

UNIT
D

Concepts

NINTH EDITION

ILLUSTRATED SERIES™

Computer Concepts

Introductory

**Unit D: File
Management and
Digital Electronics**



Learning Objectives

- Explain how file management programs help you manage your computer files
- Explain how to create and use folders to store files
- Identify the key elements of a computer file

Learning Objectives (continued)

- Describe the file management steps for working with files
- Describe how digital data representation produces numbers, text, images, video, and sound
- Define integrated circuits and explain the role they play inside a computer

Learning Objectives (continued)

- Explain how CPU factors affect computer performance
- Define RAM and explain its importance to computers
- Explain how a computer uses virtual memory, ROM, and EEPROM

File Management Tools

- File management – how files are created, opened, saved, deleted, and renamed
- Folders help organize your computer files

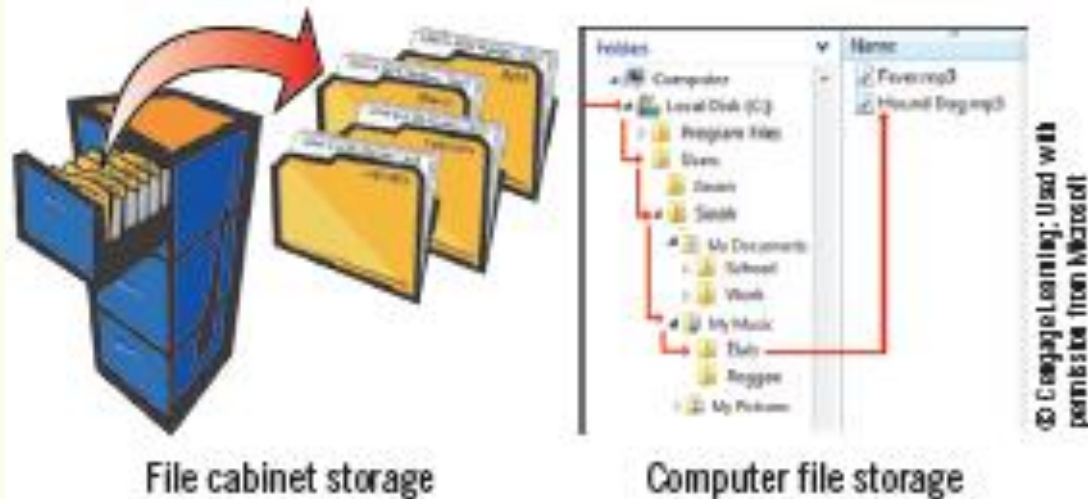


Figure D-1: Files are stored in folders

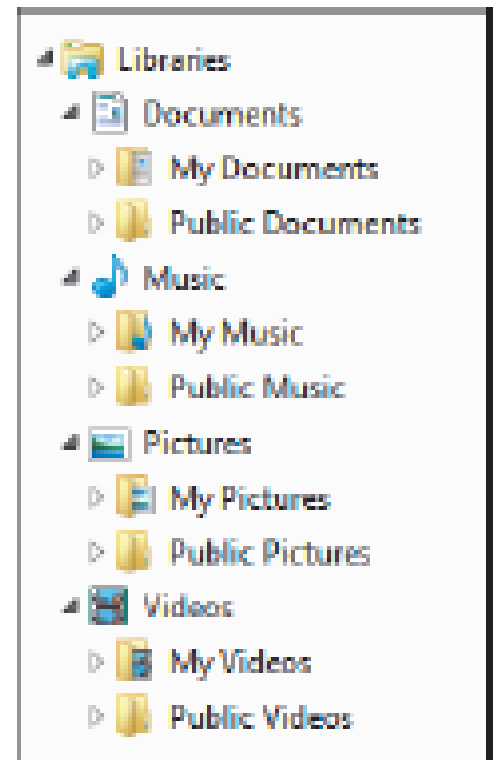
File Management Tools (continued)

- File path or file specification – location of a file on a storage device

C:\Users\Sarah\My Music\Elvis\Hound Dog.mp3

Primary folder	Subfolder	Subfolder	Subfolder	Filename	File extension
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Figure D-2: A file path



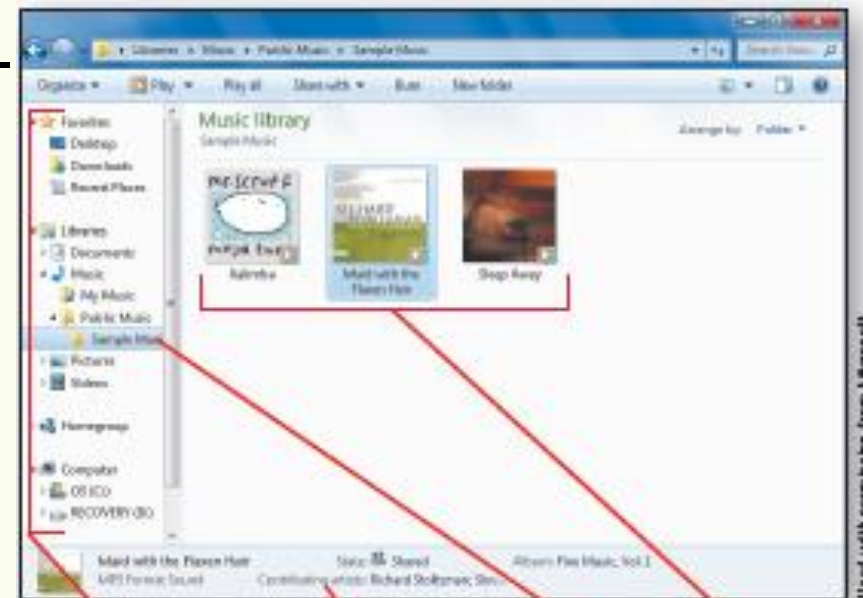
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Figure D-3: Windows default folders

