

Instructions- Parents are requested to make sure that the child reads and understands the chapter and the related exercises.

1
CHAPTER

Computers - Storage and Memory Device

DATA VS INFORMATION

Data are plain facts in unprocessed form. The word data is plural for datum. When data are processed, organized, structured or presented in a given context so as to make them useful, they are called **Information**.

It is not enough to have data. Data themselves are fairly useless. But when these data are interpreted and processed to determine its true meaning, they become useful and can be called Information.

Key Concepts

- Data vs Information
- Data storage units-basic facts
- Internal and External memory
- Primary and Secondary storage devices

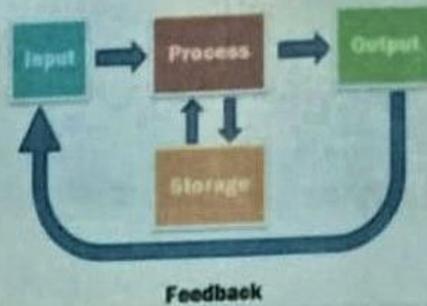
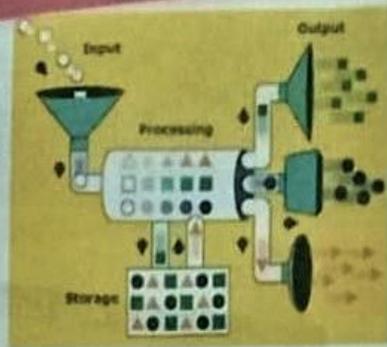
Distinction between Data and Information:

Data	Information
Data is a form of raw facts and figures.	Information is the result of processed data.
Data can be collected in un-sequential manner.	Information is presented in a meaningful form.
Data is an input form.	Information is an output form.
Data cannot be understood.	Information is complete and understandable.

Data → **Information** → **Knowledge**

N.T.C.S. - 4

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We know that CPU is the brain of a computer. It controls the functions of Computer. It processes data and gives results. It remembers all the things stored in it and when we give command to it, it fetches the information from its memory.



A human brain cannot remember so much things. Computer is a great way to store large amounts of data. We can retrieve the data as and when we need it.

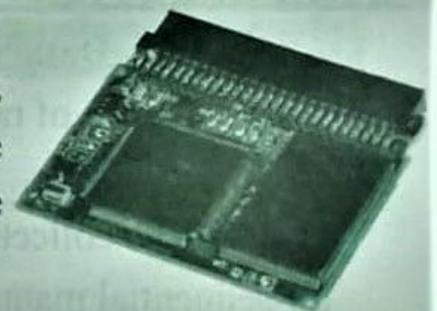
Let us study in details, where does a computer store information.

COMPUTER MEMORY

A computer can store the program in its memory. When a certain program starts on the computer, first of all, it is loaded in the computer memory. Computer memory can load a number of programs in its memory. The faster the memory of the computer, the faster is the speed of opening of the programs.

A computer can have two types of memory.

1. Primary Memory
2. Secondary Memory



Memory

PRIMARY MEMORY

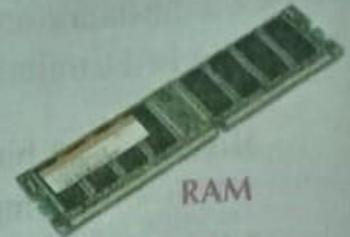
Primary memory is the main memory of the computer. It is also called internal memory.

It holds the programs and instructions while the computer is working. When the computer is turned off, this memory is erased.

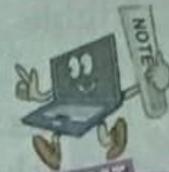
Primary memory is of two types :

RAM

- ❖ It is Random Access Memory.
- ❖ RAM is used by the computer to store data for processing.
- ❖ It stores data temporarily. As you write new instructions, the previous data is erased and new data is overwritten.



RAM



NOTE THE FACT

Smallest unit of memory is Bit.

ROM

- ❖ It is Read Only Memory.
- ❖ There is another memory in computer, which is called Read Only Memory (ROM).
- ❖ The storage of programs and data in the ROM is permanent.
- ❖ ROM can only be read by the CPU but it cannot be changed.
- ❖ ROM does not erase its contents when the power is switched off.



