## Lesson 1 Computers and Computer Systems

## Computer Literacy BASICS: A Comprehensive Guide to IC3, 3rd Edition

About the Presentations

* The presentations cover the objectives found in the opening of each lesson.
* All lesson objectives are listed in the beginning of each presentation.
* You may customize the presentations to fit your class needs.
* Some figures from the lessons are included. A complete set of images from the book can be found on the Instructor Resources disc.

Objectives

* Understand the importance of computers.
* Define computers and computer systems.
* Classify different types of computer devices.
* Use computer systems.
* Identify system components.
* Describe the role of the central processing unit.
* Define computer memory.
* Describe how data is represented.
* Identify types of storage devices.
* Care for storage media.

Vocabulary

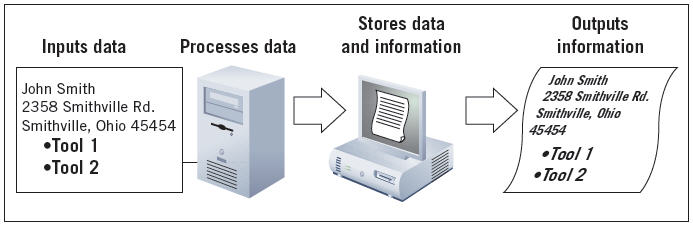
* arithmetic/logic unit (ALU)
* binary
* bit
* BIOS ROM
* byte
* central processing unit (CPU)
* circuit board
* computer
* control unit
* data
* dual-core processor
* embedded
* computers
* file allocation table (FAT)
* hard disks
* hardware
* Information
* memory
* mobile devices
* motherboard
* multicore processor
* network drive
* notebook computers
* random access memory (RAM)
* Read-only memory (ROM)
* remote storage
* server
* software
* supercomputer
* tablet PC
* tracks
* USB flash drive

Understanding the Importance of Computers

* The is one of the most important inventions of the past century.
* A Brief of the Computer:
  + The first computers were developed in the late and early 1950s for use by the and government.
  + The first computer was built in 1976. The IBM was introduced in 1981.

Defining Computers and Computer Systems

* A computer is an electronic that follows a series of referred to as an information processing cycle.

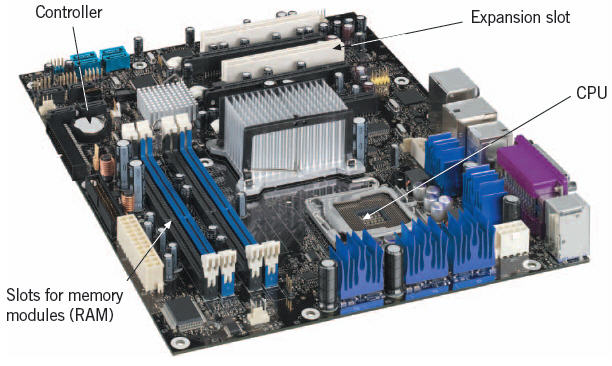


* A computer system includes , software, data, and people.

Classifying Computers

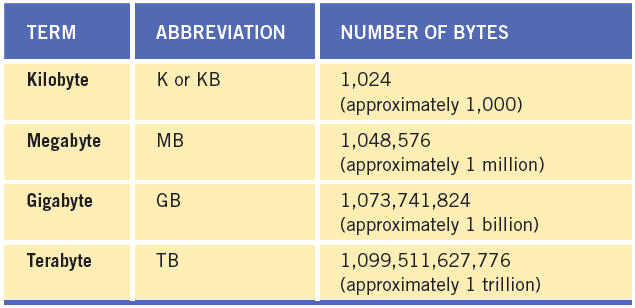
* -purpose computers are used mostly to something else.
* -purpose computers are divided into categories, based on their physical , function, , and performance:
  + Desktop and notebook computers
  + Server
  + Mobile devices
  + Tablet PC
  + Mainframe computer
  + Supercomputer
  + Embedded computers
  + Portable players

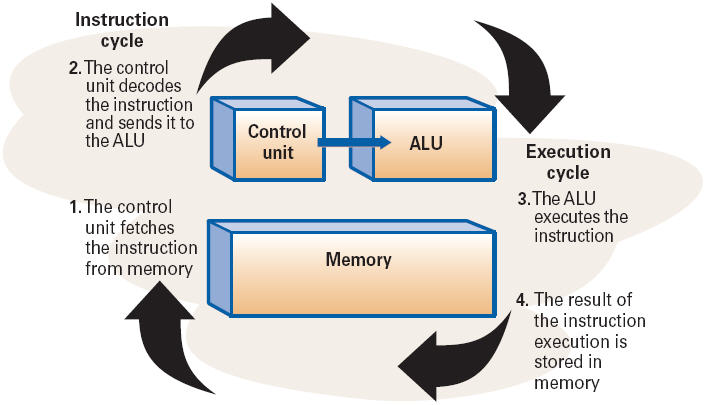
Using Computer Systems

* Computers are used for kinds of tasks.
* Computers take data and change it into *information*. An example of the procedure:
  + You programs and data with some type of input .
  + The computer uses to process the data and to turn it into information.
  + You the information to some type of device.
  + You it for later retrieval.