File Management Tools (continued)

- Library – contains links to similar files that are stored on various devices
 - Libraries are similar to a folder
- Windows Explorer – file management program

Figure D-5: Windows Explorer showing contents of Sample Music folder



Hierarchy of devices and folders

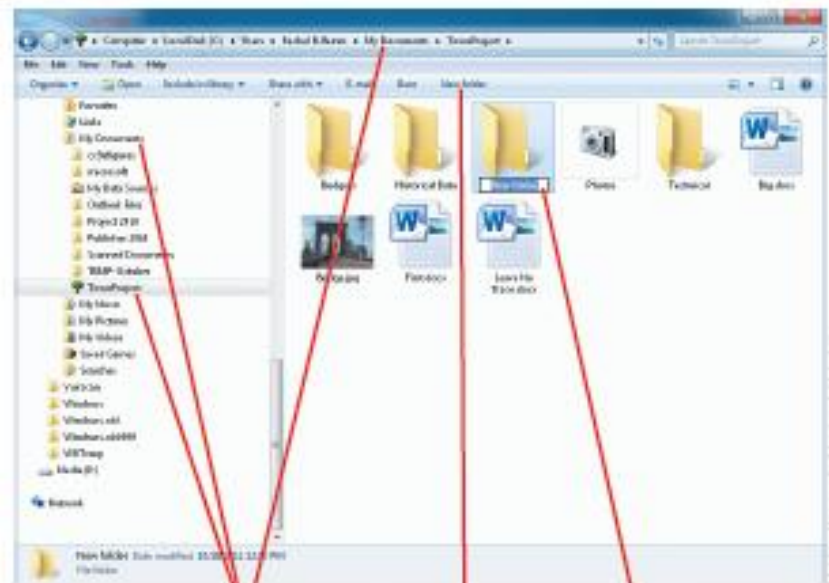
Details pane for selected file

Selected folder

Contents of selected folder

Computer Folder Basics

- Nested or subfolders – created to add further organization to file system



TownProject folder is in
My Documents folder

New folder
button

Type to name the
new folder

Used with permission from/td created:

Figure D-6: Creating a new folder

Computer Folder Basics (continued)

- Folder properties – size, date, security information

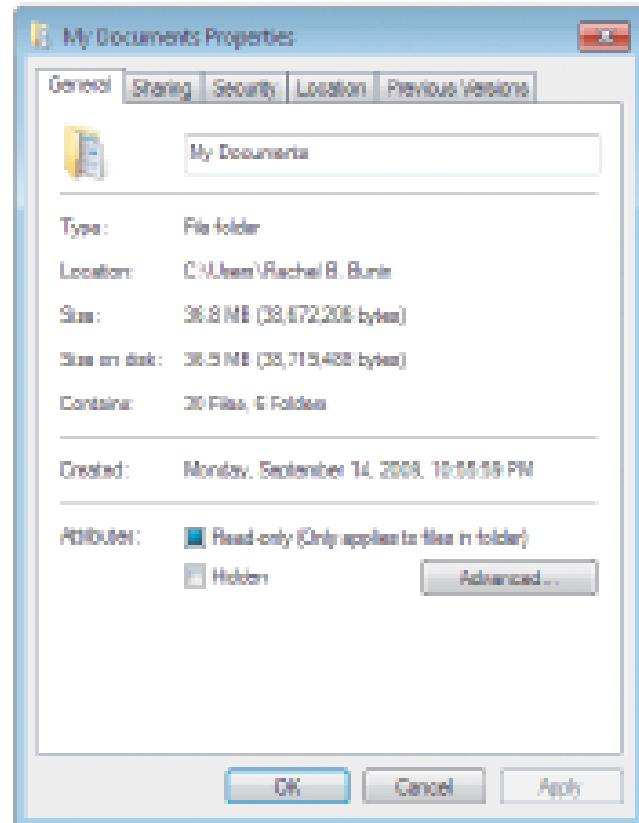


Figure D-8: Properties dialog box for My Documents folder

Computer Folder Basics (continued)

