

## **NEW PERSPECTIVES ON COMPUTER CONCEPTS, 3<sup>rd</sup> EDITION, INTRODUCTORY LAB ASSIGNMENTS**

The New Perspectives Labs are designed to help you master some of the key computer concepts and skills presented in each chapter of the text. If you are using your school's lab computers, your instructor or technical support person should have installed the Labs software for you. If you want to use the Labs on your home computer, ask your instructor for the appropriate software.

Each Lab has two parts: Steps and Explore. Use Steps first to learn and review concepts. Read the information on each page and do the numbered steps. As you work through the Lab, you will be asked to answer Quick Check questions about what you have learned. At the end of the Lab, you will see a Summary Report of your answers to the Quick Checks. If your instructor wants you to turn in this Summary Report, click the Print button on the Summary Report screen.

When you have completed Steps, you can click the Explore button to complete the Lab Assignments. You can also use Explore to practice the skills you learned and to explore concepts on your own.

If you're viewing this textbook on screen, just click the icon for the Lab you want to use. Otherwise, use the instructions below. Your instructor or technical support person might help you get started.

### **If you have your own New Perspectives CD-ROM:**

Insert the NP3 CD and wait a few seconds. If the program doesn't start automatically:

**Windows 95:** Click Start, click Run, type d:\start and press Enter.

**Windows 3.1:** Click File, click Run, type d:\start and press Enter.

### **If the New Perspectives software has been installed on a network or local hard disk drive:**

**Windows 95:** Click Start, point to Programs, point to New Perspectives 3/e, click Textbook 3/e.

**Windows 3.1:** Double-click the New Perspectives 3/e group icon, double-click the Textbook 3/e icon.

### **To select a Lab:**

1. From the Computer Concepts menu bar, click Labs, then click the Lab you want to use.
2. Follow the instructions on the screen to enter your name and class section.
3. Read the instructions for using the Lab by clicking the Instructions button.
4. When you are ready to begin the Lab, click the Steps button.

## **CHAPTER 1 LAB ASSIGNMENTS PERIPHERAL DEVICES**

A wide variety of peripheral devices provide expandability for computer systems and provide users with the equipment necessary to accomplish tasks efficiently. In the Peripheral Devices Lab you will use an online product catalog of peripheral devices.

1. Click the Steps button and begin the Steps. Complete the Steps to find out how to use the online product catalog. As you work through the Steps, answer all of the Quick Check questions. When you complete the Steps, you will see a Summary Report of your performance on the Quick Checks. Follow the directions on the screen to print the Summary Report.
2. After you know how to use the product catalog to look up products, features, and prices, use the catalog to do the following:
  - a. List the characteristics that differentiate printers.
  - b. List the factors that differentiate monitors.
  - c. Describe the factors that determine the appropriate type of scanner for a task.
  - d. List the peripheral devices in the catalog that are specially designed for notebook computers.
3. Suppose that the company that produces the peripheral devices catalog selected your name from its list of customers for a free scanner. You can select any one of the scanners in the catalog. Assume that you own a notebook computer to which you could attach any one of the scanners. Click the Explore button and use the catalog to help you write a one-page paper explaining which scanner you would select,

- why you would select it, and how you would use it.
4. Suppose you are in charge of a new college computing lab. The lab will include 25 computers that are used by students from all departments at the college. You have a \$3,000 budget for printers. Use the product catalog to decide which printers you would purchase for the lab. Write a one-page memo to your boss that justifies your choice.
  5. Suppose you own a basic computer system, such as the one in Figure 1-10 of this textbook. You have an idea that you can earn the money for your college tuition by using your computer to help other students produce spiffy reports with color graphs and scanned images. Your parents have agreed to "loan" you \$1,000 to get started. Click the Explore button and look through the online peripheral devices catalog. List any of the devices that might help you with this business venture. Write a one-page paper explaining how you would spend your \$1,000 to get the equipment you need to start the business.

## **USER INTERFACES**

You have learned that the hardware and software for a user interface determine how you interact and communicate with the computer. In the User Interfaces Lab, you will try five different user interfaces to accomplish the same task—creating a graph.

1. Click the Steps button to find out how each interface works. As you work through the Steps, answer all of the Quick Check questions. When you complete the Steps, you will see a Summary Report of your performance on the Quick Checks. Follow the directions on the screen to print the Summary Report.
2. In Explore, use each interface to make a 3-D pie graph using data set 1. Title your graphs "Cycle City Sales." Use the percent style to show the percent of each slice of the pie. Print each of the five graphs (one for each interface).
3. In Explore, select one of the user interfaces. Write a step-by-step set of instructions for how to produce a line graph using data set 2. This line graph should show lines and symbols, and have the title "Widget Production."
4. Using the user interface terminology you learned in this Lab and in Chapter 1 of this textbook, write a description of each of the interfaces you used in the Lab. Then, suppose you worked for a software publisher and you were going to create a software package for producing line, bar, column, and pie graphs. Which user interface would you use for the software? Why?

