

What are they?

# COMPUTER COMPONENTS

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**Input**

**CPU**

**Output**

**ROM**

**Memory**

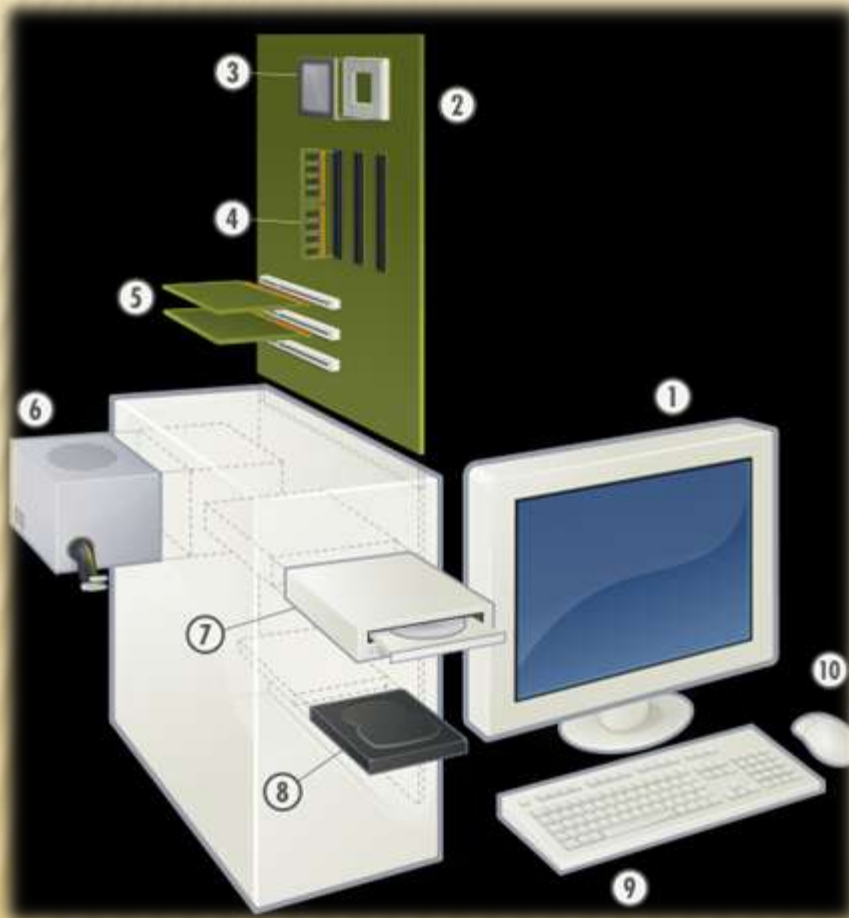
**RAM**

**Hardware**

**Storage**

**Software**

# TYPICAL PC HARDWARE



Hardware of  
Personal Computer.

1. Monitor
2. Motherboard
3. CPU
4. RAM Memory
5. Expansion card
6. Power supply
7. CD-ROM Drive
8. Hard Disk
9. Keyboard
10. Mouse

# SOFTWARE

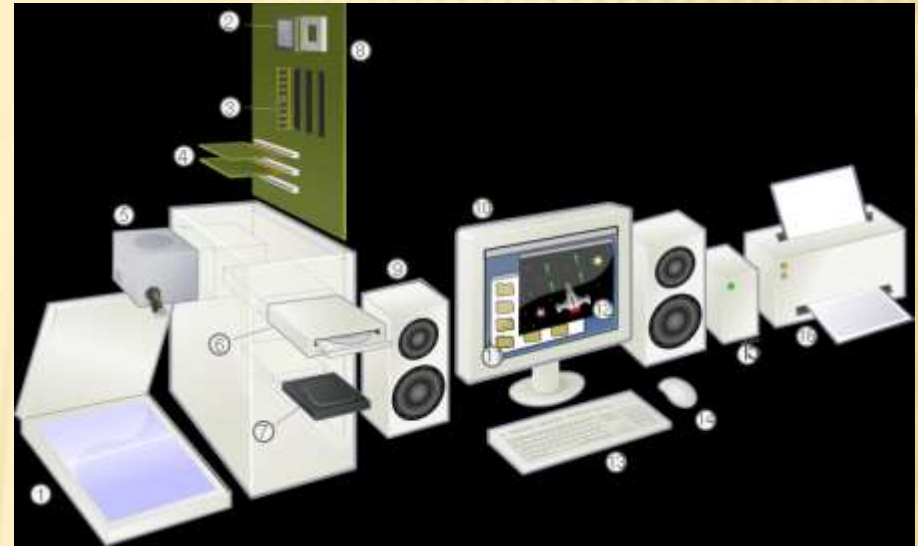
- ✘ Operating Systems: MS Windows, Apple OS X
- ✘ Applications: MS Office, Final Cut Pro, Adobe CS6
- ✘ Games: World of Warcraft, The Sims



