**MOTHERBOARD**

**Types of Motherboard (According to there use)  
Desktop Motherboards**: - It is used in Personal Computer and Desktop. As it is used for applications at home and in office, this type of motherboard is the most basic.  
**Server Motherboards**: - Its are more advanced than desktop motherboards and are designed to offer high-end services. It also offer improved graphics and provide multiprocessing features.  
**Laptop Motherboards**: - It is connected to different parts of a laptop system. The size of a laptop motherboard is portable than desktop motherboard.

**Components of a Motherboard**  
Motherboard contains slots, sockets and connectors for connecting various devices. It contains slots for attaching RAM, graphic cards and any other devices, and sockets for attaching microprocessor. A CMOS battery is mounted on the motherboard to keep the system updated with latest data and time. An on-board CPU voltage regulator is provided to regulate power supply to the processor.  
**Connectors**  
*System panel connector* – Accommodates different front panel system functions such as system power LED, hard disk LED, On/Off button, Resent button.  
*USB headers* – Functions as connectors for USB module that can provide tow additional USB port, if the USB ports are inadequate.  
*Digital Audio connector* – It provides digital sound output, instead of analog  
*Internal Audio connector* – Enables connection to CD-ROM or voice modem card  
*ATX 12V connector* – It give the power supply to CPU.  
*ATX Power connector* – It give the power supply to the motherboard.  
*CPU chassis fan connectors* – Connects to the system cooling fans.  
*SATA (Serial Advanced Technology Attachment) connector* – It is used to connect SATA hard Disk or any other SATA drives.  
*IDE connector* – Connects to the IDE devices.  
*Floppy disk drive connector* – It is used to FDD through the floppy drive ribbon cable.

**On Board Disk Drive Connectors**  
The hard drive, floppy drive and the CD-ROM is connected to the motherboard using the on-board disk drive connectors. The primary connector used to connect storage devices such as the hard drive and the CD-ROM drive is the Integrated Development Environment (IDE) port on the motherboard. This is also known as the Parallel Advanced Technology Attachment (PATA). The connector is a normal 40-pin connector.  
 Serial Advanced Technology Attachment (SATA) technology is used to connect the newer versions of hard drive. SATA technology supports a transfer rate of up to 1.5 Gbps.

**Keyboard and Mouse Connector**  
The keyboard and the mouse device are connected to the Personal System (PS/2) port of the computer. These ports are located at the back side of the system. The PS/2 port is a round shaped port. DIN 5 port is the old type of port which was used to connect keyboard.

**Serial, Parallel and USB port and connector**The most basic communication ports in any system are the serial and parallel ports and these ports continue to be important. Generally 9-pin serial port connector, which is also called COM port & 25-pin parallel port connector, which is also called LPT port. Both are in D shape.  
 USB port is a rectangular port that is used to connect a variety of external devices to the system. It is 4-pin connector. It also supplies power to the device. To use the USB device you must just plug the device into USB port, as must USB devices offer Plug-and-Play support. A USB controller supports 127 different devices at a time.

**Expansion Slots**  
Expansion slots on a motherboard enables you to connect expansion cards to the motherboard.  
Different Expansion slots are as follows: -  
*Audio/Modem Riser*: - AMR is a card with capabilities of modem and audio. The AMR slot is smallest than the standard PCI slot. The AMR card was used only for modems.  
*Peripheral Component Interconnect (PCI)*: - PCI is a bus standard developed by Intel Corporation. PCI slots are 32-bit wide in bus. This is used for attaching peripheral devices to the motherboard. Additional components such as Ethernet card (LAN card), internal modem, SCSI card, USB Card and Audio card.  
*AGP (Accelerated Graphic Port)*: - It is an interface that is used to display graphics and 3D images in an efficient manner. An AGP card is installed into the AGP slot of the computer. This card handles all the graphic effects of the computer.

**Jumpers**  
Jumpers on the motherboard are small pins that enable you to configure motherboard setting. A jumper consists of a pair of pins and a small shunt.

**Memory Slots**  
Memory slots provide an interface for attaching RAM on the board. RAM modules is inserted in these slots. There are at least two memory slots in the motherboard.

**CPU Socket**  
CPU socket commonly known as CPU slots is an interface that connects the CPU with motherboard.

**CMOS Battery**  
Complementary Metal Oxide Semiconductor batteries power the CMOS chip of the motherboard. The CMOS chip stores the time and settings of the system. CMOS batteries are mostly made up of Lithium.

**BIOS/CMOS Chip (ROM Chip)**  
Basic Input Output System is software that is built in to the Read Only Memory of the computer. BIOS are available even when none of the disk drive works. It also controls the configuration of the various devices and runs a test to check whether all the devices are properly configured when the computer is started. POST (Power on Self Test).

**Super I/O chip**  
It is a single chip which is very much similar to the system chipset. This chip controls the I/O functions of the motherboard. It controls the Floppy drive, serial ports, PS/2 mouse, some keyboard features and parallel ports.

**Chipset**  
Chipset is a group of integrated circuits (IC). Different chipset are manufactured by companies such as the Intel chipsets, AMD chipsets, VIA chipsets and Asus chipsets.  
 The chipset controls the data transfers between every component of the system. A modern chipset consists of the Northbridge and the Southbridge. The Northbridge handles data communication between the memory and the CPU. The Southbridge handles data form the PCI, and other devices that are not under the control of Northbridge.

**CPU Voltage Regulator**  
It is a DC to DC converter. The CPU voltages normally range from 1.5 to 3 volts. The regulator maintains this particular voltage range. It is installed on the motherboard.