COMPUTER AND INFORMATION TECHNOLOGY

Course Code:510113
BBA -2nd Semester

Chapter 2

Fundamental of Computer Hardware

Lecture 07

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2.32 Memory Representation

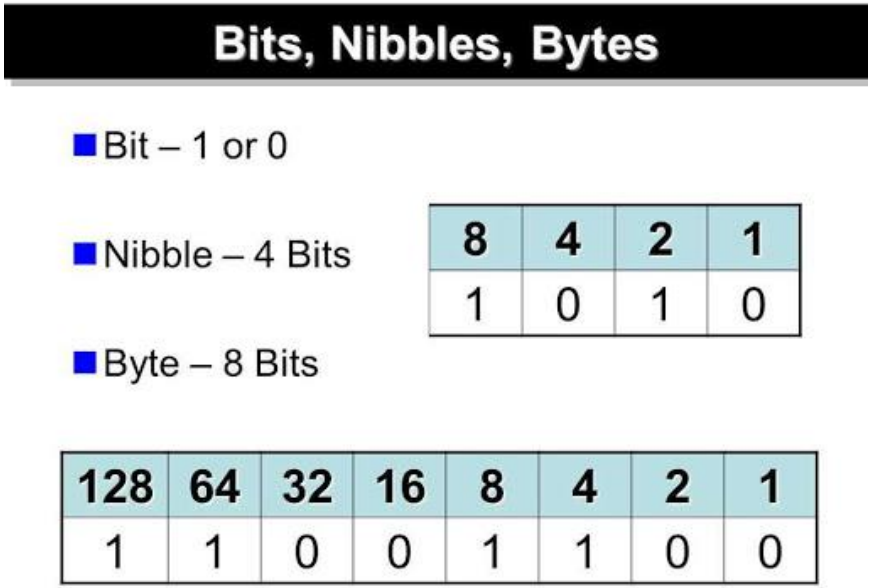
Computer works only two states: ON (1) and OFF (0). Each of these values is called 'binary digit'. A group of eight bits called as 'byte' which represent a character,

Decimal	*Binary*	*Octal*	*Hexadecimal*
0	00000000	000	00
1	00000001	001	01
2	00000010	002	02
3	00000011	003	03
4	00000100	004	04
5	00000101	005	05
6	00000110	006	06
7	00000111	007	07
8	00001000	010	08
9	00001001	011	09
10	00001010	012	0A
11	00001011	013	0B
12	00001100	014	0C
13	00001101	015	0D
14	00001110	016	0E
15	00001111	017	0F
16	00010000	020	10
17	00010001	021	11
18	00010010	022	12
:	:	:	:
etc.	etc.	etc.	etc.

2.23 BIT,BYTE, KILOBYTE, MEGABYTE……

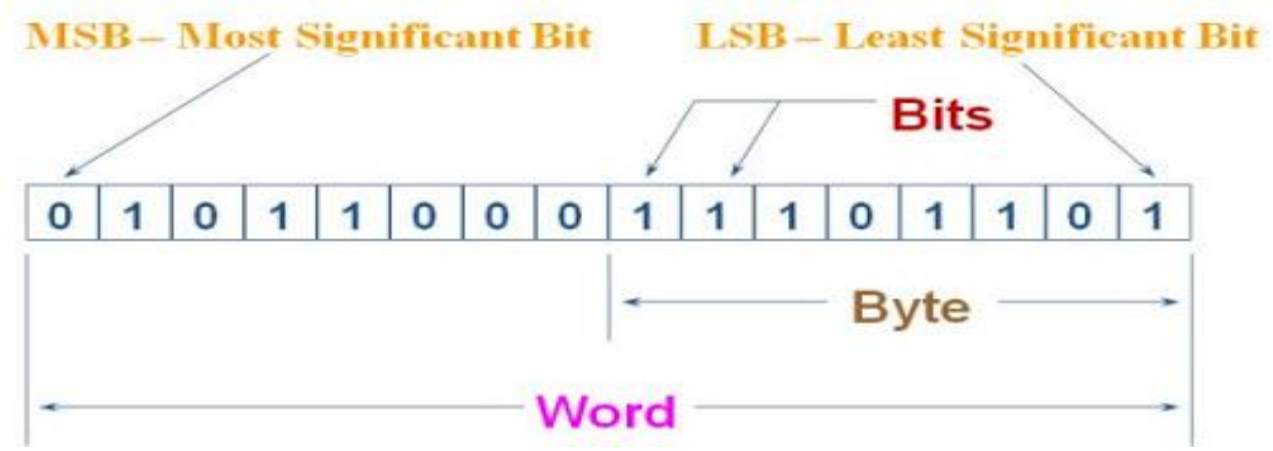
1. **BIT**: smallest unit of data that a computer uses.
2. **Byte:** a byte is equal to 8 bits. A byte can represent 256 states of information.
3. **KILOBYTE**: approximately 1000 bytes actually 1024nbytes
4. **MEGABYTE:** 1000 KB
5. **GIGABYTE:** approximately 1000 Megabyte
6. **TERABYTE:** **approximately one trillion bytes**
7. **Nibble:** a string of four bits or half a byte is called nibble. A nibble can represent up to 16 distinct values used for BCD numbers.

