

# Computers 101

# The Physical Machine

By Maxx Mittelstadt

# Peripherals

Inputs & Outputs



# What is input and output?

**Input:** A user in someway takes information and puts it into the PC.

*Example:*

*Typing using a keyboard gives the PC information about what letters, numbers and symbols to put on the screen.*

**Output:** The PC displays, makes a sound, or prints out the information to the user.

*Example:*

*When the PC is turned on it will make a music sound and show a logo on the screen.*

## Input Peripherals

- Keyboard
- Mouse
- Camera
- Photo Scanner
- Microphone

## Output Peripherals

- Monitor
- Projector
- Printer
- Speakers
- Headphones/Earbuds

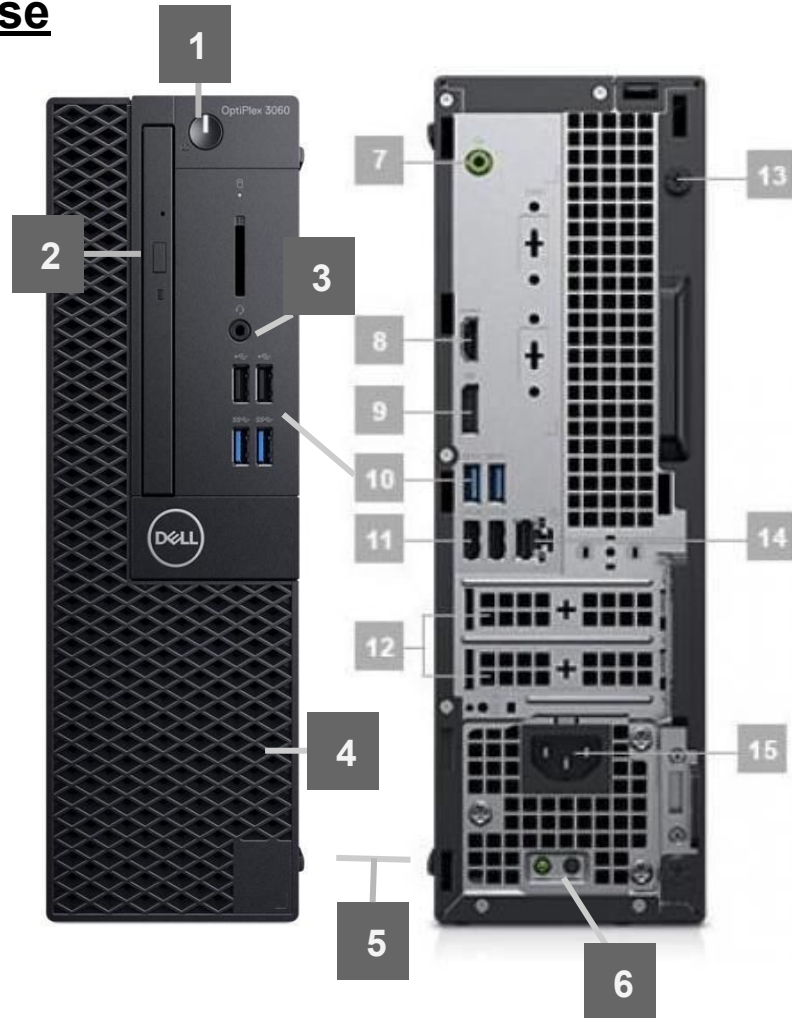
# The PC Case

Simple on the outside



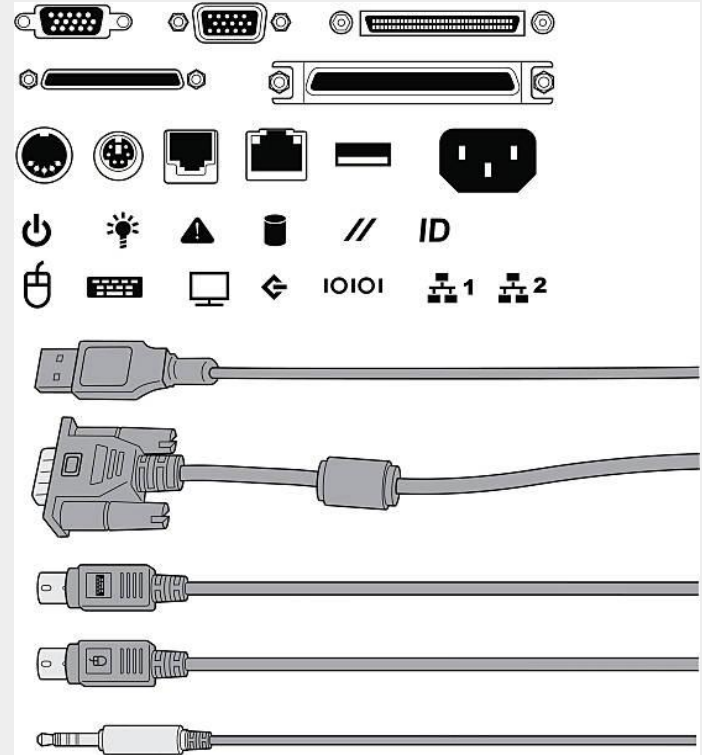
# Parts of a Modern PC Case

1. Power Button
2. CD Drive
3. Front Audio Jack
4. Fan Vents
5. Rubber Feet
6. Power Light
7. Back Audio Jack
8. HDMI
9. Displayport
10. USB Port
11. More USB Ports
12. Expansion Slots
13. Screws
14. Ethernet Plug
15. Power Port



# Ports, Jacks, and Connectors

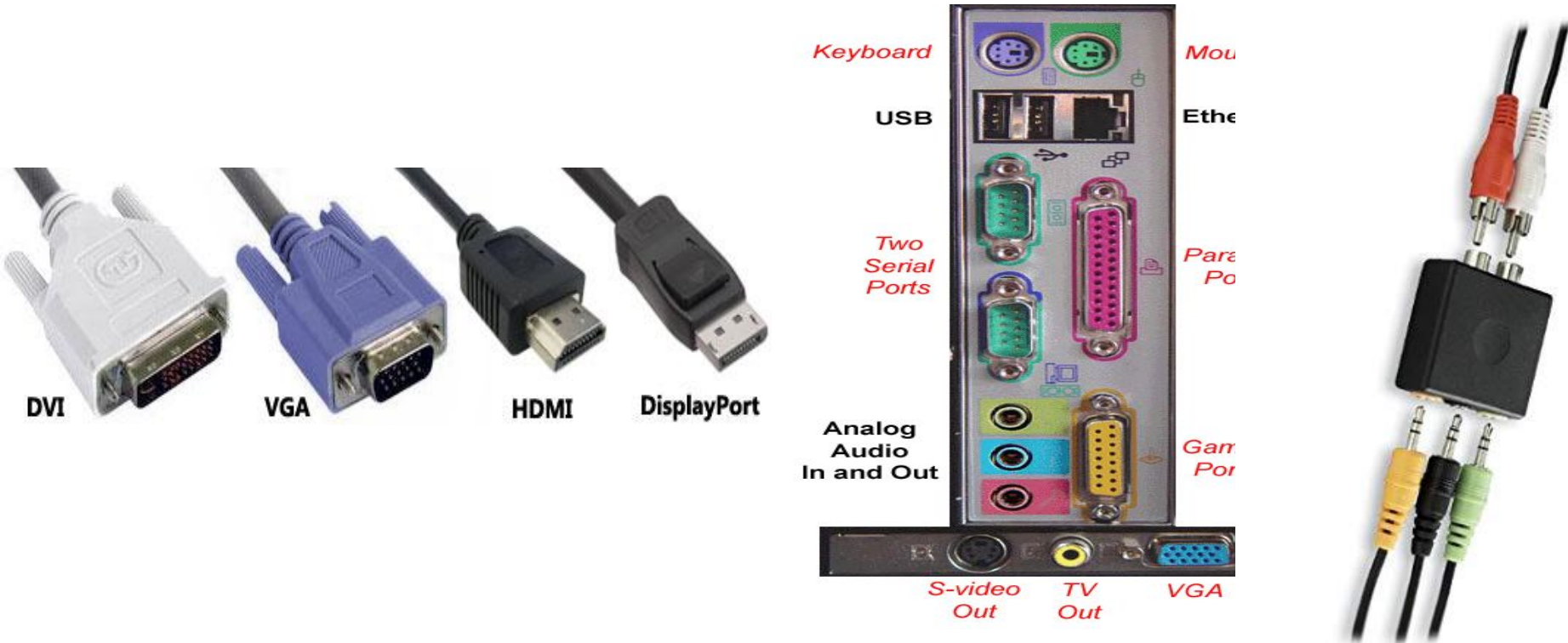
How does all this stuff plug-in?



