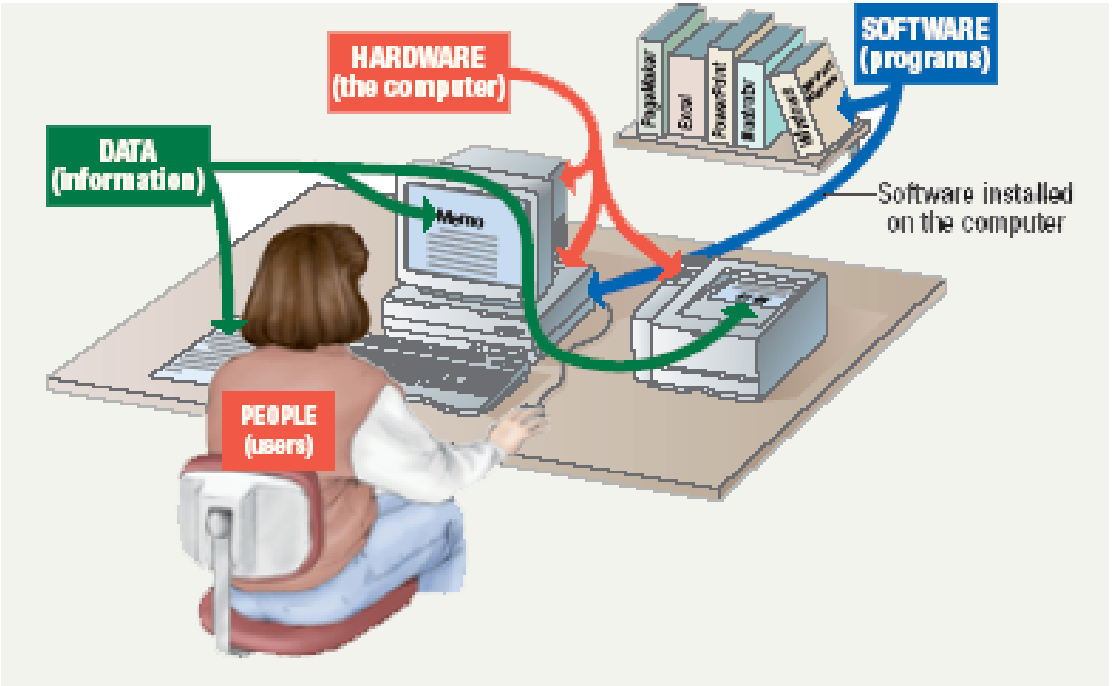
Parts of the Computer System

- Computer systems have four parts
  - Hardware
  - Software
  - Data
  - User



Parts of the Computer System

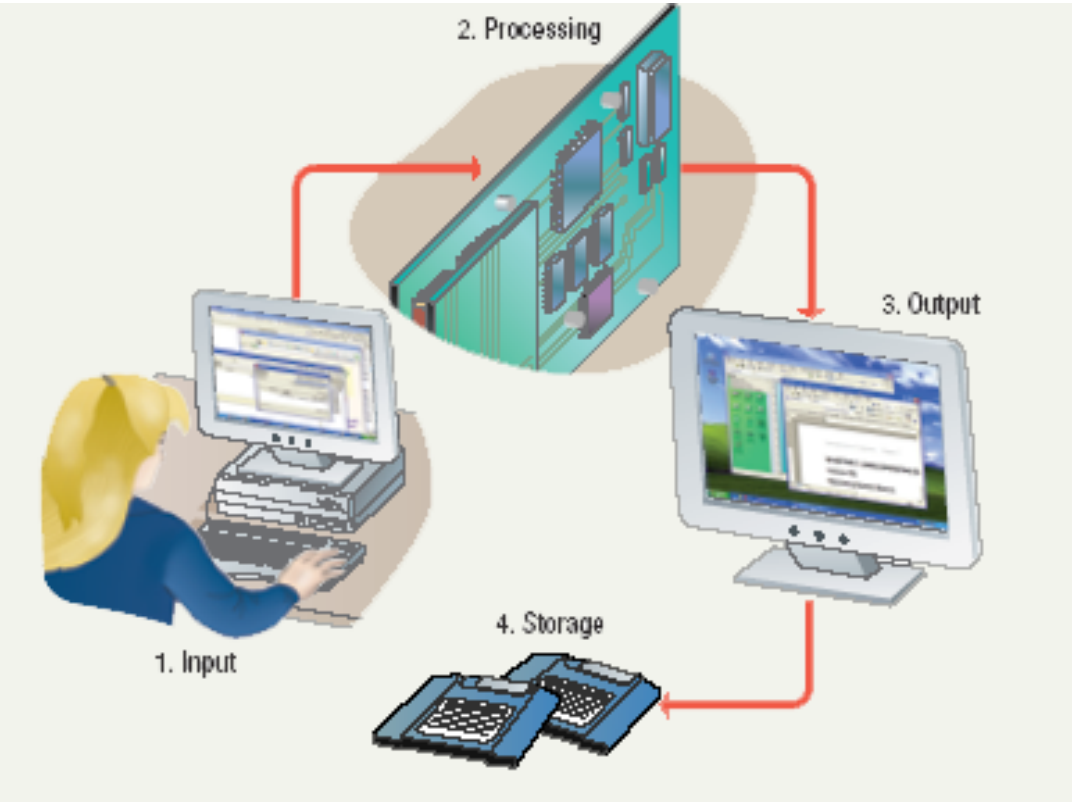
- Hardware
  - Mechanical devices in the computer
  - Anything that can be touched
- Software
  - Tell the computer what to do
  - Also called a program
  - Thousands of programs exist

Parts of the Computer System

- Data
  - Pieces of information
  - Computers organize and present data
- Users
  - People operating the computer
  - Most important part
  - Tell the computer what to do