## **DOS COMMAND-LINE USER INTERFACE**

The DOS command-line user interface provides a typical example of the advantages and disadvantages of command-line user interfaces. DOS was included with the original IBM PC computers to provide users with a way to accomplish system tasks such as listing, moving, and deleting files on disk. Although today's typical computer user prefers to use a graphical user interface such as Windows, DOS commands still function on most IBM-compatible computers.

1. Click the Steps button to learn how to use the DOS command-line interface. As you work through the Steps, answer all of the Quick Check questions that appear. When you complete the Steps, you will see a Summary Report that summarizes your performance on the Quick Checks. Follow the directions on the screen to print the Summary Report. Remember to use the EXIT command to close the DOS window when you're ready to quit.
2. In Explore, write out your answers to a through d.
  - a. Explain the different results you get when you use the commands DIR, DIR /p, and DIR /w.
  - b. What happens if you make a typing error and enter the command DIT instead of DIR? What procedure must you follow to correct your error?
  - c. Enter the command, DIR /? and explain what happens. Enter the command VER /? and explain what happens. What generalization can you make about the /? command parameter?
  - d. Enter the command VER /w. Why do you think /w does not work with the VER command word, but it works with DIR?

Write a one-page paper summarizing what you know about command-line user interfaces and answering the following questions:

- a. Which DOS commands do you now know how to use?
- b. How do you know which commands to use to accomplish a task?

- c. How do you know what parameters work with each command?
- d. What kinds of mistakes can you make that will produce an error message?
- e. Can you enter valid commands that don't produce the results you want?

### USING A MOUSE

A mouse is a standard input device on most of today's computers. You need to know how to use a mouse to manipulate graphical user interfaces and to use the rest of the Labs.

1. The Steps for the Using a Mouse Lab show you how to click, double-click, and drag objects using the mouse. Click the Steps button and begin the Steps. As you work through the Steps, answer all of the Quick Check questions that appear. When you complete the Steps, you will see a Summary Report that summarizes your performance on the Quick Checks. Follow the directions on the screen to print the Summary Report.
2. In Explore, demonstrate your ability to use a mouse and to control a Windows program by creating a poster. To create a poster for an upcoming sports event, select a graphic, type the caption for the poster, then select a font, font styles, and a border. Print your completed poster.

### USING A KEYBOARD

To become an effective computer user, you must be familiar with your primary input device—the keyboard.

1. The Steps for the Using a Keyboard Lab provide you with a structured introduction to the keyboard layout and the function of special computer keys. Click the Steps button and begin the Steps. As you work through the Steps, answer all of the Quick Check questions that appear. When you complete the Steps, you will see a Summary Report that summarizes your performance on the Quick Checks. Follow the directions on the screen to print the Summary Report.
2. In Explore, start the typing tutor. You can develop your typing skills using the typing tutor in Explore. Take the typing test and print out your results.
3. In Explore, try to improve your typing speed by 10 words per minute. For example, if you currently type 20 words per minute, your goal would be 30 words per minute. Practice each typing lesson until you see a message that indicates you can proceed to the next lesson. Create a Practice Record as shown here to keep track of how much you practice. When you have reached your goal, print out the results of a typing test to verify your results.

#### Practice Record

Name:

Section:

Start Date:            Start Typing Speed:            wpm

End Date:            End Typing Speed:            wpm

Lesson #:            Date Practiced/Time Practiced

### CHAPTER 2 LAB ASSIGNMENTS COMPUTER HISTORY HYPERMEDIA

The Computer History Hypermedia Lab is an example of a multimedia hypertext, or hypermedia that contains text, pictures, and recordings that trace the origins of computers. This Lab provides you with two benefits: first, you learn how to use hypermedia links, and second, you learn about some of the events that took place as the computer age dawned.

1. Click the Steps button to learn how to use the Computer History Hypermedia Lab. As you proceed through the Steps, answer all the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.

2. Click the Explore button. Find the name and date for each of the following:
  - a. First automatic adding machine.
  - b. First electronic computer.
  - c. First fully electronic stored-program computer.
  - d. First widely used high-level programming language.
  - e. First microprocessor.
  - f. First microcomputer.
  - g. First word-processing program.
  - h. First spreadsheet program.
3. Select one of the following computer pioneers and write a one-page paper about that person's contribution to the computer industry: Grace Hopper, Charles Babbage, Augusta Ada, Jack Kilby, Thomas Watson, or J. Presper Eckert.
4. Use this Lab to research the history of the computer. Based on your research, write a paper explaining how you would respond to the question, "Who invented the computer?"

