

Computers Are Your Future





Computers Are Your Future

Chapter 1

Computers and You



What You Will Learn . . .

- ✓ Define the word computer and name the four basic operations
- ✓ Describe the main components of a computer
 - Hardware
 - Software
- ✓ Provide examples of hardware devices
- ✓ Explore the information-processing cycle



What You Will Learn . . .

- ✓ Major categories of computers and various types of computers
- ✓ Advantages and disadvantages of computer use
- ✓ Risks of using hardware and software
- ✓ Ethical and societal impact of using computers
- ✓ How computers affect employment
- ✓ Be a responsible computer user



Computers & You



- ✓ Workers with computer and Internet skills tend to make more money and have more satisfying careers than workers without such skills



Understanding the Computer: Basic Definitions

✓ **Computer** – A machine that performs the four basic operations of the information-processing cycle:

- input
- processing
- output
- storage



Understanding the Computer: Basic Definitions



Hardware



Software

- ✓ **Computer system** – A collection of related components that are designed to work together
 - A system includes hardware and software



Understanding the Computer: Basic Definitions

Multiple Choice Structures

The old BASIC ON statement allowed multiple branching.

```
100 ON case GOTO 200, 300, 400
200 REM Here for the first case
210 GOTO 500
300 REM Here for the second case
310 GOTO 500
400 REM Here for the third case
410 GOTO 500
500 ...
```

- ✓ **Program** – A list of instructions that tell the computer how to perform the four basic operations to accomplish a task



Understanding the Computer: Basic Definitions

✓ **Software** – All the programs that give the computer its instructions

➤ Two categories of software:

System software

Application software



Input: Getting Data into the Computer



- ✓ **Data** – Unorganized raw materials made up of words, numbers, images, or sounds
- ✓ The first operation: input
 - Input devices enable the user to enter data into the computer
 - The computer accepts data

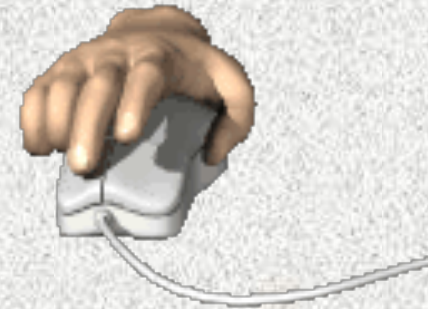


Input Devices

Keyboard



Mouse – pointing device



**Microphone –
speech-recognition**



Digital Cameras



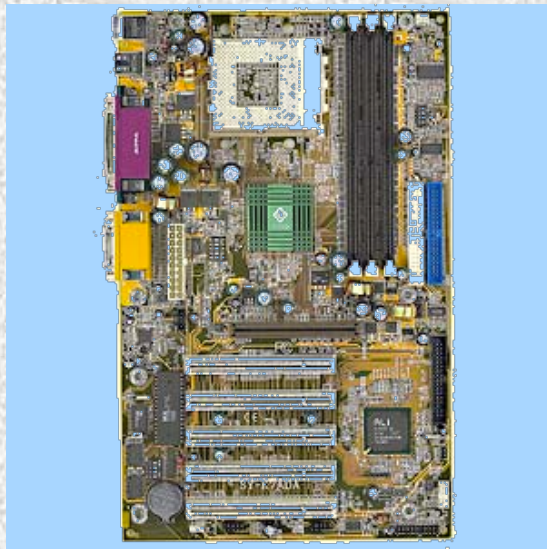
Processing: Transforming Data into Information



- ✓ The second operation: processing
 - Computers transform data into information
 - Processing circuitry:
 - Central processing unit (CPU)
 - Random access memory (RAM)