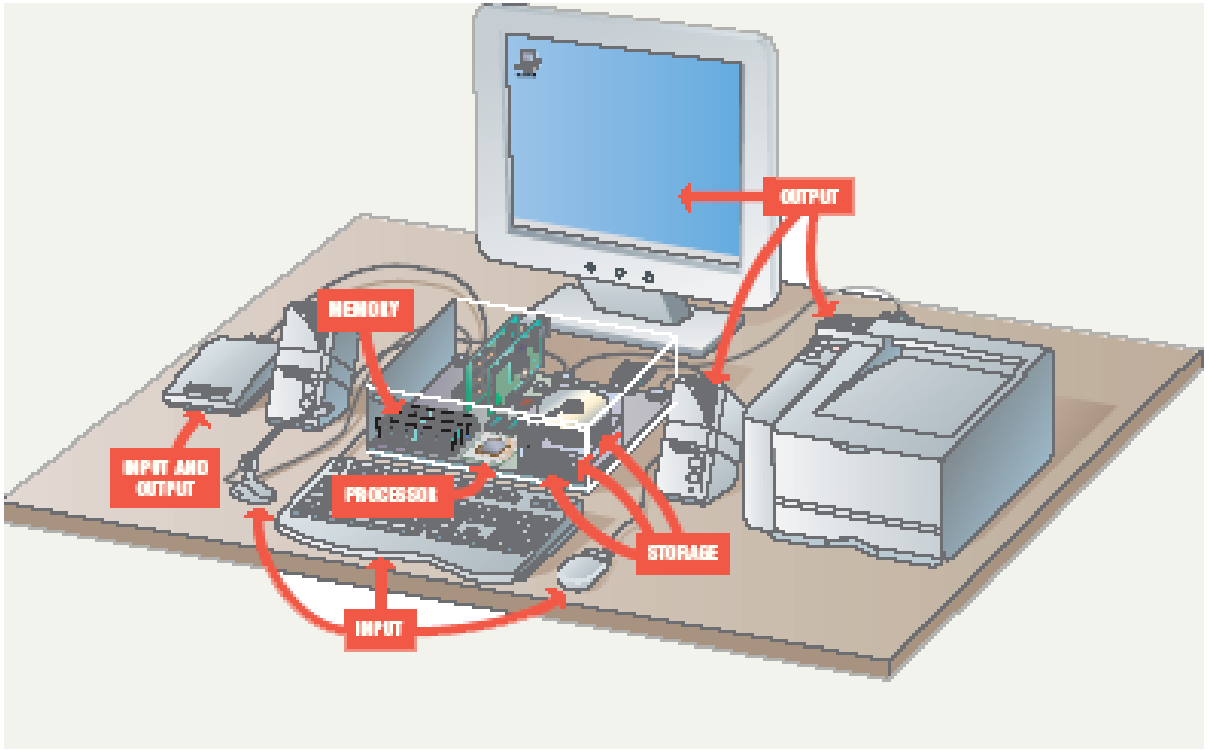
Information Processing Cycle

- Steps followed to process data
- Input
- Processing
- Output
- Storage



Essential Computer Hardware

- Computers use the same basic hardware
- Hardware categorized into four types

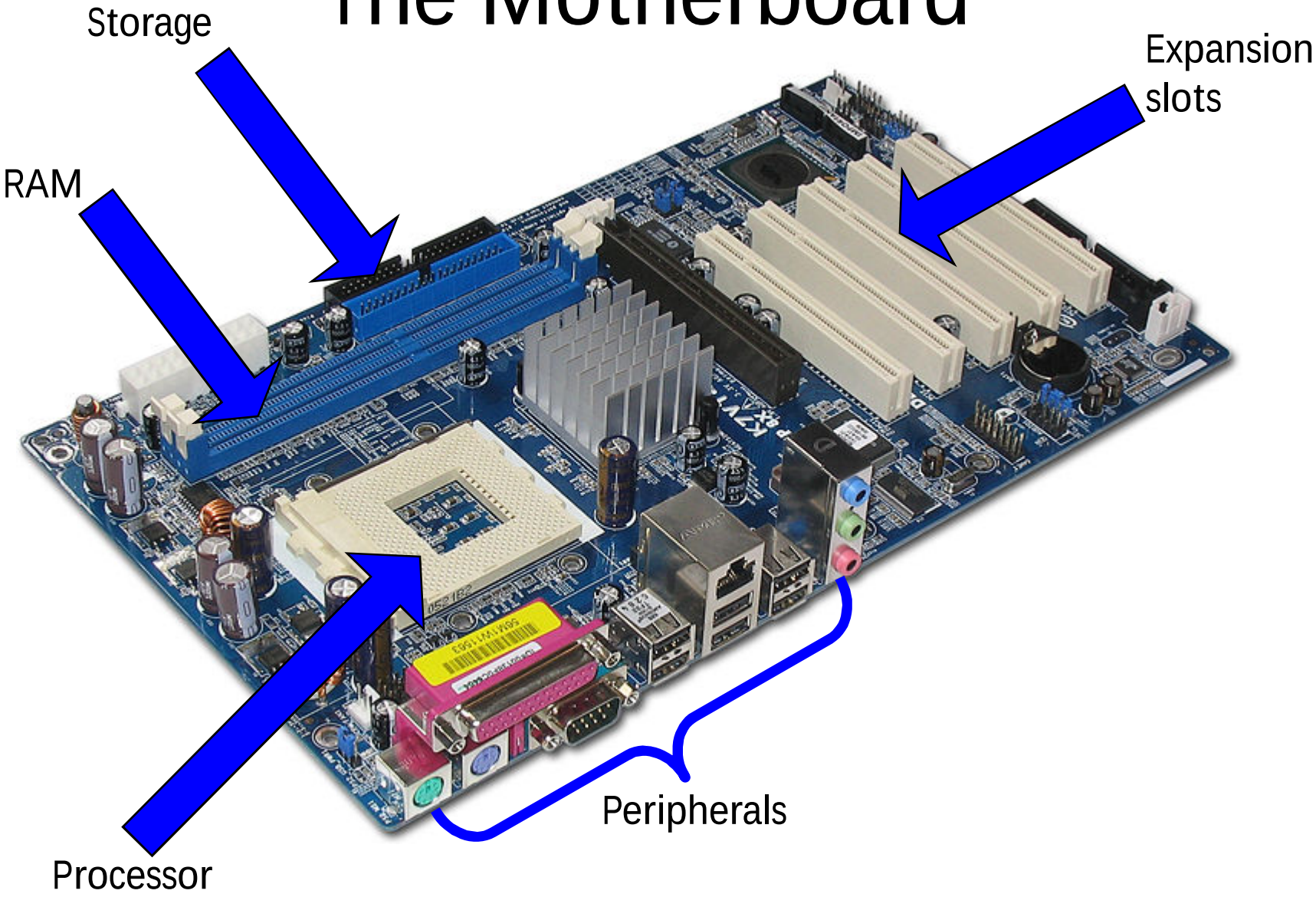


The System Unit

- The System Unit houses the central processing unit, memory modules, expansion slots, and electronic circuitry as well as expansion cards that are all attached to the motherboard; along with disk drives, a fan or fans to keep it cool, and the power supply.
- All other devices (monitor, keyboard, mouse, etc., are linked either directly or indirectly into the system unit.

Sources: **Tom's Hardware site: http://www.tomshardware.com**

The Motherboard



Essential Computer Hardware

- Processing devices
  - Brains of the computer
  - Carries out instructions from the program
  - Manipulate the data
  - Most computers have several processors
  - Central Processing Unit (CPU)
