Microsoft Excel 5.0 for Windows
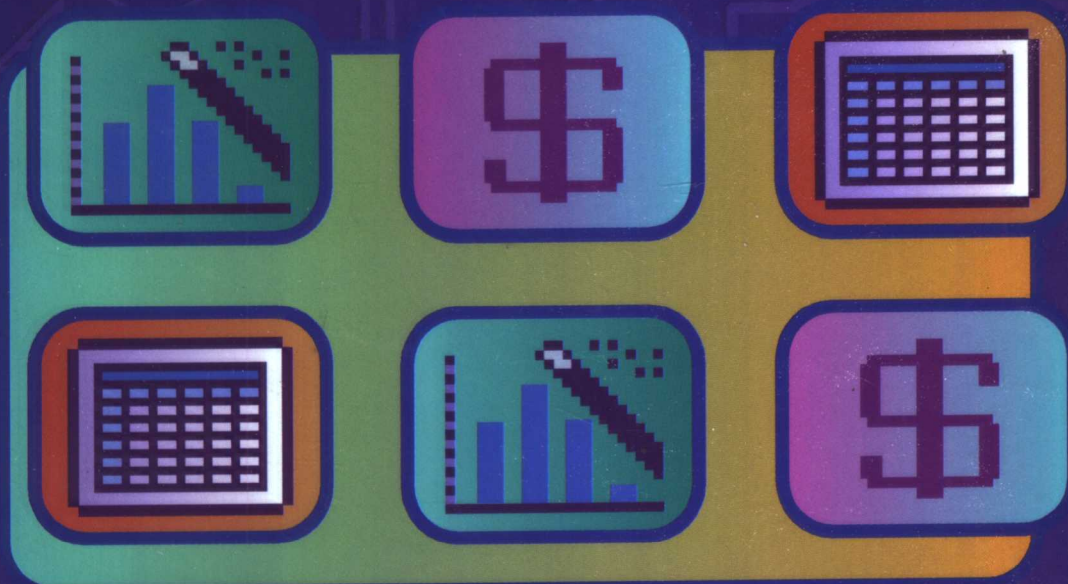
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Electronic Spreadsheets

In contrast to a word processor, which manipulates text, an electronic spreadsheet manipulates numerical data. The first electronic spreadsheet software program (VisiCalc) was offered on the market in 1979. Since then millions of electronic spreadsheet programs of differing brands have been sold. In a 15-year period, spreadsheets have revolutionized the business world.

Definition of Electronic Spreadsheets

The electronic spreadsheet, or worksheet, is an automated version of the accountant's ledger. Like the accountant's ledger, it consists of rows and columns of numerical data. Unlike the accountant's ledger, which is created on paper using a pencil and a calculator, the electronic spreadsheet is created using a computer system and an electronic spreadsheet applications software program.

The electronic spreadsheet eliminates the paper, pencil, and eraser. With a few keystrokes the user can quickly change, correct, and update the data. Even more impressive is the spreadsheet's ability to perform calculations—from very simple sums to the most complex financial and mathematical formulas. The calculator is replaced by the electronic spreadsheet. Analysis of data in the spreadsheet has become a routine business procedure. Once requiring hours of labor and/or costly accountants' fees, data analysis is now available almost instantly using electronic spreadsheets.

Nearly any job that uses rows and columns of numbers can be performed using an electronic spreadsheet. Typical uses of electronic spreadsheets are for budgets and financial planning in both business and personal situations.

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Advantages of Using an Electronic Spreadsheet

Like a word processor, the speed of entering the data into the worksheet using the keyboard is not the most important advantage gained from using an electronic spreadsheet. This is because the speed of entering data is a function of the typing speed of the user and the user's knowledge of the software program. The advantages are in the ability of the spreadsheet program to quickly edit and format data, perform calculations, create graphs, and print the spreadsheet.

The data entered in an electronic spreadsheet can be edited and revised using the program commands. Numeric or text data is entered into the worksheet in a location called a cell. These entries can then be erased, moved, copied, or edited. Formulas can be entered that perform calculations using data contained in specified cells. The results of the calculations are displayed in another cell.

The design and appearance of the spreadsheet can be enhanced in many ways. There are several commands that control the format or display of a numeric entry in a cell. For instance, numeric entries can be displayed with dollar signs or with a set number of decimal places. Text or label entries in a cell can be displayed centered or left- or right-aligned to improve the spreadsheet appearance. Columns and rows can be inserted and deleted. The cell width can be changed to accommodate entries of varying lengths.

Many spreadsheet programs let you further enhance the appearance of the spreadsheet by changing the type style and size. You can emphasize different parts of the spreadsheet by using bold or italics and adding underlines, borders, boxes, drop shadows, and shading around selected cells. The ability to see these styles and format changes on the screen as they will appear when printed is called WYSIWYG (What You See Is What You Get).