- ✘ Ottokar, a dwarven paladin in the Planes of Knowledge, Everquest (hey, no short jokes!!!)

# HARDWARE

- ✘ Hardware Components in the computer:
  - + Click on:  
start/computer/system  
properties/device manager



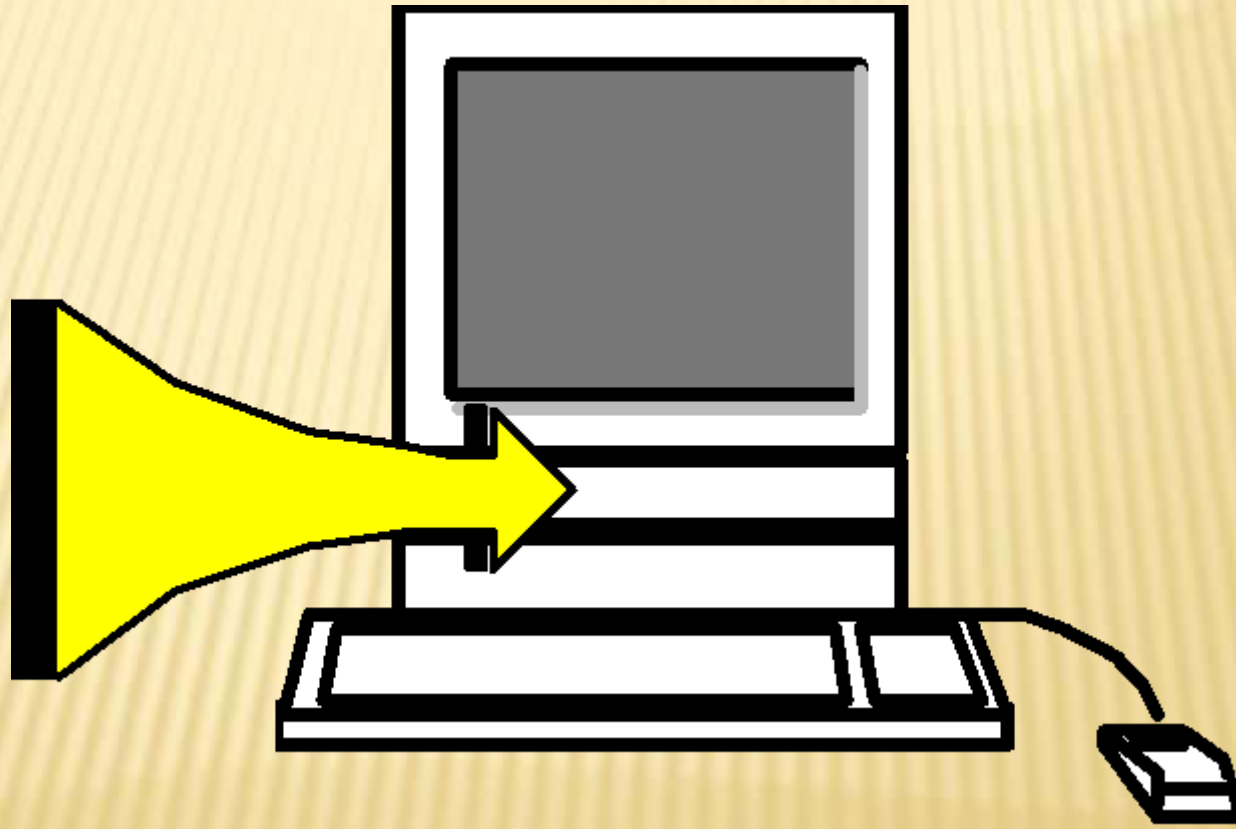
# VIDEO CARDS GRAPHICS CARDS

- ✘ These are **expansions cards** (computer components) that are designed to produce images for the computer display.



