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Assignment Operating system

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| Hard disk drive(HDD): | A **hard disk drive** is a non-volatile computer storage device containing magnetic disks or platters rotating at high speeds. It is a secondary storage device used to store data permanently, random access memory (RAM) being the primary memory device. The hard disk is a secondary storage device, which is designed to store data permanently. The secondary storage devices include a large storage capacity as compared to the primary storage devices. The data stored in a hard disk is retained when our computer system shuts down. The data stored in the hard disk can be of many types such as the operating system, installed software, documents, and other files of computer. Hard disk was introduced in the year 1956 by IBM. The first personal computer contains a hard drive of less than 1 megabyte, while modern computers contain a hard drive of 1 terabyte. |
| Solid state drive(SSD): | A **solid state drive** is a type of mass storage devices similar to a hard disk drive.. It supports reading and writing data and maintains stored data in a permanent state even without power. Internal SSDs connect to a computer like a hard drive,using standard IDE or SATA connections.While SSDs serve the same function as hard drives, their internal components are much different. Unlike hard drives, SSDs do not have any moving parts (which is why they are called solid state. Instead of storing data on magnetic platters, SSDs store data using flash memory. Since SSDs have no moving parts, they don't have to "spin up" while in a sleep state and they don't need to move a drive head to different parts of the drive to access data. Therefore, SSDs can access data faster than HDDs.SSDs have several other advantages over hard drives as well. Therefore defragmenting an SSD is not necessary. |
| Ram access memory(RAM): | **RAM** is the internal memory of the CPU for storing data, program, and program result. It is a read/write memory which stores data until the machine is working. As soon as the machine is switched off, data is erased. Access time in RAM is independent of the address, that is, each storage location inside the memory is as easy to reach as other locations and takes the same amount of time. Data in the RAM can be accessed randomly but it is very expensive. RAM is volatile, i.e. data stored in it is lost when we switch off the computer or if there is a power failure. Hence, a backup Uninterruptible Power System (UPS) is often used with computers. RAM is small, both in terms of its physical size and in the amount of data it can hold. Every computing device has RAM, whether it’s a desktop computer (running Windows, MacOS, or Linux), a tablet or smartphone, or even a special-purpose computing device (such as a smart TV). Nearly all computers also have some way to store information for longer-term access, too. But the working processes are done in RAM. |
| Digital versatile disk random access memory(DVD-RAM): | A **digital versatile disk random access memory** drive is a rewritable and erasable optical disc drive specified by the DVD Forum in 1996. It is a media storage device used in computers, camcorders and personal video recorders.The original DVD-RAM disks had an enclosed cartridge, which made it difficult to fit them into DVD-ROM drives and DVD players. As such, a DVD-RAM drive was required in order to use a DVD-RAM disk. Modern DVD-RAM disks can be used without a cartridge in any DVD device that supports a DVD-RAM format. It is a DVD optical disk storage technology on which data can be continually read, erased and written. It provides exceptional data integrity, data retention and damage protection and can be used for basic data storage, archiving data and data backup. Most operating systems, such as Windows XP, Linux and Mac OS 8.6, support DVD-RAM directly. However, earlier Windows versions required a device driver or InCD software. |
| Read only memory(ROM: | **Read-Only Memory** is a type of electronic storage that comes built in to a device during manufacturing. You’ll find ROM chips in computers and many other types of electronic products; VCRs, game consoles, and car radios all use ROM to complete their functions smoothly. ROM chips come built into an external unit – like flash drives and other auxiliary memory devices – or installed into the device’s hardware on a removable chip. Non-volatile memory like ROM remains viable even without a power supply. Unlike the non-volatile memory of a hard drive, it’s difficult and time-consuming to rewrite a ROM chip’s memory. In most cases, it’s impossible to alter integrated circuits, which may mean you can’t update more basic forms of ROM. You may be able to reprogram some modern types of ROM, but only at slow speeds and with special equipment. These hurdles make traditional ROM poorly-suited for functions that require frequent feature updates or are prone to bugs or security issues. |
| USB flash memory: | A **USB flash memory** is a device used for data storage that includes a flash memory and an integrated Universal Serial Bus (USB) interface. Most USB flash drives are removable and rewritable. Physically, they are small, durable and reliable. The larger their storage space, the faster they tend to operate. USB flash drives are mechanically very robust because there are no moving parts. They derive the power to operate from the device to which they are connected (typically a computer) via the USB port. A typical USB flash drive consists of a USB connector, which is well protected and electrically insulated inside a plastic or rubber case. A small printed circuit board with surface-mounted integrated circuits are found within the device's casing. |