- Folder options – how opened and viewed

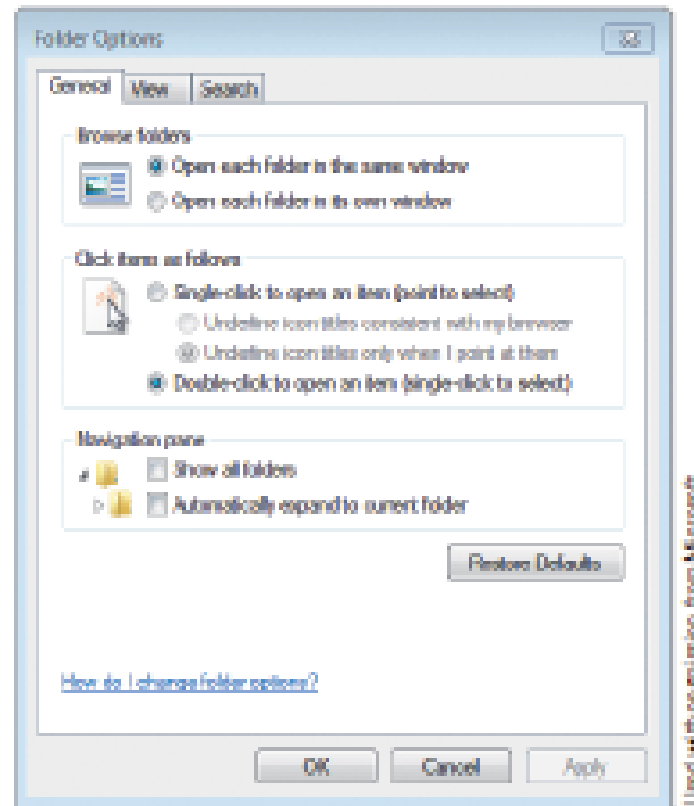


Figure D-9: Folder Options dialog box

Computer Folder Basics (continued)

- To create a new folder:
 - Use New Folder button of Windows Explorer
- To work with folders:
 - Select the folder(s), then copy, move, rename, or delete
- Folder Properties dialog box
 - Provides general information about files and folders stored in that folder
- Folder Options dialog box
 - Used to view or change a folder's options

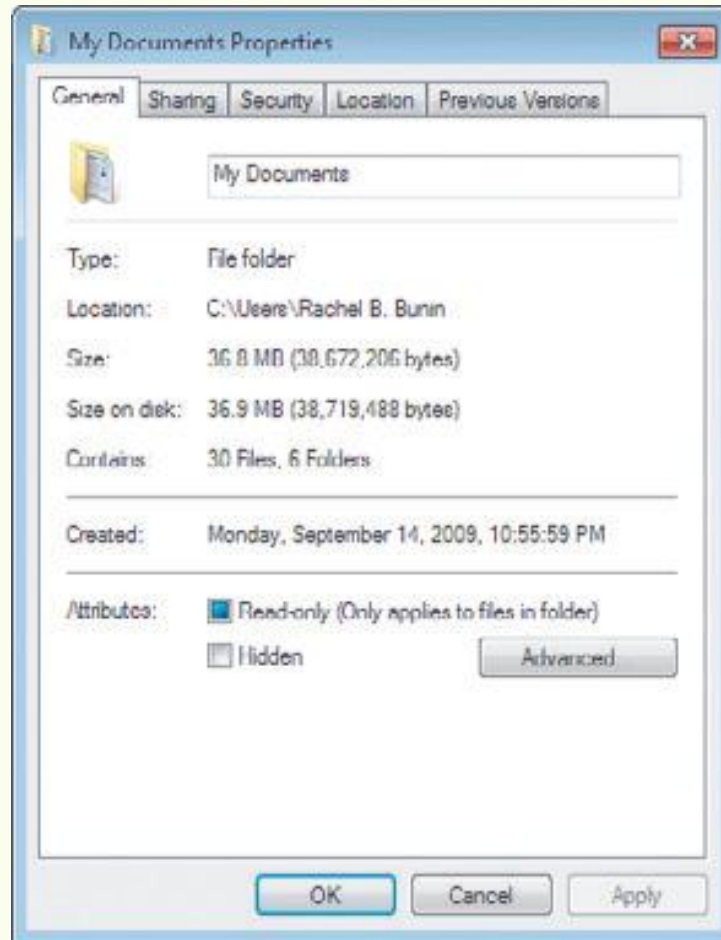


Figure D-31: Properties dialog box for My Documents folder

Computer File Basics

- Filename – set of letters, symbols, or numbers that identifies a file
- Every file must have a filename
- File naming conventions – specific rules that must be followed

Computer File Basics (continued)

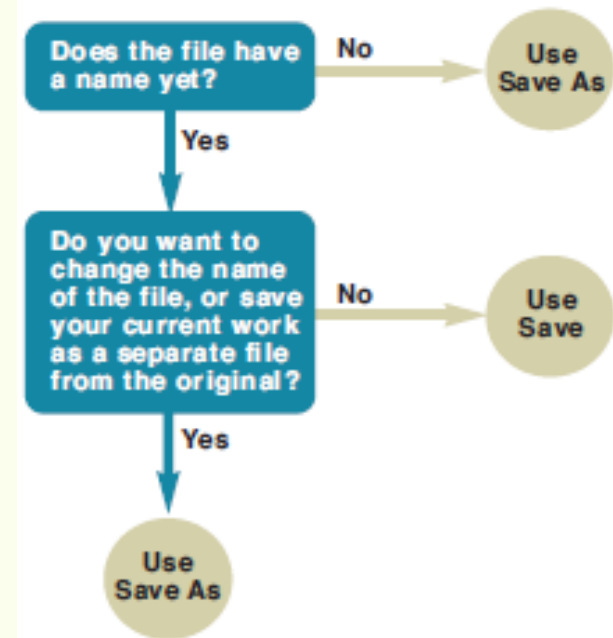
- File extension or filename extension – set of letters and/or numbers added to the end of filename following a period
 - Describes file contents

File extensions	Application
xls, xlsx	Microsoft Excel
doc, docx	Microsoft Word
txt, rtf	Text editor (WordPad, Notepad)
ppt, pptx	Microsoft PowerPoint
mdb, accdb	Microsoft Access
gif, tif, jpg, bmp, raw, png	Graphic or photo viewer or editor
wav, mid, mp3	Music and sound player or editor
zip	Compressed file
pdf	Adobe Acrobat or Reader

Table D-1: Common file extensions

Computer File Basics (continued)

- Save and Save As commands
 - Save command – saves a file using its current name and location
 - Save As command – can select a name and storage device for a file



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Figure D-10: Save or Save As?

