 as a
percentage.

You've covered a lot, but there's a little bit more to
learn. You have set up the formula for % change in row 5,
but you haven't done it for row 6 yet. Your response may
be to move the pointer to R6C4 and follow the same
procedure you did for the previous formula. But, once
again, there is an easier way.

You will use the Copy command to replicate the formula in
R5C4 to R6C4. With the pointer in R5C4, enter the
following:

R5C4	C(opy) F(rom) R5C4 <Tab> R6C4 <R>

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Multiplan has copied the formula from R5C4 to R6C4, and displayed the result in R6C4. Note three things about this Copy:

1. The Copy command copied the formula in the cell, not the contents the way they are displayed on the screen;

2. The formula copied into Row 6 Column 4 refers to the appropriate cells on Row 6 (Columns 2 and 3), rather than the cells that the formula originally referred to; and

3. The Copy command replicates the Format of the original cell.

The next step is to make projections for the coming year in Column 5. Once again, we'll use the visual method of setting up formulas. If you have questions reread that part of this Lesson or the appropriate part of your Multiplan manual.

Move the pointer to R5C5. Enter V for Value and the following:

Cell	Entry	Notes
R5C5	(1+<Left>)*<Left><Left> <R>	

Cell R5C5 should read: 121000

To make the cell below R5C5 do the same thing for Row 6, copy the formula the way you did before:

R5C5	C(opy) F(rom) R5C5 <Tab> R6C5 <R>

R6C5 should project 19X3 fringe benefits to be 36000.

There. You've calculated the percentage change, projected expenditures for the coming year, set Format, created formulas with the directional keys, and copied cells. You have only one or two things left to do.

First, you have to fill in the TOTALs in Row 8.

Move the pointer to R8C2. In the same way that you wanted the percentages to be calculated regardless of the contents of Columns 2 and 3, you will want the TOTALs cells to add up the contents of Columns 2 and 3 whatever they may be.

So enter this formula:

Cell	Entry	Notes
R8C2	V(alue) SUM(\<Up\>\<Up\>\<Up\>: \<Up\>\<Up\>) \<R\>	

In this formula, press the \<Up\> key three times, add a
colon, press \<Up\> twice, add a right parenthesis, and press
\<R\>.

As you can see, Multiplan uses the directional pointers for
SUMs as well as other formulas. The Status Line should
read:

R8C2	SUM(R[-3]C:R[-2]C).

The only thing left before your sample worksheet is
complete is to add up Columns 3 and 5 (you needn't add
Column 4, the percentages, because that wouldn't tell you
anything interesting).

We'll use the Copy command one more time, although in a
somewhat different fashion. Type:

R8C2	C(opy) F(rom) R8C2 \<Tab\> R8C3,R8C5 \<R\>

Note that the range you copied <u>to</u> included a comma. The
comma told the computer that you wanted the cell copied
<u>only</u> to R8C3 and R8C5. If you had used a ":" instead of a
"," you would have copied R8C2 to <u>every</u> cell between R8C3
and R8C5.

Congratulations!

You have finished building a budget projection worksheet.
All that's left is to Save the worksheet so you can Print
it or use it again at later time (even if you don't _want_ to
use it again, Save it anyway; it will be good practice in
using the Transfer command).

But first, before you leave the worksheet, try playing
around with the numbers in the Wages & Salaries and Fringe
Benefit cells for 19X1 and 19X2. For instance, try
replacing 30000 in the Fringe Benefits cell for 19X2 with
35000.

```
 #1          1          2        3        4          5          6
    1 Budget Projection
    2 Personal Services
    3                       19X1     19X2   % Change   19X3 Projected
    4
    5 Wages & Salaries   100000   110000     10%         121000
    6 Fringe Benefits     25000    35000     40%          49000
    7
    8 TOTAL              125000   145000                 170000
    9
   10
   11
   12
   13
```

Watch the sums, percentages, and projections change based
on the new data you entered. Change the entries in any of
those four cells and see what happens. This is the
keystone of a spreadsheet software package: its ability to
calculate changes in your worksheet instantly.

Saving your work is, as we mentioned before, an essential
step. To spend several hours in front of the computer only
to lose everything is indeed heartbreaking. When you have
finished your work, or sooner if you are working on a large
worksheet, insert a formatted disk in the B drive of your
IBM or Drive 2 of your Apple. Enter the following:

Cell	Entry	Notes
Any Cell	T(ransfer) S(ave) b:Example <R>	

and the computer will save your work for you. The name
"b:Example" is just the name I happened to give the
worksheet; the "b:" prefix tells the IBM PC that your
storage diskette is in the B Drive. Apple requires you to
specify Drive 2.█

Lesson 7: Getting Help

Multiplan is equipped to assist you whenever you need
help. You can access the Help command simply by
highlighting Help on the command menu, or by pressing the
question mark (?) key (except when you are in the Alpha
command).

Multiplan will present you with a Help Menu and text from
the Help file. The Help file text will usually pertain to
the command field you are in at the time, or to an error
message you may have received.

Feel free to make use of the Help command. It can save you
a lot of time and trouble.■

Lesson 8: Before You Go Any Further:

Before you go any further, we should point out a few
dangers you will encounter, and some things you should
remember to do.

1. Always make a back up copy of the work you do. Its easy
enough to do, as long as you remember to take the time
whenever you finish a work session with Multiplan. Just
follow the instructions for making copies of files provided
with your Apple or IBM.

2. Making a back up copy is designed to help you avoid the
consequences of these pitfalls:

   a. Damaging diskettes through carelessness or improper
   storage.

   b. Leaving the Multiplan program without SAVING your
   worksheet. This is comparable to throwing your
   worksheet in the wastebasket, except that once you've
   dumped it, it can never be retrieved.

   c. Turning the machine Off before taking the disks out
   of the Disk Drives, or locking the diskettes in their
   drives before turning the machine On. This could
   result in the loss of all or part of your data through
   power failure or a power surge.

Even when you do back up your work, it is good practice to
avoid these habits.

Chapter 2 Summary

You've covered quite a bit in these first two chapters.
You now know:

           How to load Multiplan.
           The layout of the Multiplan screen.
           How to move around the screen using the
           directional keys and the G(oto) command.
           How to enter labels, numbers, and formulas.
           How to correct mistakes.
           How Multiplan uses formulas.
           How to get Help with Multiplan commands.
           How to use the Alpha, Blank, Copy, Format,
           Transfer, and Value commands.

Now you are ready for Chapter 3 where you will begin to set
up the Department Budget Worksheet.

CHAPTER THREE : USING MULTIPLAN TO BUILD AN OPERATING BUDGET

CHAPTER 3: USING MULTIPLAN TO BUILD AN OPERATING BUDGET

This Chapter includes a detailed Lesson on setting up the Department Budget for a single department: General Government. The Department Budget Worksheets are the building blocks for the operating budget in this manual. This Chapter will employ the fundamental commands of Multiplan you learned in the last Chapter and teach you a few new ones. It will illustrate the workings of our sample operating budget.

By completing the Lessons in this Chapter, you will have set up the Department Budget Worksheet one step at a time. Lesson 9 gives an overview of the Worksheet. Lesson 10 covers all the labels. In Lesson 11, you enter the formulas required to make the budget work. Lesson 12 lets you format the worksheet so that integers look like integers, percentages like percentages, and labels are correctly centered. Finally, Lesson 13 shows you how to link the Worksheets together.

Instructions for completing the budget and using it will be presented in Chapters 4 and 5.

In the remainder of the manual, I will give you clear instructions on how to enter the labels and formulas necessary in your budget. I will occasionally explain the use of a new command or a particular strategy for building the worksheet. Otherwise, you need only follow the directions and a model operating budget for Minnesota cities will appear before your eyes. Once you have a little practice in building and using worksheets, you will be able to use Multiplan for just about any application you can think of.

You know enough to get started. So let's get going...

The Budget Explained

First we will diagram the budget system for you.

1) The Department budget is based on six worksheets. Each worksheet is a subsection of a Department Budget Worksheet illustrated below:

```
+----------------------------------------------------------+
|  +----------------------------------------------------+  |
|  |  Department: General Government                    |  |
|  +----------------------------------------------------+  |
|  |  Department Budget Summary                         |  |
|  |                                                    |  |
|  |  Personal Services Table                           |  |
|  |  Personal Services Worksheet                       |  |
|  |  Supplies Worksheet                                |  |
|  |  Other Services & Charges Worksheet                |  |
|  |  Capital Outlay                                    |  |
|  |  Debt Service                                      |  |
|  +----------------------------------------------------+  |
+----------------------------------------------------------+
```
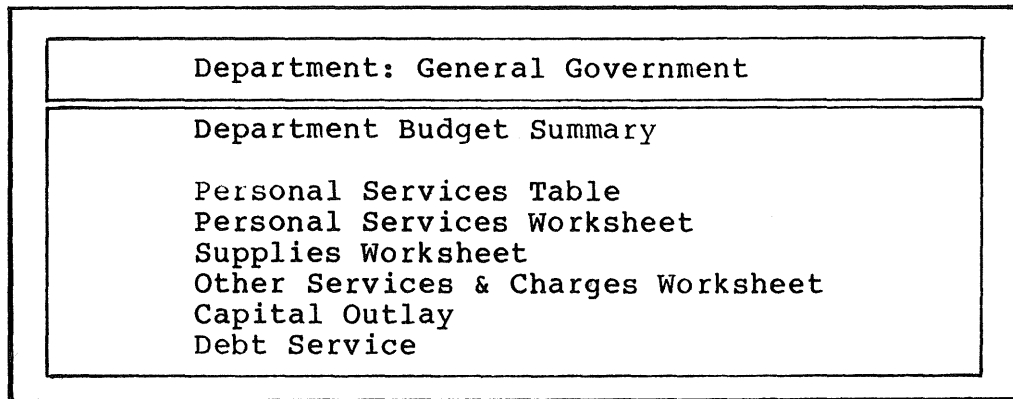
DEPARTMENT BUDGET WORKSHEET

You will set up these six worksheet sub-sections for the General Government Department in this Chapter. You will copy the General Government Department Worksheet for the other five departments in Chapter 4. When you have finished all six Department Worksheets, you will be able to enter the raw data for your budget.

