

# Identify Components of the Motherboard

- **Chipset**

- Collection of chips that work together to provide the switching circuitry needed to move data throughout the computer



# Identify Components of the Motherboard

- **Peripheral component interconnect bus**
  - PCI
  - A slower bus connecting devices to the faster microprocessor system bus



# Identify Components of the Motherboard

- **Memory**

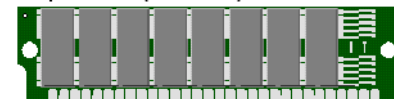
- Refers to the chips located on the motherboard or within the CPU

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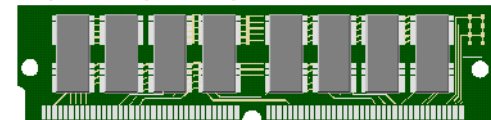
- **Memory modules**

- Memory cards
  - Small circuit boards holding several RAM chips
    - Dual inline memory modules (DIMM)
    - Single inline memory modules (SIMM)

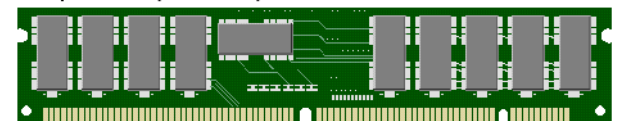
30-pin SIMM (3.5 x .75")



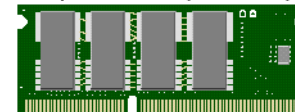
72-pin SIMM (4.25 x 1")



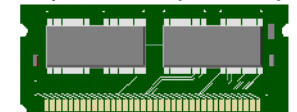
168-pin DIMM (5.375 x 1")



144-pin SODIMM (2.625 x 1")



72-pin SODIMM (2.375 x 1")



# Identify Components of the Motherboard

- **Virtual memory**
  - Used when RAM is full (On the Hard Disk)
- **Cache memory**
  - Small unit of ultrafast memory built into or near the processor storing frequently or recently accessed program instructions and data

# Identify Components of the Motherboard

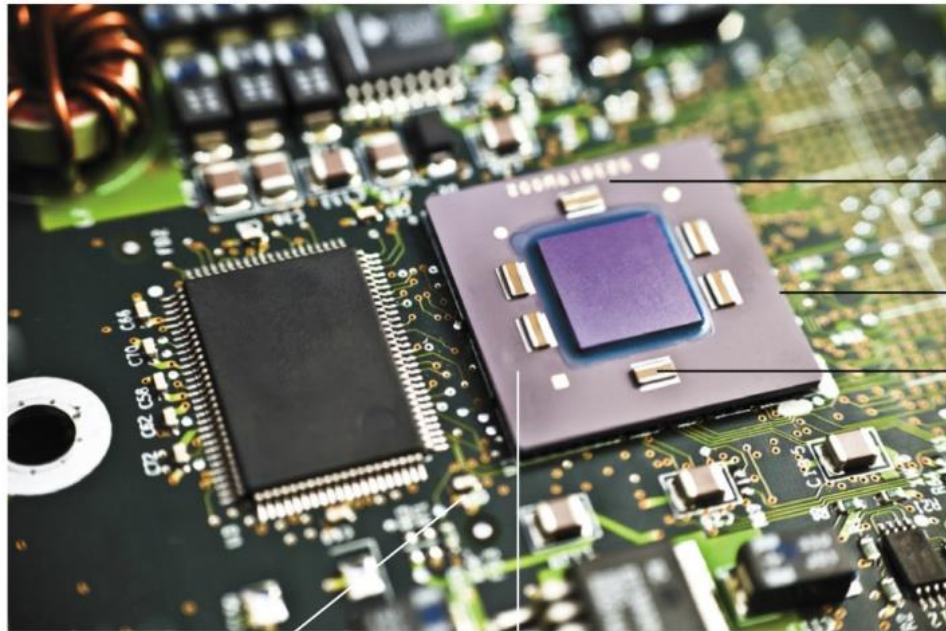
- **Level 1 cache**
  - Primary cache
  - Runs at approximately 10 nanoseconds
- **Level 2 cache**
  - Secondary cache
  - Up to 512 KB of ultrafast memory
- **Level 3 cache**
  - Found on newer microprocessors, located outside the processor on a separate chip