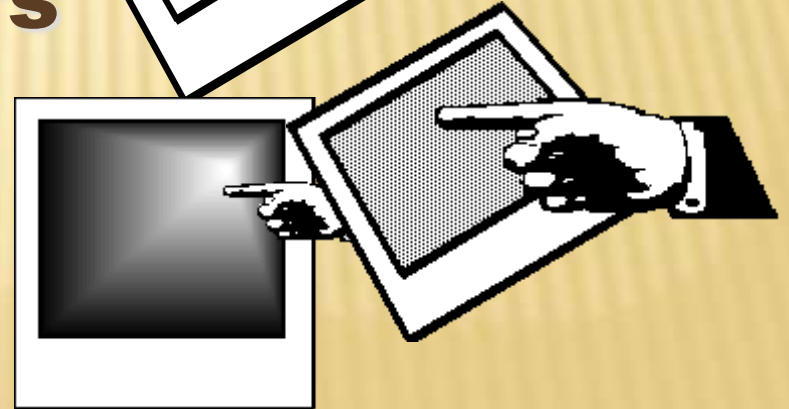
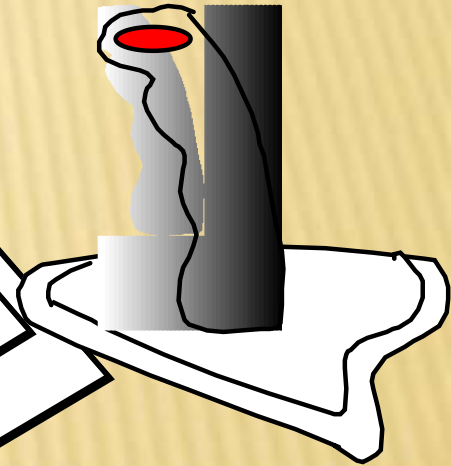
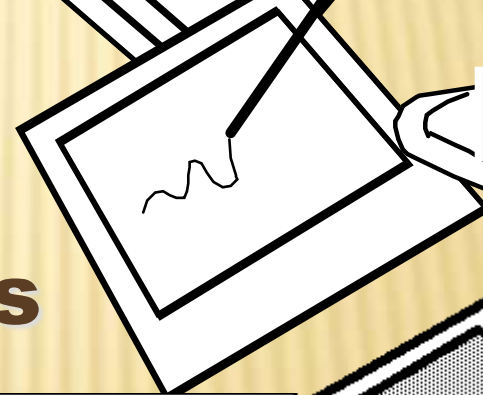
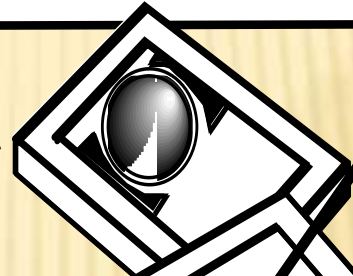
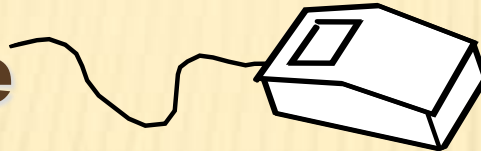
AN NVIDIA RIVA 128 AGP VIDEO CARD (\*)

# Input Devices



# Input Devices

- **Keyboard**
- **Mouse**
- **Trackball**
- **Graphics tablet**
- **Game Controllers**
- **Touch screen**
- **Webcam**
- **Microphone**





# Motherboard

- **Central Processing Unit**
- **The “Brain” of the computer**
- **What comes in and out?**




# CPU

- **Central Processing unit**
- **The “Brain” of the computer**
- **Measured in MHz (Megahertz) and GHz (Gigahertz)**