You have the ability to "play" with the values in the worksheet, to see the effect of changing specific values on the worksheet. This is called "what-if" or sensitivity analysis. Questions that once were too expensive to ask or took too long to answer can now be answered almost instantly, and with little cost. Planning that was once partially based on instinct has been replaced to a great extent with facts. However, any financial planning resulting from the data in a worksheet is only as accurate as that data and the logic behind the calculations.

Most electronic spreadsheets also have the ability to produce a visual display of the data in the form of graphs. As the values in the worksheet change, a graph referencing those values automatically reflects the new values. These graphs are a tool for visualizing the effects of changing values in a worksheet. Thus they are analytic graphs. Many spreadsheet programs let you include a graph with the spreadsheet data. This way you can display and print it with the data it represents. You can also enhance the appearance of a graph by using different type styles and sizes, adding three-dimensional effects, and including text and objects such as lines and arrows.

Another new feature of many spreadsheet programs is the ability to open and use multiple spreadsheet files at the same time. Additionally you can create multiple spreadsheets within a file. This is called 3-D spreadsheets. Even more important is the ability to create formulas that link one spreadsheet file to another file or that link one spreadsheet in a file to another spreadsheet in the same file. This linking capability lets you change data in one file and automatically update the linked data in another file.

Electronic Spreadsheet Terminology

Alignment: The position of an entry in a cell to the left, centered, or right in the cell space.

Cell: The space created by the intersection of a horizontal row and a vertical column. It can contain a label (text), value (number), or formula.

Column: The vertical block of cells in the spreadsheet identified by letters.

Copy: A feature that duplicates the contents of a cell or range of cells to another location in the worksheet.

File linking: A spreadsheet feature that creates a connection between two files in order to share data.

Format: The styles applied to a cell that control how entries in the spreadsheet are displayed (currency, percent, number of decimal places, and so on).

Formula: An entry that performs a calculation.

Function: A built-in or preprogrammed formula.

Graph: The visual representation of ranges of data in the worksheet. Also called a chart. Some graph types are line, bar, stacked-bar, and pie.

Label: An entry that consists of text (alphanumeric characters).

Move: A feature that relocates the contents of a cell(s) to another area in the worksheet.

Row: The horizontal block of cells in the worksheet identified by numbers.

Value: An entry that is a number or the result of a formula or function.

What-if analysis: A process of evaluating the effects of changing one or more values in formulas to help in decision making and planning.

WYSIWYG: The feature that lets you see onscreen the format and text enhancement features as they will appear when printed.

Case Study for Labs 1–5

As a recent college graduate, you have accepted your first job as a management trainee for The Sports Company. The program requires that you work in several areas of the company. In this series of labs, you are working in a retail store as an assistant to the store manager.

In Labs 1 and 2, you will create an operating budget for the retail store. You will learn how to use the worksheet program to enter descriptive text, numbers, formulas, and functions. You will also learn how to format the worksheet to improve its appearance. Finally, you will open and work with multiple worksheet files and create a workbook to organize related files.

Lab 3 demonstrates how to freeze row and column titles and split windows to manage large worksheets. It also shows you how to use the operating budget worksheet to perform what-if analysis. Finally, in this lab you learn how to link files and incorporate a worksheet into a text document.

In Lab 4 you decide you want to analyze the sales data by sport at the store. To better visualize the changes in sales over time, you learn how to create several charts of the data.

In Lab 5 you will work on two projects. The first project is to create a worksheet template to be used to track the monthly new charge card enrollments and employee bonuses. While working on this project you learn about the IF function, naming ranges, and using worksheet protection. The second project is to design a

worksheet to evaluate the loan payments for several copy machines the store is considering purchasing. In this project you learn about the payment function and how to create and use macros.

Before You Begin

The following assumptions have been made:

- The Microsoft Excel 5.0 program has been properly installed on the hard disk of your computer system, and the default program settings are in effect.

- The worksheet window is maximized. The number of rows and columns that can be displayed in a maximized worksheet window varies with the computer system display settings established in Windows. These labs assume a standard VGA display setting, which displays columns A through I and rows 1 through 18. the text and figures reflect this setup.

- The Standard and Formatting toolbars are displayed whenever a worksheet is opened.

- The Quick Preview on-line tutorial is not on. The TipWizard is not on.

- The Ignore Other Applications setting is on and the Prompt for Summary Info setting is off. These options are in the General folder of the Options dialog box in the Tools menu.

- The data disk contains the data files in the root directory that are needed to complete the series of Excel 5.0 labs and practice exercises. These files are supplied by your instructor.

- You have completed the Windows 3.1 or higher labs or you are already familiar with how to use Windows 3.1 or higher.

Creating a Worksheet: Part 1

CASE STUDY

The Sports Company is a chain of sporting goods shops located in large metropolitan areas across the United States. The stores are warehouse oriented, discounting the retail price of most items 15 percent. They stock sporting goods products for the major sports: team sports, racquet sports, aerobics, golf, and winter sports.

As a recent college graduate, you have accepted your first job in a management training program for the Sports Company. The training program emphasis is on computer applications in the area of retail management. The program requires that you work in several areas of the company, beginning in a retail store as an assistant to the store manager.