Each worksheet sub-section details information you need to plan your budget. In addition, a Personal Services Table worksheet is included to help you keep track of fringe benefits and other personnel costs. A summary of the detailed information from the worksheet subsections is fed into the Department Budget summary (at the top of the Department Budget Worksheet). In the Department Budget summary you will make your projections, balance the budget, and record the final budget allocations. For convenience, a summary of line items is included, along with a summary of revenues, on the data disk provided with this manual.

2) Every department will have a separate file
containing each of the worksheets needed to complete
its budget. The workings of the budget system are
illustrated below:

Budget Balancing Worksheet

Line Item Summary		Revenue Summary

General Government	Public Safety	Public Works	Health & Welfare	Culture-Recreation	Conservation
Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service

A. The 1984 expenditure totals from each Department are
fed into the Budget Balancing worksheet (provided on
your data disk).

Budget Balancing Worksheet

Line Item Summary		Revenue Summary

General Government	Public Safety	Public Works	Health & Welfare	Culture-Recreation	Conservation
Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service	Personal Services Supplies Other Services & Charges Capital Outlay Debt Service

B. In the Budget Balancing Worksheet the 1984
Department totals can be adjusted and fed back into the
Department Budget Worksheets as guidelines for the 1985
budget.

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```
┌─────────────────────────────┐
│  Budget Balancing Worksheet │
└─────────────────────────────┘
        ┌──────────────────────┐      ┌─────────────────┐
   ┌───▶│   Line Item Summary  │      │ Revenue Summary │
   │    └──────────────────────┘      └─────────────────┘
```

General Government	Public Safety	Public Works	Health & Welfare	Culture-Recreation	Conservation
Personal Services	Personal Services	Personal Services	Personal Services	Personal Services	Personal Services
Supplies	Supplies	Supplies	Supplies	Supplies	Supplies
Other Services & Charges	Other Services & Charges	Other Services & Charges	Other Services & Charges	Other Services & Charges	Other Services & Charges
Capital Outlay	Capital Outlay	Capital Outlay	Capital Outlay	Capital Outlay	Capital Outlay
Debt Service	Debt Service	Debt Service	Debt Service	Debt Service	Debt Service

C. When final budget totals are developed in the each of the Department Budget Worksheets, you can copy them into the Line Item Summary worksheet (provided on the data disk).

This model budget was developed with the assistance of a committee of Minnesota city clerks and finance officers. It is based on the Uniform Chart of Accounts for Cities developed by the Office of the State Auditor. It may be a little different from the way you now do your budget, but one of the beauties of the electronic spreadsheet is that, once you learn how to use it, you can change the system to fit the way you do things.

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Lesson 9: Building the Department Worksheet

Let's get started with the Department Budget Worksheets.

With the Multiplan program loaded and the spreadsheet blank, make sure that the pointer is in cell R1C1.

The next few pages will show you how the Worksheet will appear when you finish:

	1	2	3	4	5	6	7	8	9	10	11	12
1		DEPARTMENT BUDGET:										
2		General Government										
3	Code			1982	1983	Current	%Change	Projection	Tentative	%Change	% of Total	Final
4				Actual	Actual	Budget			1985			1985
5	100	Personal Services		101,680	100,403	107,073	7%	114,186	112,590	5%	71%	117,687
6	200	Supplies		3,094	3,764	3,600	-4%	3,443	4,920	37%	3%	5,143
7	300	Other Services and Charges		43,273	32,928	35,625	8%	38,543	40,480	14%	25%	42,313
8	500	Capital Outlay		3,109	954	1,120	17%	1,315	1,055	-6%	1%	1,103
9	600	Debt Service		285	287	285	-1%	283	290	2%	0%	303
10												
11		TOTAL		151,441	138,336	147,703	7%	157,770	159,335	8%	100%	166,549

12 ——

	1	2	4	5	6	7	8	9	10	11
13		WORKSHEET: Personal Services Table								
14					Employee					
15	Code		#1	#2	#3	#4	#5	#6	#7	TOTAL
16										
17	100	Wages & Salaries	12,000	13,400	15,000	18,500	14,250	12,550	17,950	103,650
18	110	Other Pay	2,105		560	245				2,910
19	120	Employer Contributions								
20		To Retirement								
21		PERA - Basic			1,050	1,295			1,257	3,602
22		PERA - Coordinated	480	536			570	502		2,088
23		Police Pension								0
24	130	Employer Paid Insurance								0
25	140	Unemployment Compensation								0
26	150	Worker's Compensation	71	56	75	25	68		45	340
27	160	Liability Insurance								0
28										
29		TOTAL	14,656	13,992	16,685	20,065	14,888	13,052	19,252	112,590

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	1	2	4	5	6	7	8	9	10	11
31										
32		WORKSHEET: Personal Services				Tentative				Final
33	Code		1982	1983	1984	1985	%Change	% of Total	Reallo-	1985
34			Actual	Actual	Budget	Budget			cation	Budget
35	100	Wages & Salaries	95,040	91,500	98,500	103,650	5%	92%	108,343	75,000
36	110	Other Pay	1,955	4,219	3,105	2,910	-6%	3%	3,042	12,000
37	120	Employer Contributions				0				
38		To Retirement:				0				
39		PERA - Basic	3,250	3,024	3,409	3,602	6%	3%	3,765	5,000
40		PERA - Coordinated	1,125	1,340	1,734	2,088	20%	2%	2,183	3,250
41		Police Pension				0				
42	130	Employer Paid Insurance				0		0%	0	1,250
43	140	Unemployment Compensation				0		0%	0	7,500
44	150	Worker's Compensation	310	320	325	340	5%	0%	355	13,450
45	160	Liability Insurance				0		0%	0	9,000
46										
47		TOTAL	101,680	100,403	107,073	112,590	5%	100%	117,687	126,450

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	1	2	4	5	6	7	8	9	10	11
49										
50		WORKSHEET: Supplies				Tentative				Final
51	Code		1982	1983	1984	1985	%Change	% of Total	Reallo-	1985
52			Actual	Actual	Budget	Budget			cation	Budget
53	200	Office Supplies	1,946	2,105	2,450	2,550	4%	52%	2,665	

	1	2	3	4	5	6	7	8	9	10	11	12
54	210	Operating Supplies		850	850	850	925	9%	19%	967		
55	220	Repair & Maintenance		0	459	0	1,025		21%	1,071		
56		Supplies										
57	240	Small Tools & Minor		290	350	300	420	40%	9%	439		
58		Equipment										
59	250	Merchandise for Resale								0		
60												
61		TOTAL		3,094	3,764	3,600	4,920	37%	100%	5,143	0	
62												
63												
64		Worksheet: Other Services & Charges										
65							Tentative				Final	
66	Code			1982	1983	1984	1985	%Change	% of Total	Reallo-	1985	
67				Actual	Actual	Budget	Budget			cation	Budget	
68	300	Professional Services		10,500	2,450	4,500	6,400	42%	16%	6,690		
69	320	Communication		2,200	1,995	2,250	3,000	33%	7%	3,136		
70	330	Transportation		12,540	9,850	10,000	12,000	20%	30%	12,543		
71	340	Advertising		1,950	1,925	2,000	1,800	-10%	4%	1,882		
72	350	Printing & Binding		11,500	11,840	12,000	11,500	-4%	28%	12,021		
73	360	Insurance		1,045	1,150	1,175	2,015	71%	5%	2,106		
74	380	Utility Services		2,980	3,154	3,150	3,200	2%	8%	3,345		
75	400	Repairs & Maintenance—		550	564	550	565	3%	1%	591		
76		Contractual										
77	410	Rentals						#DIV/0!	0%	0		
78	420	Depreciation						#DIV/0!	0%	0		
79	430	Miscellaneous						#DIV/0!	0%	0		
80												
81		TOTAL		43,273	32,928	35,625	40,480	14%	100%	42,313	0	
82												
83												
84		Worksheet: Capital Outlay					Tentative				Final	
85	Code			1982	1983	1984	1985	%Change	% of Total	Reallo-	1985	
86				Actual	Actual	Budget	Budget			cation	Budget	
87	500	Capital Outlay		3,109	954	1,120	1,055	-6%	100%	1,103		
88												
89												
90												
91		Worksheet: Debt Service					Tentative				Final	
92	Code			1982	1983	1984	1985	%Change	% of Total	Reallo-	1985	
93				Actual	Actual	Budget	Budget			cation	Budget	
94	600	Debt Service		285	287	285	290	2%	100%	303		
95												
96												

Lesson 10: Entering Labels:

Notice that the left column indicates the cell you must be in before you can enter the information in the right column. You will start by setting the width of the columns.

With the pointer in R1C1, enter the following information:

Cell	Entry	Notes
R1C1	F(ormat) W(idth) 5 <R>	This sets the width of column 1 at 5 characters.
R1C2	F(ormat) W(idth) 30 <R>	Here you are setting the width of column 2 to accommodate wider labels.
R1C2	A(lpha) DEPARTMENT: <Down>	
R2C2	General Government <Down> <Left>	
R3C1	Code <R>	
R3C4	A(lpha) 1982 <R>	
R3C5	A(lpha) 1983 <Right>	
R3C6	Current <Right>	
R3C7	%Change <Right>	
R3C8	Projection <Right>	
R3C9	Tentative <Right>	
R3C10	%Change <Right>	
R3C11	% of Total <Right>	
R3C12	Final <R>	
R4C4	A(lpha) Actual <Right>	
R4C5	Actual <Right>	
R4C6	Budget <R>	
R4C9	A(lpha) 1985 <R>	

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Cell	Entry	Notes
R4C12	A(lpha) 1985 <R>	

You have entered the column headings for the Department
summary. Now you can enter the code numbers...

Cell	Entry	Notes
R5C1	V(alue) 100 <Down>	"100" is the code for this classification. It is treated as a number here to make it easier to enter.
R6C1	200 <Down>	
R7C1	300 <Down>	
R8C1	500 <Down>	
R9C1	600 <R>	

...and the row labels:

Cell	Entry
R5C2	A(lpha) Personal Services <Down>
R6C2	Supplies <Down>
R7C2	Other Services & Charges <Down>
R8C2	Capital Outlay <Down>
R9C2	Debt Service <Down> <Down>
R11C2	TOTAL <R>

You may have noticed that the program takes a few seconds
to recalculate the worksheet after an entry. The farther
you get into the worksheet, the longer it will take to
recalculate. Since you don't need automatic recalculating
at this time, you can turn it off by entering:

O(ptions) (recalc:) N(o) <R>

This should save you a little time. You can turn it on
again by switching the recalc option from No to Yes.

Now you can go on to the Personal Services Table:

R13C2	A(lpha) WORKSHEET: Personal Services Table <Down> <Down> <Left>
R15C1	Code <Down> <Down> <Right>
R17C2	Wages & Salaries <Down>
R18C2	Other Pay <Down>
R19C2	Employer Contributions <Down>
R20C2	>To Retirement <Down> Remember that > stands for a Space.
R21C2	>>PERA - Basic <Down>
R22C2	>>PERA - Coordinated <Down>
R23C2	>>Police Pension <Down>
R24C2	Employer Paid Insurance <Down>
R25C2	Unemployment Compensation <Down>
R26C2	Workers Compensation <Down>
R27C2	Liability Insurance <Down> <Down>
R29C2	TOTAL <R>

You have entered all of the row labels for the Personal
Services Table.

Look at the screen as you work along to see what you are
accomplishing. Make sure that you are entering the correct
information in the correct cells. For a comparison of
where you are and where you should be when you finish, take
a look at the completed worksheet on pages 5 and 6 of this
Chapter.

Also, watch the status line as you move to see that you are
in the correct cell.

Let's enter the column headings. Each column will
represent an employee (or a category of employees), to
which we'll assign a single digit number. You can assign
the employee any number you want. Although this budget
only has room for seven employees (or seven categories of
employees) per department, you can have as many or as few
employees per department as you want.

Cell	Entry	Notes
R14C6	A(lpha) Employee <R>	
R15C4	A(lpha) #1 <Right>	
R15C5	#2 <Right>	
R15C6	#3 <Right>	
R15C7	#4 <Right>	
R15C8	#5 <Right>	
R15C9	#6 <Right>	
R15C10	#7 <Right>	
R15C11	TOTAL <R>	

