Modern Jack

A modem jack connects a telephone line to the computer. It is the same type of connector as a telephone jack. A computer with an internal modem has a modem jack.

Hardware Components

There are only 6 groups of computer hardware components:

* Input device
* Output device
* Processor / motherboard
* Storage device
* Addition / Periphery

Input Device

These are used to input various forms of data or information into the computer. For processing purpose these devices can be connected to the computer as your requirement. There are the following input devices such as keyboard, mouse etc.

Output Device

These are used to show the result of processing either on screen or in the printed form using the printer. There are the following output devices as:
Memory Management Unit: It handles the addressing and search where data store in system memory. Whenever the CPU needs something from memory, it manages memory segmentation and paging. It translates all logical addressing into physical addressing.

Bus Interface Unit: It supervise the transfer of data over the bus system between the other components of the computer and the CPU. It acts as an interface point for the external bus as well as handles data transfer out of the computer.

Basic Components of the system board:

1. Connects all the components of computer system. Example - CPU, RAM, video components and other different components.

2. Types of System Board:

   * Non Integrated System Board: It is assembled from expansion board. This board is easily identified because of each expansion slot. It is usually occupied in own physical space. It is classified by these designs.

   All the components had to attach.
Settings on the CMOS chip requires power constantly.

Jumpers and DIP switches:
These are used to configure various hardware options on the motherboard. Processor use a different voltage and frequency. To achieve these target voltage and frequency.

Power Supply:
The device in the Computer that provides the power to the power supply. A Power Supply converts 110 volt AC current to the voltage that the Computer needs to operate. On a motherboard these might be +3.3 board (DC), +5 board (DC), -5 board (DC), +12 board (DC).

Components in modern PC do not use the negative voltage.

SMPS:
Switch mode Power Supply. In SMPS the AC mains input is directly rectified and then filtered to obtain in DC voltage.

The resulting DC voltage in then switched on and off at a high frequency by electronic switching circuitry. Switch mode power supply are usually regulated and to keep the output voltage constant.
1) Hard Disk:

Hard disk system is used for permanent storage and quick storage. Hard disk typically reside inside the computer (although they are internal and removable hard disk). It can hold more information than other form of devices. The hard disk system contains 3 critical components:

* Controller:

It controls the drive. It understands how the drive operates and sends signal to the various motors of the drive, receives signal from the motors to the drive.

* Hard Disk:

It is a physical storage medium. Hard disk system store information on small disk.

* Host Adapter:

It is a translator, converting signals from the hard drive and controller to a signal that the computer can understand.
Floppy Drive

A floppy disk is a magnetic storage media that use the flexible diskette made of the thin plastic. In case in a protection placing. The floppy disk itself enables that information to be transform from one computer to other easily. There are two types of floppy disk.

1) 5¼
2) 3½

A floppy drive is used to read and write information. The advantage of the drive is that they allow portability of data.

<table>
<thead>
<tr>
<th>Floppy Disk Size</th>
<th>No. of Tracks</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5¼</td>
<td>40</td>
<td>360 kb</td>
</tr>
<tr>
<td>3½</td>
<td>80</td>
<td>1.2 mb</td>
</tr>
<tr>
<td>3½</td>
<td>80</td>
<td>1.44 kb</td>
</tr>
<tr>
<td>3½</td>
<td>80</td>
<td>2.88 mb</td>
</tr>
</tbody>
</table>

CD-ROM

Most computers have a CD-ROM drive. The compact disk virtually the same as those used in CD players. The CD-ROM stored data for long-term storage. CD-ROM can read only that once information as written on a CD. It can be arranged, erased, and changed.
2) The secondary purpose of backup is to recover file from an earlier time. According to a user-defined data policy. If the typically configure within a backup application for how long copies are stored properly, backup mechanism in a simple form of disaster recovery and the other complex configuration such as the Computer Cluster, Active Directory.

In general, backup and recovery refer to the various steps and procedures involved in protecting your database against data loss. And reconstructing the database after any kind of data loss. There are two types of backup:

1) Physical Backup
2) Logical Backup

Physical Backup are backup of physical file used in restoring and accounting for your database such as data files, control files and redo log files. Every physical backup is the copying of file restoring database information some other location whether on disk or some offline storage such as Tape, monitor (magnetic).