**Plug:** A part with some type of projection that goes into a port.

**Port:** A part that has some type of matching hole or slot that accepts the plug.

**Jack:** Used as an alternative to port, so you may also put a plug into a jack.

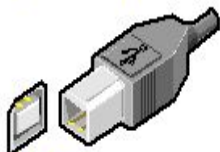


## USB Connector



**Type A**  
(host or hub)

Type A sockets are on the host computer and hub, and Type B sockets are on the peripheral devices. Cables have both a Type A and Type B plug.



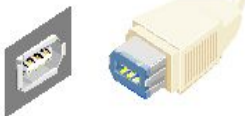
**Type B**  
(peripheral device)

Mini-B sockets are ubiquitous on cameras, PDAs and other portables.



**Mini-B**  
(cameras and portable devices)

## FireWire (IEEE 1394)



This is the 6-pin FireWire plug and socket. A 4-pin version is found on laptops.

## Audio-Video Connectors



**1/8" Mini**  
(audio)



**3/32" Submini**  
(audio)

**RCA Phono**  
(audio and video)



left and right  
analog audio



analog composite video



Y Pb Pr  
analog component video

**HDMI**  
(audio and video)



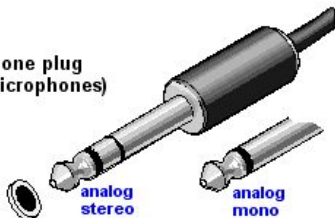
8-channel digital  
audio and digital video

**DVI**  
(video)



digital  
video

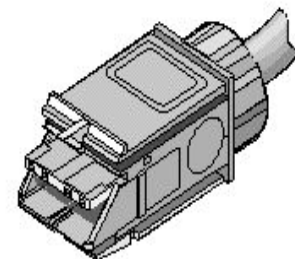
**Phone plug**  
(microphones)



analog  
stereo

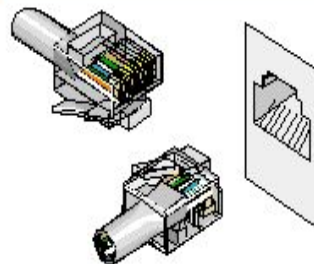
analog  
mono

## Type 1 IBM Connector



Type 1 connectors are used in Token Ring networks. The same connector is both plug and socket just by flipping one 180 degrees with the other.

## RJ-45 Connector (Ethernet, Token Ring)



Eight-wire RJ-45 connectors are used with 10BaseT Ethernet and Type 3 Token Ring networks.



# Ultimate Chart of Computer Connectors and Ports

Updated for 2016

## USB, Keyboard and Mouse



## Storage / Disk



## Male vs. Female Connectors and Ports

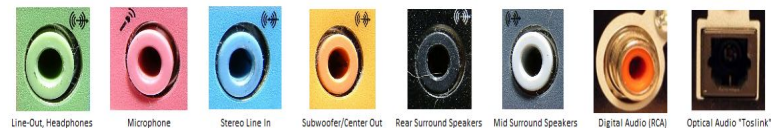
**Male** connectors and ports push into things.

**Female** connectors and ports get things pushed into them.

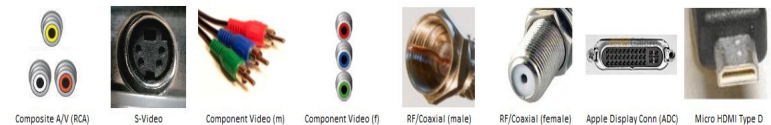
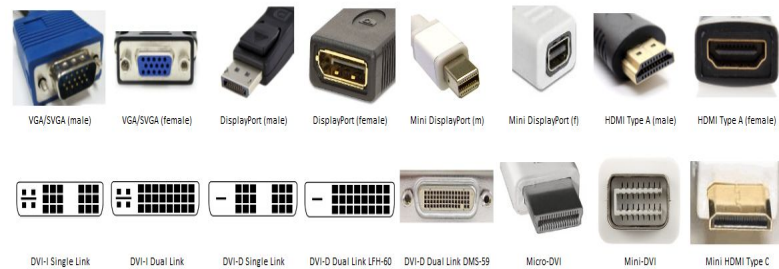
## Network / Communications



## Audio



## Video



## Power



# Inside the Case

Less gross than biology class.

