

Importance and Need of Backup

Back-Up:

Definition: Data backup involves the storing of files from your computer in another location. In this way, if there is ever any loss of data on your primary machine, you still have your data in backup in order to restore those files. In the world of computers loss of data can be devastating, and while there are possibilities for recovery of data after a disaster it is far easier to restore your files from backup than to attempt to find your data on a crashed hard drive.

Need to take backup:

- Data backup is easy to do and can save you great amounts of time as well as ensure that your data is secure in the case of disaster.
- Data recovery is a very difficult, time consuming and expensive process, and it is not even assured that you will be able to recover your data from a system crash.
- Backup does not take much time, as it is easy to put your files onto another medium, and is not too expensive, depending upon what mediums you use to backup your data.
- There are many different options for data backup, and you will have to choose the one that is best for you.

Storage Devices

1. Hard Disk:

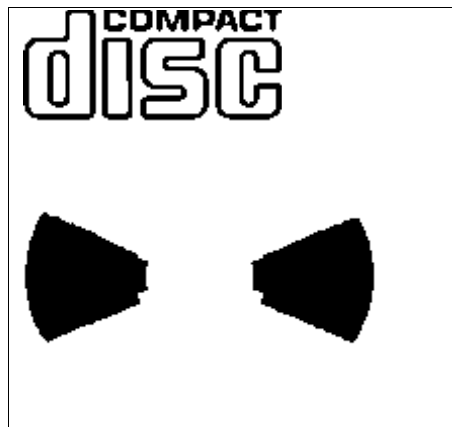
- A hard disk usually consists of several inflexible, circular disks, called platters, on which items are stored electronically.
- The hard disk in most desktop and laptop computers is housed inside the system unit, and is considered fixed disks because being not portable.
- Hard disks are sealed tightly to keep out of contaminants (e.g., dust and smoke particles), which may result in head crash.
- Hard disks undergo two formatting steps: a low-level format and a high-level format.
- Some computers are able to improve the hard disk access time by using disk caching.
- The flow of data, instructions, and information to and from a hard disk is managed by a special purpose chip and its associated electronic circuits called the hard disk controller (HDC).
- Some manufacturers develop a type of hard disk system, called RAID, which connects several smaller disks into a single unit that acts like a single large hard disk.
- Advantages:
Advantages of hard disks over floppy disk include

- ✓ Hard disks provide far larger storage capacities and much faster access times than floppy disks.
 - ✓ Hard disk is cheaper than floppy disk per Megabyte.
 - ✓ Hard disk is usually more reliable than floppy disk (a better protection against dust and dirt).
- **Disadvantages:**
Disadvantages of hard disk when compared with floppy disk include
 - ✓ Hard disk is not portable (except removable hard disk, which is usually more expensive).
 - ✓ Data becomes less secure if left on the hard disk.
 - ✓ Head crash may occur due to extreme shock or contaminants.

2. CD (Compact Disk):

A compact disc (CD) is a flat, round, portable, storage medium that is usually 4.75 inches in diameter and less than one-twentieth of an inch thick.

Figure:



- Compact discs store items by using microscopic pits and land that are in the middle layer of the disc.
- A compact disc stores items in a single track, which is also divided into evenly sized sectors, that spirals from the center of the disc to the edge of the disc.
- The drive destination of a compact disk drive usually follows alphabetically after that of the hard disk (i.e. if the hard disk is drive C, then the compact disk is drive D).
- Variations of compact discs designed for use with computers include
- Most manufacturers guarantee that a properly cared for compact disc will last up to 50 years.

Advantages:

- Advantages of compact disc over hard disk include
 - ✓ A compact disc is more portable than a hard disk.
- Advantages of compact disc over floppy disk include
 - ✓ The storage capacity of a compact disc is very much larger than that of a floppy disk.

- ✓ The average access time of a compact disc is faster than that of a floppy disk.

Disadvantages:

- Some kinds of compact discs are read only (CD-ROM and DVD-ROM).
- The average access time of a compact disc is slower than that of a hard disk.

3. DVD(Digital Video Disc or Digital Versatile Disc) :

Figure:



- DVD is an optical disc storage media format, and was invented and developed by Philips, Sony, Toshiba, and Time Warner in 1995.
- Its main uses are video and data storage. DVDs are of the same dimensions as compact discs (CDs), but are capable of storing more than six times as much data.
- Variations of the term DVD often indicate the way data is stored on the discs: DVD-ROM (read only memory) has data that can only be read and not written; DVD-R and DVD+R (recordable) can record data only once, and then function as a DVD-ROM; DVD-RW (re-writable), DVD+RW, and DVD-RAM (random access memory) can all record and erase data multiple times.

Advantages:

- **Superior Data Storage - Advantage DVD**
When it was developed, the only serious competition of DVD was from 3.5 inch floppies. The floppies had been in existence for quite a long time and had slowly been coming down in size from 10 inch to 5.5 inches and then to the standard 3.5 inches.
- **High density advantage of DVD:** The capacity of floppies remained at a measly 1.44 MB, whereas the CD could store 700 MB and the DVD could store initially 4.5 GB and now you can have double sided double layer storing up to

17 GB. This had the advantage of storing 11000 times more data at just double the size of floppy.

- **Cost advantage of DVD:** The cost of blank DVD is just 4 to 10 times that of the floppy or the audio CD, but the data storage capacity is huge and thus the cost per bit of data stored comes down considerably. With the costs coming down rapidly, the cost advantage of DVD becomes further obvious.
- **Duplication advantage of DVD:** With DVD writers becoming just as cheap as the CD writers, the cost of carrying of data with you has reduced considerably. You can carry the data as cheaply and easily as the floppies themselves. You can do this without bothering about the costs.