2) Logical Backup: It contains logical data.

for example:

Table or procedure, export from
a database and store in a binary file for
leak reinstating into database using the corresponding
utility software.

Restore.

It means to return something to its
formal condition therefore when you restore a
computer or other electronic device you return
it to a previous stage, restoring a computer	often called a System Restore.

This process also erase any
new data that has been added since the
previous stage restore your data always backup
your data before restoring a computer.

There are two types of Backup:

* File Backup
* System Image

* File Backup

It is used to save the zip
file. There are two types of file backup are
supported.

i) Normal Backup
ii) Incremental Backup
Normal Backup: It restores everything selected for backup.

Incremental Backup: It restores only files that are changed after a previous backup.

System Image:

System Image is on disk image. There are two types:

* Disk Image
* Differential Image

System image is a disk imaging backup image of a system or the backup system same as block by block with a VHD file. Block base data is more efficient at performing differential backup. Only the blocks that have been changed need to be backup.

Windows backup services responsible for backup and restore operation. The WBS (Windows Backup System) admin command line utility also be used.

Display Device:

Display System Convert Computer signal into touch and prelearn and display them on T.V. screen. Today we use Cathode Ray
3) Mouse Keyboard: Enable the Num-Lock, keyboard.
   Auto delete mouse.

4) Drive Configuration: Configure hard drive, CD-ROM and floppy disk drive.

5) Memory: Direct the BIOS to window a specific memory address.

6) Security: Set a password for accessing the computer.

7) Power Management: Decide whether to use power management or not and set the amount of time for a Stand by suspend.

8) Exit: Save your changes, discard your changes or restore default settings.

The BIOS uses CMOS technology to save any changes made to the computer settings with this technology a small lithium battery on supply in a power to keep the data.
1. Long 2. Short

Solutions

* One long & short

Check the video is properly connected or not.

* One long & short

Video Card

* One long & short

Check the RAM is properly connected or not.

* Eleven Short

Check that cache memory chip is properly connected or not/replace.

* Ten Short

Replace the CMOS Chip/replace the motherboard.

* Eight Short
Read/Write Head:

Hard drive and floppy drive have a read/write head. Most hard drive have two head for each platter, one head is used to read/write data to top of the platter and on other hand it is used to read and write to the bottom side of the platter.

Tracks:

A hard drive platter is divided into many drives. The platter is the entire face back. The tracks are separate lanes running parallel to each other in a circle. The first track is so it is located adjacent to the outside edge of the platter. Floppy disk also have 80 tracks.

Sector:

The smallest area on a hard drive is a sector. A sector can hold maximum 512 words of information, each sector contains the same amount of data. A platter typical hard disk contain approximately 63 sectors per track. A group of sectors is called cluster.

Cylinder:

Cylinder area logical grouping of similar no. of tracks on all platters combined. For example, if you have 6 platters, you would have total no. of surface.
Accessing Data from Hard Disk:

Data bits are recorded on the tracks of a spinning disk surface and read from the surface by read/write heads. These are the basic type of this system.

1) Moving Head
2) Fixed Head

The moving head system has the read/write head (or each disk surface) move in this time system each read/write head moves radially across the surface of the disk and able to access the each track sequentially.

In the fixed head system the access head distributes disk surface.

Hard Drive Partition and Formatting:

Two primary methods are used to prepare for supporting operating system and applications and formatting.

Partitioning:
It is the process of dividing one physical hard drive into separate areas of storage. In another words you can create several logical drives/disk out of one physical drive.
are used by the system and by the initial users of the system. In order to gain some access, these accounts are created to grant basic services.

- Local
- Domain

These accounts are also created in domain controllers automatically when active directory is installed.

1) Administrator cannot be deleted or disabled and should be a permanent user.

2) Guest is blocked by default.

Sharing

Sharing is always accessible and to fill on the network computer user true access to share will determine if they can pass through the network.

Sharing Permissions:

- Full Control (Read / Write / Delete)
- Permissions for Read
- Permissions for Delete
Level 1:

- Mirroring/duplicating

Level 2:

- Stripping with ECC (Error Correcting Code)

Level 3:

- Stripping with a dedicated pirated disk

Level 4:

- Independent data disk with whose pirated disk.

Level 5:

- Independent data disk with distributed parity parity parity.

Plug and Play features of Windows 2000:

Plug and play is a computer feature that allows the addition of a new device normally a peripheral without requiring re-configuration or manual installation of device drivers.