Computer File Basics (continued)

- File properties – general information, such as size and date

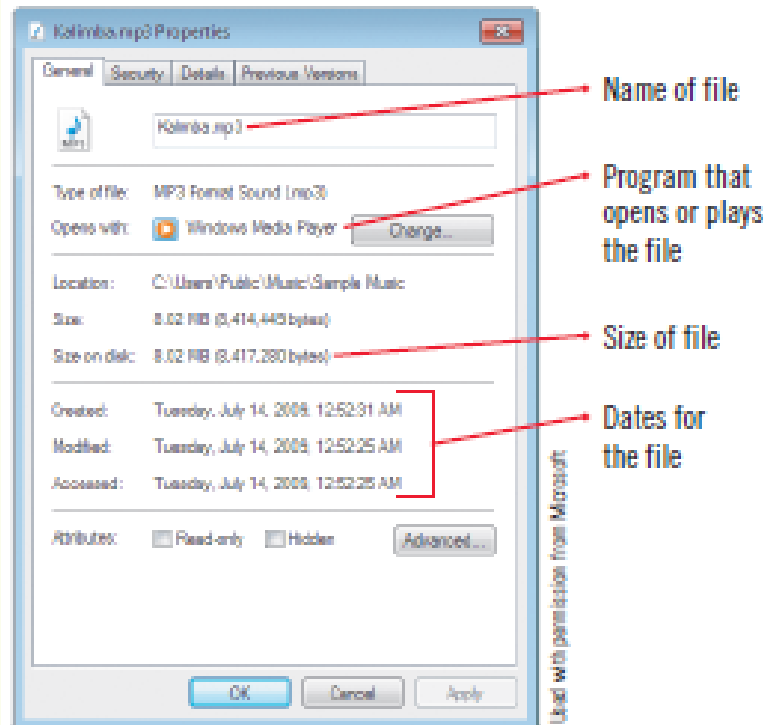


Figure D-12: File Properties dialog box for Kalimba.mp3

How to Manage Computer Files

- File management tasks

File or folder command	Description and examples
Rename	Change the name of a file or folder to describe its contents better. For example, you might change the name of the file Letter.docx to Letter to Pam 10-6.docx. When renaming a file, be careful to keep the same file extension so that you can open it with the correct application software.
Copy	Create a copy of a file or folder; the file remains in the original location and a duplicate file is added to a different location. For example, copy a document file to a new folder so that you can revise the content in the copy and leave the original content intact.
Move	Move a file or folder from one folder to another, or from one storage device to another. For example, move a file to a new folder to organize your hard drive. When you move a file or folder, it is erased from its original location.
Delete	Remove the file from the folder and place it in the Recycle Bin. For example, delete a file or folder with files when you no longer need it. Note: most file management programs delete all the files (and subfolders) in a folder when you delete a folder.

Table D-2: Additional file management tasks

How to Manage Computer Files (continued)

- File tag - short word or phrase describing a file that is useful when searching for a file

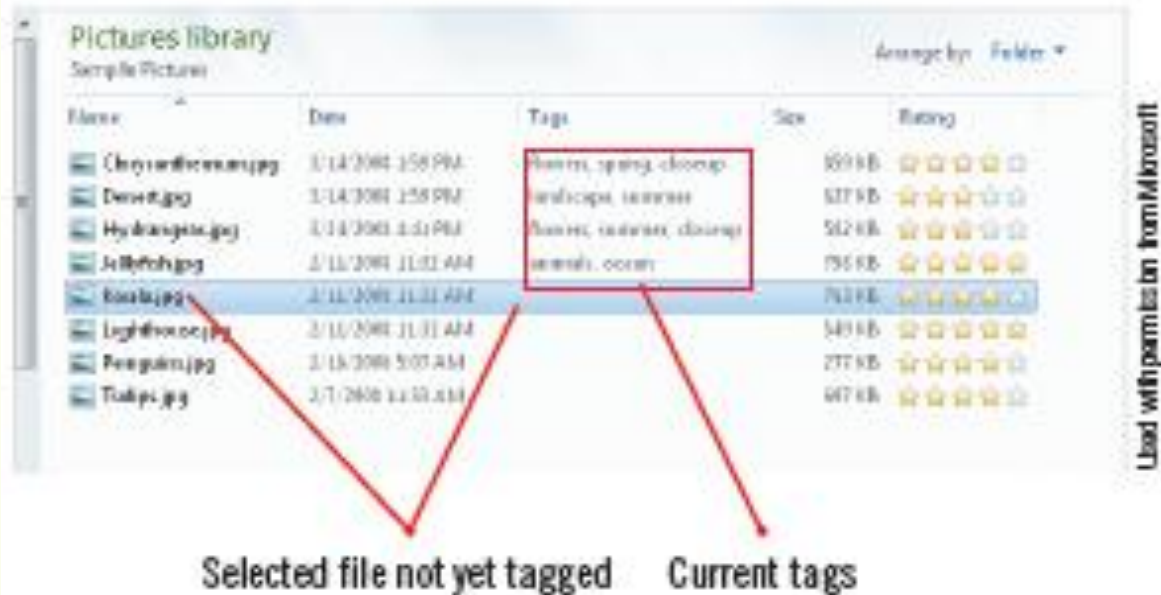


Figure D-13: Tags provide additional information about a file

How to Manage Computer Files (continued)

