

# Inside the Computer

# Hardware vs. Software

## ○ Hardware

- > Mechanical devices in the computer
- > Anything that can be touched

## ○ Software

- > Also called a program
- > Set of instructions written to perform a specific task
- > Tells the computer what to do

# Types of Software

- System software
- Application software

# System Software

- ◉ Most important software as it runs the functions of the computer
- ◉ Workstation Operating system
  - > Windows 7 or 8
  - > Mac X (Panther, Leopard)
- ◉ Network Operating System
  - > Windows NT
- ◉ Utility – small program that helps the system run
  - > AntiVirus /Malware utilities

# Application Software

- ◉ Accomplishes a specific task
- ◉ Most common type of software
  - > MS Word, “Educational” programs
- ◉ Actively used by the computer user rather than the computer system

# Four types of hardware

- ◉ Input/Output
- ◉ Processing
- ◉ Memory
- ◉ Storage

# Input/Output

- Allows the user to interact with the computer
- Input devices accept data into computer
  - > Keyboard, mouse
- Output devices deliver data to user
  - > Monitor, printer, speaker
- Some devices are input and output
  - > Touch screens
  - > Modems

# Processing

- ◉ Brains of the computer
  - > Central Processing Unit (CPU)
- ◉ Carries out instructions from the program
- ◉ Manipulate the data



# Memory

- ◉ Stores data or programs
- ◉ Random Access Memory (RAM)
  - > Volatile or temporary
  - > Stores current data and programs
  - > More RAM results in a faster system
- ◉ Read Only Memory (ROM)
  - > Permanent
  - > Holds the computer start-up (boot) directions

# Storage

- ◉ Hold data and programs permanently
- ◉ Different from RAM
- ◉ Magnetic
  - > Floppy and hard drive
  - > Uses a magnet to access data
- ◉ Optical
  - > CD and DVD drives
  - > Uses a laser to access data
- ◉ Flash
  - > USB drive
  - > No moving parts

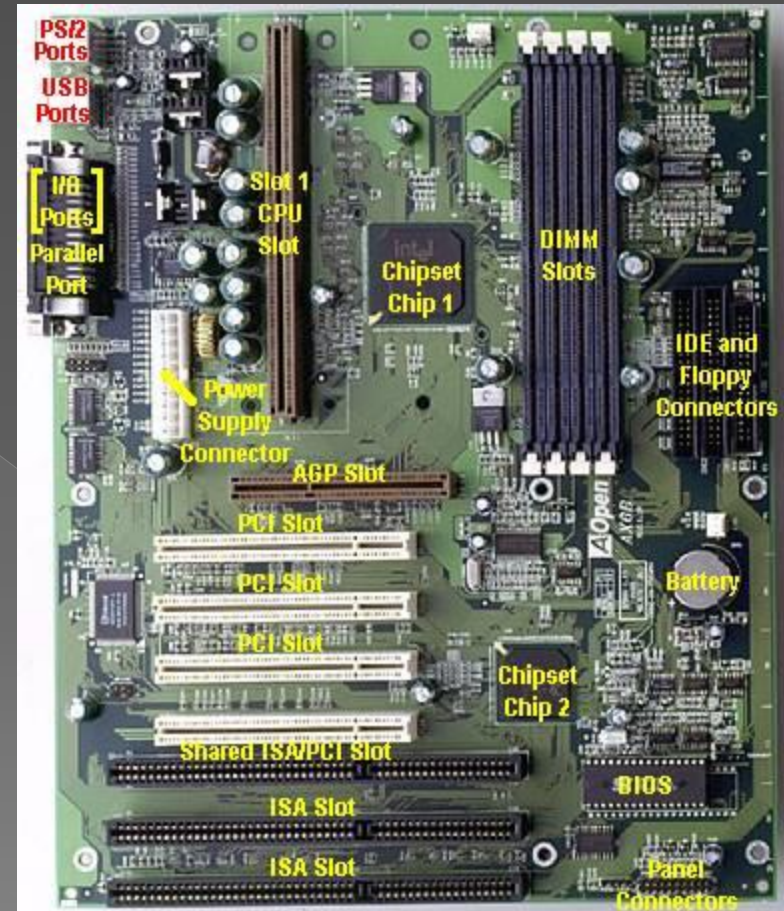
# External Storage

- ◉ Not housed within the computer case
- ◉ Provides portability/backup
- ◉ Examples
  - > USB drives (flash drives)
  - > CD or DVD
  - > External Hard drives



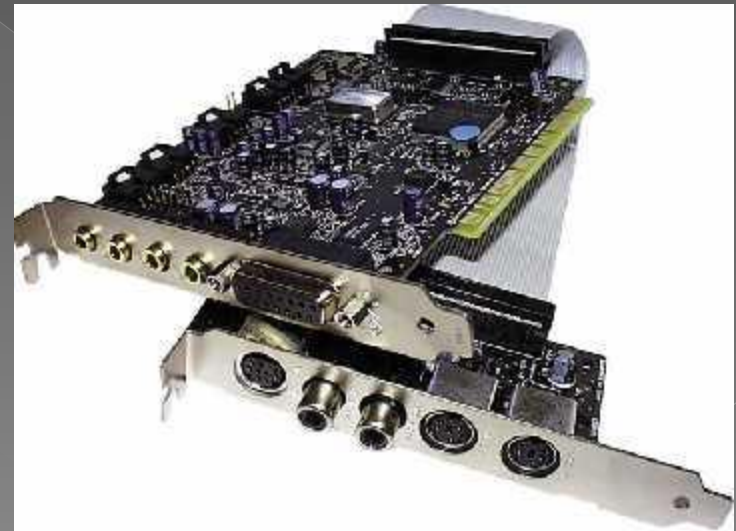
# Motherboard

- Circuit board that all the parts connect to
- Connects via cables, wires or slots
- Bus – electrical paths on the motherboard



# Expansion Slots

- Found on the motherboard
- Allows user to add components to the computer
  - > Memory
  - > Video
  - > Network
  - > Sound



# Memory



- Also called RAM - Random Access Memory
- The computer's main memory
- Temporarily stores information while the computer uses it.
- Units of memory are measured in Gigabytes
- The speed is measured in Megahertz or Gigahertz.
- Speeds tells how fast information is transferred and/or accessed.

# Microprocessor

- ◉ the CPU – Central Processing Unit
- ◉ “brain of the computer”
- ◉ Coordinates all functions of the computer
- ◉ Usually has a fan connected for cooling





# Hard Drive

- Internal Storage device
- Contains programs and Operating system
- Also allows for information to be stored
  - > Files
  - > Images
  - > Media (movies and music)
- Size of storage is measured in Gigabytes





# Miscellaneous

- ◉ **Battery** – allows the computer to keep date and time when shut down
- ◉ **Power supply** – all power cables within the computer come from power supply.
- ◉ **Data Cables** – information moves between motherboard and other computer parts
  - > Hard drive

# 4 steps of Machine Cycle

## > Fetch

- Gets instructions from memory

## > Decode

- Changes them to commands the computer can understand

## > Execute

- Carries out the commands

## > Store

- Stores results back into memory

# Peripherals

- “Extras”
- Separate components that enhance a computer's capabilities.
  - > Speakers or headphones, printers, scanners, or microphones
- Plugged into the computer case