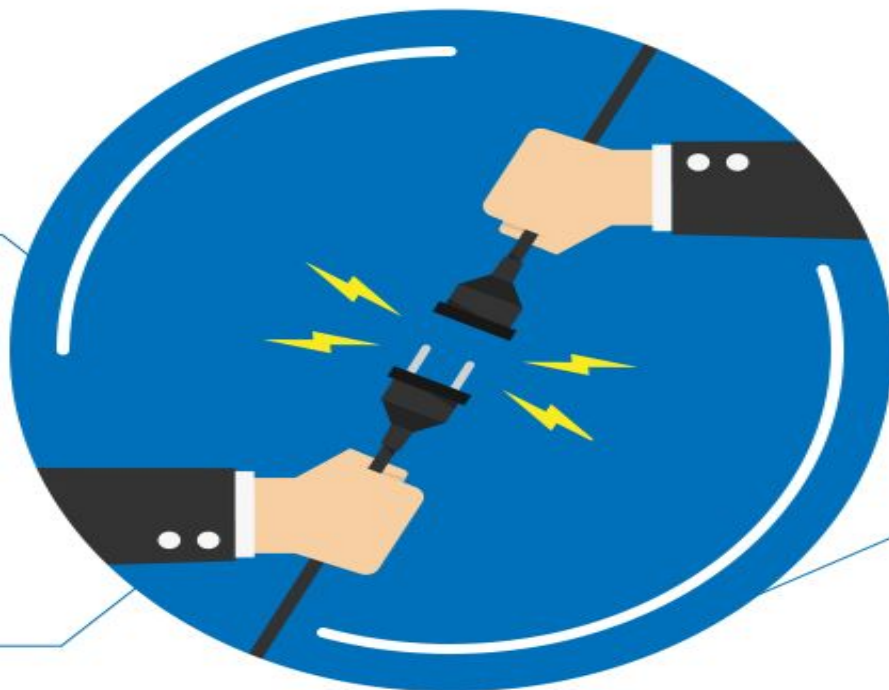


Electrostatic discharge (ESD) occurs when there is a swift discharge of electricity between 2 objects with different charges and it can cause permanent damage to electronic devices, particularly those with a low voltage threshold.

## What is ESD?

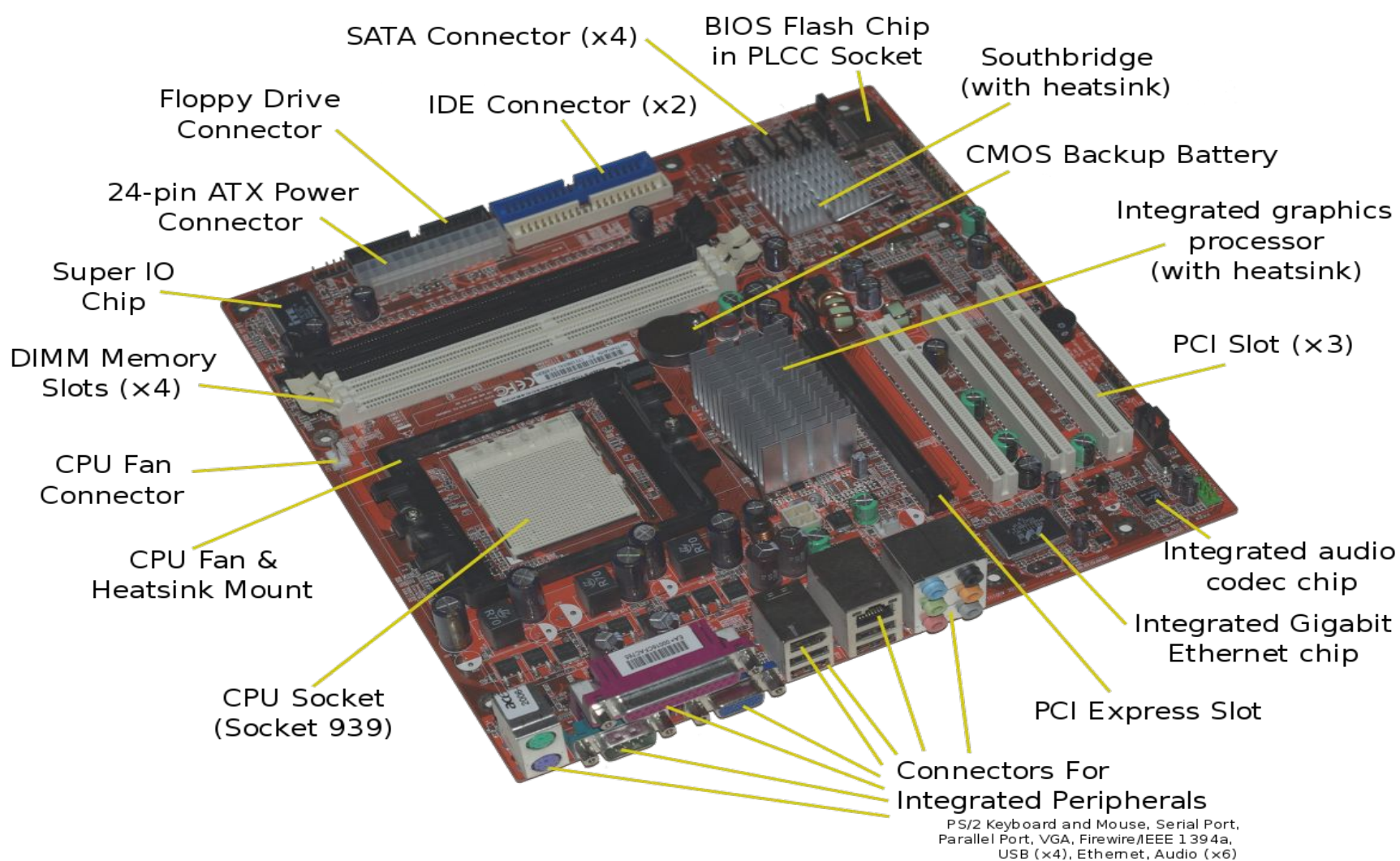
ESD refers to the release of static electricity when 2 objects come into contact with each other.