- Use descriptive names
- Maintain file extensions
- Group similar files and consider using the default folders
- Do not mix data files and program files
- Do not store programs or data files in the root directory (C:\) of hard drive

How Computers Represent Data

- Binary number system - used by computers to represent electrical on and off signals by using 0s and 1s
- Digital data – text, numbers, graphics, sound, and video converted into the digits 0 and 1
- Bit or binary digit – 0 or 1 code for an electronic signal
- Byte – series of 8 bits

How Computers Represent Data (continued)

- Numeric data – numbers
- Character data – letters, symbols

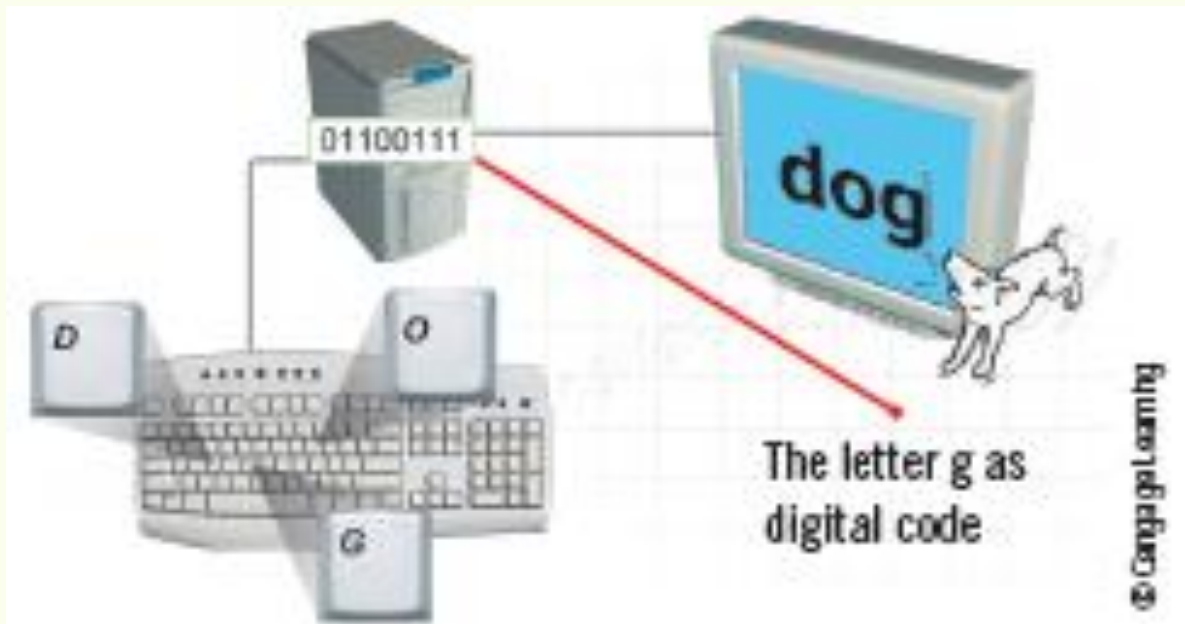


Figure D-16: Coding data

How Computers Represent Data (continued)

- Pixels or picture elements – series of colored dots making up digitized images

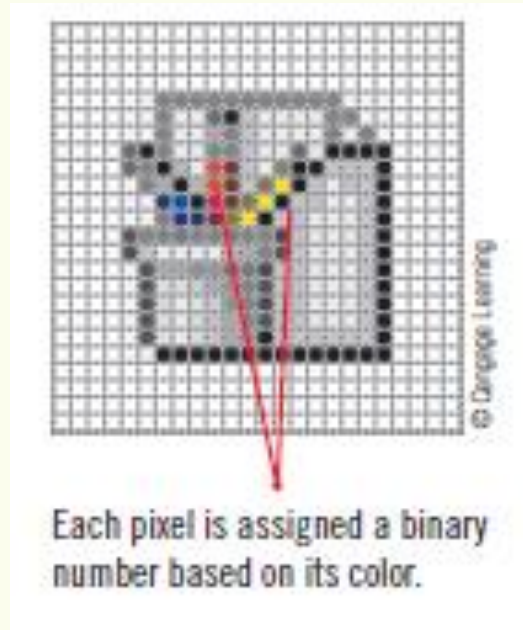


Figure D-17: Pixels in an image

How Computers Represent Data (continued)

- Digital sound – analog sound wave sampled at various points and converted to digital numbers