During the next five labs, you will create and use several worksheets using the Microsoft Excel 5.0 program. In this lab you will create a store budget. You will learn how to enter descriptive row and column headings, enter numbers and formulas, copy data, and print the worksheet.

Loading Excel

If necessary turn on your computer and load DOS. Put your data disk in drive A (or the appropriate drive for your system).

You must start Excel from the Windows 3.1 (or higher) environment.

Start Windows.

The Windows Program Manager should display the Microsoft Office Program group icon or the Microsoft Excel 5.0 Program group icon.

Open the program group that is appropriate for your system. To start the Excel 5.0 program, choose the Microsoft Excel application icon.

Competencies

After completing this lab, you will know how to:

1. Move around the worksheet.
2. Design a worksheet.
3. Enter text and numbers.
4. Delete and change cell entries.
5. Open and close files.
6. Use Help.
7. Copy data.
8. Enter formulas.
9. Recalculate a worksheet.
10. Change cell alignment.
11. Document and save a workbook.
12. Print a worksheet.
13. Exit the Excel program.

Type WIN at the C:\>.

If your system is set up differently, your instructor will provide alternative instructions.

A title screen is briefly displayed while the computer loads the Excel 5.0 program into memory. After a few moments, your screen should be similar to Figure 1-1.
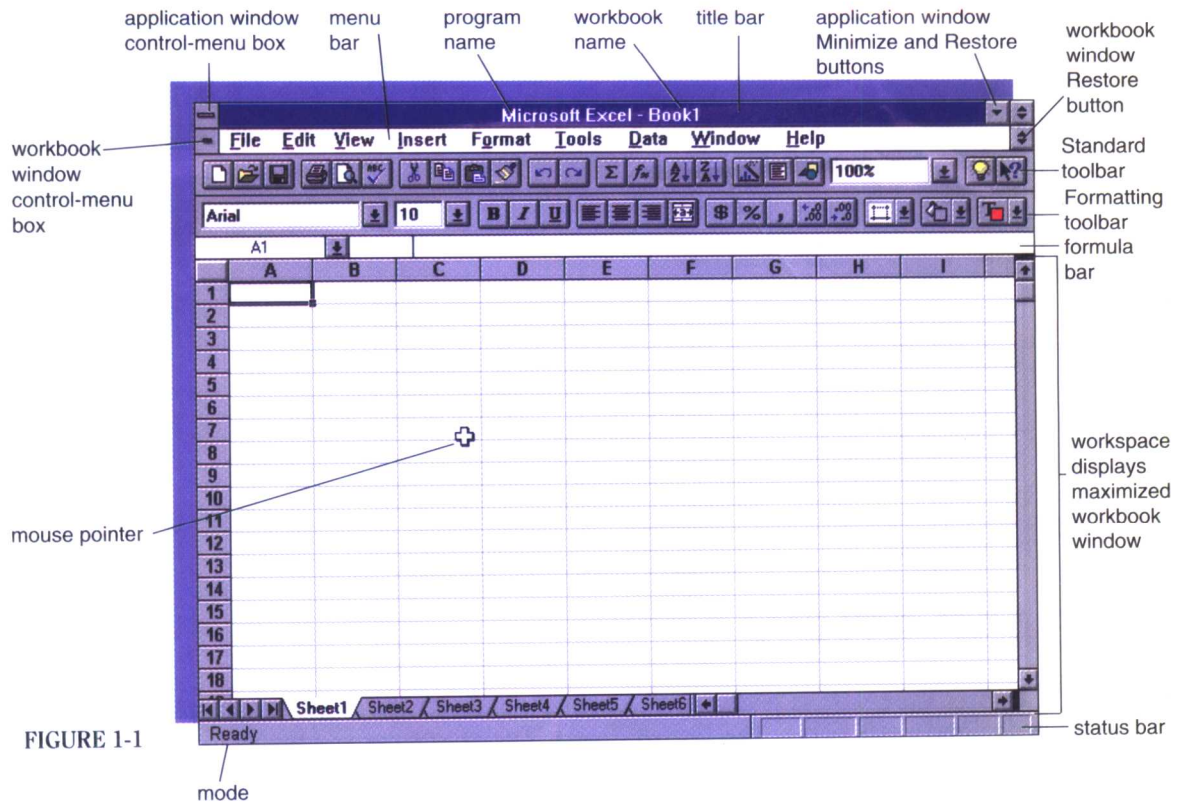

FIGURE 1-1

Examining the Excel Window

Figure 1-1 is the **Excel application window**. As you can see, there are many Excel window features that are common to the Windows environment. Among those features are a title bar, menu bar, control menus, Minimize and Restore buttons, icons, document windows, and mouse compatibility. You can move and size Excel windows, select commands, use Help, and switch between files and programs just as in Windows and other Windows-based applications. Your knowledge of how to use Windows makes using Excel much easier. The Excel window includes all these features, plus some additional features that are specific to Excel.