### **MULTIMEDIA**

Multimedia brings together text, graphics, sound, animation, video, and photo images. If you are using the CD version of this book, you have already seen multimedia in action. In this Lab you will learn how to apply multimedia and then have the chance to see what it might be like to design some aspects of multimedia projects.

1. Click the Steps button to learn about multimedia development. As you proceed through the Steps, answer the Quick Check questions. After you complete the Steps, you will see a Quick Check Report. Follow the instructions on the screen to print this report.
2. In Explore, browse through the STS-79 Multimedia Mission Log. How many videos are included in the Multimedia Mission Log? The image on the Mission Profile page is a vector drawing, what happens when you enlarge it?
3. Listen to the sound track on Day 3. Is this a WAV file or a MIDI file? Why do you think so? Is this a synthesized sound or a digitized sound? Listen to the sound track on page 8. Can you tell if this is a WAV file or a MIDI file?
4. Suppose you were hired as a multimedia designer for a multimedia series on targeting fourth- and fifth-grade students. Describe the changes you would make to the Multimedia Mission Log so it would be suitable for these students. Also, include a sketch showing a screen from your revised design.
5. When you view the Mission Log on your computer, do you see palette flash? Why or why not? If you see palette flash, list the images that flash.
6. Multimedia can be effectively applied to projects such as Encyclopedias, atlases, and animated storybooks; to computer-based training for foreign languages, first aid, or software applications; for games and sports simulations; for business presentations; for personal albums, scrapbooks, and baby books; for product catalogs and Web pages.  
 Suppose you were hired to create one of these projects. Write a one-paragraph description of the project you would be creating. Describe some of the multimedia elements you would include. For each of the elements indicate its source and whether you would need to obtain permission for its use. Finally, sketch a screen or two showing your completed project.

## **CHAPTER 3 LAB ASSIGNMENTS**

### **WORD PROCESSING**

Word-processing software is the most popular computerized productivity tool. In this Lab you will learn how word-processing software works. When you have completed this Lab, you should be able to apply the general concepts you learned to any word-processing package you use at home, at work, or in your school lab.

1. Click the Steps button to learn how word-processing software works. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button to begin. Click File, then click Open to display the Open dialog box. Click the

file **Timber.tex**, then press the Enter key to open the letter to Northern Timber Company. Make the following modifications to the letter, then print it out. You do not need to save the letter.

- a. In the first and last lines of the letter, change "Jason Kidder" to your name.
  - b. Change the date to today's date.
  - c. The second paragraph begins "Your proposal did not include..." Move this paragraph so it is the last paragraph in the text of the letter.
  - d. Change the cost of a permanent bridge to \$20,000.
  - e. Spell check the letter.
3. In Explore, open the file **Stars.tex**. Make the following modifications to the document, then print it out. You do not need to save the document.
- a. Center and boldface the title.
  - b. Change the title font to size 16 Arial.
  - c. Boldface the DATE, SHOWER, and LOCATION.
  - d. Move the January 2-3 line to the top of the list.
  - e. Double-space the entire document.
4. In Explore, compose a one-page double-spaced letter to your parents or to a friend. Make sure you date the letter and check your spelling. Print the letter and sign it. You do not need to save your letter.

### SPREADSHEETS

Spreadsheet software is used extensively in business, education, science, and humanities to simplify tasks that involve calculations. In this Lab you will learn how spreadsheet software works. You will use spreadsheet software to examine and modify worksheets, as well as to create your own worksheets.

1. Click the Steps button to learn how spreadsheet software works. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button to begin this assignment. Click OK to display a new worksheet. Click File, then click Open to display the Open dialog box. Click the file **Income.xls**, then press the Enter key to open the **Income and Expense Summary worksheet**. Notice that the worksheet contains labels and values for income from consulting and training. It also contains labels and values for expenses such as rent and salaries. The worksheet does not, however, contain formulas to calculate Total Income, Total Expenses, or Profit. Do the following:
  - a. Calculate the Total Income by entering the formula =sum(C4:C5) in cell C6.
  - b. Calculate the Total Expenses by entering the formula =sum(C9:C12) in C13.
  - c. Calculate Profit by entering the formula =C6-C13 in cell C15.
  - d. Manually check the results to make sure you entered the formulas correctly.
  - e. Print your completed worksheet showing your results.
3. You can use a spreadsheet to keep track of your grade in a class. In Explore, click File, then click Open to display the Open dialog box. Click the file **Grades.xls** to open the Grades worksheet. This worksheet contains all the labels and formulas necessary to calculate your grade based on four test scores. Suppose you receive a score of 88 out of 100 on the first test. On the second test, you score 42 out of 48. On the third test, you score 92 out of 100. You have not taken the fourth test yet. Enter the appropriate data in the **Grades.xls** worksheet to determine your grade after taking three tests. Print out your worksheet.
4. Worksheets are handy for answering "what if" questions. Suppose you decide to open a lemonade stand. You're interested in how much profit you can make each day. What if you sell 20 cups of lemonade? What if you sell 100? What if the cost of lemons increases?