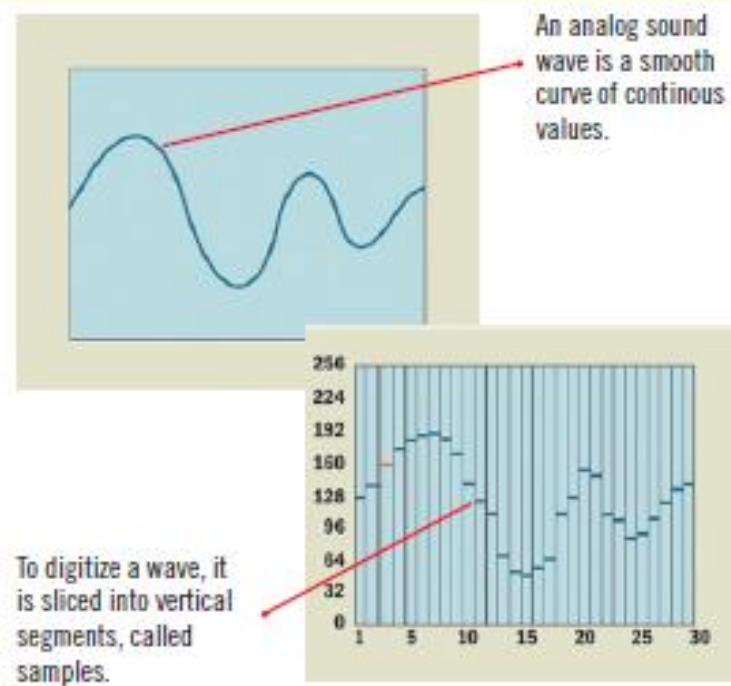
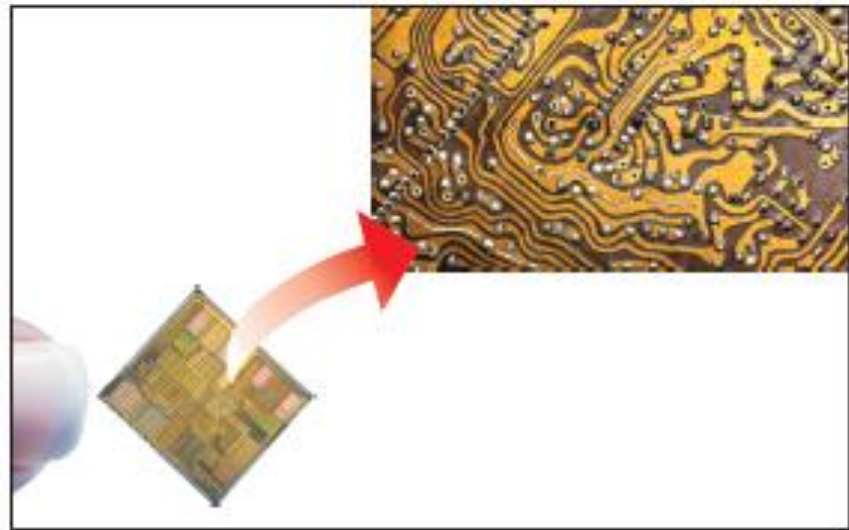


Figure D-18: Digitizing sound

Integrated Circuits—An Overview

- Integrated circuit (IC) – incredibly thin slice of semiconducting material or semiconductor
 - Also called computer chip, microchip, and chip



Courtesy of Intel Corporation; © W. H. Inoué/ISTOCK/ALAMY

Figure D-19: An integrated circuit

Integrated Circuits—An Overview (continued)

- Chip packages vary in shape and size
 - DIP (dual inline package)
 - DIMM (dual inline memory module)
 - PGA (pin-grid array)

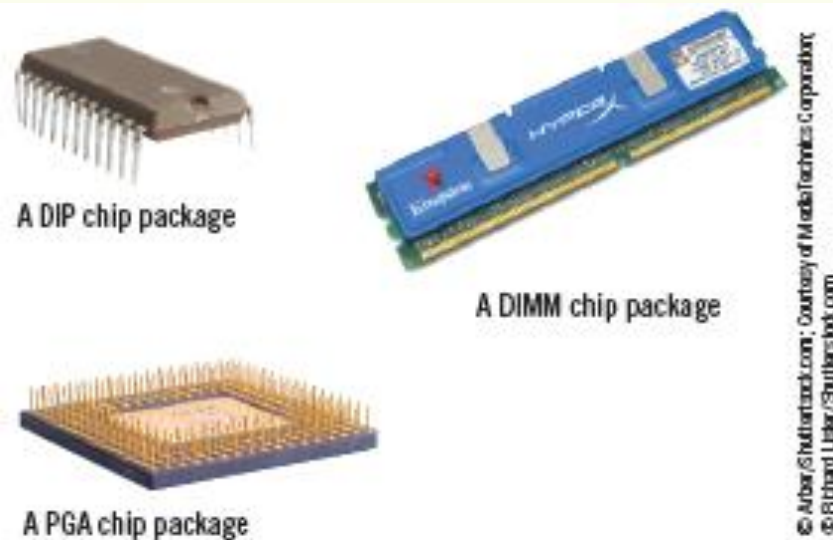


Figure D-20: Packaging for integrated circuits

Integrated Circuits—An Overview (continued)

- Motherboard –main circuit board
 - Integrated circuits are connected to the motherboard



Adapter card
with chips

Memory using a
DIMM chip package

CPU using a
PGA chip
package

Figure D-21: Chips on a motherboard

Integrated Circuits—An Overview (continued)

- Processor or microprocessor – process instructions



Figure D-22: Every digital device has a processor

Processors—An Overview

- CPU or central processing unit – main processor on PCs
- Multi-core processor – single chip containing circuitry for multiple processors

