ROM stands for **Read Only Memory**. The memory from which we can only read but cannot write on it. This type of memory is non-volatile. The information is stored permanently in such memories during manufacture. A ROM stores such instructions that are required to start a computer. This operation is referred to as **bootstrap**. ROM chips are not only used in the computer but also in other electronic items like washing machine and microwave oven.

Let us now discuss the various types of ROMs and their characteristics.

MROM (Masked ROM)

The very first ROMs were hard-wired devices that contained a pre-programmed set of data or instructions. These kind of ROMs are known as masked ROMs, which are inexpensive.

PROM (Programmable Read Only Memory)

PROM is read-only memory that can be modified only once by a user. The user buys a blank PROM and enters the desired contents using a PROM program. Inside the PROM chip, there are small fuses which are burnt open during programming. It can be programmed only once and is not erasable.

EPROM (Erasable and Programmable Read Only Memory)

EPROM can be erased by exposing it to ultra-violet light for a duration of up to 40 minutes. Usually, an EPROM eraser achieves this function. During programming, an electrical charge is trapped in an insulated gate region. The charge is retained for more than 10 years because the charge has no leakage path. For erasing this charge, ultra-violet light is passed through a quartz crystal window (lid). This exposure to ultra-violet light dissipates the charge. During normal use, the quartz lid is sealed with a sticker.

EEPROM (Electrically Erasable and Programmable Read Only Memory)

EEPROM is programmed and erased electrically. It can be erased and reprogrammed about ten thousand times. Both erasing and programming take about 4 to 10 ms (millisecond). In EEPROM, any location can be selectively erased and programmed. EEPROMs can be erased one byte at a time, rather than erasing the entire chip. Hence, the process of reprogramming is flexible but slow.

Advantages of ROM

The advantages of ROM are as follows −

- Non-volatile in nature
- Cannot be accidentally changed
- Cheaper than RAMs

- Easy to test
- More reliable than RAMs
- Static and do not require refreshing
- Contents are always known and can be verified

Advantages of ROM:
- It is cheaper than RAM and it is non-volatile memory.
- It is more reliable as compared to RAM.
- Its circuit is simple as compared to RAM.
- It doesn't need refreshing time because it is static.
- It is easy to test.

Disadvantages of ROM:
- It is a read-only memory, so it cannot be modified.
- It is slower as compared to RAM.

Difference between PROM and EPROM

The data stored in PROM is permanently stored and cannot be changed and erased.	The EPROM can be reprogrammed and reusable multiple times.
PROM is not expensive compared to EPROM.	EPROM is more expensive than PROM.
A bipolar transistor is used in PROM.	A MOS transistor is used in EPROM.
PROM is more flexible than EPROM.	EPROM is less flexible than PROM.
PROM is used in low-level programs such as firmware or microcode.	EPROM is used in microcontrollers.