

Computer Science 100

Chapter 2

Looking at Computers: Understanding the Parts



Topics

- Hardware components
- Input devices
- Output devices
- System unit
- Ergonomics

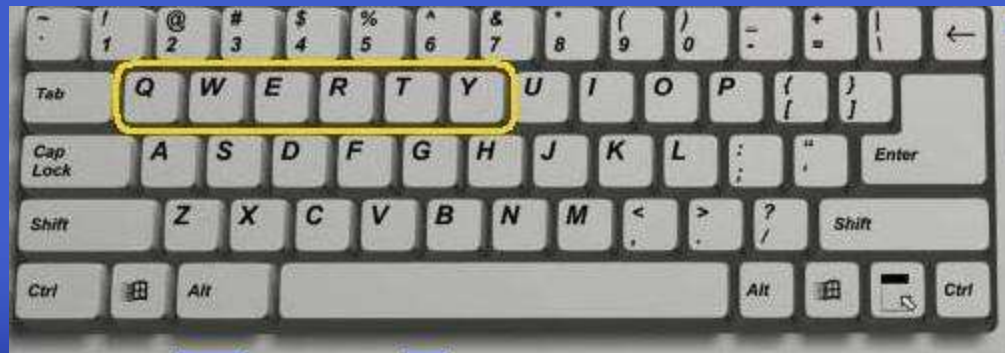
Hardware

- System Unit
- Peripheral Devices



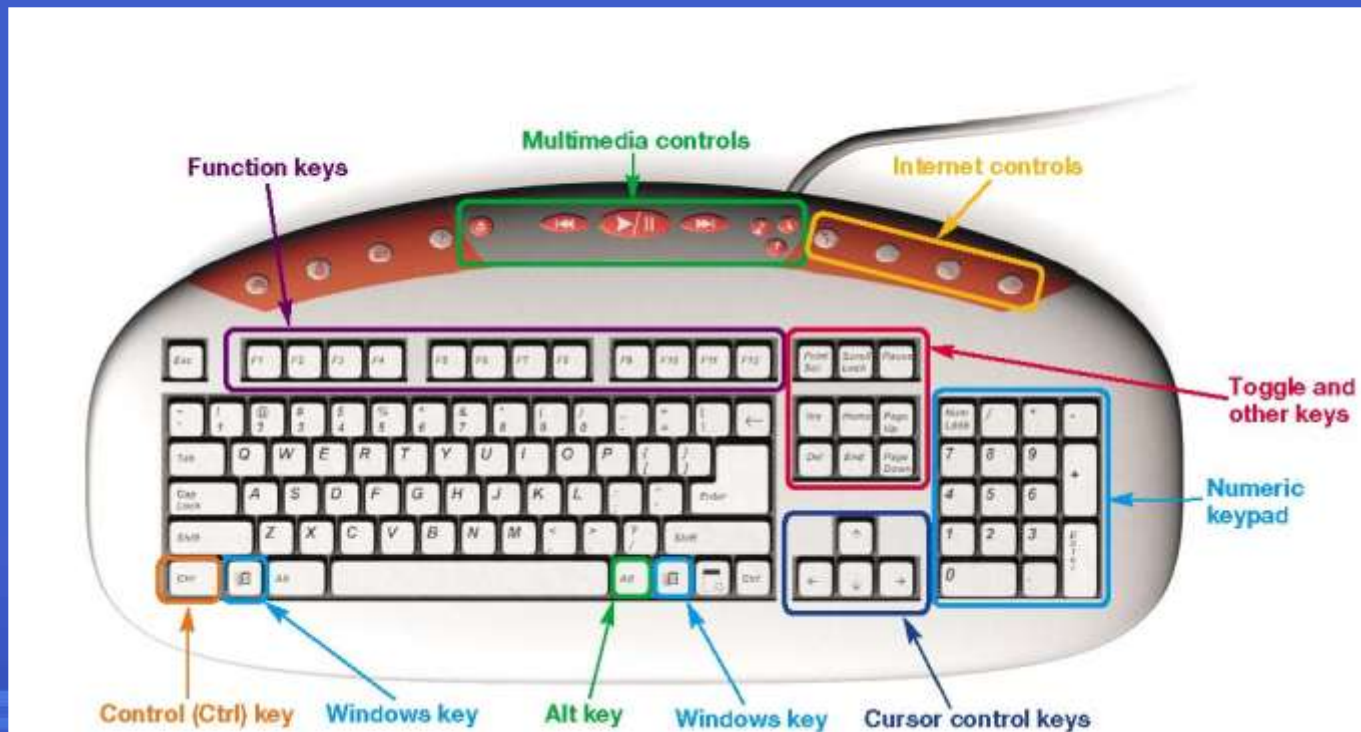
Input Devices

- Devices used to enter information or instructions into the computer
 - Keyboard
 - Mouse / pointing device
 - Microphone
 - Scanner
 - Digital camera