# Identify Components of the Motherboard

## PROXIMITY OF CACHE TO CPU



RAM



Registers

CPU

Level 1 cache

Motherboard

Level 3 cache

Level 2 cache

# Identify Components of the Motherboard

- **ROM**
  - Read-only memory
  - Nonvolatile memory in which essential startup instructions are prerecorded
- **Basic input/output system (BIOS)**
  - First code to run when system is powered on
- **Bootstrap Loader**
  - Program that locates the operating system on hard drive and loads it into RAM



# Identify Components of the Motherboard

- **Complementary metal-oxide semiconductor**
  - CMOS (BIOS configuration and clock)
  - Volatile (Works on the battery)
  - Controls a variety of actions, including starting the power-on self-test
- **Power-on self-test (POST)**
  - A program activated by CMOS that checks the circuitry and RAM, marking defective locations





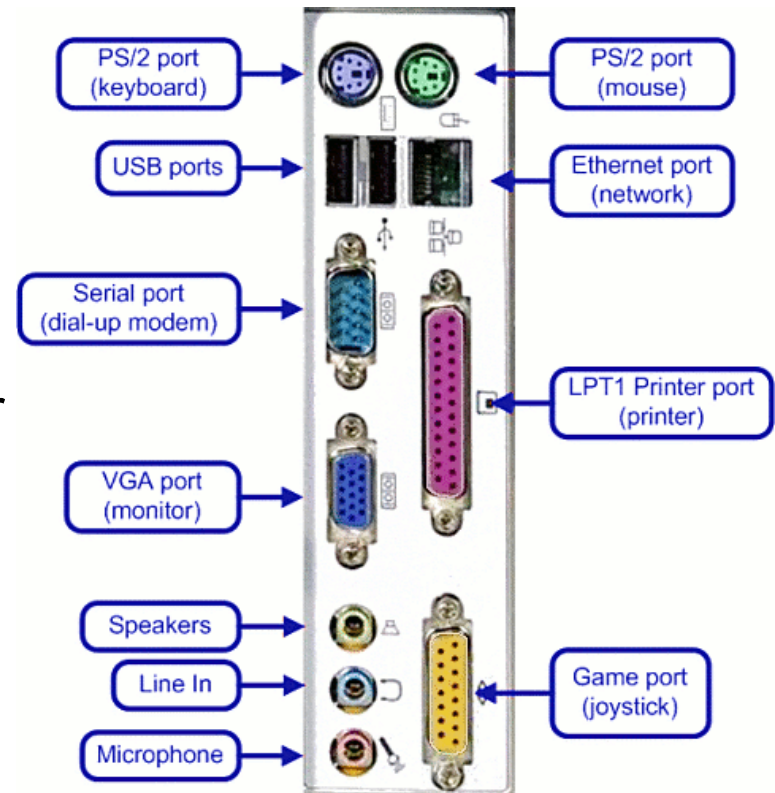
# Identify Connectors Located Outside the System Unit

- **Connector**

- Physical receptacle either on the system unit or extending from an expansion card

- **Port**

- Electronic pathway or interface for getting information into and out of the computer



# Identify Connectors Located Outside the System Unit

- **USB**

- Universal serial bus
- Provides a way to connect a variety of devices
- Advantages
  - Hot swapping
    - Ability to connect devices without shutting off system
  - Plug-and-Play
    - Allows computer to automatically detect a device

# Identify Connectors Located Outside the System Unit

- **ExpressCard**
  - Credit-card-sized device that fits into a designated slot to provide expanded capabilities, including wireless communication
- **Is a *Legacy technology***
  - Refers to technology, devices, or applications that are being phased out