Identifying System Components

* The is a board that contains integral components—central processing unit, memory, basic controllers, and expansion slots.
* **The Central Processing Unit:**
* The central processing unit (CPU) is the of the computer.
* The CPU has primary sections: the arithmetic/logic unit and the unit.
* **The Arithmetic/Logic Unit:**
* The arithmetic/logic unit (ALU) performs computations and operations.
* **The Control Unit:**
* The control unit all of the processor’s .
* You communicate with the computer through programming .
* The computer uses machine language, or , which is all *1s* and *0s*.



* **Recognizing How a Computer Represents Data:**
* In language, the control unit sends out necessary messages to the instructions. A single zero or a single one is a bit. A byte is a single character.
* **Memory:**
* Memory can be term or term.
* **Random Access Memory:**
* The memory on the motherboard is term, called access memory ( ).
* Data, information, and program instructions are stored temporarily on a RAM chip and when the computer is turned off.
* The cycle is the amount of it takes to instructions to perform a specified task and complete the command.
* The cycle refers to the amount of time it takes the CPU to the instruction and store the results in RAM.
* Together, the instruction cycle and one or more execution cycles create a cycle.
* **Read-Only Memory:**
* Another type of memory found on the motherboard is -only memory ( ).
* ROM chips store specific instructions that are needed for computer . These instructions on the chip even when the power is turned off.
* The more common of these is the ROM, containing instructions to start the system when you turn on the computer.



Identifying Types of Storage Devices

* To keep a copy of data, you must store it on a device.
* **Magnetic Storage Devices:**
* Data is stored in tracks in a special log on the disk called a file allocation table ( ).
* **Hard Disk:**
* Advantages: and capacity
* **Magnetic tape:**
* Magnetic tape primarily is used for purposes and data collection.
* **3½-Inch Disks and Zip Disks:**
* Since the introduction of USB drives and -state storage media, disks are not as widely used.
* **Optical Storage Devices:**
* Use technology to read and data on silver platters, like CDs and DVDs.
* **Solid-State Storage Media:**
* Removable medium that uses integrated , such as flash drive
* **Network Drives:**
* Hard drive or tape connected to a network and is available to and shared by multiple users.

Caring for Storage Media

* Keep away from fields.
* Avoid temperatures.
* Remove media from drives and store them when not in use.
* When handling DVDs and other optical discs, hold them at the .
* try to remove the media from a drive when the drive indicator is on.
* Keep discs in a case when transporting.

Computers in Your Future

* One of the major areas of in the evolution of computers will be connectivity, or the ability to with other computers.
* and mobile devices will become the norm.
* Computer literacy, which is the and understanding of computers and their , will become even more important.

Summary

In this lesson, you learned:

* A computer is an electronic device that receives data, processes data, produces information, and stores the data and information.
* A computer derives its power from its speed, reliability, accuracy, storage, and communications capability.
* Computer classifications include personal computers (desktop and notebook), mobile devices, servers, mainframes, and supercomputers.
* Almost all computers perform the same general functions: input, processing, output, and storage. Input, output, and processing devices grouped together represent a computer system.
* The machine cycle is made up of the instruction cycle and the execution cycle.
* The motherboard is the center of all processing. It contains the central processing unit (CPU), memory, and basic controllers for the system. It also contains ports and expansion slots.
* The motherboard contains different types of memory. Random access memory (RAM) is volatile and is used to store instructions, data, and information temporarily. Read-only memory (ROM) is nonvolatile and is used to store permanent instructions needed for computer operations.
* The CPU is the brains of the computer. The CPU has two main sections—the arithmetic/logic unit (ALU) and the control unit. All calculations and comparisons take place in the ALU. The control unit coordinates the CPU activities.
* To maintain a permanent copy of data, you should store it on some type of storage medium. The three categories of storage media are magnetic storage, optical storage, and solid-state storage.