Processing Devices

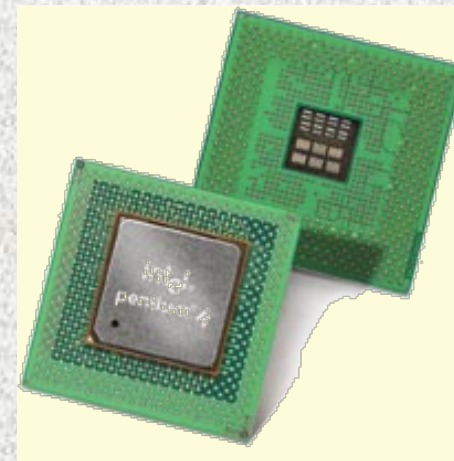
Motherboard



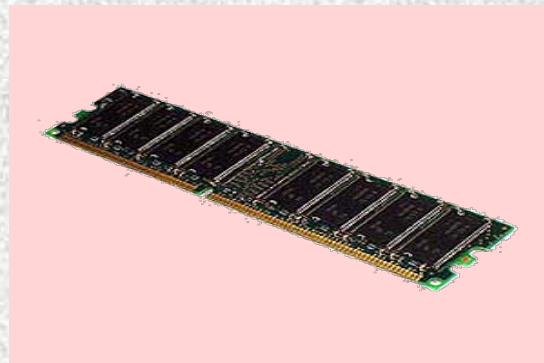
Expansion Card



Central Processing Unit – CPU



Random Access Memory – RAM



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Output: Displaying Information



- ✓ The third operation: output
 - The computer shows the results of the processing operation in a way people can understand
 - Output devices show the results of processing operations



Output Devices

Monitor



Printer



Speakers



Storage: Holding Programs and Data for Future Use



✓ The fourth operation: storage

- The computer saves the data or output so that it can be used again later
- Storage devices hold all programs and data that the computer uses