The largest area of the Excel window is the **workspace**. The workspace is where different windows are displayed. Currently there is only one window open, the full size of the workspace. The window displays a **workbook**. A workbook is an Excel file that stores the information you enter using the program. Excel calls a window that displays a workbook a **workbook window**. You can have several workbooks open at once, each displayed in their own workbook window in the workspace. You will learn about the different parts of the workbook window shortly.

The Excel window **title bar** displays the program name, "Microsoft Excel," followed by the file name "Book1," the default name of the file displayed in the workbook window. The left end of the title bar contains the Excel application window control-menu box, and the right end displays the Minimize and Restore buttons. They perform the same functions and operate in the same way as in Windows.

Note: If the title bar does not display the file name, the workbook window is not maximized. Maximize the workbook window by clicking on the workbook window Maximize button or by opening the workbook window control menu ([Alt] + [−]) and choosing Maximize.

The **menu bar** below the title bar displays the Excel program menu. The left end of the menu bar displays the workbook window control-menu box, and the right end displays the workbook window Restore button.

The two **toolbars** below the menu bar contain buttons that are mouse shortcuts for many of the menu items. The first toolbar is the Standard toolbar, the second is the Formatting toolbar. You will learn how to use the toolbars shortly.

Below the toolbars is the **formula bar**. The formula bar displays entries as they are made and edited in the window.

The **status bar** is the bottom line on the Excel window. It displays information about various Excel settings. The left side of the status bar displays the current **mode** or state the Excel program is in. The current mode is Ready. When Ready is displayed, you can move around the worksheet, enter data, use the function keys, or choose a command. As you are using the program, the status bar will display the current mode. The modes will be discussed as they appear throughout the labs.

If you have a mouse attached to your computer, a ✛ or ↖ is displayed in the window. This is the mouse pointer. The mouse pointer changes shape depending upon the task you are performing or where the pointer is located on the window. You will learn about using the mouse in Excel shortly.

Moving Around the Worksheet

A workbook can contain six different types of **sheets**. A sheet is used to display different types of information in Excel such as financial data or charts. Whenever you open a new workbook, it displays a **worksheet**. A worksheet is a rectangular grid of **rows** and **columns** used to enter data. It is the type of sheet you will use most often in Excel. The parts of the worksheet are shown in Figure 1-2 below.
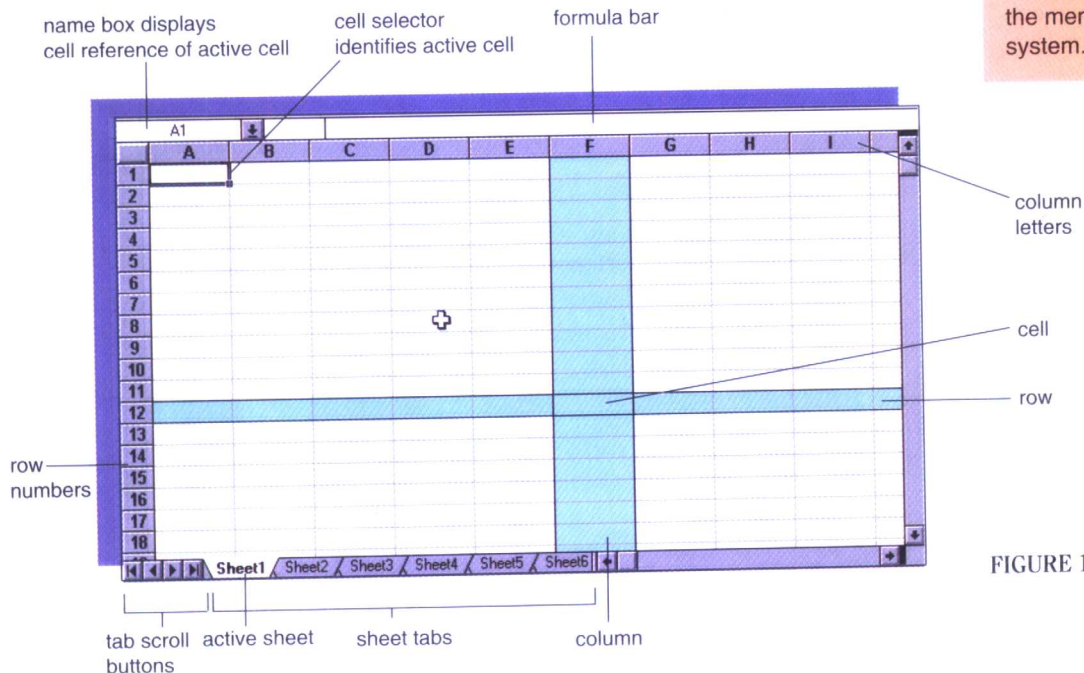
The default workbook opens with 16 worksheets. The number of sheets in a workbook is limited only by the memory of your computer system.