ROM



NOTE IT

The actual word Bit is BIT.
It has been derived from **BI**nary digi**T**.

SECONDARY MEMORY

In addition to internal memory of the computer, external memory is required to store the huge amount of data. Since internal storage of a computer is less, therefore, external memory is required to store information and that too for a longer period.

- ❖ Secondary memory is not lost even if the computer is turned off.
- ❖ Secondary memory is also known by the name external memory.

DATA STORAGE

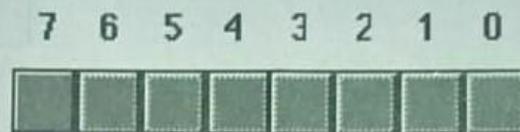
All the data stored on the computers is handled by them in terms of bits. Let us study the units of data handling in computers.

Bit : A bit (short for *binary digit*) is the smallest unit of data in a computer. A bit has a single binary value, either 0 or 1.

Nibble : Half a byte (four bits) is called a nibble.

Byte : A byte is a combination of 8 bits.

The bits in a byte are normally numbered from zero to seven using the convention shown below:



1 Bit	=	Binary Digit (0 or 1)
1 Byte	=	8 Bits
1024 Bytes	=	1 Kilo Byte
1024 Kilo Bytes	=	1 Mega Byte
1024 Mega Bytes	=	1 Giga Byte
1024 Giga Bytes	=	1 Tera Byte
1024 Tera Bytes	=	1 Peta Byte
1024 Peta Bytes	=	1 Exa Byte
1024 Exa Bytes	=	1 Zetta Byte
1024 Zetta Bytes	=	1 Yotta Byte

STORAGE DEVICES

The devices that can store data and information are called storage devices.

CD, DVD, Hard Disk, Pen Drive are the common storage devices.

Hard Disk

Hard disk can store huge amount of data on it. Hard disk is fixed inside the CPU box.

It is the main storage medium in the computer system. It can store a large amount of data. Hard disk can store upto 4 TB of data.



Hard Disk

NOTE THE FACT

Internal memory is known as Primary memory whereas External memory is known as Secondary memory.

NOTE THE FACT

Hard Disk is also known by the name Magnetic Disk.

CD

A CD is a Compact Disc. It is round in shape. It is an optical storage media. Diameter of a CD is 12 cm. It can store lot of information in it, like songs (music), video and other information. A CD can store upto 700 MB data.

Mini CDs are also available. A mini CD is 8 cm in diameter. These CDs are smaller in size but are less common. These CDs can be seen with hardware items as Driver CDs.

CD is inserted in CD drive. CD drive is fixed on the front panel of CPU cabinet.



CD



CD Drive



NOTE THE FACT

Nowadays, CPUs have DVD drives instead of CD drives. A DVD drive can read both CD and DVD.

DVD

A DVD is called Digital Versatile Disc. It is also round in shape and same in size of a CD, but it has more storage space in it.

Storage capacity of a DVD varies from 4.7 GB to 17 GB.



DVD



NOTE THE FACT

A written CD, DVD and Blu-Ray Disc cannot be

DISCUSS

Primary memory vs
Secondary memory.

Blu-Ray Disc

Blu-ray is also an optical disc. It can store large amount of data. Blu-ray is superior to DVD.

A Blu-ray disc can store much more data in the same 12 centimeter space.

A single-sided Blu-ray disc can store upto 25 GB of data.



Blu-Ray Disc



NOTE THE FACT

Floppy was the handy storage device with a maximum storage capacity of 1.44 MB. It was very much used upto 2010s.



Floppy 8 inch size



Floppy 5 1/2 inch size



Floppy 3 1/2 inch size

Pen Drive

A pen drive is a small device which can store more information than a CD. It can be used for storing music, video and other information.

Storage capacity of pen drives can be upto 256 GB.

Information written on the pen drive can be erased and rewritten any number of times.



Pen drive

Memory Card

Memory card is also known by the name multimedia card. It is a flash memory card. This card is used in portable devices like mobiles, digital cameras, ipods and tablets. It can be easily inserted in the card slot and can be detached and attached with the computer using card reader.