Start the code numbers with the pointer in R17C1:

R17C1	100 <Down>	
R18C1	110 <Down>	
R19C1	120 <R>	
R24C1	130 <Down>	
R25C1	140 <Down>	
R26C1	150 <Down>	
R27C1	160 <R>	

The next thing to do is to build another worksheet sub-section, right below this one.

We will call it the Personal Services Worksheet.

Move the pointer to R35C2 and enter the following:

R35C1	C(opy) F(rom) R17C1 : R29C2 <Tab> R35C1 <R>	Copy the row labels and code numbers from the Personal Services Table to the Personal Services worksheet.

Cell	Entry	Notes
R32C2	A(lpha) WORKSHEET: Personal Services <R>	
R34C1	A(lpha) Code <R>	
R33C4	A(lpha) 1982 <R> <Right>	These are the column headings.
R33C5	A(lpha) 1983 <R> <Right>	
R33C6	A(lpha) 1984 <R> <Right>	
R33C7	A(lpha) 1985 <Up>	
R32C7	Tentative <R>	
R33C8	A(lpha) %Change <Right>	
R33C9	% of Total <Right>	
R33C10	Realloc- <R> <Right>	
R33C11	A(lpha) 1985 <Up>	
R32C11	Final <R>	
R34C4	A(lpha) Actual <Right>	
R34C5	Actual <Right>	
R34C6	Budget <Right>	
R34C7	Budget <R>	
R34C10	A(lpha) cation <Right>	
R34C11	Budget <R>	

Ok. The next worksheet is called the "Supplies"
worksheet. It is similar to the Personal Services
worksheet, differing only in the line items.

R49C1	C(opy) F(rom) R32C1 : R34C11 <R>	You are copying the column headings which will remain the same for the rest of the budget.

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Cell	Entry	Notes
R49C2	A(lpha) WORKSHEET: Supplies <R>	
R52C2	A(lpha) Office Supplies <Down>	
R53C2	Operating Supplies <Down>	
R54C2	Repair & Maintenance <Down>	
R55C2	>Supplies <Down>	
R56C2	Small Tools & Minor <Down>	
R57C2	>Equipment <Down>	
R58C2	Merchandise for Resale <Down> <Down>	
R60C1	TOTAL <R>	

...and move on to the next worksheet: Other Services & Charges.

Cell	Entry	Notes
R63C1	C(opy) F(rom) R49C1 : R51C11 <R>	
R63C2	A(lpha) WORKSHEET: Other Services & Charges <R>	You won't see the whole label "Other Services & Charges" until you work through the Lesson on Format.
R67C2	A(lpha) Professional Services <Down>	
R68C2	Communication <Down>	
R69C2	Transportation <Down>	
R70C2	Advertising <Down>	
R71C2	Printing & Binding <Down>	
R72C2	Insurance <Down>	
R73C2	Utility Services <Down>	
R74C2	Repairs & Maintenance-- <Down>	
R75C2	>Contractual <Down>	
R76C2	Rentals <Down>	
R77C2	Depreciation <Down>	

Cell	Entry	Notes
R78C2	Miscellaneous <R>	
R80C2	C(opy) F(rom) R60C2 : R60C11 <R>	This gives you the entire TOTAL line.

The last two worksheets, "Capital Outlay" and "Debt Service" will be easy.

Cell	Entry
R83C1	C(opy) F(rom) R63C1 : R66C11 <R>
R83C2	A(lpha) WORKSHEET: Capital Outlay <R>
R87C2	A(lpha) Capital Outlay <R>
R90C1	C(opy) F(rom) R83C1 : R87C11 <R>

You have two worksheets that look alike. To substitute "Debt Service" for "Capital Outlay" in the last worksheet, move the pointer to R90C2 and enter:

Cell	Entry	Notes
R90C2	A(lpha) WORKSHEET: Debt Service <R>	
R94C2	A(lpha) Debt Service <R>	Here you are writing "Debt Service" over "Capital Outlay".

Good. You have finished entering the labels for the Department Budget Worksheet. If you look back to the completed Budget Worksheet on pages 5 and 6, you will see how far you've come already. It's time to type in the formulas.

You may want to take a break, however, before you go on to the next Lesson. If so, just enter the following:

    T(ransfer) S(ave) B:General <R>

then press:

    Q(uit) Y(es)

and reload the program and worksheet B:General when you return.■

Lesson 11: Entering the Formulas:

Next, you will enter the formulas which will make your
budget work. You will begin with the formulas for the
Department Budget summary at the top of the Worksheet.

Cell	Entry	Notes
R5C7	V(alue) (RC[-1]-RC[-2]) / RC[-2] <R>	Use the pointer to visually set up this formula. It calculates % change from 1983 actual to the current budget. See Chapter 2 discussion of setting up formulas with the directional keys.
R5C7	C(opy) D(own) 6 <R>	The Copy Down command enters the formula into each of the five cells below the active cell.

Don't worry about the "#DIV/0!" (or any other error
messages) that appears in the worksheet. It is there to
remind you that you can't divide by zero. In this case, it
just indicates that the raw data hasn't been entered yet.
As soon as you type in your raw data for the current and
previous years, the worksheet will automatically calculate
the percentage change.

Cell	Entry	Notes
R5C8	V(alue) (1+RC[-1]) * RC[-2] <R>	This formula makes a simple projection for each of the line item classifications.
R5C8	C(opy) D(own) 4 <R>	
R5C10	V(alue) (RC[-1]-RC[-4])/RC[-4] <R>	This formula calculates % change.
R5C10	C(opy) D(own) 6 <R>	
R5C11	V(alue) RC[-5]/R11C6 <R>	
R5C11	C(opy) D(own) 6 <R>	

Cell	Entry	Notes
R5C12	V(alue) RC[-1]*R11C12	
R5C12	C(opy) D(own) 4 <R>	
R11C4	V(alue) SUM(R[-6]C : R[-2]C) <R>	This will be easier if you type SUM(and use the pointer to highlight the cells you want included in the formula. Watch the edit line and the screen as you identify the cells with the pointer. Be sure to close the formula with a parenthesis.
R11C4	C(opy) R(ight) 2 <R>	
R11C4	C(opy) F(rom) R11C4 <Tab> R11C8 : R11C9 <R>	

Now you will do the formulas for the Personal Services
Table.

Cell	Entry	Notes
R17C11	V(alue) SUM(RC[-7] : RC[-1]) <R>	This entry automatically sums everything in the range specified.
R17C9	C(opy) D(own) 10 <R>	

Let's go over the steps for using the pointer, rather than
typing in the cell references, one more time, in case you
are having trouble with it. It should work like this:

Cell	Entry
R17C11	V(alue) SUM({move the pointer to R17C4} {press the colon key : } {move the pointer to R17C10}) <R>

You may use whichever method you're comfortable with. Note
once again that any time you want to refer to a group of
cells as we did above, you use the ":" in between the first
cell of the group and the last cell.

Now move the pointer to R21C4. Enter:

Cell	Entry	Notes
R21C4	V(alue) R[-4]C*0.07 <R>	
R21C4	C(opy) R(ight) 6 <R>	
R22C4	V(alue) R[-5]C*0.04 <R>	
R22C4	C(opy) R(ight) 6 <R>	
R23C4	V(alue) R[-6]C*0.12 <R>	
R23C4	C(opy) R(ight) 6 <R>	

These formulas calculate the employer contribution to PERA
based on which classification the employee is in: PERA
Basic, PERA Coordinated, or Police Pension). For your
convenience you can blank out whichever cell doesn't apply
to the employee in question.

Cell	Entry	Notes
R29C4	V(alue) SUM(R[-12]C : R[-2]C) <R>	This entry automatically sums everything in the range specified.
R29C4	C(opy) R(ight) 7 <R>	

Next, we'll fill in the formulas for the Personal Services
Worksheet.

Cell	Entry
R35C7	V(alue) R[-18]C[+4] <R>
R35C7	C(opy) D(own) 10 <R>

Column 7 will now show the same thing as the Totals column
in the Personal Services Table.

Next, the "% Change" column:

Cell	Entry
R35C8	V(alue) (RC[-1]-RC[-2])/RC[-2] <R>
R35C8	C(opy) D(own) 12 <R>

And the "Percent of Total" column:

Cell	Entry
R35C9	V(alue) RC[-3]/R47C6 <R>
R35C9	C(opy) D(own) 12 <R>

And the "Reallocation" column:

Cell	Entry	Notes
R35C10	V(alue) RC[-1]*R47C10 <R>	
R35C10	C(opy) D(own) 10 <R>	

And, finally, the Totals:

R47C4	V(alue) SUM(R[-12]C : R[-2]C) <R>	
R47C4	C(opy) R(ight) 3 <R>	
R47C11	C(opy) F(rom) R47C4 <R>	

Now we'll move down to the Supplies section of the budget
and enter the formulas. Since we will be using the same
column headings as we did in the Personal Services
worksheet, we can copy the formulas in a couple of quick
steps.

R52C8	C(opy) F(rom) R35C8 <R>	
R52C8	C(opy) D(own) 8 <R>	
R52C9	V(alue) RC[-3]/R60C6 <R>	
R52C9	C(opy) D(own) 8 <R>	

And correct the reallocation formula:

R52C10	V(alue) RC[-1]*R60C10 <R>	
R52C10	C(opy) D(own) 6 <R>	
R60C4	V(alue) SUM(R[-8]C : R[-2]C) <R>	
R60C4	C(opy) R(ight) 3 <R>	
R60C11	C(opy) F(rom) R60C4 <R>	

Next, we'll copy the formulas into the "Other Services &
Charges" worksheet the way we did in the Supplies
worksheet.

R67C8	C(opy) F(rom) R52C8 <R>	
R67C8	C(opy) D(own) 13 <R>	

Cell	Entry	Notes
R67C9	V(alue) RC[-3]/R80C6 <R>	
R67C9	C(opy) D(own) 13 <R>	
R67C10	V(alue) RC[-1]*R80C10 <R>	
R67C10	C(opy) D(own) 11 <R>	
R80C4	V(alue) SUM(R[-13]C:R[-2]C) <R>	
R80C4	C(opy) R(ight) 3 <R>	
R80C11	C(opy) F(rom) R80C4 <R>	

Finally, you will complete the Capital Outlay and Debt Service worksheets.

Cell	Entry	Notes
R87C8	C(opy) F(rom) R67C8 <R>	
R87C9	V(alue) 1 <R>	Later, when you set the Format for this cell, it will display 100%, since it will always be 100% of the Capital Outlay total.
R94C8	C(opy) F(rom) R87C8 <R>	
R94C9	V(alue) 1 <R>	

That takes care of the formulas. Remember, if you want to take a break, just enter the following:

T(ransfer) S(ave) B:General <R>	"B:" tells the computer that the data disk is in the B Drive.

then press:

Q(uit) Y(es)

and reload the program and worksheet B:General when you return.◼

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Lesson 12: Formatting the Worksheet:

Formatting the worksheet (not to be confused with
"formatting" a disk) allows you to display the numbers and
labels appropriately. For example, you can change the
format of cells which display "% Change" so that the
results appear as percentages rather than decimals.

You will be dealing with four kinds of formats: 1)
centering labels, 2) displaying integers, 3) displaying
percentages, and 4) displaying labels continuously across
adjacent cells. In addition, we will show you how to
display numbers with commas, and how to draw lines between
the sections of the Department Budget.

Begin by moving the pointer to:

R3C4	F(ormat) C(ells) R3C4 : R4C12 <Tab> C(tr) <R>	This centers all the labels in this block of cells. Note that you can move around within Format by using the Space Bar or by typing the letter of the code you want to use.
R5C4	F(ormat) C(ells) R5C4 : R11C6 <Tab> <Tab> I(nt) <R>	Every entry in these columns will be expressed as an integer.
R5C7	F(ormat) C(ells) R5C7 : R11C7 <Tab> <Tab> % <R>	Entries in this column will be displayed as percentages.
R5C8	F(ormat) C(ells) R5C8 : R11C9 <Tab> <Tab> I(nt) <R>	
R5C10	F(ormat) C(ells) R5C10 : R11C11 <Tab> <Tab> % <R>	
R5C12	F(ormat) C(ells) R5C12 : R11C12 <Tab> <Tab> I(nt) <R>	

The next step is to format the "WORKSHEET" title so it will
display across adjacent cells continuously.

Cell	Entry	Notes
R13C2	F(ormat) C(ells) R13C2 : R13C3 <Tab> <Tab> C(ont) <R>	"Continuous" allows you to display a label that extends longer than one cell width.

Now you are ready to format the Personal Services Table.
Begin by centering the column headings then convert the
entire block of cells in the worksheet to integer format.

R15C4	F(ormat) C(ells) R15C4 : R15C11 <Tab> C(tr) <R>	
R17C4	F(ormat) C(ells) R17C4 : R29C11 <Tab> <Tab> I(nt) <R>	

The Personal Services worksheet begins on row 32.

R32C4	F(ormat) C(ells) R32C4 : R34C11 <Tab> C(tr) <R>

A quick and easy way to finish formatting the cells which
display numbers is to specify the largest possible block of
cells in the range. Since the rest of the worksheet (from
row 32 to the end) has basically the same structure, you
can format a large block of cells.

Cell	Entry	Notes
R35C4	F(ormat) C(ells) R35C4 : R93C7 <Tab> <Tab> I(nt) <R>	Note that the end of the range is R93C7.
R35C8	F(ormat) C(ells) R35C8 : R93C9 <Tab> <Tab> % <R>	
R35C10	F(ormat) C(ells) R35C10 : R93C11 <Tab> <Tab> I(nt) <R>	

You have completed formatting the cells which display
numbers. The only thing left is to format the cells
containing labels.