SPREADSHEET

FIGURE 1-2

The **row numbers** along the left side of the worksheet and the **column letters** across the top of the window identify each worksheet row and column. The intersection of a row and column creates a **cell**. Notice the highlighted cell on your display. The heavy border around this cell is called the **cell selector** and identifies the **active cell**. The active cell is the cell your next entry or procedure affects. The **name box**, located on the left side of the formula bar, displays the **cell reference** of the active cell. The cell reference consists of the column letter and row number of the active cell. Currently the active cell is cell A1.

Each sheet in a workbook is named. The default names are Sheet1, Sheet2, and so on. The sheet names appear on **sheet tabs** at the bottom of the workbook window. The sheet tabs show you if a workbook contains more than one sheet. For each sheet in a file, a tab is displayed. Additionally the sheet tabs are used to make a sheet the **active sheet**. The active sheet is the sheet you can work in. The sheet tab of the active sheet is bold. Currently Sheet1 is the active sheet.

The sheet tab area also contains **tab scroll buttons**, which are used to scroll tabs right or left when there are more worksheet tabs than there is available space. You will learn about these features throughout the labs.

Either the mouse or the keyboard can be used to move from one cell to another in the worksheet. Follow the instructions in the mouse or keyboard sections as appropriate.

Several of the common mouse shapes and their meanings are shown below.

Mouse Pointer Shape	Meaning
⇧	Move cell selector; select cells and ranges
⬉	Select menus and commands; use scroll bar; move or copy by dragging; switch sheets
⧖	Wait while Excel finishes performing a task
+	Drag to extend series or clear entry
↔ ↕	Size a column or row
I	Enter information in text box or formula bar

The mouse operates just as in Windows. Unless otherwise directed, you will always use the left mouse button when making selections.

Move the mouse pointer around the Excel window and observe the change in shape as it is positioned in different areas of the window.

To move the cell selector, point to the cell you want to move to and click the mouse button.

Move to: E3

If your mouse has been set up for a left-handed user, the right mouse button is used.

The directional keys on your keyboard are used to move the cell selector around the worksheet. You can use the directional keys in the numeric keypad area or, if you have an extended keyboard, you can use the separate directional keypad area.

To move to cell E3,

Press: ↓ (2 times)
Press: → (4 times)

Your screen should be similar to Figure 1-3.

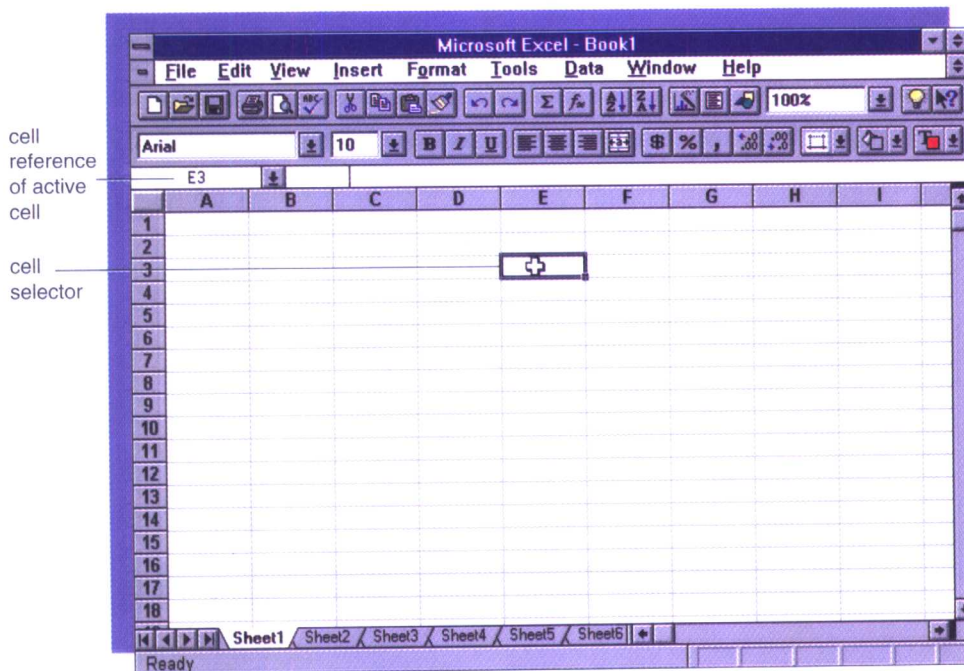FIGURE 1-3

cell reference of active cell

cell selector

SPREADSHEET

The cell selector is in cell E3, making this cell the active or selected cell. The name box reflects the new location of the cell selector in the worksheet by displaying the cell reference E3 (column E, row 3).

To practice moving around the worksheet using the mouse or keyboard,

Move to: G15
Move to: B4
Move to: D10

To return quickly to the upper left corner, cell A1, of the worksheet,

Press: Ctrl + Home

You cannot move the cell pointer above row 1 or to the left of column A.

If your workbook window displays a different number of rows and columns, this is because of the type of display screen that is selected in Windows.

Wherever you are in the worksheet, pressing [Ctrl] + [Home] will move the cell selector to the upper left corner of the worksheet.