Storage Devices

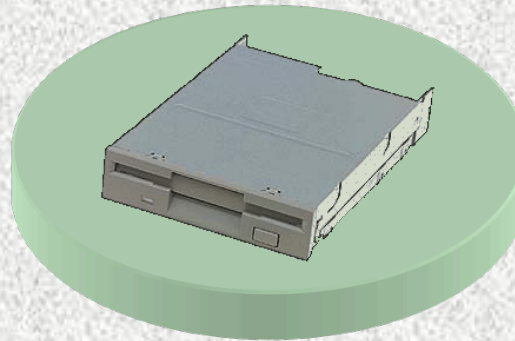
CD/DVD Drive



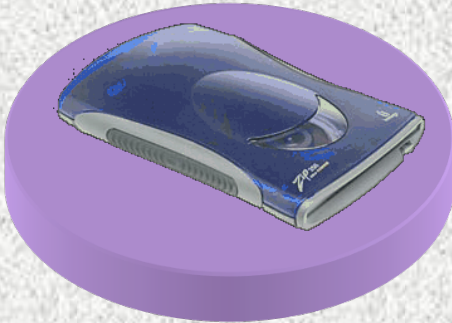
Hard Drive



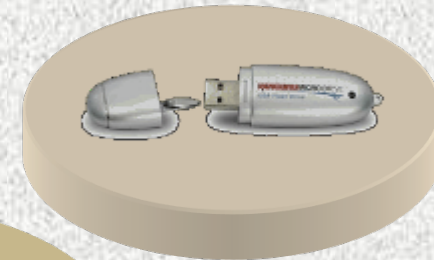
Floppy Disk Drive



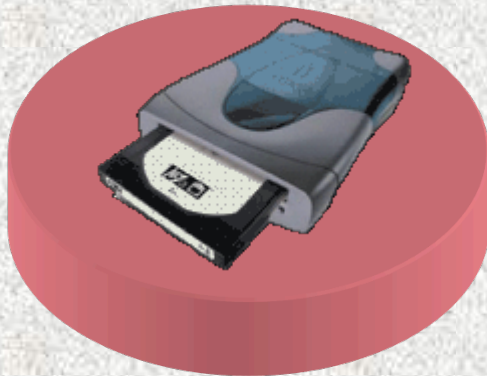
Zip Drive



Micro Drive



Jaz Drive



Tape Drive



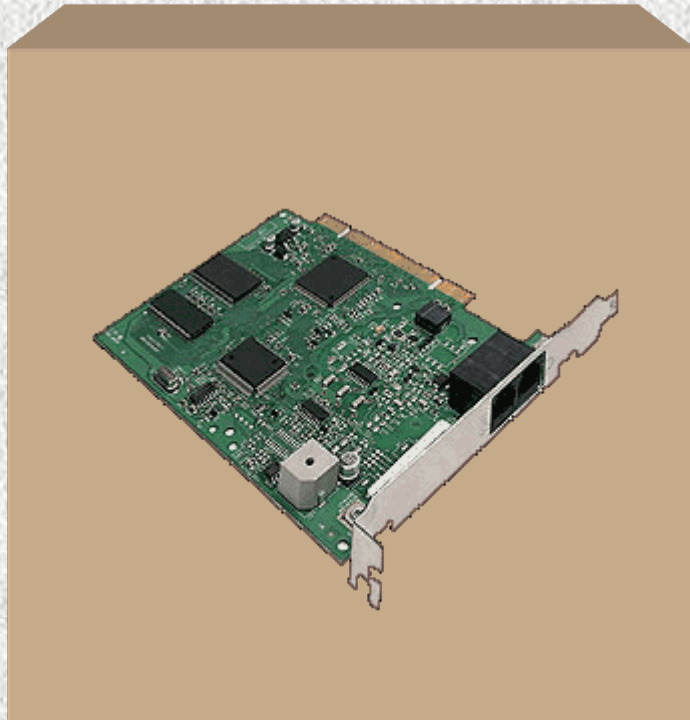
Communications: Moving Data between Computers

- ✓ A fifth operation: communications
 - Moving data within the computer or between computers
 - Communications devices – Enable computers to connect to a computer network
 - **Network** – Two or more computer systems that are connected
 - **Modem** – A device that enables the computer to access other computers