Hertz = Cycles Per Second

Mega = 1,000,000

Giga = 1,000,000,000



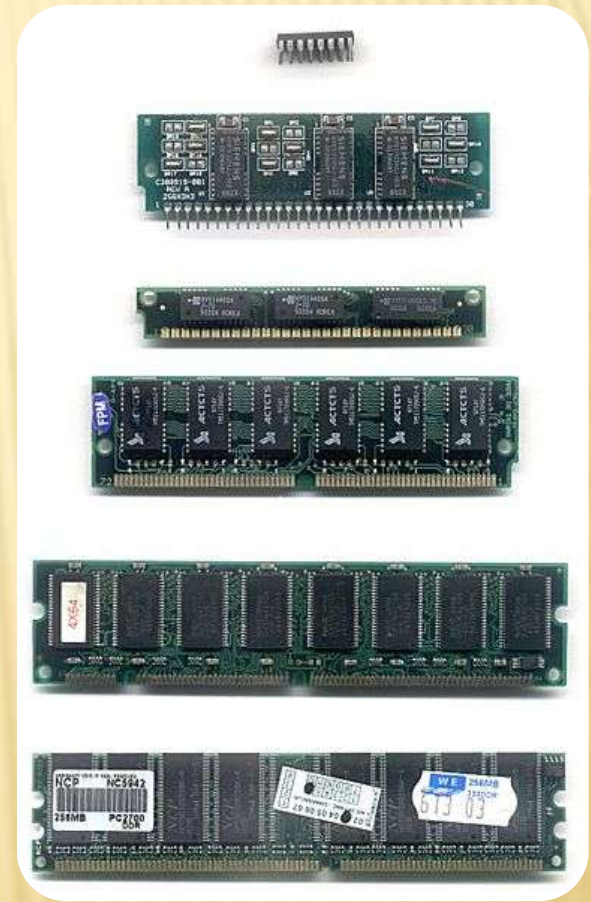
Makes me dizzy  
thinking about it!

# Memory

## RAM

### Random Access Memory

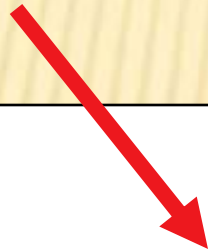
- Temporary
- Flexible



# Memory

## RAM

**Empty RAM— 4 GB**



# Memory

## RAM

**Operating System— 1GB**



**Empty RAM— 3 GB**

# Memory

## RAM

**OS—1 GB**

**Program—2 GB**



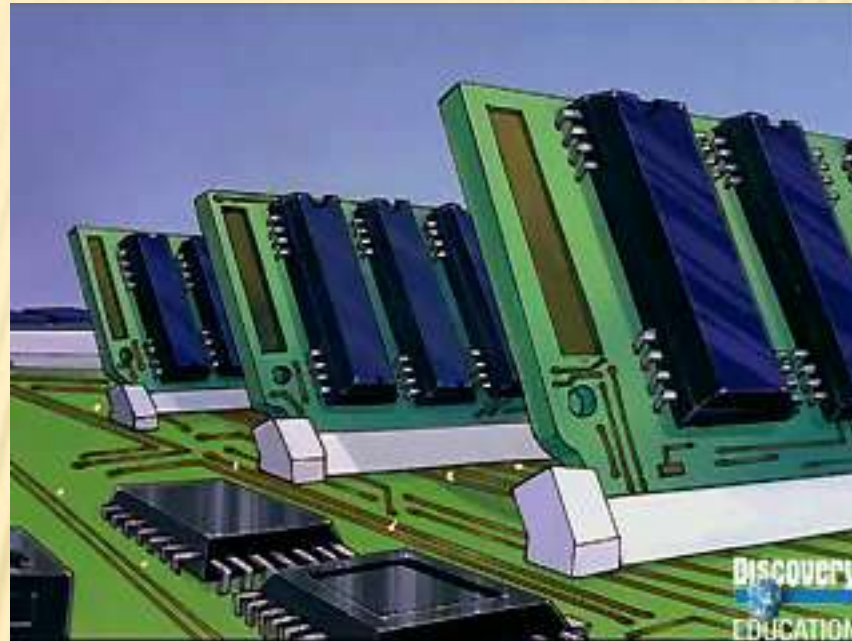
**Empty RAM—1 GB**

# MEMORY

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- ✘ In the previous example, 1GB was still available out of 3 GB total, after the Operating System and a program loaded into the system memory. When a **system runs low** on available memory, the computer **will run more slowly**.