In Explore, open the file **Lemons.xls** and use the worksheet to answer questions a through d, then print the worksheet for question e:

  - a. What is your profit if you sell 20 cups a day?
  - b. What is your profit if you sell 100 cups a day?
  - c. What is your profit if the price of lemons increases to \$.07 and you sell 100 cups?
  - d. What is your profit if you raise the price of a cup of lemonade to \$.30? (Lemons still cost \$.07 and assume you sell 100 cups.)
  - e. Suppose your competitor boasts that she sold 50 cups of lemonade in one day and made exactly \$12.00. On your worksheet adjust the cost of cups, water, lemons, and sugar, and the price per cup

to show a profit of exactly \$12.00 for 50 cups sold. Print this worksheet.

5. It is important to make sure the formulas in your worksheet are accurate. An easy way to test this is to enter 1's for all the values on your worksheet, then check the calculations manually. In Explore, open the worksheet **Receipt.xls**, which calculates sales receipts. Enter 1 as the value for Item 1, Item 2, Item 3, and Sales Tax %. Now, manually calculate what you would pay for three items that cost \$1.00 each in a state where sales tax is 1% (.01). Do your manual calculations match those of the worksheet? If not, correct the formulas in the worksheet and print out a *formula report* of your revised worksheet.
6. In Explore, create your own worksheet showing your household budget for one month. You may use real or made up numbers. Make sure you put a title on the worksheet. Use formulas to calculate your total income and your total expenses for the month. Add another formula to calculate how much money you were able to save. Print a formula report of your worksheet. Also, print your worksheet showing realistic values for one month.

## **DATABASES**

The Database Lab demonstrates the essential concepts of file and database management systems. You will use the Lab to search, sort, and report the data contained in a file of classic books.

1. Click the Steps button to review basic database terminology and to learn how to manipulate the classic books database. As you proceed through the Steps, answer the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button. Make sure you can apply basic database terminology to describe the classic books database by answering the following questions:
  - a. How many records does the file contain?
  - b. How many fields does each record contain?
  - c. What are the contents of the Catalog # field for the book written by Margaret Mitchell?
  - d. What are the contents of the Title field for the record with Thoreau in the Author field?
  - e. Which field has been used to sort the records?
3. In Explore, manipulate the database as necessary to answer the following questions:
  - a. When the books are sorted by title, what is the first record in the file?
  - b. Use the Search button to search for all books in the West location. How many do you find?
  - c. Use the Search button to search for all books in the Main location that are checked in. What do you find?
4. In Explore, use the Report button to print out a report that groups the books by Status and sorted by title. On your report, circle the four field names. Put a box around the summary statistics showing which books are currently checked in and which books are currently checked out.

## **CHAPTER 4 LAB ASSIGNMENTS**

### **DOS DIRECTORIES AND FILE MANAGEMENT**

DOS is an operating system used on millions of computers. Even if your computer has a graphical user interface, such as Microsoft Windows, understanding DOS commands helps you grasp the basic concepts of computer file management. In this Lab, you learn how to use basic DOS commands.

1. Click the Steps button to learn basic DOS commands. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Go through the Steps for this Lab once again. This time, create a mini DOS manual by listing each DOS command and its function. For each command, you should also provide a sample of a valid command, for example:  
DIR Provides a listing of all the files on a disk  
Example: DIR A:
3. Click the Explore button and make a new disk. (You can copy over the disk you used for the Steps.) Do each of the following tasks and record the command you used:
  - a. Display the directory for drive A.