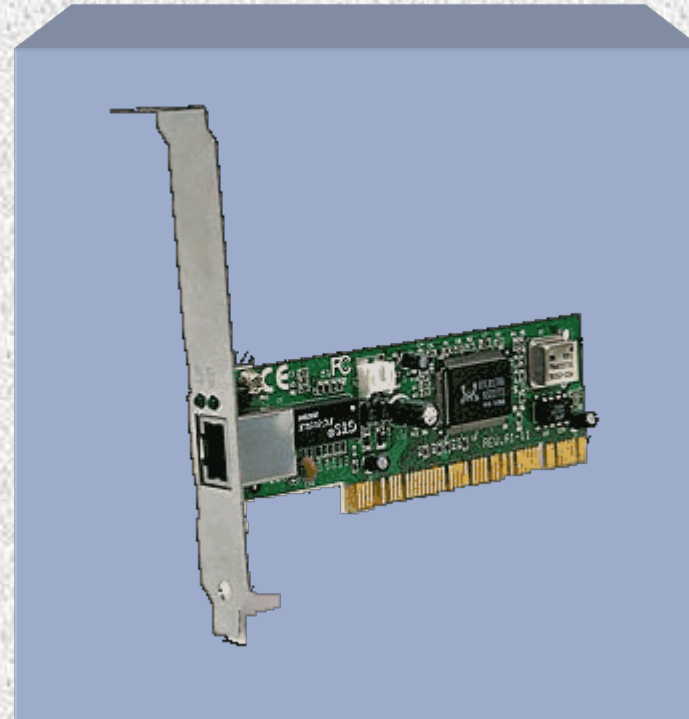


Communications Devices

Modem

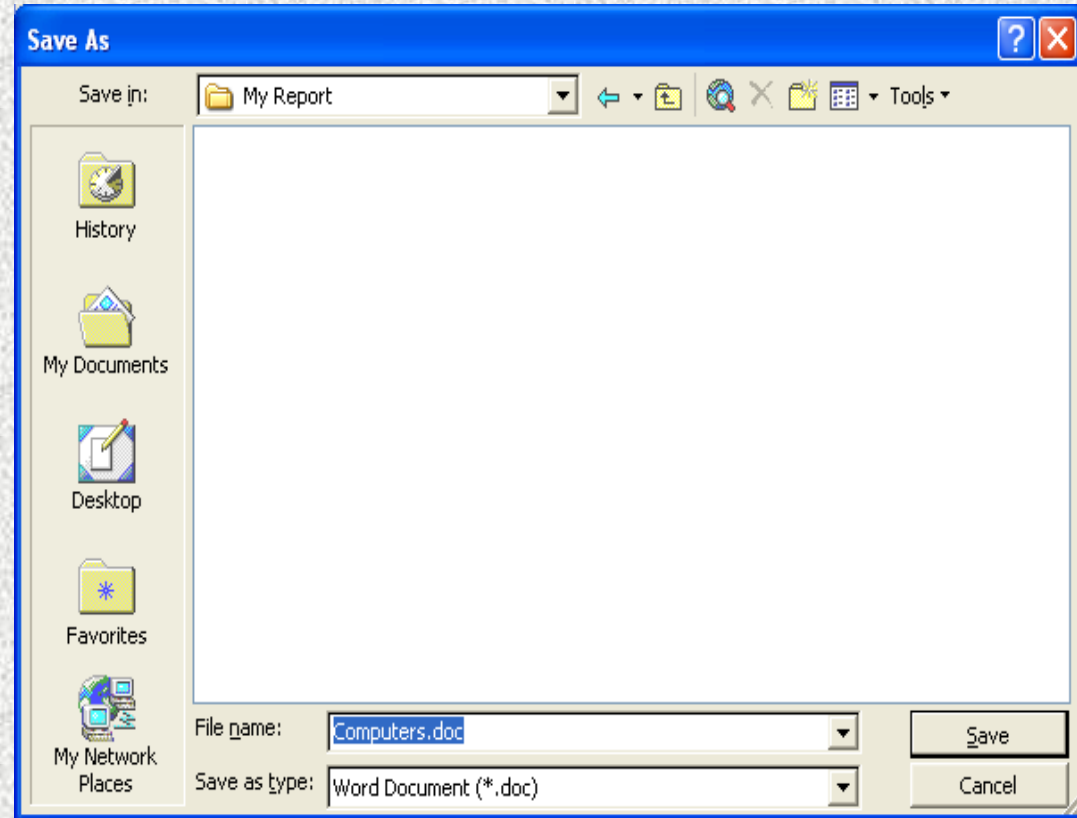


Network Interface Card – NIC



The Information Processing Cycle In Action

- ✓ **Input** – You enter text in a word processing program
 - You run the program's spell checker program
- ✓ **Processing** – The computer checks and compares all words entered with a list of correctly spelled words
- ✓ **Output** – The computer provides a list of apparent misspellings
 - You correct the spelling in your document
- ✓ **Storage** – You save the revised document to a disk



Ethical Debates

- ✓ Digital piracy is using unlicensed software or illegally sharing music or movies
 - When you purchase software, you purchase a license, not the actual software
 - Installing it on another computer is illegal and unethical



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Types of Computers Computers for Individuals

Desktop – PC, iMac



Personal Digital Assistant



Workstation



Notebook – Laptop



All-in-One



Internet Appliance



Types of Computers

Computers for Organizations

- ✓ **Servers** are not designed for individuals. They make programs available for network users
- ✓ **Minicomputers** handle the computing for small corporations



- ✓ **Mainframes** handle gigantic processing jobs for large corporations or agencies
- ✓ **Supercomputers** are ultra-fast and handle huge amounts of scientific data



Computers, Society, & You

- ✓ Computers can work with all types of data
- ✓ With a computer you can:
 - Purchase CDs from an online store
 - Organize music collections
 - Research music reviews
 - Send e-mail to friends and family



Computers, Society, & You

- ✓ Computers help us be more productive and creative:
 - Use a word-processor to create a term paper
 - Facilitate collaboration
 - Facilitate learning with computer-based study guides
 - Internet research