# RAM



**So what is RAM?**



# MEMORY MEASURED IN...

- ✗ Based on Bit - 0 or 1, On/OFF
- ✗ Byte = 8 bits
  - + K= Kilobyte = 1000
  - + MB = Megabyte = 1,000,000
  - + GB = Gigabyte = 1,000,000,000
  - + TB = Terabyte = 1,000,000,000,000
  - + PB = Petabyte = 1,000,000,000,000,000 (quadrillion)
- ✗ **History:** According to Kevin Kelly of the *New York Times*, "the entire works of humankind, from the beginning of recorded history, in all languages" would amount to 50 petabytes of data. (\*)
- ✗ What are the kinds of memory?
  - + Hard Drive (Read & Write)
  - + ROM (Read)
  - + RAM (Write)
  - + External - Input (Read or Write)

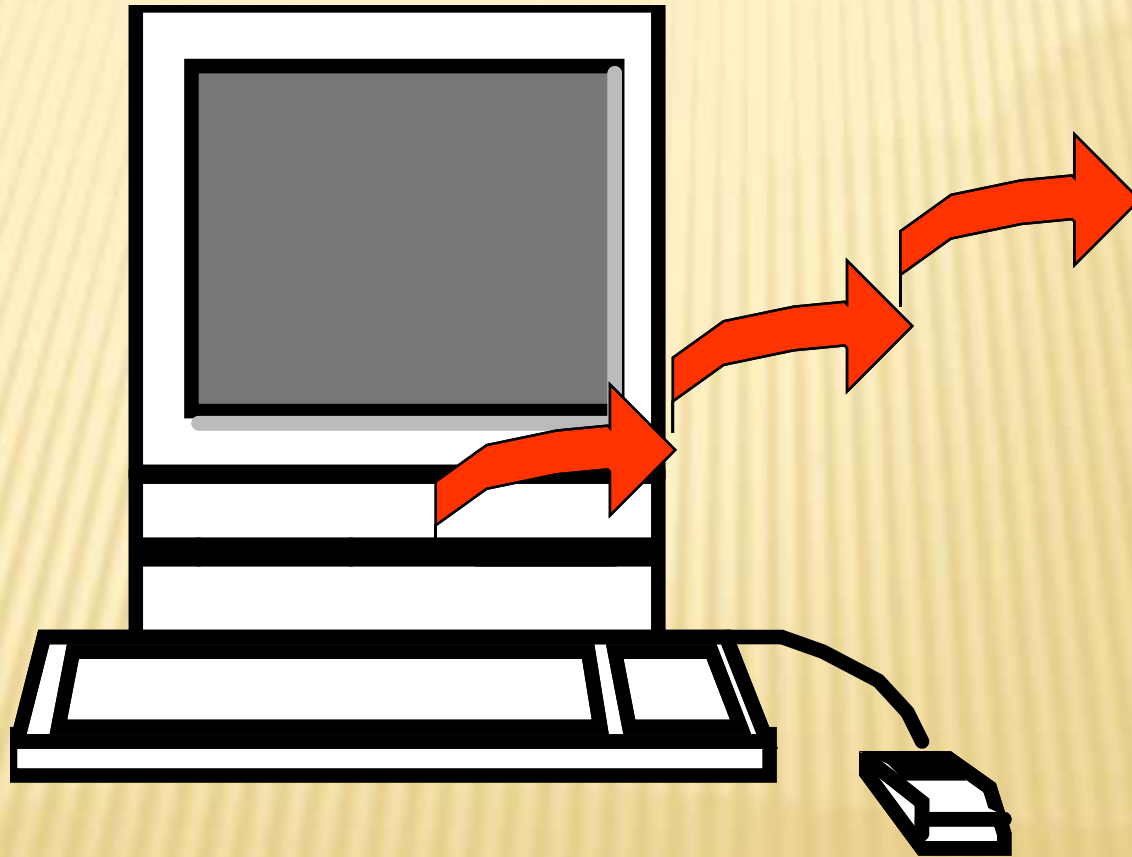
# Memory

## ROM

**Read Only Memory**

**Contains things  
that the  
computer  
needs to  
operate**

# Output Devices

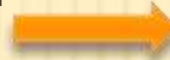


# Output Devices

- **Monitor**
- **Printer**
- **Sound**

# MONITORS

- ✘ **CRT- Cathode - Ray Tube** The cathode ray tube (CRT)
  - + **vacuum tube containing an electron gun (a source of electrons)**
  - + **fluorescent screen with internal or external means to accelerate and deflect the electron beam**
- ✘ **LCD Display - Liquid Crystal Display** A liquid crystal display (LCD)
  - + **thin, flat panel used for electronically displaying information**



# MONITORS

## A plasma display panel (PDP)

- **Flat panel** display common to large TV displays (32" inches or larger)
  - **Tiny video projector** takes a video signal and projects the corresponding image on a projection screen using a lens system.
  - **Cells between** two panels of glass hold a mixture of noble gases.