The majority of ESD instances are completely harmless, but it can be a rather expensive problem within industrial environments. It could also damage or destroy parts within a computer.



Common examples of ESD include the shock we get when touching a door handle after walking across a carpet, or the static electricity that can be felt from clothes after they've been tumble-dried. A more extreme example is a bolt of lightning.





## Power Supply Unit (PSU)

Converts alternating current (AC) electric line from your home to the Direct Current (DC) needed by the personal Computer

In direct current (**DC**), the electric charge (current) only flows in one direction. Electric charge in alternating current (**AC**), on the other hand, changes direction periodically. The voltage in **AC** circuits also periodically reverses because the current changes direction.

## Video or Graphics Card

Processes the graphics on the Monitor separately so that the computer can operate smoother.



# RAM & HDD

## RAM (Random Access Memory)

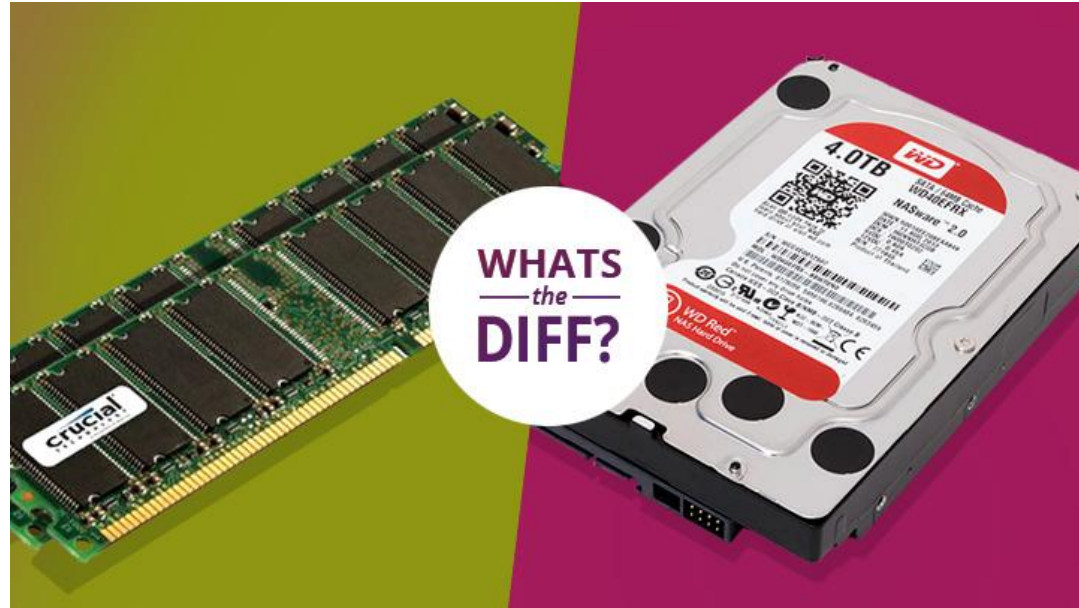
Known as the system *memory*.

Stores data for a short length of time. RAM never stores data that can be accessed for later use. RAM gets the data from the hard drive so that it can be used.