Keyboard

- The QWERTY keyboard with enhanced features is standard with most modern personal computers



Dvorak Keyboard

- Puts the most commonly used keys at “home keys”
- Reduces distance of finger stretches



Specialty Keyboards

- Laptops
- PDAs
- Wireless
- Ergonomic



Mouse

- Roller ball mouse
 - Less expensive
 - Harder to keep clean
- Trackball
 - Harder to control
 - Stationary on desk
- Optical mouse
 - Needs no mouse pad
 - Doesn't need cleaning
 - More expensive

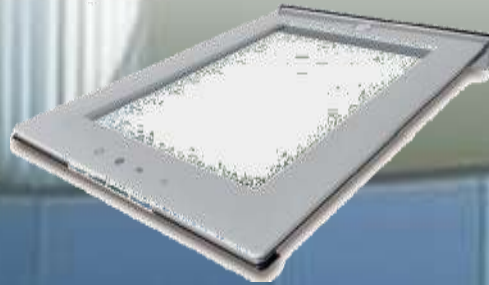


Wireless



Other Input Devices

- Scanners
 - Text
 - Images
- Digital cameras
 - Images
 - Video



Flatbed

Handheld



Camera

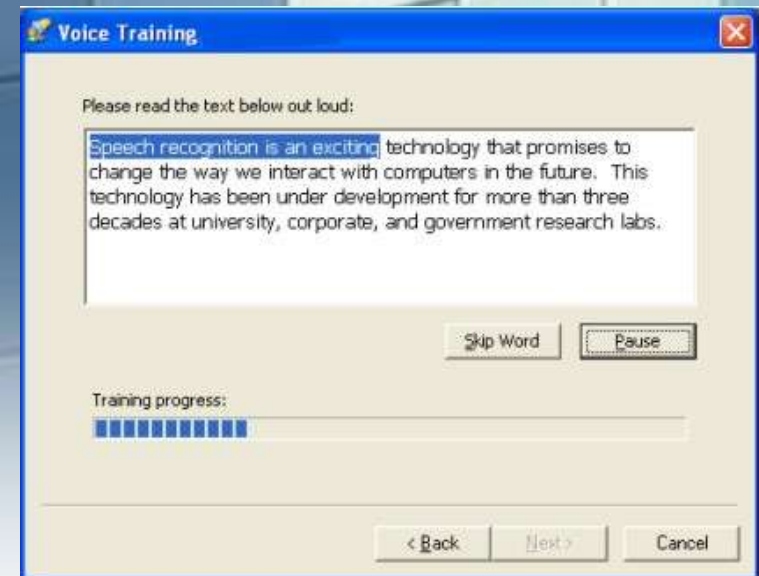


Camcorder

Inputting Sound

- Microphone Input
 - Teleconferencing
 - Voice over Internet
 - Voice Recognition

Microsoft Voice Recognition



Output Devices

- Retrieving information from the computer
- Output devices
 - Softcopy (video, sounds, control signals)
 - Hardcopy (print)



Monitor Types

- CRT Cathode Ray Tube
 - Less Expensive
 - Use much more space
 - Uses more energy
 - Better viewing angles

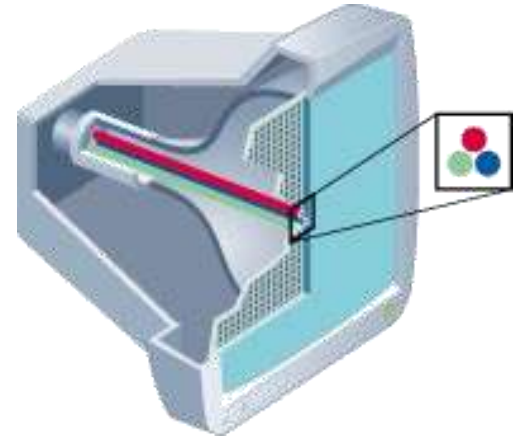


- LCD Liquid Crystal Display
 - More expensive
 - Uses far less space
 - More energy efficient
 - Less viewable from an angle



CRT Monitors

- Uses picture tube technology
- Screen size – Diagonal measurement of the screen (15, 17, 19, 21)
- **Resolution** – Sharpness of the image determined by the number pixels that the screen can display (800 x 600, 1024 x 768, 1600 x 1200)
- **Refresh rate** – Speed at which the screen is refreshed (60Hz, 75Hz) Faster rate equals less flicker.