# Recognize Input Devices

- **Advanced Keyboards include a number pad and special keys to facilitate Internet access and control media**



# Recognize Input Devices

- **Special keys on a PC keyboard**

## Special Keys on a PC Keyboard

Key Name	Typical Function
Alt	In combination with another key, enters a command.
Caps Lock	Toggles Caps Lock mode on or off.
Ctrl	In combination with another key, enters a command.
End	Moves the insertion point to the end of the current line.
F1	Displays the Help system for the application.
Home	Moves the insertion point to the beginning of the current line.
Insert	Toggles between Insert mode and Overwrite mode if these modes are available in the program you are using.
Print Screen	Captures the image on the screen and places it in memory. Also labeled as PrtScn, Prt Scr, or PrintScrn.
Windows key	Displays the Start menu in Microsoft Windows.

# Recognize Input Devices

## MOBILE DEVICES EQUIPPED WITH KEYBOARD OPTIONS



On screen keyboard with visual confirmation



Mini-keyboard



Keypad

# Recognize Input Devices

Input system allowing customization of location and function of input keys





# Virtual Laser Keyboard



# Recognize Input Devices

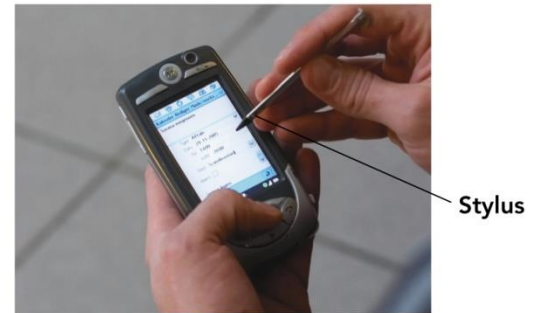
- **Pointing device**

- Input device to control the movements of the pointer
- Most widely used device is a *mouse*
- Air mouse
  - Motion-sensing device that recognized the typical forward, back, left, and right, motions made by the mouse