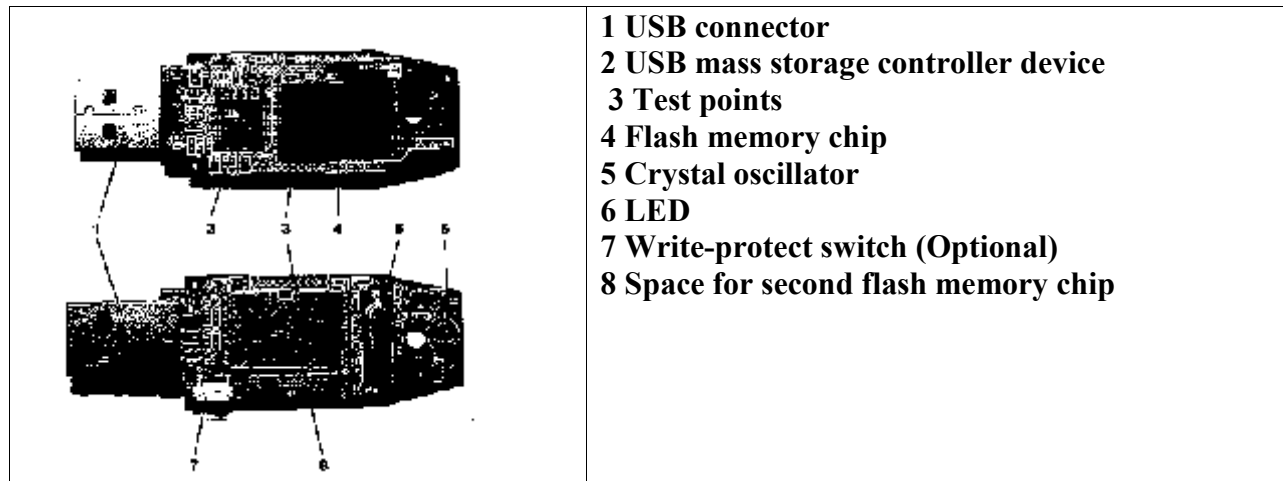
This makes transfer of data quick and easy. Imagine sending 17 GB of data over 256 KBPS modem or through floppies and you will understand the advantage immediately. You might require remaining connected over the internet for more than one year or sending 11000 floppies instead of just one DVD.

4. Pen Drive:

- A USB flash drive consists of a flash memory data storage device integrated with a USB (Universal Serial Bus) 1.1 or 2.0 interface.
- USB flash drives are typically removable and rewritable, and physically much smaller than a floppy disk. Most weigh less than 30 g (1 oz). Storage capacities in 2010 can be as large as 256 GB with steady improvements in size and price per capacity expected. Some allow 1 million write or erase cycles and have a 10-year data retention cycle.
- Flash drives use the USB mass storage standard, supported natively by modern operating systems such as Windows, Mac OS X, Linux, and other Unix-like systems. USB drives with USB 2.0 support can store more data and transfer faster than a much larger optical disc drive and can be read by most other systems such as the Play Station-3.

Figure:



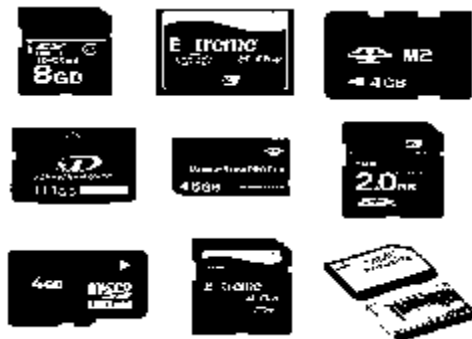


- 1 USB connector
- 2 USB mass storage controller device
- 3 Test points
- 4 Flash memory chip
- 5 Crystal oscillator
- 6 LED
- 7 Write-protect switch (Optional)
- 8 Space for second flash memory chip

5. Flash Memory Card:

- A memory card or flash card is an electronic flash memory data storage device used for storing digital contents. They are commonly used in many electronic devices, including digital cameras, mobile phones, laptop computers, MP3 players, and video game consoles. They are small, re-recordable, and they can retain data without power.
- The most common type of memory card in use today is the SD card, which comes in capacities of up to 64 Gigabytes. In addition to these and other types of memory cards, there are also non-solid-state memory cards that do not use flash memory, and there are different types of flash memory. Many cards incorporate wear leveling algorithms in their design.

Figure:



Difference between Main memory and Backing storage.

	<u>Memory</u>	<u>Backing Storage</u>
<u>Advantages</u>	Memory is fast because it is accessed electronically and no mechanically components are involved.	<p>1. Backing storage is <u>nonvolatile</u> and contents stored are relatively more permanent when compared with memory.</p> <p>2. Backing storage provides a cheap and almost an unlimited amount of storage.</p>
<u>Disadvantages</u>	<p>Most memory (except ROM, flash memory and CMOS) is <u>volatile</u> and contents must be transferred to backing storage before the computer is turned off.</p> <p>Memory is expensive and its storage size on a computer system is usually limited when compared with backing storage.</p>	Backing storage is slow because of the mechanical components involved.