Non-impact Printers

- Ink Jet
 - Less expensive device
 - Full color printing
 - Slower in pages per minute (PPM)
 - More expensive per page in B&W



- Laser
 - More expensive device
 - Black and White (Color lasers are very expensive)
 - Faster in PPM
 - Less expensive in B&W

The System Unit

Box that contains the central electronic components of the computer:

- CPU/RAM/motherboard
- Expansion cards
- Power supply
- Storage devices



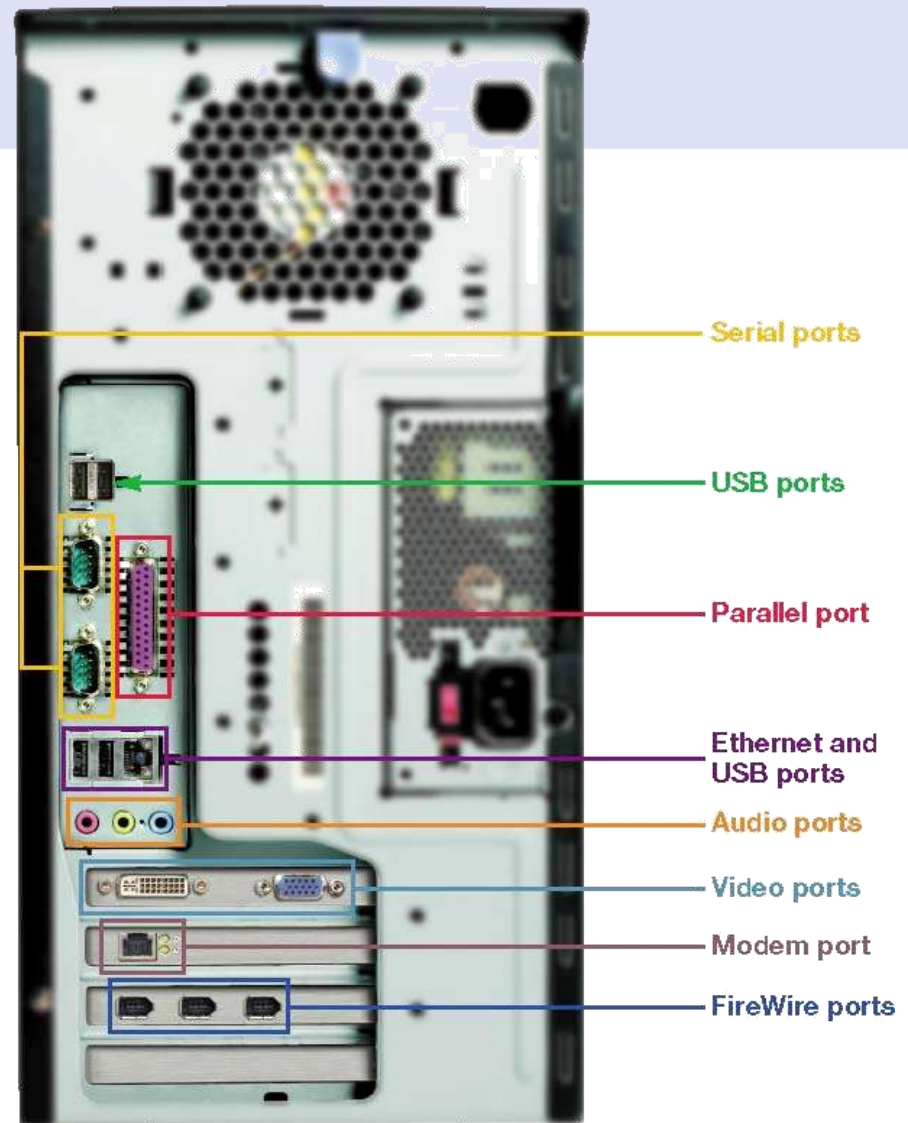
The Front Panel

- Drive Bays
- Memory card reader
- Floppy Drive
- Productivity Ports
- Power Button



The Back

- Ports for peripheral devices
- Types of ports:
 - Serial
 - Parallel
 - VGA
 - USB
 - Connectivity