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Advantages and Disadvantages of Using
Computers

Advantages	Disadvantages
Speed	Information overload
Memory	Expensive
Storage	Slower than RAM
Reliability and accuracy	Only applies to hardware, not software



Don't Be Intimidated by Hardware

- ✓ People feel threatened by computers because they fear computers are too complicated
- ✓ Computers should be treated in the same way as any other electrical device



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Maintain a Safe Working Environment

- ✓ Do not overload electrical outlets
- ✓ Do not position hardware where it can fall
- ✓ Leave space for proper ventilation
- ✓ Check that cords are fastened securely



Ergonomics

- ✓ Helps to prevent injuries from computer use
 - Special keyboards can prevent carpal tunnel syndrome
 - Chairs can help improve your posture
 - Anti-glare screens can be used on computer monitors



Recognize the Risks of Using Flawed Software



- ✓ All programs contain errors.
- ✓ All computer use entails a certain level of risk.
 - **Bug** – An error or defect in software or hardware that causes a program to malfunction



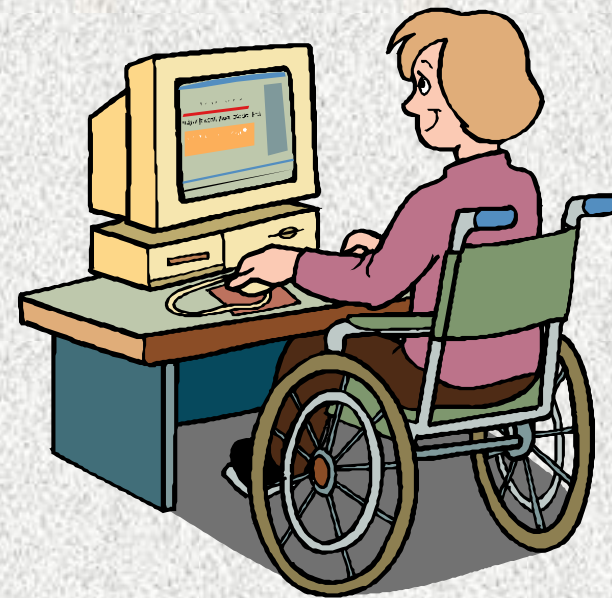
Take Ethics Seriously

- ✓ Ethics is the behavior associated with moral beliefs
- ✓ Computer ethics deals with computer-related moral dilemmas and principles for computer professionals
- ✓ Responsible computing requires an understanding of both the benefits of computer use and the potential harm of computer misuse



Societal Impacts of Computer Use

- ✓ The Americans with Disabilities Act of 1990 requires schools to provide computer access for people with disabilities
 - Speech recognition software for visually impaired
 - Special input devices for motor impaired



The Effect of Computers on Employment

- ✓ Skilled workers earn more wages, but . . .
- ✓ Computer guided robots take over many manufacturing and repetitive jobs
- ✓ Structural unemployment results when advancing technology makes an entire job category obsolete



Being a Responsible Computer User

- ✓ Be considerate of other sharing the same connection
- ✓ Dispose of old computers properly
- ✓ Internet overuse may promote unhealthy behavior



Chapter 1 Summary

- A computer is a machine that performs the operations of input, processing, output, and storage
- A computer system is a collection of related components
- The information processing cycle consists of the input (keyboard, mouse), processing (microprocessor), output (printer, monitor), and storage operations (hard disk, floppy disk)



Chapter 1 Summary (continued)

- Spell checking is an example of information processing
- Two types of computers:
 - Computers for individuals
 - Computers for organizations
- Responsible computing requires an understanding of advantages and disadvantages of using the computer
- Using hardware and software involves some risk



Chapter 1 Summary (continued)

- Computers can be misused or used to benefit individuals and society
- Computers create new job opportunities, but also shift the labor demand toward skilled workers
- Being a responsible computer user means knowing how your computer and Internet usage affects you and others