  - Secondary processors
  - Processors made of silicon and copper

Essential Computer Hardware

- Memory devices
  - Stores data or programs
  - Random Access Memory (RAM)
    - Volatile
    - Stores current data and programs
    - More RAM results in a faster system
  - Read Only Memory (ROM)
    - Permanent storage of programs
    - Holds the computer boot directions

Essential Computer Hardware

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

Input Devices

Any peripheral used to provide data and input signals to the computer

Keyboard

Mouse

Joystick

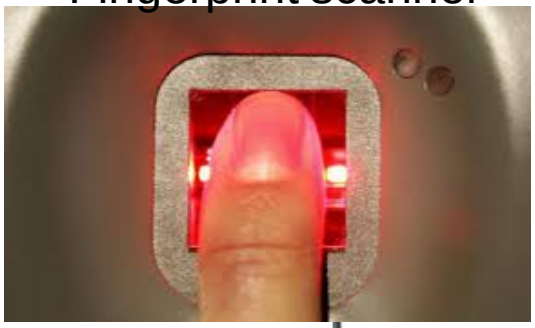
Digtal tablet

Mic. & Earphone

WebCamera

Input Devices

Fingerprint scanner



3-D scanner

Digital Camera

Joystick

Scanners

Wearable input gloves

Racing Wheel

Barcode Scanner

Tablet

Output Devices

A Place to present processed data

Monitor

Projector

Speakers

Plotter

Laser Printer

Storage Vs. Memory

Memory (e.g., RAM)

- The information stored is needed now
- Keep the information for a shorter period of time (usually volatile)
- Faster
- More expensive
- Low storage capacity (~1/4 of a DVD for 1 GB)

Storage (e.g., Hard disk)

- The information stored is not needed immediately
- The information is retained longer (non-volatile)
- Slower
- Cheaper
- Higher storage capacity (~50 DVD's for 200 GB)

Essential Computer Hardware

- Storage devices
  - Hold data and programs permanently
  - Different from RAM
  - Magnetic storage
    - Floppy and hard drive
    - Uses a magnet to access data
  - Optical storage
    - CD and DVD drives
    - Uses a laser to access data
  - Solid State storage
    - Flash drives(pen, Sdcard)

Storage Devices

Tape drives

5 1/2” Floppy drive

Flash memory card

USB flash drive

3 1/2 “ Floppy drive

Storage Devices

Zip drives

CD/DVD/Blu-ray

Hard disk

Magneto Optic

Software Runs the Machine

- Tells the computer what to do
- Reason people purchase computers
- Two types
  - System software
  - Application software