```
R49C4       F(ormat) C(ells) R49C4 : R51C11
            <Tab> C(tr) <R>

R63C2       F(ormat) C(ells) R63C2 : R63C3
            <Tab> <Tab> C(ont) <R>

R63C4       F(ormat) C(ells) R63C4 : R65C11
            <Tab> C(tr) <R>

R83C4       F(ormat) C(ells) R83C4 : R85C11
            <Tab> C(tr) <R>

R90C4       F(ormat) C(ells) R90C4 : R92C11
            <Tab> C(tr) <R>
```

To make sure that commas appear on the display whenever you
have a number greater than 999, use the Format Options
command:

```
            F(ormat) O(ptions) (commas:) Y(es) <R>
```

You can draw a line to separate the subsections of the
budget (e.g., the Department summary from the Personal
Services Table) by using the Alpha command and entering
enough dashes to cross the bottom of each subsection. The
first step is to format the row of cells which will contain
the dotted line.

```
R12C1       F(ormat) C(ells) R12C1 : R12C12
            <Tab> <Tab> C(ont) <R>
```

Type the dotted line until you think you have enough dots
to form a continuous line across row 12 (hint: type the
dotted line until Multiplan tells you that the formula is
too long; then back up a few spaces and press <R>). You
can adjust the length of the line if it isn't long enough.
Whatever the length of the entry, it will only display
through column 12 since that is the range you specified in
formatting row 12 to display continuously.

```
R12C1       A(lpha) -----------------------------
            -------------------------------------
            -------------------------- <R>
```

Drawing a line under each subsection requires only the use
of the copy command.

```
R30C1        C(opy) F(rom) R12C1 : R12C12 <R>

R48C1        C(opy) F(rom) R12C1 : R12C12 <R>

R61C1        C(opy) F(rom) R12C1 : R12C12 <R>

R81C1        C(opy) F(rom) R12C1 : R12C12 <R>

R88C1        C(opy) F(rom) R12C1 : R12C12 <R>

R95C1        C(opy) F(rom) R12C1 : R12C12 <R>
```

The only thing left to do in this Lesson is to clean up the
worksheet. Using the Blank command allows you to erase
cells containing formulas which won't be used. Look, for
example, at row 10. Some of the cells in columns 7 through
12 have formulas which will not be used. Blanking them out
is the best way to get rid of them.

```
R10C7        B(lank) R10C7 : R10C12 <R>
```

Continue on through the other cells that should be blanked
out:

```
R19C11       B(lank) R19C11 : R20C11 <R>

R37C7        B(lank) R37C7 : R38C10 <R>

R46C7        B(lank) R46C7 : R47C10 <R>

R59C8        B(lank) R59C8 : R59C10 <R>

R74C8        B(lank) R74C8 : R74C10 <R>

R79C8        B(lank) R79C8 : R79C10 <R>
```

This should clear the cells. Later we will show you how to
lock the cell contents and formulas in place so that you
can't erase them or enter data in the wrong cell by
accident.

Now that you have formatted the Department Budget
worksheet, the next step is to link the appropriate cells
in the worksheet. That is the subject of the next Lesson.

Be sure to <u>save</u> your work:

```
T(ransfer) S(ave) B:General <R> Y
```

The "Y" tells the computer that you want to overwrite the
previous "B:General" file. Enter the"Y" only when you are
prompted with the question "Overwrite existing file?"

then press:

```
Q(uit) Y(es)
```

if you plan to take a break, and reload the program and
worksheet B:General when you return.▪

Lesson 13: Naming Cells:

In Multiplan you have learned to refer to cells or groups of cells by their row and column numbers, or by using the pointer to visually refer to a cell. You have another option: you can assign any name that you want to a cell or group of cells. You may then refer to that name whenever you set up formulas or use commands involving the cell(s) the name refers to.

Here's an example. Let's assume that you want the sum of all Wages & Salaries in the Personal Services Table to be fed into the Personal Services Worksheet. You could use the Name command to assign a name to the cell which sums Wages & Salaries, and refer to that name in the worksheet cell in which you want the sum recorded. In fact you could name that cell "Wages & Salaries" if you wished. Naming cells makes them easier to work with when you want to build formulas. It's certainly much easier, for example, to remember that "Wages & Salaries", rather than R27C9, refers to wage and salary expenditures in your budget.

In our model budget we will use names in two ways:

First, we'll name cells in one part of a worksheet which will be referred to in other parts of the same worksheet. For example, the final budget figure for Supplies in the Department worksheet will automatically feed into the Department summary on the line corresponding to "Supplies".

Second, we'll name cells on one worksheet which can be automatically read into another worksheet. We'll do this by taking advantage of Multiplan's Xternal Copy command.

Before we begin assigning names to cells, we should briefly introduce you to the concept of Xternal copying.

The Xternal Copy command allows you to link a cell on one worksheet with a cell on another. In practice, this means that the results of a calculation on, for example, the General Government worksheet, can be fed into the Budget Balancing worksheet for a comparison with a similar figure from other Departments. Any time you load the Budget Balancing sheet, it automatically checks the other sheets to see if this figure has changed. This makes it easier for you by updating changes in the budget when they occur. There is less chance for error because you are not obliged to remember which numbers changed, and by how much, each time you load the worksheets. The computer does that for you.

We'll show you the details of Xternal Copy in Chapter 4. The first step in the process is to name the cells that will feed information from one part of the budget into another.

Load the General Government worksheet (if its not already loaded) by entering the following:

We will name two sets of cells on this worksheet:

1. The first set includes the "Total" cells for each sheet from Personal Services through Debt Service. These totals will automatically read into the Department summary at the top of the worksheet and will be added together to come up with a Department total.

2. The second set will read from the "Final 1985" column in the Department summary worksheet to the "Reallocation" column in each of the worksheets from Personal Services through Debt Service.

You will name ten cells in all. To name a cell, follow these instructions:

1. Move the pointer to the cell you want to name.

2. Press N(ame). The screen will prompt you with the following:

    NAME: define name: to refer to:

    Enter name

3. Enter the name you want to assign to the cell. If the cell number after "to refer to:" is correct, then press return and you are finished.

Further information on naming cells is available in your Multiplan manual.

Now you can begin. The cells you name here are the totals for each subsection which will feed into the summary at the top of the Worksheet.

Cell	Entry	Notes
R47C7	N(ame) PERSONAL <R>	Refers to Personal Services total.
R60C7	N(ame) SUPPLIES <R>	
R80C7	N(ame) OTHER <R>	
R87C7	N(ame) CAPITAL <R>	
R94C7	N(ame) DEBT <R>	

This set of names applies to the totals for each subsection. Note that you can give a cell any name you want. Now you will name the cells which read from the Final Summary to the Reallocation columns in each subsection of the Worksheet.

At this point, you should link the cells named above with the cells they will feed into.

Cell	Entry	Notes
R5C9	+Personal <Down>	The plus indicates a value. Here you are referring to the cell you Named above.
R6C9	+Supplies <Down>	
R7C9	+Other <Down>	
R8C9	+Capital <Down>	
R9C9	+Debt <R>	

Next you will name the cells in the Reallocation column.

Cell	Entry
R5C12	N(ame) PS <R>
R6C12	N(ame) S <R>
R7C12	N(ame) OSC <R>
R8C12	N(ame) CO <R>
R9C12	N(ame) DS <R>

These names are just abbreviations for the worksheets: "PS" for Personal Services, etc. Again, you can give the cell any name you want.

Cell	Entry	Notes
R47C10	V(alue) PS <R>	
R60C10	V(alue) S <R>	
R80C10	V(alue) OSC <R>	
R87C10	V(alue) CO <R>	
R94C10	V(alue) DS <R>	

You have completed naming the cells in the General Government worksheet. Later, when you copy the General Government worksheet for the other Departments (so you won't have to retype each worksheet separately), the names will stay with the worksheets; you won't have to rename each cell in each worksheet.

Now, save the Department Budget Worksheet (General Government) by entering

    T(ransfer) S(ave) B:General Y <R>

There you go. You have completed the worksheets for General Government. When the computer has finished saving your worksheet, enter:

    Q(uit) Y(es)

and you will leave the Multiplan program.

Congratulations! You have completed the basic worksheet you will need to set up this budget. Most of your typing is over. From this point on, you will:

    1) make five copies of the Department worksheet so you
    will have worksheets for all six Departments without
    having to type all of those labels and formulas again.
    The copies will require only a few simple
    modifications; we'll explain those modifications and
    the copying procedure in the next Chapter;

    2) use the eXternal Copy command to link the
    worksheets;

    3) fill in the raw data for the budget template. You
    should have this data on hand already;

    4) learn how to make the system run; and,

    5) print the results of your work on paper (or "hard
    copy" as they call it).

Chapter 3 Summary

In Chapter 3 you learned:

How to set up the Department Budget Worksheet;
New ways to use the Format command, including Width,
Centering, Integer, %, and Options (commas).
How to set up formulas by using the directional (pointer)
keys;
How to use the Options Recalc command;
How to use the Copy command to save yourself a lot of time
and keystrokes; How to use the Format command.
How to Name cells.
    and
How to use the Transfer Save and Quit commands.

CHAPTER FOUR : COMPLETING THE BUDGET WORKSHEETS

CHAPTER 4: COMPLETING THE BUDGET WORKSHEETS

In the previous Chapter, you learned how to create a
Department Budget Worksheet for one city department, and
how to make changes in and save that Worksheet when you've
finished. Now it's time to link the worksheet with the
others provided on disk, and create five more Worksheets
for the five other city Departments.

Lesson 14: Linking Worksheets with the Xternal Command

The purpose of this Lesson is to demonstrate the external
copying capabilities of Multiplan.

The budget you're working on is set up so that you can add
up the expenditures for each worksheet subsection,
summarize them on a balance worksheet, make adjustments in
the totals for each Department, and feed that information
back to the Department worksheets, to be allocated out
among the worksheet subsections and line items. In order
to send the latter information from the Budget Balancing
Worksheet to the various Department Worksheets, you need
some method of linking them. You could do it manually (in
fact the Tentative Budget information for 1985 will be
manually entered in the Budget Balancing Worksheet). Or
you could have it done automatically for you every time you
load the Department Worksheet. The way to accomplish the
latter is with Multiplan's Xternal command.

Start by loading the General Government Department
Worksheet:

        T(ransfer) L(oad) B:General <R>

You will be linking the cell in the Budget Balancing
Worksheet containing the Final expenditure figure for the
General Government Department with the Reallocation Total
cell in the General Government budget.

Use the Xternal command to make the link:

You will see the following:

```
  from sheet:            name:        to: R11C12
  linked: (Yes)No
```

Enter:

so that the screen appears as follows:

```
  from sheet:B:BALANCE   name:General    to:R11C12
  linked: (Yes)No
```

Remember that the <Tab> gets you from the name of the sheet
to the name of the cell on that sheet which you want to
copy. The cell you are in, R11C12, is given to you by
default.

Now you can press <R>.

This cell will automatically read the contents of a cell
named "General" on the Budget Balancing Worksheet (which is
stored on the data disk provided with this manual) every
time you load the General Government Department Worksheet.

You can also link the Line Item Summary sheet with each of
the Department Worksheets so that the values in those
worksheets feed into the Summary. This option will be
explained later in this Chapter, because it involves
external copying without linkage (i.e., a one time copy of
a block of cells from the Department Worksheets to the Line
Item Summary).

At this point, the General Government Department Worksheet
should be in final form. In Chapter 3 you set up the
labels, formulas, and format and you named some key cells.

The next step is to set up the worksheets for the other
five departments: Public Safety, Public Works, Health and
Welfare, Culture-Recreation, and Conservation. You can
learn how to accomplish this task with a few quick
keystrokes in the next Lesson.■

Lesson 15: Creating New Worksheets with the Transfer
Command.

In this Lesson you will load the General Government
Department Worksheet. Since the other five department
worksheets are almost identical to the General Government
Worksheet, all you need to do to create the other
worksheets is to follow a simple copying procedure.

Start by loading the General Government Worksheet:

T(ransfer) L(oad) B:General <R>

You will create the other five worksheets by following this
general procedure:

    1. When the original worksheet is loaded, adjust the
    labels and formulas so they fit the new worksheet. For
    example, if the new worksheet is for the Public Works
    Department you will change the label on the top of the
    worksheet accordingly.

    2. Use the Transfer Save command to save the new
    worksheet, but change the name of the worksheet, before
    you save it, to indicate that the new worksheet is a
    different file from the old worksheet.

For example, you will load a worksheet as the General
Government Worksheet, but save it (after making changes) as
the Public Works Worksheet. A copy of the original General
Government Worksheet is already on your data disk, so you
can save the worksheet you made adjustments to (Public
Works) as a separate file. You will repeat this process
five times and, in a matter of minutes, have six Department
worksheets.

With the General Government Department Worksheet loaded,
enter the following:

Cell	Entry	Notes
R2C2	A(lpha) Public Works <R>	Changes the label for the Department summary.
R11C12	X(ternal) C(opy)	Here you are going to use Xternal Copy to delete an external linkage.

When the Xternal Copy screen appears, fill in the
information on the cell you want to delete. Since Xternal
Copying locks in the contents of the cell, you can't just
Blank it out using the Blank command. You have to set up
the Xternal Copy command and change the cell so that the
previous external link refers to no cell. Remember that
you have already saved a copy of the General Government
worksheet; you won't lose the link between that sheet and
the Balance worksheet. Fill in the Xternal Copy screen as
follows:

```
sheet:B:Balance   name:General
to:               linked:(Yes)No
```

You blank out the "to:" entry by spacing forward with the
space bar once, and then back spacing over the entry until
it disappears.

When the screen looks like the above, press <R>.

Now you will enter the new Xternal Copy; the new copy will
link this sheet (Public Works) with the Public Works cell
on the Budget Balancing Worksheet.

Cell	Entry	Notes
R11C12	X(ternal) C(opy)	Enter the following after each prompt:
	sheet:B:Balance name:PubWorks to:R11C12 linked:(Yes)No	
	<R>	Now you have cleared the link between Balance and General Government, and created a new link between Balance and Public Works.

You will follow the same process with all the other
worksheets.

The last step in creating the Public Works worksheet is to
change the name of the file from B:General to
B:PublicWorks.