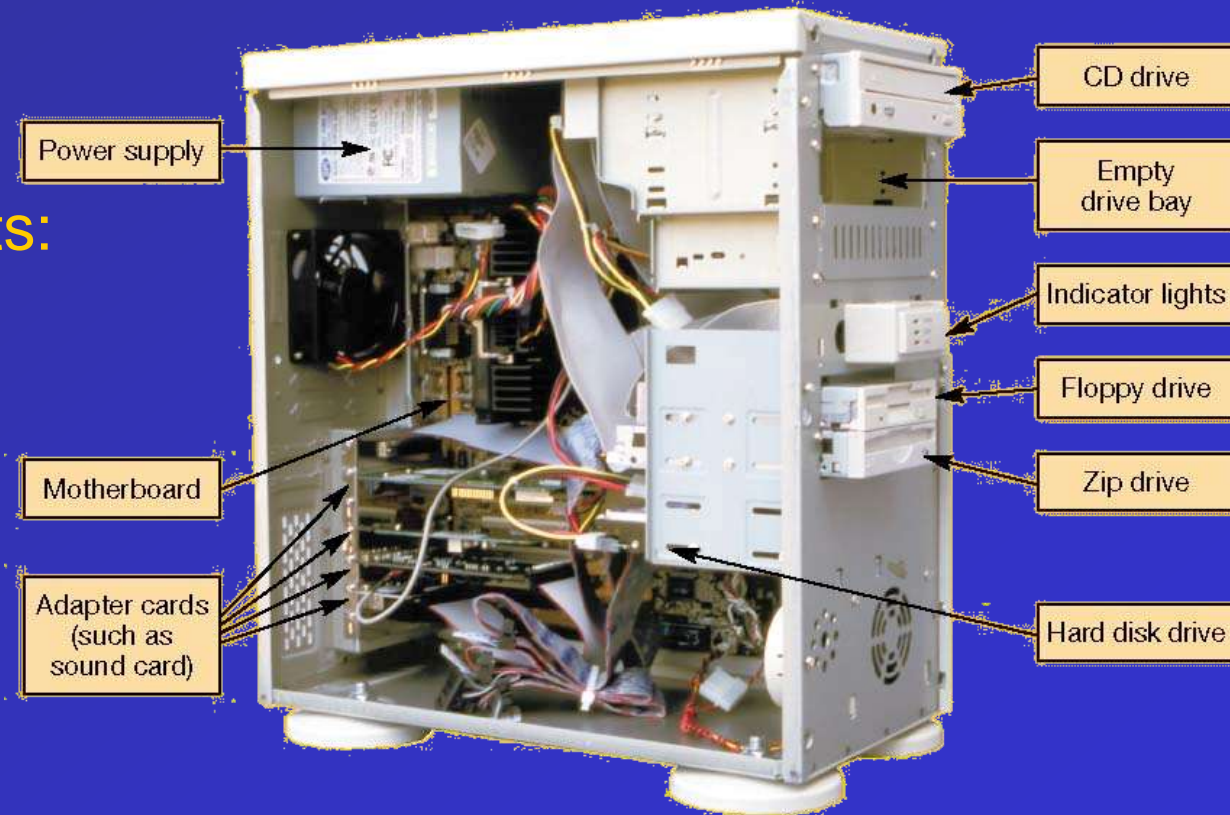


Inside the System Unit

- Essential electronic components used to process data

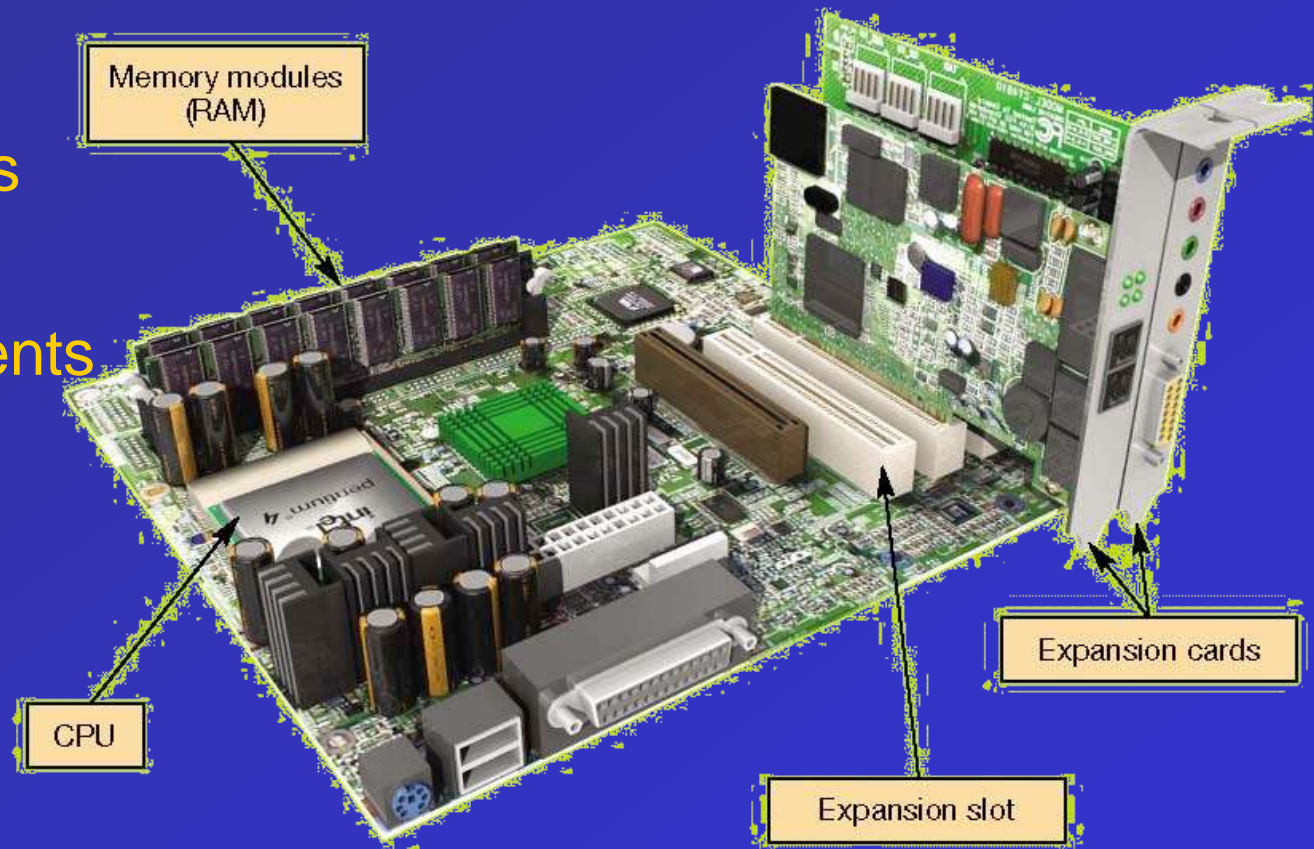
- Types of components:

- Power supply
- Hard disk drive
- Motherboard
- CPU
- Expansion cards



The Motherboard

- CPU
- RAM
- Expansion Cards
- Chip Set
- Built-in components



Central Processing Unit (CPU)

- Referred to as the “brains” of the computer
- Controls all functions of the computer
- Processes all commands and instructions
- Can perform billions of tasks per second



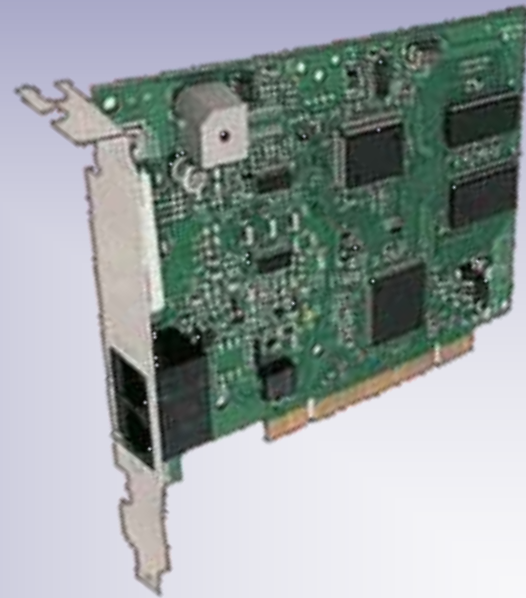
Memory Module

- Random access memory (RAM)
- Primary storage
- Stores instructions and data
- Temporary (volatile) storage



Expansion Cards

- Adds functions
- Provides new connections for peripheral devices
- Common types:
 - Sound
 - Modem
 - Video (VGA)
 - Network (NIC)



Hard Disk Drive

- Stores data and program instructions
- Permanent (nonvolatile) storage
- Storage capacities up to 250 GB and higher
- Transfers data in milliseconds



Setting it all up: Ergonomics

How to Avoid the Chiropractor!

- Ergonomics refers to minimizing injury or discomfort while using the computer
- Steps to follow:
 - Position monitor correctly
 - Use adjustable chair
 - Assume proper position while typing
 - **Take breaks!**
 - Ensure adequate lighting