The worksheet is much larger than the part you are viewing in the window. The worksheet actually extends many columns to the right and many rows down. An Excel worksheet has 256 columns and 16,384 rows. The workbook window currently displays rows 1 through 18 and columns A through I of the worksheet.

To view the next full window of cells to the right of column I,

Press: [Alt] + [Page Down]

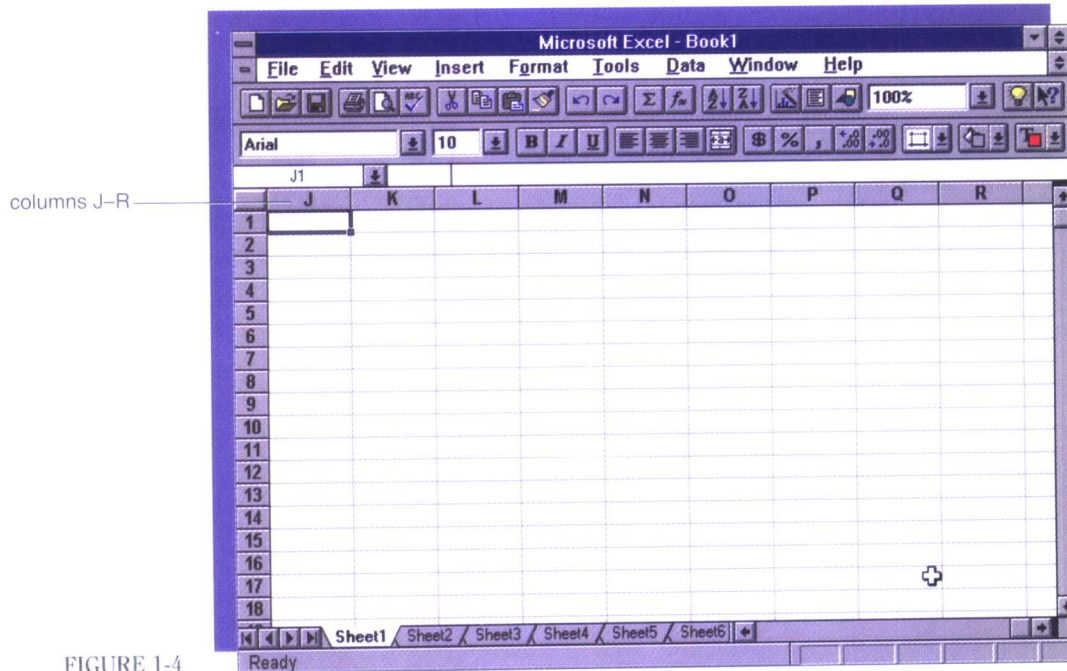Your screen should be similar to Figure 1-4.

columns J–R ——

FIGURE 1-4

Columns J through R and rows 1 through 18 of the worksheet are now displayed in the window. To return to the previous window,

Press: [Alt] + [Page Up]

Columns A through I are visible again.

To move down one full window on the worksheet,
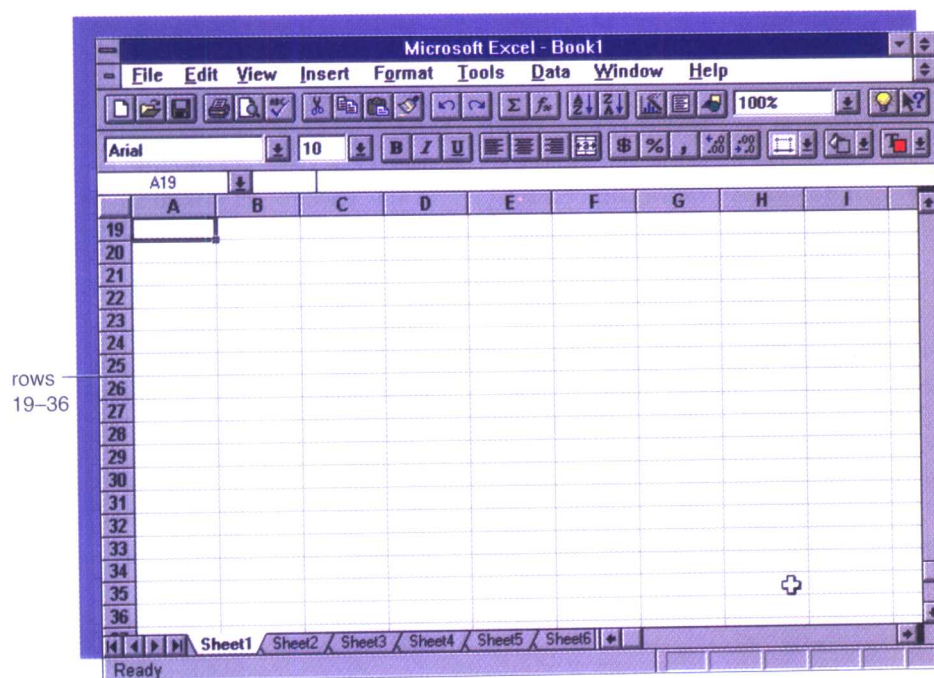
Press: [Page Down]

FIGURE 1-5

The window is positioned over rows 19 through 36 of the worksheet. Columns A through I have remained the same.