```
          T(ransfer) S(ave) B:PublicWorks <R>
```

Now you have a General Government Department Worksheet and a Public Works Department Worksheet. To finish copying the worksheets, follow the same procedure as you did for changing the General Government Worksheet to the Public Works Worksheet:

Cell	Entry	Notes
R2C2	A(lpha) Health & Welfare <R>	
R11C12	X(ternal) C(opy) <Tab> PublicW <Tab> (erase cell reference) <R>	This is the procedure for clearing the previous cell reference.
R11C12	X(ternal) C(opy) <Tab> Health <R>	This is the new cell reference.
	T(ransfer) S(ave) B:Health <R>	Now you have the Health & Welfare worksheet complete.
R2C2	A(lpha) Culture-Recreation <R>	
R11C12	X(ternal) C(opy) <Tab> Health <Tab> (erase cell reference) <R>	This is the procedure for clearing the previous cell reference.
R11C12	X(ternal) C(opy) <Tab> Culture <R>	This is the new cell reference.
	T(ransfer) S(ave) B:Culture <R>	Now you have the Culture-Recreation worksheet complete.
R2C2	A(lpha) Conservation <R>	
R11C12	X(ternal) C(opy) <Tab> Culture <Tab> (erase cell reference) <R>	
R11C12	X(ternal) C(opy) <Tab> Conservation <R>	
	T(ransfer) S(ave) B:Conservation<R>	Now you have the Conservation worksheet complete.

Cell	Entry	Notes
R2C2	A(lpha) Public Safety <R>	
R11C12	X(ternal) C(opy) <Tab> Conservation <Tab> (erase cell reference) <R>	
R11C12	X(ternal) C(opy) <Tab> PubSafe <R>	
	T(ransfer) S(ave) B:Public Safety	

You have now finished creating the budget model. This
Lesson may have seemed complicated to you, but it is
considerably easier and a lot less time consuming than
entering each of the separate Department worksheets by
themselves.◼

Lesson 16: Printing with Multiplan:

Now that your worksheets are linked up, you can begin work on your budget. The next chapter will give you ideas on how to use the budget, but before we go into that, we want to show you how to print your results. After all, you can fiddle around with the budget inside the computer all you want, but if you can't show your council a printed copy, it's not going to do you much good.

Printing your worksheets with Multiplan is fairly easy. When you are finished with your worksheet, save a copy with the Transfer Save command, but be sure to leave the worksheet visible on the screen.

Turn the switch of your printer to "On".

Press P for Printer, and you will be presented with the following:

```
PRINT: Printer File Margins Options
```

You will be mainly concerned with Print Margins and Print Options. Print Margins allows you to set length, width, and margins of the worksheet to be printed. Print Options lets you print only part of the worksheet (for example, the line item labels and the TOTAL column), print formulas instead of the output, or print without showing the row and column numbers.

When you have selected the appropriate margins and options, and are ready to go, press Return to get back to the Print menu (as appears above).

Then type P for Printer. If everything is in place, the printer will begin printing and in a few seconds (or minutes) you will have a printed copy of your worksheet ready for your council or whoever else wants to see your budget.

The specific details on how to print will depend, to some extent, on your printer. Printers will vary, and the specific way that you will use your printer depends on a number of factors: the purposes of printing, the size of paper you can print on, the quality of the printed document, etc. However, Multiplan will almost always respond to the commands shown here and in your Multiplan manual. Check the manual provided with your printer or the Multiplan manual if you have problems.

Chapter 4 Summary

In Chapter 4 you learned:

How the Budget is structured;
How to set up the Summary worksheets;
How to Name cells;
How to link worksheets together with the Xternal Copy
command;
How to create new worksheets from old using the Transfer
command; and
How to use the Print command.

Let's recap what you've done since you started:

   1. You know how to load Multiplan, how to move around
   the screen, how to enter labels, numbers, and formulas,
   and how to save your worksheet when you're finished.

   2. You have set up a Department worksheet, including
   labels and formulas, and created a line item summary, a
   revenue summary, and a budget balancing worksheet.

   3. You linked the Department worksheet to the Budget
   Balancing worksheet using the Name and Xternal
   commands.

   4. You copied from the Department worksheet five other
   Department worksheets and made minor modifications in
   each, including linking them to the Budget Balancing
   worksheet.

You are now finished with the General Fund Operating Budget
model. The only thing left to do is use it!

Chapter 5 shows you how and provides some tips on using
Multiplan and the Budget.

CHAPTER FIVE : USING THE BUDGET:
BALANCING AND FORECASTING WITH MULTIPLAN

CHAPTER 5: USING THE BUDGET: BALANCING AND FORECASTING WITH
MULTIPLAN

The model budget you have set up in the previous chapters
is based around three things you can do with Multiplan:

1. You can adjust and balance your budget as revenue
and expenditure figures change;

2. You can project budget figures for the coming fiscal
year (or of any period of time for that matter); and,

3. You can compare line item expenditures between
departments.

There are many other possible applications of spreadsheets
to city finances. We hope that as you learn the ins and
outs of the Multiplan program you develop your own
applications which fit the way you handle financial budgets
and reports.

In this chapter we will outline the steps for using the
budget you have created. You will learn where to insert
expenditure and revenue data; where to look for the
information you need; and how to make the budget do the
three things mentioned above.

Before you dig in, let's quickly review the layout of the
budget. First, you have a set of six department
worksheets. The information from those worksheets can be
summarized in the Line Item Summary sheet (see Lesson 25).
The Revenue Summary sheet calculates your revenue total.
The expenditure totals can be adjusted in the Balance
worksheet, and the new expenditure figures allocated among
Departments and returned to the Department worksheets.

Lesson 20: Entering the Raw Data:

The first step in using the Budget is to enter the raw
data. What raw data, you may ask?

The raw data you will enter are all the expenditure and
revenue figures in your budget which are not calculated by
a formula in the budget. For example, the Department
Budget Worksheets contain columns for :

```
        1982 Actual
        1983 Actual,and
        1984 Budget
```

Each of these columns should be filled in using data you
have on file. Similarly, the "Tentative 1985 Budget"
column should be filled in as you go through your budget
process.

Once you have gone through the budget process, you can
enter the results of the line items for 1985 into the Line
Item Summary Worksheet. You will use the Xternal Copy
command without linkage to accomplish this as described in
Lesson 25.

You should also fill in the appropriate cells in the Budget
Balancing Worksheet based on information calculated on each
of the Department worksheets. Specifically, you should
enter the current (1984) budget totals for each of the six
departments in the appropriate column.

When you have arrived at final expenditure totals for any
Department budget, you may enter those totals in the
Department summary at the top of the worksheet in the
column marked "Final 1985 Budget". Until you finish, that
column is used to break down the total Department
reallocation by subsection. The reallocated figures are
then fed into the subsections. The reallocations are
nothing more than guidelines. The final figures are for
you and your city to determine.

Locking Cells:

You may find the use of the Lock command handy when
entering or changing the data. The Lock command will, in
effect, lock the cells containing labels or formulas. You
cannot accidentally enter data in the wrong cell, at least
not in cells that have been locked.

To lock the formulas and labels on a worksheet type:

        L(ock) F(ormulas) Y(es)

Multiplan will lock all the cells containing formulas and
labels. If you try to enter data into those cells, the
program will respond with a beep and an error message.

More information on the Lock command can be found in your
Multiplan manual.■

Lesson 21: Using the Personal Services Table:

Since Personal Services form the largest part of your
budget, the budget you set up in Chapter 3 provides a
special Personal Services Table to supplement the Personal
Services worksheet. The Personal Services Table is
designed to help you track expenditures associated with
personnel costs.

To use the Personal Services Table, start by loading any
one of the Department Worksheets. When the Worksheet is
loaded, move the pointer to row 17 and notice the layout of
the Table:

```
      WORKSHEET: Personal Services Table
                                            Employee
      Code                     #1     #2     #3     #4     #5     #6     #7    TOTAL

      100 Wages & Salaries                                                        0
      110 Other Pay                                                               0
      120 Employer Contributions
          To Retirement
          PERA - Basic          0      0      0      0      0      0      0       0
          PERA - Coordinated    0      0      0      0      0      0      0       0
          Police Pension                                                         0
      130 Employer Paid Insurance                                                0
      140 Unemployment Compensation                                              0
      150 Workers Compensation                                                   0
      160 Liability Insurance                                                    0