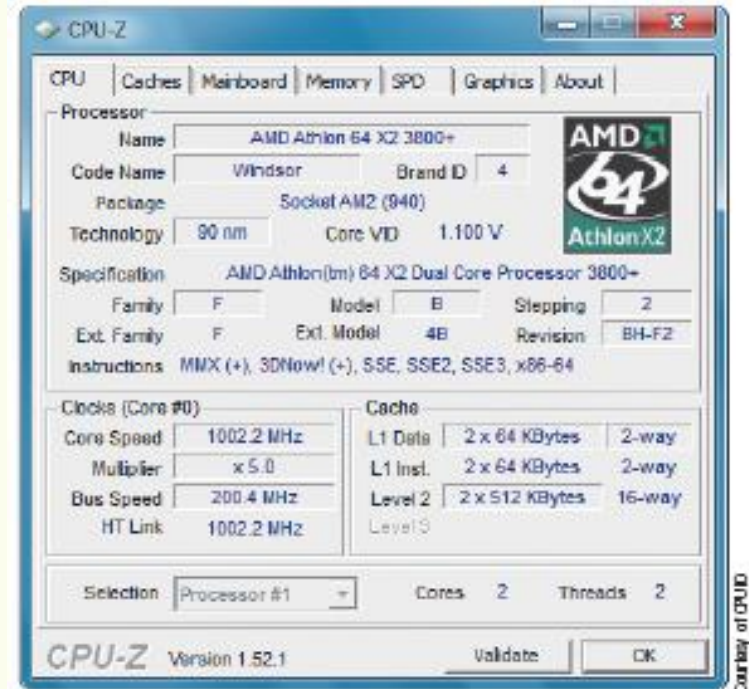


Figure D-24: Specs for a processor using the CPU-Z program

Processors—An Overview (continued)

- Processor clock – timing device setting the pace (the clock speed) for executing instructions
- Clock speed – measured in megahertz (MHz)/millions of cycles per second
- Cycle – smallest unit of time recognized by a processor



Intel Core i7 2860QM processor 2.50 GHz 1600 MHz FSB 8 MB L2 cache

Figure D-26: Clock speed specs in an ad

Processors—An Overview (continued)

- Bus – electronic pathway carrying signals between electronic computer components

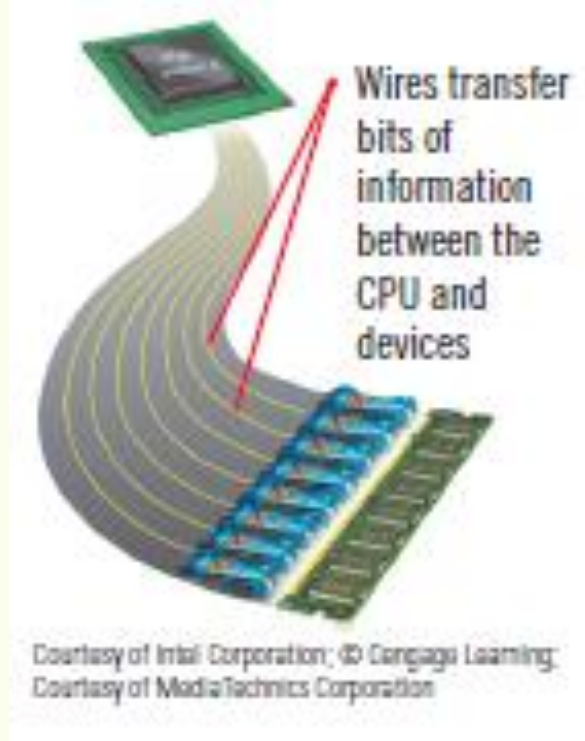


Figure D-27: Front side bus

Processors—An Overview (continued)

- Word size – number of bits that a processor can manipulate at one time
- Cache or RAM cache or cache memory – high-speed memory accessed by the processor more rapidly than memory elsewhere on the motherboard



Intel Core i7 2860QM processor 2.50 GHz 1600 MHz FSB 8 MB L2 cache

Figure D-29: Cache specs in an ad

Computer Memory: RAM

- RAM or random access memory – temporarily holds basic instructions



Figure D-31: RAM is a temporary holding area

Computer Memory: RAM (continued)

- Capacitors – hold the bits that represent data
 - A charged capacitor is turned on and represents a 1 bit
 - A discharged capacitor is turned off and represents a 0 bit