| [CD, DVD and Blu-Ray Discs](https://www.computerscience.gcse.guru/theory/storage-devices#optical): | **CD** is similar to the one you buy at a music store. A single disc can store more than 600MB of data I.e. equivalent to 400 floppy disks. CDs can be read through CD ROM drive. The speed of a CD ROM drive determines how fast a disc spins. With faster speed, a disc can transfer information to computer more quickly.  **DVDs** are similar to CDs but can hold visual displays like movies or large amount of data. DVD drive is able to read DVDs as well as CDs. A DVD disc has a storage capacity starting from 4.7GB up to 8 GB which is equivalent to 6 CDs. **Blu-ray Disc-** is an optical storage medium designed to supersede the DVD format. The standard physical medium is a 12 cm plastic optical disc, the same size as DVDs and CDs. Blu-ray Discs contain 25 GB per layer, with dual layer discs(50 GB) the norm for feature-length video discs and additional layers possible in the future. |
| [Cloud Storage](https://www.tech21century.com/different-types-of-storage-devices/#10_Cloud_Storage): | **Cloud storage** is a cloud computing model that stores data on the Internet through a cloud computing provider who manages and operates data storage as a service. It’s delivered on demand with just-in-time capacity and costs, and eliminates buying and managing your own data storage infrastructure. This gives you agility, global scale and durability, with “anytime, anywhere” data access. Cloud storage is purchased from a third party cloud vendor who owns and operates data storage capacity and delivers it over the Internet in a pay-as-you-go model. These cloud storage vendors manage capacity, security and durability to make data accessible to your applications all around the world. Applications access cloud storage through traditional storage protocols or directly via an API. Many vendors offer complementary services designed to help collect, manage, secure and analyze data at massive scale. |

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| BluRay Disk: | **Blu-ray** is an optical disc format like CD and DVD. Blu-ray discs can hold more information than other optical media, because of the blue lasers that the disc drives use. A single Blu-ray disc can hold up to 25GB of data. Dual-layer Blu-ray discs will be able to store 50GB of data — equivalent to four hours of HD content. In 2010, the Blu-ray Disc Association (BDA) announced formal specifications for a new Blu-ray disc XL (BDXL) format that boasts a maximum storage capacity of 128GB. In practice Blu-rays are primarily used for storing movies and TV shows in high definition with high-quality lossless sound, more available channels of surround sound than DVD, and support for stereoscopic full-color 3D video. They are also used as the physical release format for Playstation 3, Playstation 4, and Xbox One video games. Like DVDs, they also come in recordable versions onto which people with Blu-ray burners can write any type of data, to be read back with a Blu-ray Disc drive equipped computer. |
| Cache memory: | **Cache memory** is a small-sized type of volatile computer memory that provides high-speed data access to a processor and stores frequently used computer programs, applications and data.A temporary storage of memory, cache makes data retrieving easier and more efficient. It is the fastest memory in a computer, and is typically integrated onto the motherboard and directly embedded in the processor or main random access memory (RAM). Cache memory is the fastest memory available and acts as a buffer between RAM and the CPU. The processor checks whether a corresponding entry is available in the cache every time it needs to read or write a location, thus reducing the time required to access information from the main memory. Hardware cache is also called processor cache, and is a physical component of the processor. Depending on how close it is to the processor core, can be primary or secondary cache memory, with primary cache memory directly integrated into (or closest to) the processor. |
| SD Card: | An [**SD card**](https://www.businessinsider.com/category/sd-card)**,** short for Secure Digital card, is a type of removable memory card used to read and write large quantities of data in a wide variety of mobile electronics, cameras, smart devices, and more. It has become the default standard of memory card for most consumer electronics (though a smaller version, the Micro SD card, is commonly used in phones and other devices where physical space is more of a premium). The SD card debuted in 1999 and is the successor to the now-obsolete MultiMediaCard (MMC). It was one of a number of competing memory card formats in use by consumer electronics, such as Sony's defunct Memory Stick and the CompactFlash card, which, while still in use, is much less common than it was in decades past. As the electronics industry has evolved, the original SD card specification has been updated several times to allow for higher capacities. That means there are several types of SD cards sold and used. |
| Floppy Disk: | A **floppy disk** is a magnetic storage medium for computer systems. The floppy disk is composed of a thin, flexible magnetic disk sealed in a square plastic carrier. In order to read and write data from a floppy disk, a computer system must have a floppy disk drive (FDD). A floppy disk is also referred to simply as a floppy. Since the early days of personal computing, floppy disks were widely used to distribute software, transfer files, and create back-up copies of data. When hard drives were still very expensive, floppy disks were also used to store the operating system of a computer.  A number of different types of floppy disks have been developed. The size of the floppy got smaller, and the storage capacity increased. However, in the 1990s, other media, including hard disk drives, ZIP drives, optical drives, and USB flash drives, started to replace floppy disks as the primary storage medium. |