To move up a window on the worksheet,

Press: Page Up

Rows 1 through 18 of the worksheet are again displayed in the window.

Scrolling the Worksheet

Either the mouse or the keyboard can be used to quickly move through or scroll the worksheet to see an area that is not currently in view. If you have a mouse, you will learn to scroll using both methods.

If you hold down the arrow keys, the Alt + Page Down or Alt + Page Up keys, or the Page Up or Page Down keys, you can quickly scroll through the worksheet. As you scroll the worksheet using the keyboard, the cell selector moves to the new location.

To move to cell A45,

Press: ↓ and hold down for several seconds until the cell selector is on cell A45

You quickly scrolled the worksheet row by row. Cell A45 is now the active cell.

Press: Alt + Page Down (hold down for several seconds)

You quickly scrolled the worksheet window by window horizontally.

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To return to cell A1,

Press: Ctrl + Home

The End key followed by an arrow key will move the cell selector to the last cell containing data in that row or column. If the row or column does not contain data, this key combination will move the cell selector to the last cell of that row or column. To quickly move the cell selector to the last row of column A in the worksheet,

Press: End

Notice the word "END" displayed in the status bar. This is a **keyboard mode**. The status bar will display different keyboard mode messages about key conditions as they are used. In this case it tells you the End key is on.

Press: ↓

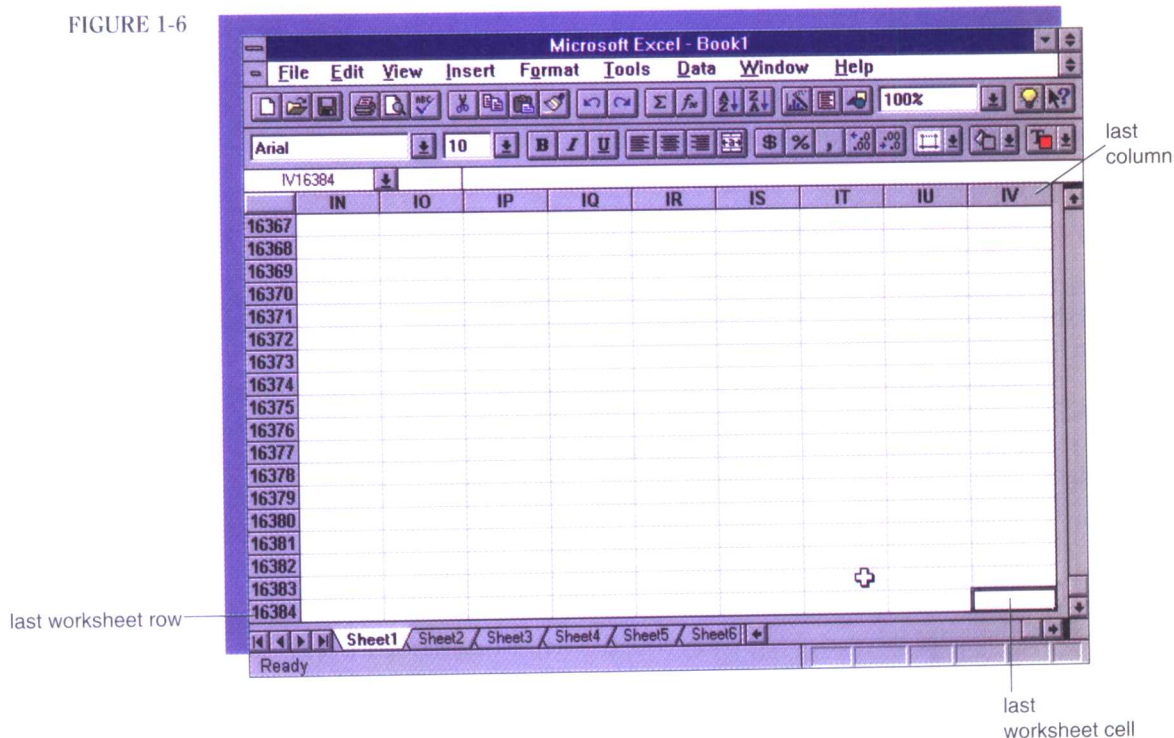Because column A is empty, the cell selector moved to the last row, 16,384, of the column.
To move to the rightmost column in row 16,384,

Press: End
Press: →

Your screen should be similar to Figure 1-6.

FIGURE 1-6

last column

last worksheet row

last worksheet cell

The cell selector is positioned in cell IV16384. This is the last cell in the Excel worksheet. Columns are labeled A to Z, AA to AZ, BA to BZ, and so on, through IA to IV.