- b. Display only those files on drive A that begin with the letter "T."
  - c. Erase all the files that have names beginning with "New."
  - d. Create a directory called PAPERS.
  - e. Move all the files with .DOC extensions into the PAPERS directory.
  - f. Rename OPUS27.MID to SONG.MID.
  - g. Delete all the files with names that start with "Budget."
4. In Explore, make a new disk. (You can copy over the disk you used for earlier Lab activities.) Do each of the following tasks, then give your disk to your instructor. Don't forget to put your name on the disk label.
- a. Make two subdirectories on your disk: PICS and BUDGETS.
  - b. Move all the files with .BMP extensions into the PICS directory.
  - c. Move all the files with .WKS extensions into the BUDGETS directory.
  - d. Delete all the files except README.TXT from the root directory. (Do not delete the files from PICS or BUDGETS.)
  - e. Rename the file README.TXT to READ.ME.
5. Use the TYPE command to view the contents of the START.BAT file. Describe the file contents. Use the TYPE command to view the contents of OPUS27.MID. Describe what you see. Explain the different results you obtained when you used the TYPE command with START.BAT and OPUS27.MID.

### **WINDOWS DIRECTORIES, FOLDERS, AND FILES**

Graphical user interfaces such as Mac OS, Windows 3.1, Windows 95, and Windows 98 use a filing system metaphor for file management. In this Lab, you will learn the basic concepts of these file system metaphors. With this background, you will find it easy to understand how to manage files with graphical user interfaces.

1. Click the Steps button to learn how to manipulate directories, folders, and files. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Make sure you are in Explore. Change to drive C as the default drive. Double-click the c:\ folder to display its contents, then answer the following questions:
  - a. How many data files are in the root directory of drive C?
  - b. How many program files are in the root directory of drive C?
  - c. Does the root directory of drive C contain any subdirectories? How can you tell?
  - d. How many files are in the DOS folder?
3. Click the Explore button. Make sure drive A is the default drive. Double-click the a:\ folder to display the folder contents, then answer the following questions:
  - a. How many files are in the root directory of drive A?
  - b. Are the files on drive a: data files or program files? How can you tell?
  - c. Does the root directory of drive A contain any subdirectories? How can you tell?
4. Open and close folders, and change drives as necessary to locate the following files. After you find the file, write out its file specification:
  - a. config.sys
  - b. win.ini
  - c. toolkit.wks
  - d. meeting.doc
  - e. newlogo3.bmp
  - f. todo.doc

### **DEFRAGMENTATION AND DISK OPERATIONS**

In this Lab you will format a simulated disk, save files, delete files, undelete files to see how the computer updates the FAT. You will also find out how the files on your disk become fragmented and what a defragmentation utility does to reorganize the clusters on your disk.

1. Click the Steps button to learn how the computer updates the FAT when you format a disk and save, delete, and undelete files. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the

instructions on the screen to print this report.

2. Click the Explore button. Click the Format button to format the simulated disk. Try to save files 1, 2, 3, 4, and 6. Do they all fit on the disk?
3. In Explore, format the simulated disk. Try to save all the files on the disk. What happens?
4. In Explore, format the simulated disk. Save FILE-3, FILE-4, and FILE-6. Next, delete FILE-6. Now, save FILE-5. Try to undelete FILE-6. What happens and why?
5. In Explore, format the simulated disk. Save and erase files until the files become fragmented. Draw a picture of the disk to show the fragmented files. Indicate which files are in each cluster by using color, crosshatching, or labels. List which files in your drawing are fragmented. Finally, defragment the disk and draw a new picture showing the unfragmented files.

## **USING FILES**

In this Lab you manipulate a simulated computer to view what happens in memory and on disk when you create, save, open, revise, and delete files. Understanding what goes on "inside the box" will help you quickly grasp how to perform basic file operations with most application software.

1. Click the Steps button to learn how to use the simulated computer to view the contents of memory and disk when you perform basic file operations. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button and use the simulated computer to perform the following tasks.
  - a. Create a document containing your name and the city in which you were born. Save this document as NAME.
  - b. Create another document containing two of your favorite foods. Save this document as FOODS.
  - c. Create another file containing your two favorite classes. Call this file CLASSES.
  - d. Open the FOOD file and add another one of your favorite foods. Save this file without changing its name.
  - e. Open the NAME file. Change this document so it contains your name and the name of your school. Save this as a new document called SCHOOL.
  - f. Write down how many files are on the simulated disk and the exact contents of each file.
  - g. Delete all the files.
3. In Explore, use the simulated computer to perform the following tasks.
  - a. Create a file called MUSIC that contains the name of your favorite CD.
  - b. Create another document that contains eight numbers and call this file LOTTERY.
  - c. You didn't win the lottery this week. Revise the contents of the LOTTERY file, but save the revision as LOTTERY2.
  - d. Revise the MUSIC file so it also contains the name of your favorite musician or composer, and save this file as MUSIC2.
  - e. Delete the MUSIC file.
  - f. Write down how many files are on the simulated disk and the exact contents of each file.