Presently, memory cards are even smaller than the size of a postage stamp.

Storage capacity of a memory card can be upto 32 GB.



Exercises (To be learnt)

A. Fill in the blanks: -

- Smallest unit of memory is BIT.
- Pen drive is a storage device.
- A CD can store 700 MB data.
- RAM is primary memory.
- Pen Drive is external memory.
- Diameter of a CD is 12 cm.

B. Write True or False: -

- Memory in RAM is permanent. **False**
- Memory in ROM is temporary. **False**
- Internal memory is also called Primary memory. **True**
- A DVD has more storage capacity than a CD. **True**

C. Multiple Choice Questions: -

- A pen drive can _____ the information.
a) **Store** b) process c) enter
- Diameter of a DVD is _____.
a) 10 cm b) **12 cm** c) 12 mm
- Storage capacity of a CD can be upto _____.
a) 650 MB b) 750 MB c) **700 MB**

4. _____ is not a secondary memory device.
a) **RAM** b) Memory Card c) Pen Drive

D. Write the full forms of the followings: -

- i. KB -
- ii. MB -
- iii. GB -
- iv. TB -
- v. ROM -
- vi. RAM -
- vii. CD -
- viii. DVD -

E. Answer the following: -

1. **What is the smallest unit of storage of memory?**

Ans. The smallest unit of storage of memory is BIT.

2. **Name the types of storage devices.**

Ans. The types of storage devices are CD, DVD, Hard Disk and Pen Drive.

3. **What is RAM?**

Ans. RAM is: -

- (a) Random Access Memory
- (b) RAM is used by the computer to store data for processing.
- (c) It stores data temporarily. As we write new data (instructions), the previous data is erased and new data is overwritten.

4. **What is ROM?**

Ans. ROM is: -

- (a) Read Only Memory
- (b) The storage of programs and data in the ROM is permanent.
- (c) ROM can only read by the CPU but it cannot be changed.
- (d) ROM does not erase its contents when the power is switched off.

5. **What are the features of Pen Drive?**

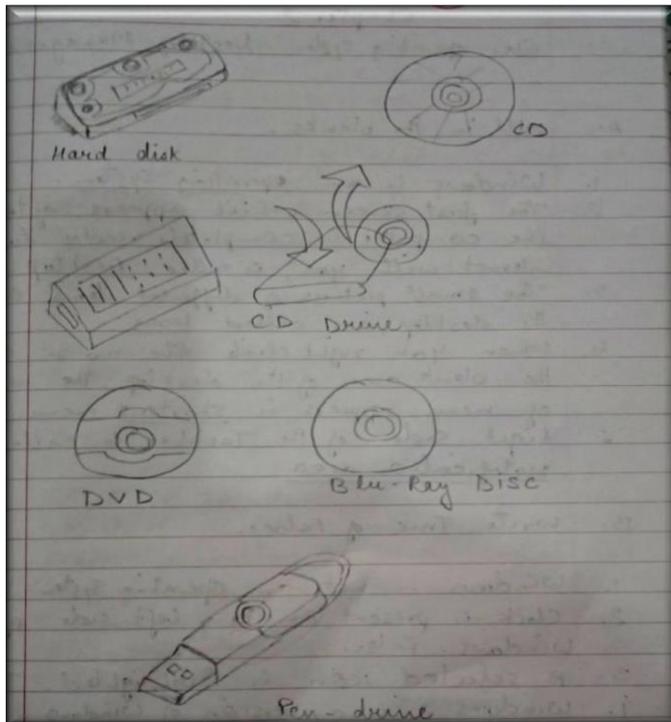
Ans. A Pen Drive is a small device which can store more information than a CD. It can be used for storing music, video and other information. Storage capacity of Pen Drive can be upto 256 GB.

F. Write the full form of the following: -

1. CD - _____.
2. ROM - _____.
3. DVD - _____.
4. RAM - _____.

Diagrams: -

Types Storage devices: (Pages 17 & 18)



Memory Card: (Page 19)



Note: - Assessment questions can also be framed from in between the chapter.