To return to cell A1,

Press:　　Ctrl + Home

The ▲ and ▼ scroll arrows in the vertical scroll bar and the ◄ and ► scroll arrows on the horizontal scroll bar will scroll the worksheet vertically or horizontally. Just as in Windows, to scroll continuously hold down the mouse button while pointing to a scroll arrow.

Click:　　　▼ scroll arrow (3 times)

Cell A4 should be in the upper left corner of the workbook window. Notice that the cell selector is not visible. This is because the active cell is still cell A1. Scrolling the worksheet with the mouse does not move the cell selector. You can confirm the location of the active cell by looking at the cell reference in the name box.

Scroll down continuously until row 45 comes into view in the window. Click on cell A45.

The cell selector is now positioned on cell A45.

Scroll the worksheet to the right until column P is displayed in the window. Click on cell P45.

The cell selector is now positioned on cell P45. To move up one full window on the worksheet at a time, click on the vertical scroll bar above the scroll box.

Click above the vertical scroll box.

The area of the worksheet that is displayed in the window is one full window above the previous window. To move cell A1 back into view, you can drag the scroll box to the top of the vertical scroll bar and to the left in the horizontal scroll bar. Then click on cell A1. This has the same effect as pressing Home. Using the mouse,

Move to:　A1

Practice moving around the worksheet using the mouse procedures presented above.

When you are ready to go on,

Move to:　A1

SPREADSHEET

You can use the mouse or the keyboard with most of the exercises in these labs. Specific instructions on how to use the mouse or the keyboard will be provided only when new topics are introduced. As you use both the mouse and the keyboard, you will find that it is more efficient to use one or the other in specific situations.

Using the Function Keys

To quickly move the cell selector to a specific cell, you can use the F5 function key. The function keys on your keyboard perform specific operations or are **shortcut keys** for many menu commands. The function keys are used alone or in combination with the Ctrl and Alt keys. Function key shortcuts will be introduced throughout the labs.

The F5 function key is a shortcut for the Go To command on the Formula menu. The Go To command moves the cell selector to a specific cell in a worksheet.

Press: F5 GOTO

Your screen should be similar to Figure 1-7.

FIGURE 1-7
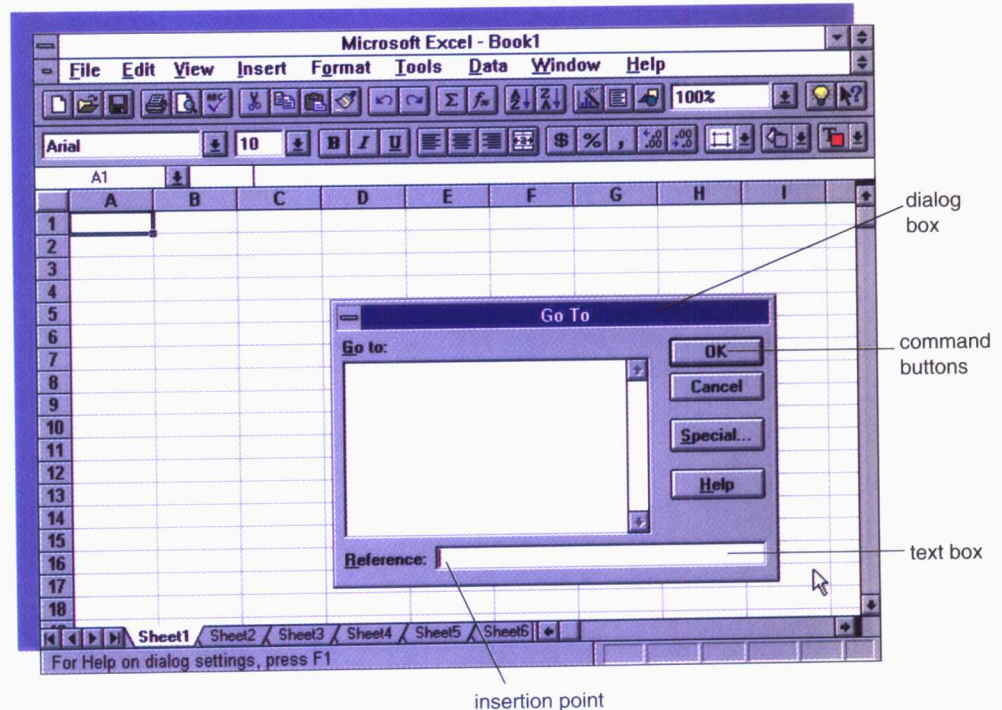
A **dialog box** is displayed. As part of many procedures, Excel will display a dialog box to obtain information from you to complete a command. Just as in Windows, dialog boxes consist of option buttons, check boxes, text boxes, command buttons, and list boxes, and they operate in the same way.

You will use the Go To dialog box to enter the cell you want to move to. The Reference text box is used to enter the cell reference. Notice that the **insertion point** (blinking vertical line) is already in the Reference text box. You can enter the cell reference in either upper- or lowercase letters. To move the cell selector to cell AL55,

Type: **AL55**

To complete the command,

Choose: OK