It is an add on feature to the IBM PC, Intel, ISA bus that allows the addition of a new peripheral (without requiring that the user choose an unoccupied input/output addresses manual configuration.
as a line reservation network.

3) Metropolitan Area Network (MAN): It is a network that interconnects users with computer resources in a geographical area or region larger than those covered by even a LAN but smaller than the area covered by a WAN. It is a data network designed for a town or city. MAN's are usually featured by very high-speed communications using fiber optics cable or other physical media. A MAN can support remote data and voice and might even be related to the local cable television network. It uses several protocols mainly FDDI, AON.

**VAN (Value Added Network)**

It is a communication channel leased from a telephone company to offer customers with modem access to network services through a local or toll-free number.

Campus Area Network (CAN)

The computers are within a limited geographical area such as a campus or military base.
Client Architecture

Each computer or process on the network is either a client or a server. Each client or server connected to a network can also be referred to as a node. The most basic type of client-server architecture is employees only.

Two types of nodes: client and server. It is also called a client-server architecture. It also allows devices to share files and resources. Each instance of the client software can send data. The request to one or more nodes. Connected in turn, the server can accept each request process. It then send the request info to the client.

Although this concept can be applied for a variety of reasons in many different kinds of applications. For example, client-server architecture in a web application. That is designed for Internet Information Server (IIS) using a combination of: Internet with Active Server Page (ASP) programming and client side scripting. ASP scripts run on the web server. While the client side script runs on the client's web browser.

Features of a Client:

* Activate the master computer.

* Initiate Request.
piece of software in a router are the OS and the routing protocol. It use logical and physical addressing to connect two or more logically separated Networks. They accomplish this network segmentation or sub networks. Each of these sub networks is given a local address, which allows the network to be separate but still access each other and exchange data when necessary.

Routing Operations

Routing is a function of the network layer of the OSI model (Open Systems Interconnection). Routing means finding the route or the next hop. A device called a router does the routing function. It uses a table called the Routing Table to find the route to any destination. The Routing Table contains information about the potential path that a data packet would take to travel through the Internet and reach its destination. A Router has to read the header of each packet that arrive and extract the destination address of the packet. The Router then sends the packet out on the appropriate transmission path based on a calculation of the optimum Route to the destination. There are two functions:

1) Forwarding Functions
Mesh Topology

In this topology every computer is connected with every other computer with separate cable segments. This requires the maximum amount of cable length but the advantage is reliability. Failure of any network does not effect the functioning of the network because of alternative path for the signal except for marginal degradation in the performance. The topology becomes extremely complex to implement and manage when the use of computers is large. This topology is good for small networks and is particularly used in peer to peer networks.

Hybrid Topology

Hybrid Topology is simply a mix of other topologies it would be impossible to illustrate/describe it because there are many combinations. Indeed most computers today are not only hybrid but heterogeneous
Local Area Network Media

It can be developed using various types of media based on the functionality, distance coverage, and bandwidth of the medium. There are two basic categories:

1) Electrical Media
2) Optical Media

Electrical Media:
- It includes those media wires which can make data in terms of electrical only. In a digital network, 5 volts for 5 milliseconds represent a binary width of 1 and absent of voltage for 5 milliseconds represents binary 0. These includes:

1) 10/100 Base-T (Shielded Twisted Pair) Cable
2) UTP (Unshielded Twisted Pair) Cable
3) Coaxial Cable:

There are two features:

1) Thin wires coaxial cable
2) Thick wire coaxial cable
address a network administrator borrows bits from the host field and designate them as the subnet field. The minimum no. of bits that can be borrowed is 2. If only one bit was borrowed to create a C-subnet then there would only be a network number and the broadcast number. The maximum number of bits that can be borrowed can be any number that leaves at least 8 bits remaining for the host number. Any combination of these borrows is known as a subnet mask except all 0’s and all 1’s.

A subnet address is equal to the small network address and broadcast, but all 1’s. A subnet is a broadcast address of a subnet network that is with these borrows are known as unusable subnets. All other subnets are known as usable subnets.

<table>
<thead>
<tr>
<th>Class</th>
<th>Minimum bits borrowing</th>
<th>Maximum bits borrowing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A</td>
<td>2</td>
<td>2 2</td>
</tr>
<tr>
<td>Class B</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Class C</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>