## HDD (Hard Drive Disk)

Known as the system *storage*.

Stores data for a long period of time. The data can be accessed at a later time. The data accessed is given to RAM to be used.

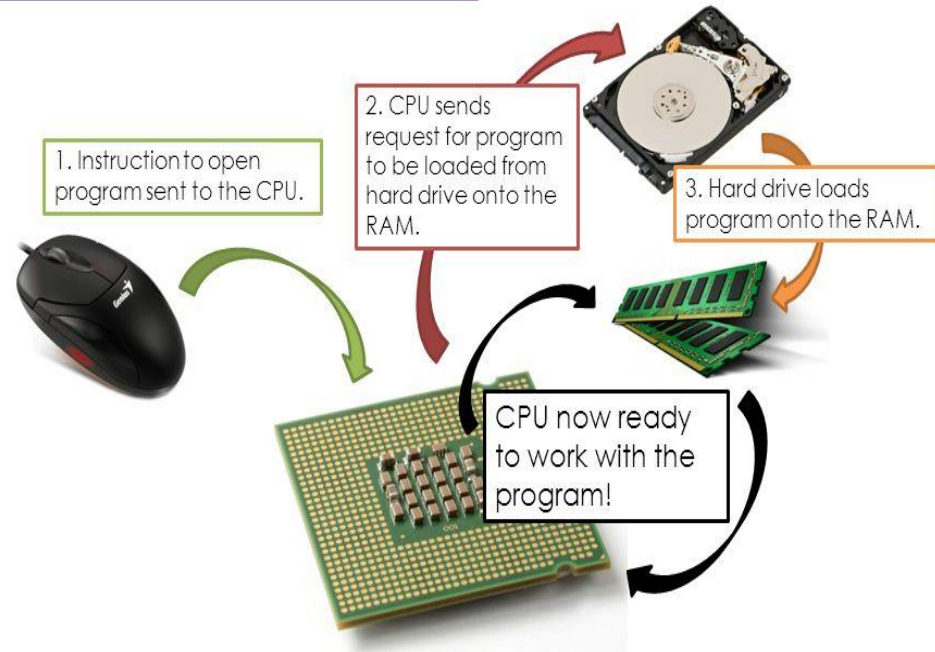




- What does a CPU do?
  - Controls the transfer of data.
  - RAM tells the CPU what data to process for a program to operate.
- What is a program?
  - Program = Instructions + Data
- Where are the instructions and data?
  - Hard Drive gives its data and instructions to RAM so that the CPU can process it.
  - RAM works with the CPU the program works seamlessly.

## The CPU, RAM and I/O Devices

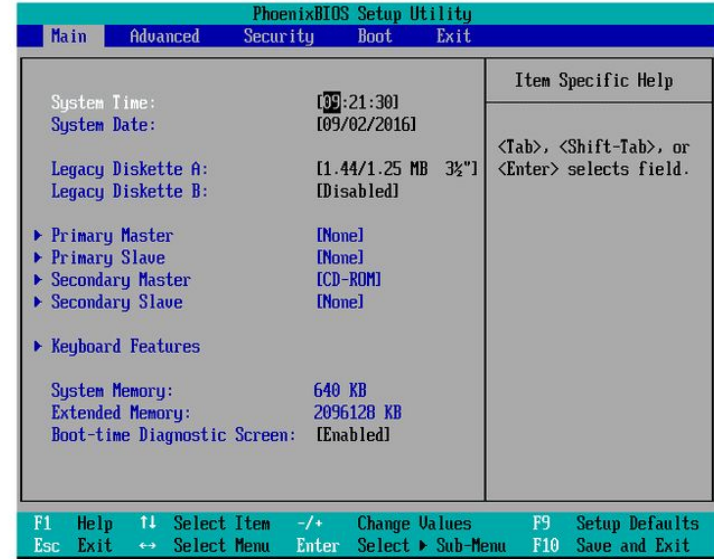
Double Click Icon to Open Program.



# BIOS & CMOS

The operations and processes of the motherboard.

It makes sure all the things plugged into the machine work and in which order.





# Drivers

Software that makes the peripherals work.



# What are computer driver?

A driver is a small piece of software that acts as a translator between a device and the OS and programs that use the device.

## *Example:*

When you buy a printer, it usually comes with a driver on a CD (or, in recent years, a URL to download the latest driver software from the Internet) that tells the OS how to print information on each page. Without the driver, the printer will not know how to interpret the data sent to it, if the data even makes it to the printer.