## **CHAPTER 5 LAB ASSIGNMENTS**

### **BINARY NUMBERS**

Computers process and store numbers using the binary number system. Understanding binary numbers helps you recognize how digital computers work by simply turning electricity on and off. In this Lab, you learn about the binary number system and you learn how to convert numbers from binary to decimal and from decimal to binary.

1. Click the Steps button to learn about the binary number system. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button, then click the Conversions button. Practice converting binary numbers into



decimal numbers. For example, what is the decimal equivalent of 00010011? Calculate the decimal value on paper. To check your answer, enter the decimal number in the decimal box, and then click the binary boxes to show the 1s and 0s for the number you are converting. Click the Check It button to see if your conversion is correct.

Convert the following binary numbers into decimals:

- a. 00000101
- b. 00010111
- c. 01010101
- d. 10010010
- e. 11111110

3. In Explore, click the Conversions button. Practice converting decimal numbers into binary numbers. For example, what is the binary equivalent of 82? Do the conversion on paper. To check your answer, enter the decimal number in the decimal box, and then click the binary boxes to show the 1s and 0s of its binary equivalent. Click the Check It button to see if your conversion is correct.

Convert the following decimal numbers to binary numbers:

- a. 77
- b. 25
- c. 92
- d. 117
- e. 214

4. In Explore, click the Binary Number Quiz button. The quiz provides you with ten numbers to convert. Make each conversion and type your answer in the box. Click the Check Answer button to see if you are correct. When you have completed all ten quiz questions, follow the instructions on the screen to print your quiz results.

### **CPU SIMULATOR**

In a computer central processing unit (CPU), the arithmetic logic unit (ALU) performs instructions orchestrated by the control unit. Processing proceeds at a lightning pace, but each instruction accomplishes only a small step in the entire process. In this Lab you work with an animated CPU simulation to learn how computers execute assembly language programs. In the Explore section of the Lab, you have an opportunity to interpret programs, find program errors, and write your own short assembly language programs.

1. Click the Steps button to learn how to work the simulated CPU. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button. Use the File menu to open a program called **Add.cpu**. Use the Fetch Instruction and Execute Instruction buttons to step through the program. Then answer the following questions:
  - a. How many instructions does this program contain?
  - b. Where is the instruction pointer after the program is loaded but before it executes?
  - c. What does the INP 3 M1 instruction accomplish?
  - d. What does the MMR M1 REG1 instruction accomplish?
  - e. Which memory location holds the instruction that adds the two numbers in REG1 and REG2?
  - f. What is in the accumulator when the program execution is complete?
  - g. Which memory address holds the sum of the two numbers when program execution is completed?
3. In Explore, use the File menu to open a program called **Count5.cpu**. Use the Fetch Instruction and Execute Instruction buttons to step through the program. Then answer the following questions:
  - a. What are the two input values for this program?
  - b. What happens to the value in REG1 as the program executes?
  - c. What happens when the program executes the JPZ P5 instruction?
  - d. What are the final values in the accumulator and registers when program execution is complete?
4. In Explore, click File, then click New to make sure the CPU is empty. Write a program that follows these steps to add 8 and 6:

- a. Input 8 into memory address M3.
- b. Input 6 into memory address M5.
- c. Move the number in M3 to Register 1.
- d. Move the number in M5 to Register 2.
- e. Add the numbers in the registers.
- f. Move the value in the accumulator to memory address M1.
- g. Tell the program to halt.

Test your program to make sure it produces the answer 14 in address M1. When you are sure your program works, use the File menu to print your program.

5. In Explore, use the File menu to open a program called **Bad1.cpu**. This program is supposed to multiply two numbers together and put the result in memory location M3. However, the program contains an error.
  - a. Which memory location holds the incorrect instruction?
  - b. What instruction will make this program produce the correct result?
6. In Explore, use the CPU simulator to write a program to calculate the volume, in cubic feet, of the inside of a refrigerator. The answer should appear in the accumulator at the end of the program. The inside dimensions of the refrigerator are 5 feet, by 3 feet, by 2 feet. Make sure you test your program, then print it.

### TROUBLESHOOTING

Computers sometimes malfunction, so it is useful to have some skill at diagnosing, if not fixing, some of the hardware problems you might encounter. In this Lab, you use a simulated computer that has trouble booting. You learn to make and test hypotheses that help you diagnose the cause of boot problems.