Software Runs the Machine

- System software
  - Most important software
  - Operating system
    - Windows XP
  - Network operating system (OS)
    - Windows Server 2003
  - Utility
    - Symantec AntiVirus

Software Runs the Machine

- Application software
  - Accomplishes a specific task
  - Most common type of software
    - MS Word
  - Covers most common uses of computers

Computer Data

- Fact with no meaning on its own
- Stored using the binary number system
- Data can be organized into files

Computer Users

- Role depends on ability
  - Setup the system
  - Install software
  - Manage files
  - Maintain the system
- “Userless” computers
  - Run with no user input
  - Automated systems

Inputting Data In Other Ways

Devices for the Hand

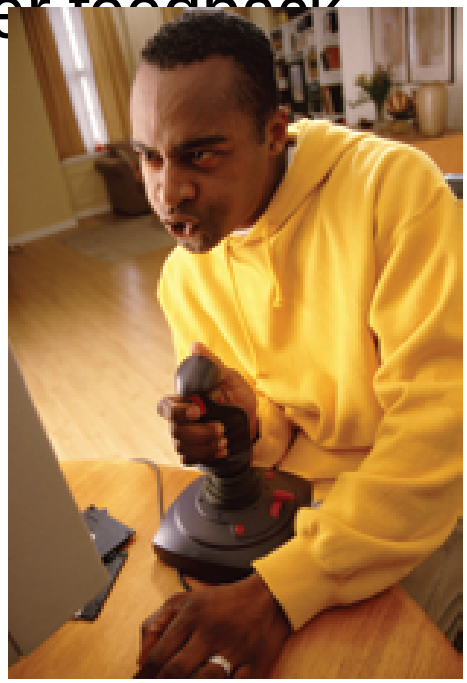
- Pen based input
  - Tablet PCs, PDA
  - Pen used to write data
  - Pen used as a pointer
  - Handwriting recognition
  - On screen keyboard
  - USED FOR PERSONAL PURPOSE

Devices for the hand

- Touch screens
  - Sensors determine where finger points
  - Sensors create an X,Y coordinate
  - Usually presents a menu to users
  - Found in cramped or dirty environments
  - USED IN HOSPITALS,EDUCATION INSTITUTE

Devices for the hand

- Game controllers
  - Enhances gaming experience
  - Provide custom input to the game
  - Modern controllers offe
  - Joystick
  - Game pad
  - USED IN THEME PARKS /GAME CENTERS



Optical Input Devices

- Allows the computer to see input
- Bar code readers
  - Converts bar codes to numbers
    - UPC code
  - Computer find number in a database
  - Works by reflecting light
    - Amount of reflected light indicates number
  - USED IN SHOPPIND MALLS,VIT(LIBRARY)

Optical Input Devices

- Image scanners
  - Converts printed media into electronic
  - Reflects light off of the image
  - Sensors read the intensity
  - Filters determine color depths
  - USED FOR DOCUMENT STORING AND SHARING

Optical input devices

- Optical character recognition (OCR)
  - Converts scanned text into editable text
  - Each letter is scanned
  - Letters are compared to known letters
  - Best match is entered into document
  - Rarely 100% accurate
  - USED IN TOLL GATES FOR AUTOMATIC NUMBER PLATE READING

Audiovisual Input Devices

- Microphones
  - Used to record speech
  - Speech recognition
    - “Understands” human speech
    - Allows dictation or control of computer
    - Matches spoken sound to known phonemes
    - Enters best match into document

Audiovisual Input Devices

- Musical Instrument Digital Interface
  - MIDI
  - Connects musical instruments to computer
  - Digital recording or playback of music
  - Musicians can produce professional results

Audiovisual Input Devices

- Digital cameras
  - Captures images electronically
  - No film is needed
  - Image is stored as a JPG file
  - Memory cards store the images
  - Used in a variety of professions