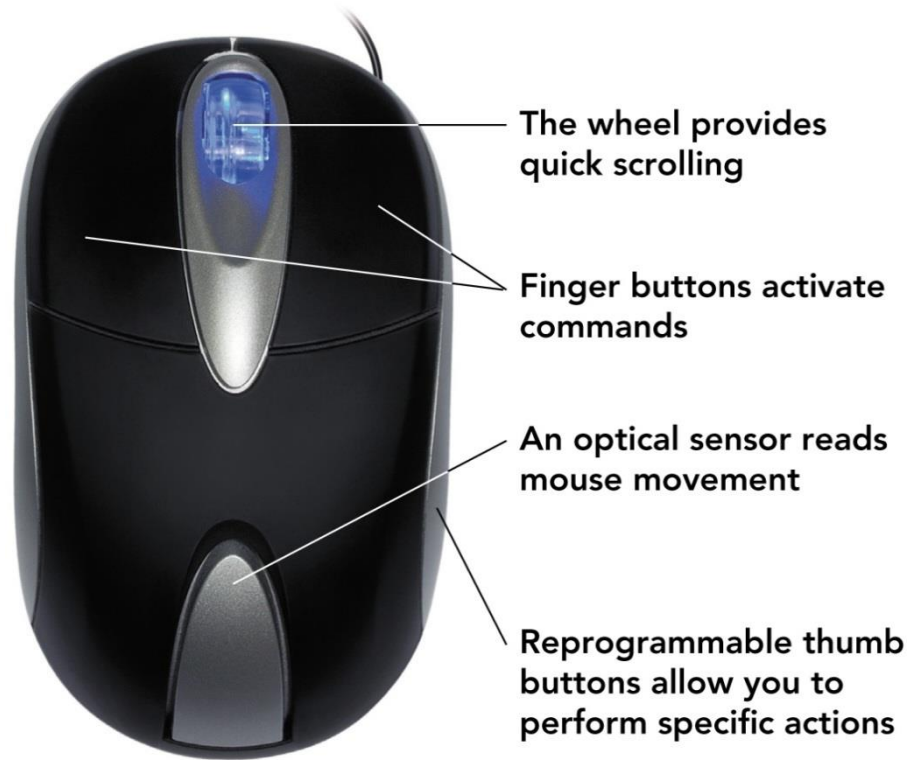
# Recognize Input Devices

- **Pointing devices**



# Recognize Input Devices

- **Optical mouse**



# Recognize Input Devices

- **Stylus**
  - Looks like an ordinary pen
- **Touch screen**
  - Display screen that is sensitive to touch of a finger or stylus
- **Speech or voice recognition**
  - Conversion of spoken words into computer text

# Recognize Input Devices

- **Scanner**

- Automated form of input that copies anything entered on a sheet of paper

- **Bitmapped image**

- Representation of an image as a matrix of dots, called pixels

- **Optical character recognition (OCR)**

- Software to convert scanned text into a text file instead of a bitmapped image

# Recognize Input Devices

- **Other input devices**
  - Bar code reader
  - Optical mark reader (OMR)
  - RFID reader



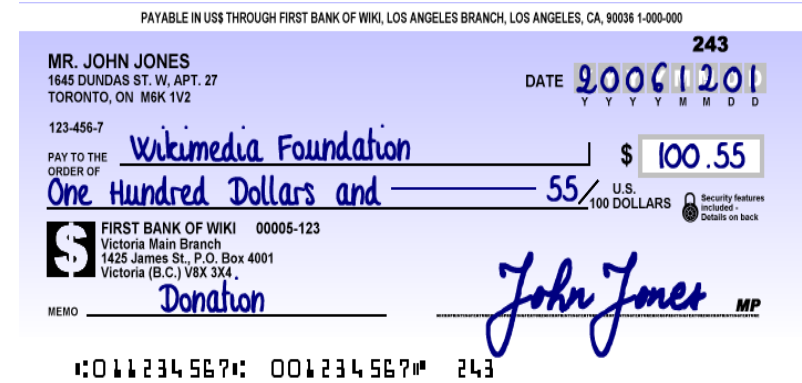


# Recognize Input Devices

- Other input devices
  - Magnetic ink character recognition (MICR)



- Biometric input device



# Recognize Input Devices

- **Other input devices**
  - magnetic stripe card reader



- Digital camera
- Digital video camera
- Webcam

# Describe Output Devices and How They Engage Your Senses

- **Output devices**
  - Enable people to see, hear, and even feel the results of processing operations
- **Soft copy**
  - Screen display, not a permanent record
- **Hard copy**
  - Printed output

# Describe Output Devices and How They Engage Your Senses

- **CRT (Cathode Ray Tube) Monitors**



- **LCD (Liquid crystal displays)**
  - Back light
  - Layered of crystal solutions



# Describe Output Devices and How They Engage Your Senses

- **OLED (organic light emitting diode) displays**
  - Better resolution
  - thinner
- **Flexible OLED displays (FOLED)**
  - Paper thin



# Describe Output Devices and How They Engage Your Senses

- **Printers**

- Produce a hard copy of the output on the display screen

- Inkjet printer
    - Laser printer
    - Thermal-transfer printer
    - Photo printer
    - Plotter



# Describe Output Devices and How They Engage Your Senses

- **Speakers**
  - Transmit computer-generated sound, such as music
- **Data projectors**
  - Display computer's video output on a screen for an audience to view
- **Interactive white boards**
  - Connect to a computer and allow video display to become touch sensitive