1. Click the Steps button to learn how to make and test hypotheses about hardware malfunctions during the boot process. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button. Use the File menu to load **System11.trb**. Click the Boot Computer button and watch what happens on the simulated computer (in this case, actually, what does not happen!). Make your hypothesis about why this computer does not boot. Use the Check menu to check the state of various cables and switches. When you think you know the cause of the problem, select it from the Diagnosis list. If you correctly diagnosed the problem, write it down. If your diagnosis was not correct, form another hypothesis and check it, until you have correctly diagnosed the problem.
3. Sometimes problems that appear very similar, result from different causes. In Explore, use the File menu to load **System03.trb**, then diagnose the problem. Do the same for **System06.trb**. Describe the problems with these two systems. Then describe the similarities and differences in their symptoms.
4. In Explore, use the File menu to load System02 and System08. Both systems produce keyboard errors, but these errors have different causes. Describe what caused the problem in System02, and what caused the problem in System08. Once you have diagnosed these problems, what can you do about them?
5. In Explore, use the File menu to load Systems 04, 05, 07, 09, and 14. These systems produce similar symptoms on boot up. However, these systems have different problems. Diagnose the problem with each of these systems and indicate the key factor (the symptom or what you checked) that led to your diagnosis.

## CHAPTER 6 LAB ASSIGNMENTS

### BUYING A COMPUTER

When buying from a mail-order or Internet computer vendor, consumers don't have an opportunity to take various computer models for a "test drive." They make a computer purchase decision based solely on a list of specifications. Thus, it is essential to understand the specifications in computer ads. In this Lab, you will find out how to use a Shopping Glossary to interpret the specifications.

1. Click the Steps button to learn how to use the Shopping Glossary. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a

- Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button and read the ad for the VectorMicro Computer system. Use the Shopping Glossary to define the following terms:
    - a. Write-back cache
    - b. EIDE
    - c. NI
    - d. Burst cache
    - e. Wavetable
    - f. EDO RAM
  3. In Explore, read the ads for the ZeePlus Multimedia Value Pak and the ZeePlus Multimedia Pro computers. The two systems differ substantially in price. If you purchase the more expensive system, what additional features do you get?
  4. In Explore, read the ad for the ZeePlus Multimedia Pro Computer (233 MHz and the NP2 Super Systems Computer. What is the price difference between these two systems? What factors might account for this price difference?
  5. In Explore, read the ads to find a notebook computer that's priced within \$100 of the Nevada Tech Systems desktop computer. Make a list of the features that the desktop computer has, that the notebook computer does not have. Which one would you buy? Why?
  6. Photocopy a computer ad from a recent issue of a computer magazine. On a separate sheet of paper, write each specification (for example, Intel Pentium processor). For each specification, define each term (for example, Intel is a microprocessor manufacturer, Pentium is a type of microprocessor in the x86 family). Write out all acronyms (for example, RAM means random access memory). If you have difficulty with some of the terms and acronyms, click the Explore button and use the Shopping Glossary.

## CHAPTER 7 LAB ASSIGNMENTS

### E-MAIL

E-mail that originates on a local area network with a mail gateway can travel all over the world. That's why it is so important to learn how to use it. In this Lab you use an e-mail simulator, so even if your school computers don't provide you with e-mail service, you will know the basics of reading, sending, and replying to electronic mail.

1. Click the Steps button to learn how to work with e-mail. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button. Write a message to re@films.org. The subject of the message is "Picks and Pans." In the body of your message, describe a movie you have recently seen. Include the name of the movie, briefly summarize the plot, and give it a thumbs up or a thumbs down. Print the message before you send it.
3. In Explore, look in your In Box for a message from jb@music.org. Read the message, then compose a reply indicating that you will attend. Carbon copy meiccone@music.org. Print your reply, including the text of JB's original message before you send it.
4. In Explore, look in your In Box for a message from leo@sports.org. Reply to the message by adding your rating to the text of the original message as follows:

Equipment:	Your Rating:
Rollerblades	2
Skis	3
Bicycle	1
Scuba gear	4
Snowmobile	5

Print your reply before you send it.

## CHAPTER 8 LAB ASSIGNMENTS

### THE INTERNET: WORLD WIDE WEB

One of the most popular services on the Internet is the World Wide Web. This Lab is a Web simulator that

teaches you how to use Web browser software to find information. You can use this Lab whether or not your school provides you with Internet access.