          TOTAL                 0      0      0      0      0      0      0       0
```

The rows contain the object classifications for Personal
Services. Each column covers an individual employee. You
are only limited by the number of columns (63). The
example here shows five employees, but you could have any
number that applies to your city.

Note that rows 21, 22, and 23 are used to calculate PERA
costs. When you set up the budget, you entered formulas to
calculate the city's contribution to PERA. One of these
classifications (Basic, Coordinated or Police pension) will
apply to each employee. When you have determined which
classification is correct for a given employee, you may
simply blank out the other(s). Once the formula is in
place it will automatically recalculate the city's
contribution to retirement whenever the base (Wages &
Salaries) figure is changed.

You can use the Personal Services Table to play "What if?"
with your Personal Services costs. Try entering different
wage and salary figures for any employee and you can see
the impact on total Personal Services costs.

When you have settled on a final figure for each employee, the budget will feed the "Total" column into the "Worksheet: Personal Services" column for the "Tentative 1985 Budget".

The same principles apply to the other rows in the Personal Services Table. If, for example, you use a formula based on wage and salary figures to calculate insurance (or any other object) then you can enter that formula in the appropriate row, and it will automatically calculate the result.■

Lesson 22: Adjusting and Balancing the Budget:

This particular budget model allows you to set up a
tentative 1985 budget in two ways:

1. You can go to the column in each worksheet entitled
"Tentative 1985 Budget" and enter the budget figures
for each line item (this is done for you in the
Personal Services worksheet). The budget figures will
be summarized at the top of the Department worksheet.

2. The alternative is to use the Budget Balancing
Worksheet to selectively increase (or decrease) total
expenditures for any or all Departments. Once you
decide on the final expenditure figure for each
Department, you enter that figure in the Final Budget
column of the Budget Balancing Worksheet, and it
automatically feeds back into the Department worksheet
so that you can allocate it among the line items.

The second method of budgeting is the one we'll document in
this Lesson.

Load the Budget Balancing Worksheet by typing:

T(ransfer) L(oad) B:Balance <R>	"B:Balance" is the name of the file containing the Budget Balancing Worksheet.

In column 3, enter the 1984 totals from each Department.
The next column to the right is titled "Desired % Change".
In this column you can enter a percent figure, either
positive or negative, to increase or decrease the
Department budget. In the example below, a 6% across the
board increase is used to calculate, in column 5, the new
dollar total. The following column shows you the dollar
difference between the 1984 budget and the new estimate.

You can try any figures in the Desired % Change column that
you wish. The purpose of the Desired % Change column is
for you to play "What if?" with percentages. For example,
if you want to see the impact of a 4% increase in the
General Government budget and a 3.5% decrease in the Public
Works budget, you could enter the figures as follows:

Cell	Entry	Notes
R6C4	4% <R>	Be sure to enter a percent sign (%) after the number.

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Cell	Entry	Notes
R8C4	−3.5% <R>	Use the negative sign (−) to indicate a decrease.

Budget Balancing Worksheet

	Current	Desired % Change	New $ Total	Difference	Desired $ Level	Final Difference	Budget	Reallo-cation
General Government	206,647	5%	216,979	10,332	215,000	4%		215,000
Public Safety	275,000	5%	288,750	13,750	280,000	2%		
Public Works	156,000	5%	163,800	7,800	170,000	9%		
Health & Welfare	98,000	5%	102,900	4,900	98,000	0%		
Culture-Recreation	55,000	5%	57,750	2,750	55,000	0%		
Conservation	115,000	5%	120,750	5,750	125,000	9%		
TOTAL	905,647	5%	950,929	45,282	943,000	4%	0	

The next three columns (columns 8 - 10) allow you to test the impact of a specific dollar change (increase or decrease), as opposed to the percent change in the previous example. Go to row 6 column 8, and try entering a General Government budget total different from the 1984 total (in column 3). The worksheet will immediately calculate a percentage increase or decrease, and column 10 will display the difference. Again, you can play "What if?" with different budget figures and instantly see the result.■

Lesson 23: Projecting with Multiplan

As we have mentioned before, Multiplan allows you to make a
variety of budget projections. In this budget, the
projections are made at the top of the Department Budget
Worksheet. Notice that column 5 and column 6 contain the
1983 Actual expenditures and the 1984 Budgeted expenditures
for each classification. Column 7 shows the percent change
between 1983 actual and 1984 budgeted, and column 8 is
titled: Projection.

The projection column automatically shows you what an
expenditure figure for a given object classification would
be if it grew (or declined) at the same rate as it did in
the previous year (column 7 calculates that rate).

For example, if your expenditure for Personal Services is
2,000,000 in 1983 and 2,500,000 in 1984, the % Change
column would show a 25% increase and the Projection column
would show 3,125,000 as the 1985 expenditure. Of course,
the projected expenditure may not be realistic. You may
have had a large, onetime increase in Personal Services
last year which will not occur again this year. Or you may
have cut back on Personal Services to accommodate a revenue
shortfall and you don't expect the same thing to happen
this year. You should treat the projection as helpful
information and nothing more. It will help you see where
costs are changing rapidly and where cutbacks or increases
may be in order.▉

Lesson 24: Modifying the Budget to Fit Your Needs

Another way you can make budget projections is to create a
column on the far end of the budget. In this column you
will automatically increase (or decrease) the expenditure
by a given percent. This approach is not built into the
budget included in this manual, but you could adapt the
budget with the skills you have learned.

While I am on the subject, I want to encourage you to
modify the budget outline provided in this manual to fit
your own way of doing things.

For example, your city may not have all six departments.
It may not have a Conservation Department. In this case,
you need only delete the row containing Conservation
Department expenditures, or not enter it in the first
place.

The same principle applies to line items. If your city has
no expenditures for advertising, then you may exclude it
from your budget. Be certain, however, when you do change
the budget layout, that all formulas refer to the correct
range of cells. You may have to modify some of your
formulas if you remove a row (or column) so that the
formula applies to only those rows (or columns) you want
included in the formula.

For more ideas on how to change the budget format, consult
your Multiplan manual. You can learn a lot from the
examples used in that book.

Lesson 25: Using the Line Item Summary

The Line Item Summary is included so that you can prepare a quick summary of all line items and all departments. As you enter the appropriate data, the worksheet will automatically calculate a running total and will show you how much the city is spending on each line item; how much each department is spending on any given item; the total budget for each department compared with other departments; the percentage of the total budget accounted for by each department; and, the percentage of the character classification accounted for by each object classification.

As I mentioned earlier, the Line Item Summary is not externally linked to other budget worksheets. Instead you can enter data into the Line Item Summary in one of two ways:

1. You can external copy blocks of numbers from the Department Budget Worksheets into the Line Item Summary. To do this, you will have to name the appropriate blocks of numbers in the Department Budget Worksheets; or

2. You can manually enter all of the data.

I recommend using the former approach, because it will make data entry faster and easier. It will, however, require that you name each of about 30 blocks of numbers on each Department Budget Worksheet before you begin. You know how to name cells, and how to externally link worksheets. The following is an example of how to copy from General Government to Line Item Summary:

1. Load the General Government worksheet. Move the pointer to cell R35C11. Using the Name command, identify R35C11 through R45C11 as the range of cells to be named. Choose an appropriate name, and enter with the return key. Name the other blocks of cells accordingly, and save the General Government worksheet.

2. Load the Line Item Summary worksheet by entering:

T(ransfer) L(oad) B:Line <R>   "B:Line" is the of
                                the file containing
                                the Line Item
                                Summary.

Move to cell R6C3. Use the external copy command to
copy the block of cells from General Government to Line
Item Summary. Be sure that the copy is <u>not</u> linked. In
seconds, the block of cells will appear on the screen,
beginning in R6C3. Copy the other blocks of cells
accordingly.

Repeat the process for the other Department Worksheets.
Save and print the Line Item worksheet when you have copied
all of the data into it.

Lesson 26: The Revenue Worksheet

The Revenue worksheet tallies the revenue figures for the
two previous years and the current year, leaving space for
the final revenue estimates for the coming budget year and
calculates the percentage change from the current year to
the next year.

The worksheet is stored on the data disk. Load it by
typing:

```
    T(ransfer) L(oad) B:Revenue      "B:Revenue" is the
       <R>                           name of the file
                                     containing the
                                     Revenue worksheet.
```

■

Chapter 5 Summary

In Chapter 5 you learned how to:

Enter raw data in your budget;
Lock formulas and labels in your worksheets;
Use the Personal Services Table;
Adjust and balance your budget;
Make projections with Multiplan;
Modify the Budget to fit your needs; and
Use the Line Item Summary.

Congratulations!

By this point you have successfully worked your way through
an introduction to Multiplan. You are now very familiar
with the ins and outs of this program. You know that a lot
of work is involved in setting up the worksheets
initially. You should also know that electronic worksheets
offer many other applications to the problems of managing
cities.

As your proficiency with the electronic worksheet
increases, feel free to make changes in the model budget I
introduced in this manual. The skills you have developed
are yours to use in the way that fits you and your city
best.

Good luck!

APPENDIX : GLOSSARY and SAMPLE BUDGET

<u>Glossary</u>:

Alpha : Alpha is the command used to enter any words,
letters, or other text (as in "Alphabetical").

Active cell : The active cell is the cell highlighted by
the pointer. In any given case, it is the cell in which
you will enter a label, number or formula.

Blank : Blank is the command you will use to erase the
contents of a single cell or of a group of cells.

Budget Balancing Worksheet : The Budget Balancing Worksheet
summarizes budget data from all the other worksheets and
allows you to allocate expenditure increases or decreases
among city departments.

Column : Columns are the <u>vertical</u> cells in the Multiplan
worksheet. Multiplan contains 63 columns numbered 1
through 63.

Command : Commands are single word instructions you give to
the Multiplan program. Commands may be entered by pressing
the first letter in the command name.

Command Line : The Command Line shows you the main Command
Menu. It is located immediately below the numbered rows of
the worksheet.

Copy : Copy is the command you use to copy the contents of
a cell to another cell or group of cells.

Department Budget Worksheet : This worksheet is the basic
building block of the model Budget included in this manual.

Directional keys : The Directional keys are used to move
the pointer up, down, left, or right. They are located on
the alphanumeric keypad on the right side of the keyboard.

DOS : Disk Operating System is a software program which
allows the Multiplan program to "talk" to your IBM PC or
Apple IIe microcomputer.

Edit : Edit is the command used to edit the contents of a
cell.

Escape key : The Escape Key (Esc) allows you to leave a
command (for example, Alpha) and return to the main,
Command Menu.

File : A file is a unit of storage for Multiplan worksheets
you have saved.

Format : Format is a command you use to change the way the
contents of a worksheet are displayed on the screen or in
print.

Formula : A Formula is a "recipe" for calculating a value.

Glossary

Goto : Goto is a command which allows you to move the pointer from one part of the screen to another.

Help : Help is a command you may use to receive assistance with Multiplan at any time during your use of the program.

Keyboard : The keyboard is the typewriter-like device you use to enter data into the microcomputer.

Label : A label is any word, letter, text or alphabetic character you enter into the microcomputer.

Link : Link refers to an electronic connection between separate worksheets.

Load : To load is to bring a worksheet or the Multiplan program itself from storage into action. Loading a program or worksheet will make it visible on the screen.

Lock : Lock is a command you will use to "lock" a cell's contents into place. The purpose of using Lock is to prevent the accidental entry of data into the wrong cell.

Line Item Summary : The Line Item Summary is a part of the model Budget contained in this manual which summarizes line item expenditures by Department.

Multiplan : Multiplan is a spreadsheet software package.

Message Line : The Message Line provides suggestions or messages from the program to the user.

Menu : A Menu is a list of commands or options you can activate to make the program work.

Name : Name is a command you can use to give a cell or a group of cells a logical name for reference in formulas.

Options : Options is a command you can use to change some of the ways Multiplan works.

Pointer : The pointer is a highlighted rectangle which you move around the worksheet to identify the active cell.

Print : Print is the command you use to set up and activate the printing of a worksheet.

Quit : Quit is the command you use to leave the Multiplan program.

Glossary

Range : A range of cells is a group of cells designated (by a colon :) for formulas, for the purposes of copying, and for other Multiplan operations.

Return Key : The Return Key activates a command and enters labels, numbers, or formulas.

Revenue Worksheet : The Revenue Worksheet summarizes information about city revenues.

Row : Rows are the horizontal cells in the Multiplan worksheet. Multiplan contains 255 rows numbered 1 through 255.

Save : To Save a worksheet is to store it electronically in a file.

Screen : The screen is the television-like monitor which displays the active worksheet.

Spreadsheet : A spreadsheet is an electronic program which simulates an accountants pad made up of rows and columns. Almost any problem which can be expressed in rows and columns is amenable to a spreadsheet. Other spreadsheet programs include VisiCalc, SuperCalc, and Lotus 1-2-3.

Software : Software is what we call the instruction given to the computer. Software is often referred to as a program or a package.

Status Line : The bottom line of the screen where Multiplan shows you the status of the active cell and the worksheet is called the status line.

Text : Text is another name for words, letters or other alphabetic characters.

Transfer : Transfer is the command used to load, save, delete, or rename a worksheet, or to clear the screen.

Value : Value is the command you use to enter a number or a formula.

Worksheet : A Worksheet is another name for a spreadsheet. In this manual the word worksheet is used more often than "spreadsheet".

Xternal : Xternal is the command used to establish a link between one worksheet and another.

	1	2	3	4	5	6	7	8	9	10	11	12
1		DEPARTMENT BUDGET:										
2		General Government										
3	Code			1982	1983	Current	%Change	Projection	Tentative	%Change	% of Total	Final
4				Actual	Actual	Budget			1985			1985
5	100	Personal Services				0	#DIV/0'	#DIV/0'		0	#DIV/0'	#DIV/0'	#DIV/0'
6	200	Supplies				0	#DIV/0'	#DIV/0'		0	#DIV/0'	#DIV/0'	#DIV/0'
7	300	Other Services and Charges				0	#DIV/0'	#DIV/0'		0	#DIV/0!	#DIV/0'	#DIV/0'
8	500	Capital Outlay				0	#DIV/0'	#DIV/0'		0	#DIV/0'	#DIV/0'	#DIV/0'
9	600	Debt Service				0	#DIV/0'	#DIV/0'		0	#DIV/0'	#DIV/0'	#DIV/0'
10												
11		TOTAL		0	0	0	#DIV/0'	#DIV/0'		0	#DIV/0'	#DIV/0'
12	--											
13		WORKSHEET: Personal Services Table										
14						Employee						
15	Code			#1	#2	#3	#4	#5	#6	#7	TOTAL	
16												
17	100	Wages & Salaries									0	
18	110	Other Pay									0	
19	120	Employer Contributions										
20		To Retirement										
21		PERA - Basic		0	0	0	0	0			0	
22		PERA - Coordinated		0	0	0	0	0			0	
23		Police Pension										
24	130	Employer Paid Insurance									0	
25	140	Unemployment Compensation									0	
26	150	Worker's Compensation									0	
27	160	Liability Insurance									0	
28												
29		TOTAL		0	0	0	0	0	0	0	0	
30	--											
31												
32		WORKSHEET: Personal Services					Tentative				Final	
33	Code			1982	1983	1984	1985	%Change	% of Total	Reallo-	1985	
34				Actual	Actual	Budget	Budget			cation	Budget	
35	100	Wages & Salaries					0	#DIV/0'	#DIV/0'	#DIV/0'	75,000	
36	110	Other Pay					0	#DIV/0'	#DIV/0'	#DIV/0'	12,000	
37	120	Employer Contributions										
38		To Retirement:										
39		PERA - Basic					0	#DIV/0'	#DIV/0'	#DIV/0'	5,000	
40		PERA - Coordinated					0	#DIV/0'	#DIV/0'	#DIV/0'	3,250	
41		Police Pension										
42	130	Employer Paid Insurance					0	#DIV/0'	#DIV/0'	#DIV/0'	1,250	
43	140	Unemployment Compensation					0	#DIV/0'	#DIV/0'	#DIV/0'	7,500	
44	150	Worker's Compensation					0	#DIV/0'	#DIV/0'	#DIV/0'	13,450	
45	160	Liability Insurance					0	#DIV/0'	#DIV/0'	#DIV/0'	9,000	
46												
47		TOTAL		0	0	0	0	#DIV/0'	#DIV/0'	#DIV/0'	126,450	
48	--											
49												
50		WORKSHEET: Supplies					Tentative				Final	
51	Code			1982	1983	1984	1985	%Change	% of Total	Reallo-	1985	
52				Actual	Actual	Budget	Budget			cation	Budget	
53	200	Office Supplies						#DIV/0'	#DIV/0'	#DIV/0'		

	1	2	3	4	5	6	7	8	9	10	11	12
54	210	Operating Supplies						#DIV/0!	#DIV/0!	#DIV/0!		
55	220	Repair & Maintenance						#DIV/0!	#DIV/0!	#DIV/0!		
56		Supplies										
57	240	Small Tools & Minor						#DIV/0!	#DIV/0!	#DIV/0!		
58		Equipment										
59	250	Merchandise for Resale						#DIV/0!	#DIV/0!	#DIV/0!		
60												
61		TOTAL		0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	

62 ---

63

64	Worksheet: Other Services & Charges

							Tentative				Final
66 Code			1982	1983	1984	1985	%Change	% of Total	Reallo-	1985
67			Actual	Actual	Budget	Budget			cation	Budget
68	300	Professional Services					#DIV/0!	#DIV/0!	#DIV/0!	
69	320	Communication					#DIV/0!	#DIV/0!	#DIV/0!	
70	330	Transportation					#DIV/0!	#DIV/0!	#DIV/0!	
71	340	Advertising					#DIV/0!	#DIV/0!	#DIV/0!	
72	350	Printing & Binding					#DIV/0!	#DIV/0!	#DIV/0!	
73	360	Insurance					#DIV/0!	#DIV/0!	#DIV/0!	
74	380	Utility Services					#DIV/0!	#DIV/0!	#DIV/0!	
75	400	Repairs & Maintenance--					#DIV/0!	#DIV/0!	#DIV/0!	
76		Contractual								
77	410	Rentals					#DIV/0!	#DIV/0!	#DIV/0!	
78	420	Depreciation					#DIV/0!	#DIV/0!	#DIV/0!	
79	430	Miscellaneous					#DIV/0!	#DIV/0!	#DIV/0!	
80										
81		TOTAL	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0

82 ---

83

84	Worksheet: Capital Outlay					Tentative				Final
85 Code		1982	1983	1984	1985	%Change	% of Total	Reallo-	1985
86		Actual	Actual	Budget	Budget			cation	Budget
87	500 Capital Outlay					#DIV/0!	100%	#DIV/0!	
88									

89 ---

90

91	Worksheet: Debt Service					Tentative				Final
92 Code		1982	1983	1984	1985	%Change	% of Total	Reallo-	1985
93		Actual	Actual	Budget	Budget			cation	Budget
94	600 Debt Service					#DIV/0!	100%	#DIV/0!	
95									

96 ---

	1	2	3	4	5	6	7	8	9	10
1	Expenditure Summary: Line Items									
2			General Government	Public Safety	Public Works	Health & Welfare	Culture-Recreation	Conserv-ation	TOTAL	% of TOTAL
3	Code									
4										
5		Personal Services								
6	100	Wages & Salaries							0	#DIV/0!
7	110	Other Pay							0	#DIV/0!
8		Employer Contributions								
9		to Retirement								
10	121	PERA - Basic							0	#DIV/0!
11		PERA - Coordinated							0	#DIV/0!
12	123	Police Pension							0	#DIV/0!
13	120	Employer Paid Insurance							0	#DIV/0!
14	140	Unemployment Compensation							0	#DIV/0!
15	150	Workers Compensation							0	#DIV/0!
16	160	Liability Insurance							0	#DIV/0!
17										
18		Subtotal: Personal Services	0	0	0	0	0	0	0	#DIV/0!
19										
20		Supplies								
21	200	Office Supplies							0	#DIV/0!
22	210	Operating Supplies							0	#DIV/0!
23	220	Repair & Maintenance								
24		Supplies							0	#DIV/0!
25	240	Small Tools & Minor								
26		Equipment							0	#DIV/0!
27	250	Merchandise for Resale							0	#DIV/0!
28										
29		Subtotal: Supplies	0	0	0	0	0	0	0	#DIV/0!
30										
31		Other Services & Charges								
32	300	Professional Services							0	#DIV/0!
33	320	Communications							0	#DIV/0!
34	330	Transportation							0	#DIV/0!
35	340	Advertising							0	#DIV/0!
36	350	Printing & Binding							0	#DIV/0!
37	360	Insurance							0	#DIV/0!
38	380	Utility Services							0	#DIV/0!
39	400	Repairs & Maintenance--								
40		Contractual							0	#DIV/0!
41	410	Rentals							0	#DIV/0!
42	420	Depreciation							0	#DIV/0!
43	430	Miscellaneous							0	#DIV/0!
44										
45		Subtotal: Other Services &								
46		Charges	0	0	0	0	0	0	0	#DIV/0!
47										
48	500	Capital Outlay							0	#DIV/0!
49										
50	600	Debt Service							0	#DIV/0!
51										
52		TOTAL	0	0	0	0	0	0	0	
53		% of TOTAL	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!		

	1	2	3	4	5	6	7	8	9	10
1	Budget Balancing Worksheet									
2				Desired	New		Desired		Final	Reallo-
3			Current	% Change	$ Total	Difference	$ Level	Difference	Budget	cation
4	General Government				0	0		#DIV/0!		
5	Public Safety				0	0		#DIV/0!		
6	Public Works				0	0		#DIV/0!		
7	Health & Welfare				0	0		#DIV/0!		
8	Culture-Recreation				0	0		#DIV/0!		
9	Conservation				0	0		#DIV/0!		
10										
11	TOTAL		0	#DIV/0!	0	0	0	#DIV/0!	0	