# PRINTERS

× Laser printer



× Inkjet printers



# SOUND

## COMPUTER SOUND OPTIONS

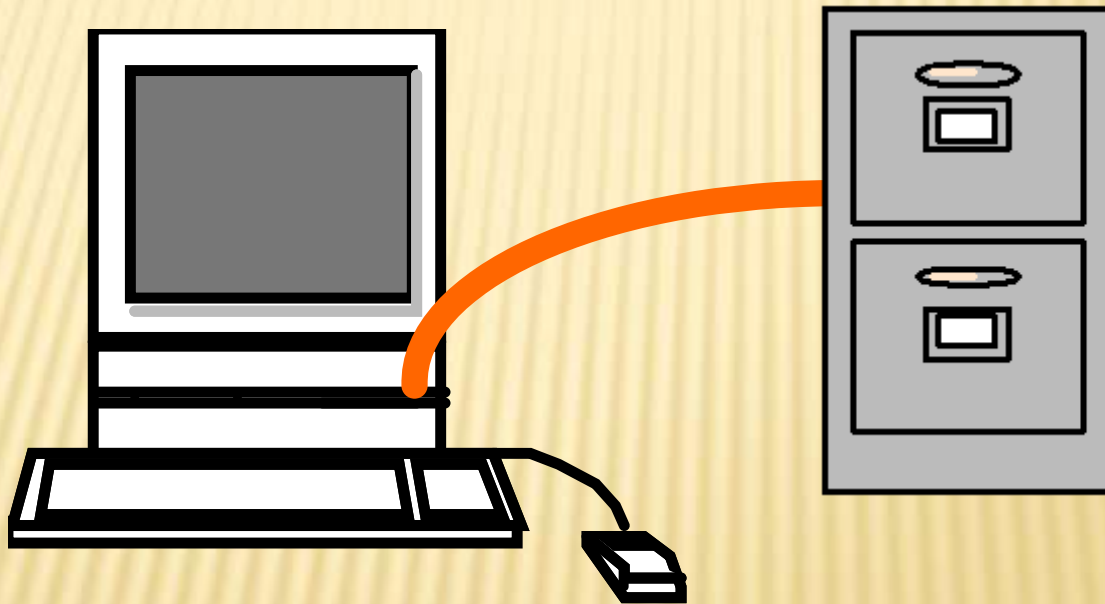
- ✘ Computers can run audio from the basic sound capabilities built into the system, or for improved audio, a dedicated audio card.
- ✘ Built in Speakers (quality suffers)
- ✘ External Speakers (improved quality\_
- ✘ Subwoofer (improved bass output)
- ✘ Headphones (with or without a mic)



A PAIR OF HARMAN KARDON SOUNDSTICKS II NEXT TO AN APPLE CINEMA DISPLAY (\*)

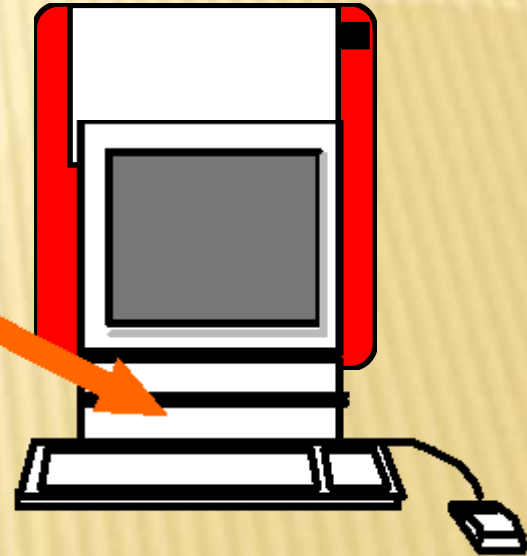


# Storage Devices



# Storage Devices

- **Diskette—Floppy Disk**
- **Hard Drive**
- **DVD**
- **Cassette**
- **Optical—Zip**
- **USB Flash Drive**
- **CD-ROM, CD-R, CD-RW**
- **Blu-Ray Disks**



# OTHER TERMS

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## ✘ Operating Systems

- + Mac - OS
- + PC - DOS (basis) Windows
- + Linux (used in computer servers, and open source-free to all, application)

## ✘ Memory - Write/Read

- + What is **Writable**?
- + What is **Readable** only?
- + What is **Read and Write**?