Decimal	Hexadecimal	Binary
0	0	0
1	1	1
2	2	10
3	3	11
4	4	100
5	5	101
6	6	110
7	7	111
8	8	1000
9	9	1001
10	A	1010
11	B	1011
12	C	1100
13	D	1101
14	E	1110
15	F	1111



2.16 Word

A word is a group of 16 buts. Bits in a word are numbered starting from zero to on up to fifteen.



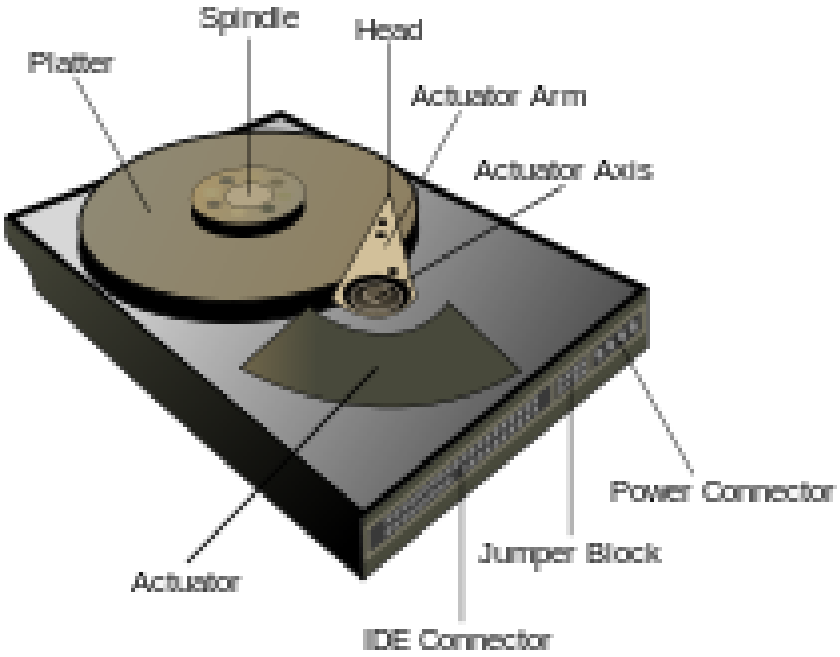
2.35 Difference between EPROM and EEPROM

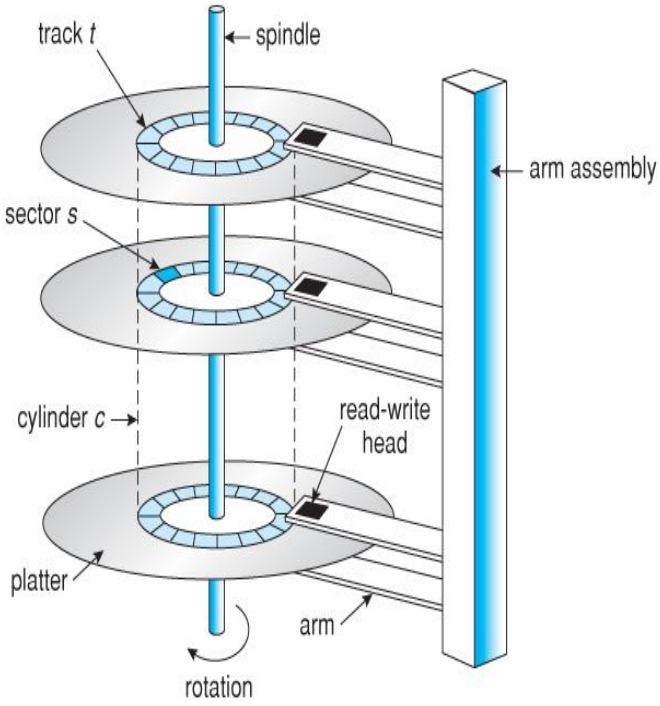
2.36 Difference between PROM and EPROM

2.37 Difference between RAM and ROM

2.39 Disk Drive

A disk drive is a randomly addressable and rewriteable storage device. It can be interpreted to include optical disk, floppy disk. Normally known as HDD.





2.41 Formatting or Initialization

Formatting is the process of preparing a hard drive or any other storage device for first use.