1. Click the Steps button to learn how to use Web browser software. As you proceed through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Quick Check Summary Report. Follow the instructions on the screen to print this report.
2. Click the Explore button on the Welcome screen. Use the Web browser to locate a weather map of the Caribbean Virgin Islands. What is its URL?
3. A SCUBA diver named Wadson Lachouffe has been searching for the fabled treasure of Greybeard the pirate. A link from the Adventure Travel Web site **www.atour.com** leads to Wadson's Web page called "Hidden Treasure." In Explore, locate the Hidden Treasure page and answer the following questions:
  - a. What was the name of Greybeard's ship?
  - b. What was Greybeard's favorite food?
  - c. What does Wadson think happened to Greybeard's ship?
4. In the Steps, you found a graphic of Jupiter from the photo archives of the Jet Propulsion Laboratory. In the Explore section of the Lab, you can also find a graphic of Saturn. Suppose one of your friends wanted a picture of Saturn for an astronomy report. Make a list of the blue, underlined links your friend must click in the correct order to find the Saturn graphic. Assume that your friend will begin at the Web Trainer home page.
5. Enter the URL **http://www.atour.com** to jump to the Adventure Travel Web site. Write a one-page description of this site. In your paper include a description of the information at the site, the number of pages the site contains, and a diagram of the links it contains.
6. Chris Thomson is a student at UVI and has his own Web pages. In Explore, look at the information Chris has included on his pages. Suppose you could create your own Web page. What would you include? Use word-processing software to design your own Web pages. Make sure you indicate the graphics and links you would use.

## WEB PAGES & HTML

It's easy to create your own Web pages. As you learned in this chapter, there are many software tools to help you become a Web author. In this Lab you'll experiment with a Web authoring wizard that automates the process of creating a Web page. You'll also try your hand at working directly with HTML code.

1. Click the Steps button to activate the Web authoring wizard and learn how to create a basic Web page. As you proceed through the Steps, answer all of the Quick Check questions. After you complete the Steps, you will see a Quick Check summary Report. Follow the instructions on the screen to print this report.
2. In Explore, click the File menu, then click New to start working on a new Web page. Use the wizard to create a Home page for a veterinarian who offers dog day-care and boarding services. After you create the page, save it on drive A or C, and print the HTML code. Your site must have the following characteristics:
  - a. Title: Dr. Dave's Dog Domain
  - b. Background color: Gold
  - c. Graphic: Dog.jpg
  - d. Body text: Your dog will have the best care day and night at Dr. Dave's Dog Domain. Fine accommodations, good food, play time, and snacks are all provided. You can board your pet by the day or week. Grooming services also available.
  - e. Text link: "Reasonable rates" links to [www.cciw.com/np3/rates.htm](http://www.cciw.com/np3/rates.htm)
  - f. E-mail link: "For more information:" links to [daveassist@drdave.com](mailto:daveassist@drdave.com)
3. In Explore, use the File menu to open the HTML document called Politics.htm. After you use the HTML window (not the wizard) to make the following changes, save the revised page on Drive A or C, and print the HTML code. Refer to Figure 8-19 of your textbook for a list of HTML tags you can use.
  - a. Change the title to Politics 2000
  - b. Center the page heading
  - c. Change the background color to FFE7C6 and the text color to 000000
  - d. Add a line break before the sentence "What's next?"
  - e. Add a bold tag to "Additional links on this topic:"

- f. Add one more link to the "Additional links" list. The link should go to the site <http://www.elections.ca> and the clickable link should read "Elections Canada".
- g. Change the last graphic to display the image "next.gif"
4. In Explore use the Web authoring wizard and the HTML window to create a Home page about yourself. You should include at least a screenful of text, a graphic, an external link, and an e-mail link. Save the page on drive A, then print the HTML code. Turn in your disk and printout.

## **CHAPTER 9 LAB ASSIGNMENTS**

### **DATA BACKUP**

The Data Backup Lab gives you an opportunity to make tape backups on a simulated computer system. Periodically, the hard disk on the simulated computer will fail, which gives you a chance to assess the convenience and efficiency of different backup procedures.

1. Click the Steps button to learn how to use the simulation. As you work through the Steps, answer all of the Quick Check questions that appear. After you complete the Steps, you will see a Summary Report of your Quick Check answers. Follow the directions on the screen to print this report.
2. Click the Explore button. Create a full backup every Friday using only Tape 1. At some point in the simulation, an event will cause data loss on the simulated computer system. Use the simulation to restore as much data as you can. After you restore the data, print the Backup Audit Report.
3. In Explore, create a full backup every Friday on Tape 1 and a differential backup every Wednesday on Tape 2. At some point in the simulation, an event will cause data loss on the simulated computer system. Use the simulation to restore as much data as you can. Print the Backup Audit Report.
4. In Explore, create a full backup on Tape 1 every Monday. Make incremental backups on Tapes 2, 3, 4, and 5 each day for the rest of the week. Continue this cycle, reusing the same tapes each week. At some point in the simulation an event will cause data loss on the simulated computer system. Use the simulation to restore as much data as you can. Print the Backup Audit Report.
5. Photocopy a calendar for next month. On the calendar indicate your best plan for backing up data. In Explore, implement your plan. Print out the Backup Audit Report. Write a paragraph or two discussing the effectiveness of your plan.

### **END OF LAB ASSIGNMENTS**