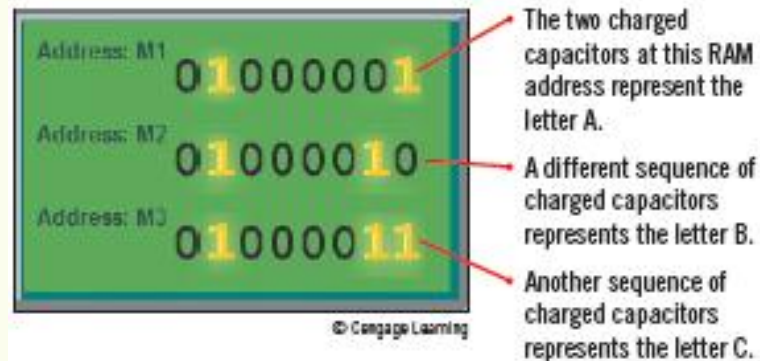


Figure D-32: How RAM works

Other Types of Computer Memory

- Virtual memory – area of the hard drive used when RAM is reaching its capacity

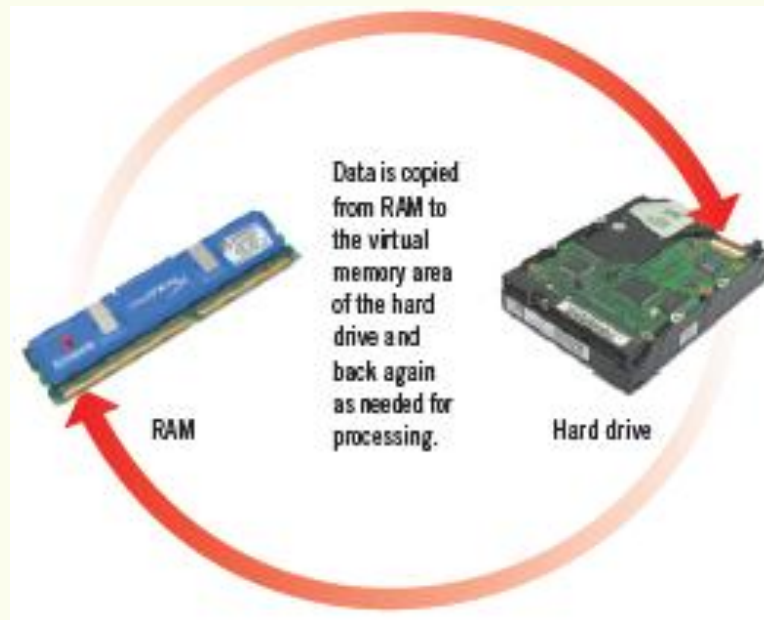


Figure D-36: How virtual memory works

Other Types of Computer Memory (continued)

- ROM (read-only memory) – holds startup routine
- ROM BIOS or basic input/output system – small set of instructions stored in ROM

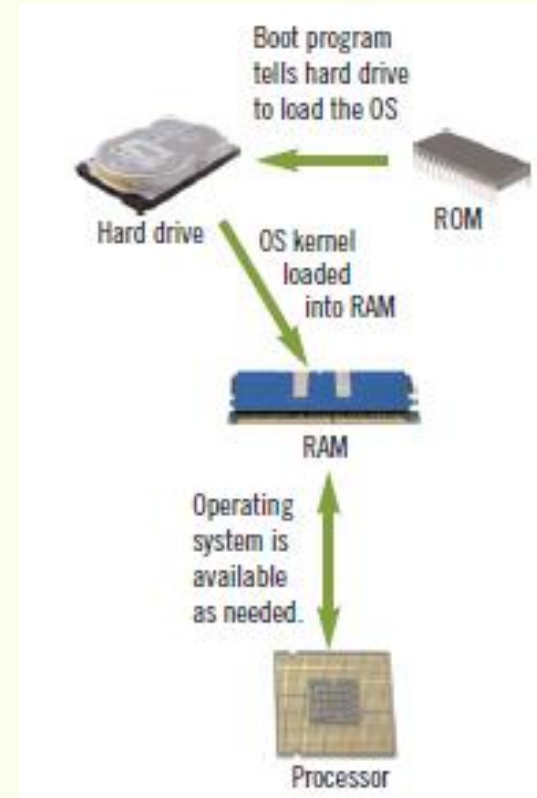


Figure D-3: ROM and the boot process

Other Types of Computer Memory (continued)

- EE PROM or electrically erasable programmable read-only memory – holds computer configuration settings

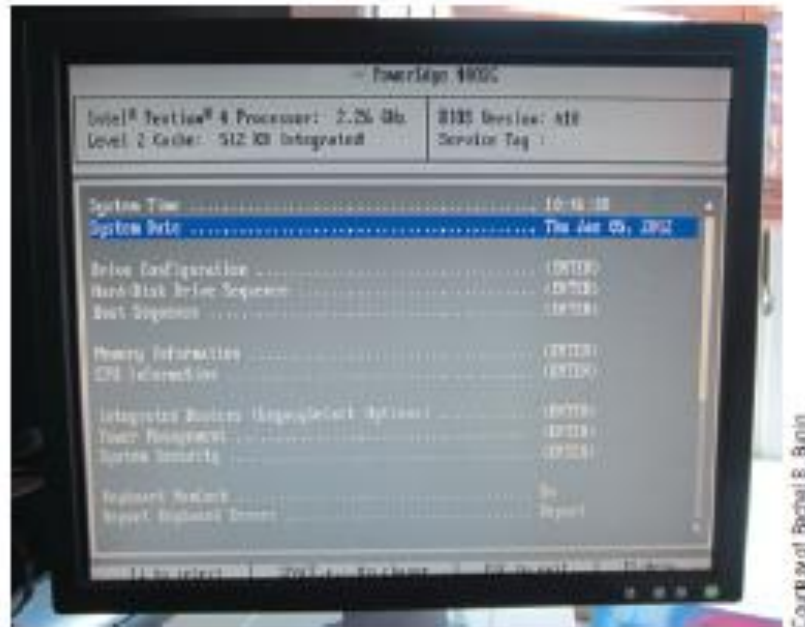


Figure D-39: Configuration settings

Talking Points: Is Your Computer Making You Sick?

- Radiation risks
- Repetitive stress injuries
 - Follow ergonomic guidelines to avoid
 - Ergonomics – study of safe and efficient environments, particularly working environments
- Eye strain
- Back pain
- Sedentary lifestyle



Figure D-44: Place your fingers correctly on the keyboard

Summary

- This chapter introduced:
 - Data representation
 - Integrated circuits
 - Computer memory
 - How computers create and store data in files and folders
 - Practical information about how to organize and manage files
 - Issues that may affect the health and well-being of computer users