# Evaluate Methods for Storing Data

- **Storage**

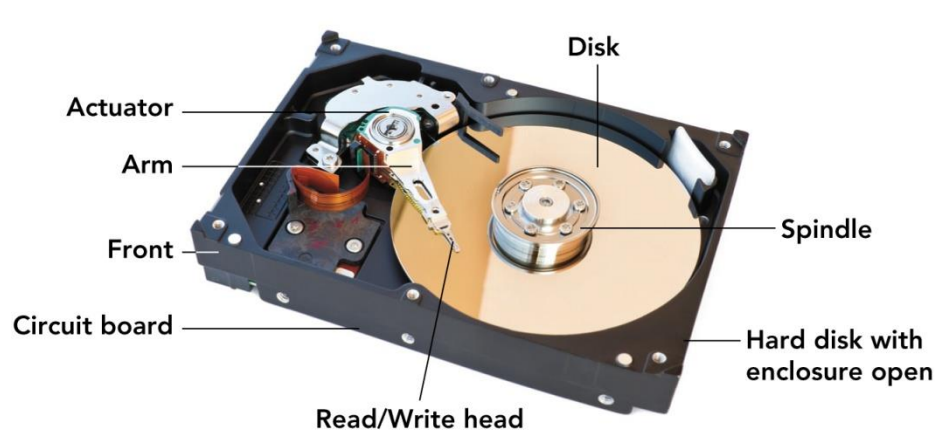
- Refers to the ways your computer system can keep software and data for future use

- **Storage devices**

- Hardware components that store data

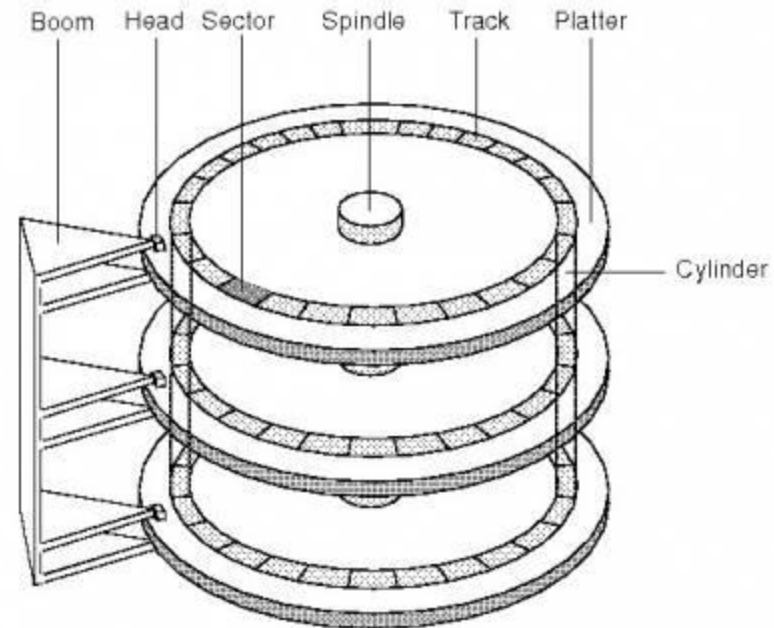
# Evaluate Methods for Storing Data

- Many types of recording media



# Hard Disk

- **Access time:** The amount of time it takes a device from a request for information to the delivery of that information.
- **Seek time:** The time it takes the read/write head to locate the data before reading begins.
- **Transfer performance:** refers to how quickly the read/write head transfers data from the disk to random access memory.



# Solid-state Storage Devices



Compact flash (CF) & secure digital (SD) cards, a Sony memory stick, and a USB memory key.

- Solid state storage devices store computer data on non-volatile "flash" memory chips
- rather than by changing the surface properties of a magnetic or optical spinning disk.
- the future for almost all forms of computer storage (SSD)

# Covered Objectives

- **Recognize the Difference Between Human and Computer Representation of Input**
- **List the Elements of the System Unit**
- **Identify Components of the Motherboard**
- **Identify Connectors Located Outside the System Unit**

# Covered Objectives

- **Recognize Input Devices**
- **Describe Output Devices and How They Engage Your Senses**
- **Evaluate Methods for Storing Data**



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