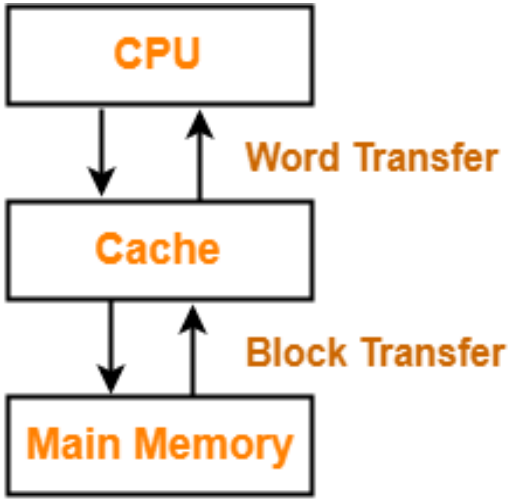
- Physical or low kevel formatting- is the process of divide the hard drive into sector and tracks ready to be used.
- Logical or high level formatting:- it creates file system that will allow the OS to use the disk space to store file and access file.

2.42 HOT Swappable hard drive

Also called the removable hard drive. These disks are used where large amounts of data are needed. Hot-swapping includes two operations. Swap-out and swap-in. 'Swap-out' indicates removal of hard disk and 'swap-in' indicates insertion of hard disk.

2.45 Cache Memory

Cache memory lies in the path between the processor and the memory. The cache memory therefore, has lesser access time than memory and it is faster than the main memory.



Cache and Main Memory

2.46 Level 1 and Level 2 Cache Memory

1. **Level 1 cache:** level 1 cache or primary cache, is on the CPU and is used for temporary storage of instructions and data organized in blocks of 32 bytes.
2. **Level 2 cache:** referred to secondary cache. It come to two sizes,256KB or 512KB

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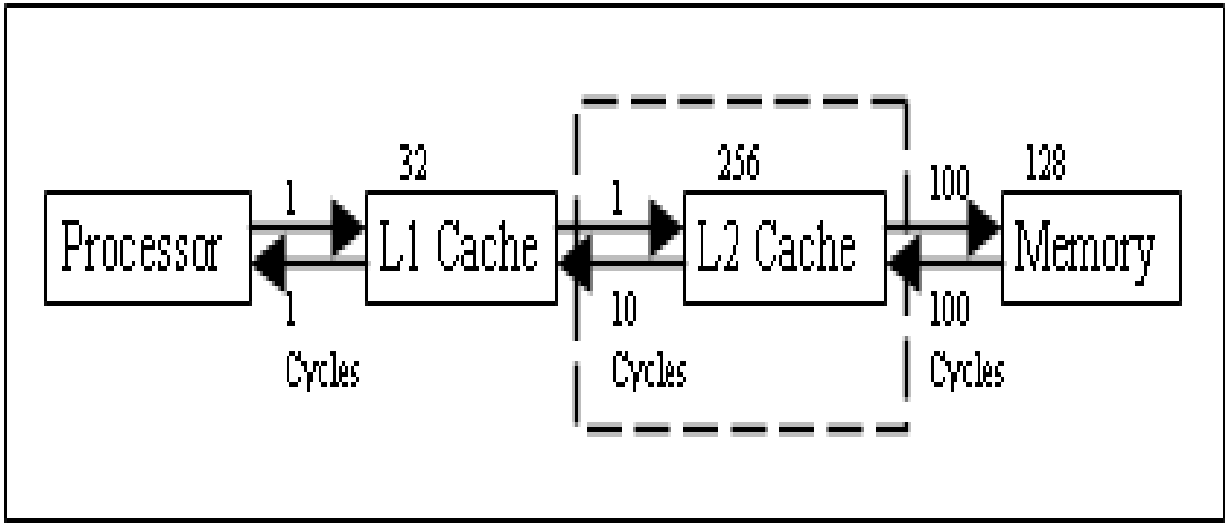

2.48 Virtual and Cache Memory

Basis	Virtual Memory	Cache Memory
Definition	Is the abstraction of the main memory. Its extends the available memory of the computer by storing the inactive parts of contents RAM on a disk. It fetches it back to RAM	Is used to store frequently accessed data in order to quickly access the data whenever it is required.

2.58 CD-ROM

This type of media is a read only media made of a thin aluminum layer placed between two clear plastic layers. It is capable of storing large amounts of data up to GB.

How bits are read from CD-ROM

The binary data stored in the CD is read only by the sensor which detects the reflection or absorption of the laser beam to determine a binary ‘)’ or ‘1’. Data is stored on the disc as a series of land and pit etched into the clear plastic layer. A land represents a binary 0 and a pit represents a binary 1. A laser light is shown on the reflective aluminum surface of the disc to rend the land and pits. When there is a land, the laser gets reflected from the land and is sensed by a sensor. When there is n pit, the laser falls into the pit and gets scattered. The scatter light is not sensed by the sensor. The pattern of changing intensity of the reflected beam is converted into binary data.