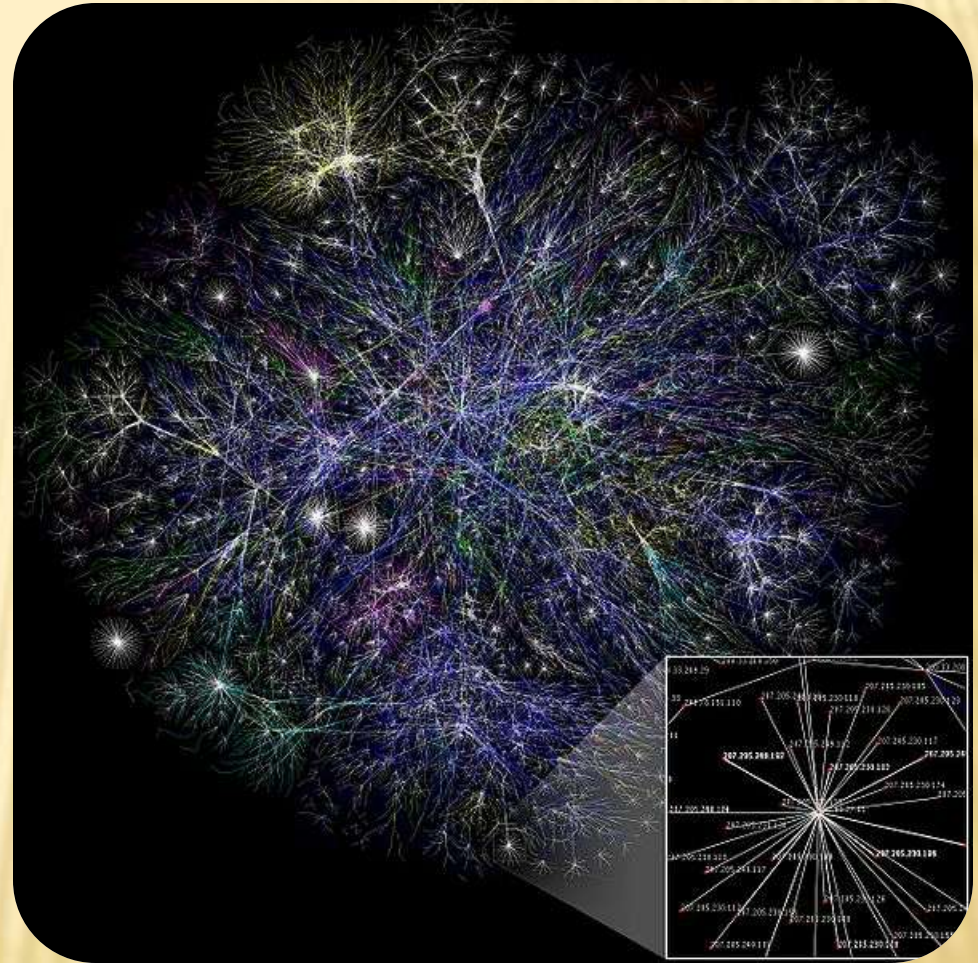
RAM

ROM

Hard drive

# NETWORKING – CONNECTING COMPUTER

- ✘ **Network Card**
  - + Allows access to computer networks
  - + **LANS** - Local area networks - etc.
  - + **WANS** – Wide area Network
- ✘ Modem (Dial-up)
- ✘ Cable Modem
- ✘ DSL (Digital Subscriber lines-data transfer over copper cable)
- ✘ Wireless (Wi-Fi)
- ✘ Satellite



- ✘ Visualization of a portion of the routes on the Internet. (\*)

# COMPUTER COMPONENTS

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**Input**

**CPU**

**Output**

**ROM**

**Memory**

**RAM**

**Hardware**

**Storage**

**Software**

# MATCHING

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**1,000**

**1,000,000**

**1,000,000,000**

**Hertz**

**Byte**

**8 Bits**

**Giga**

**Mega**

**Kilo**

**Cycles/second**

# REFERENCES

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- ✘ Original PPT by Dr. Giffel&Professor Braman
- ✘ Magic School Bus Gets Programmed, The. Scholastic (1997). Retrieved August 27, 2006, from unitedstreaming: <http://www.unitedstreaming.com/>
- ✘ (\*) Denotes Material Acquired from Wikipedia (all pictures from Wikipedia commons)