Fundamentals of Software package – Week 9

How Does the Computer Store Information in Memory?

Now we will look at how information is stored in a computer system. The size of a computer's memory is measured by the amount of data which can be stored in it.

All information used by a computer system must be stored as a pattern of ones and zeros. (e.g 0100111010)

Figure 1: Binary Numbers

Units used to measure Data

- **Bits**
  A bit is a Binary Digit. It is the smallest piece of information. Data is stored in memory as a number of 0s and 1s. For example the number 0110 consists of 4 bits.

- **Byte**
  A byte is the basic storage unit in memory. 8 bits is called 1 byte. Using the ASCII system of coding each character is stored as a unique 8-bit pattern. (a is 01000001; B is 01000010 etc.…). 1 byte of storage is needed to store one character, so to store the word 'TREE', 4 bytes of storage will be needed.

- **Kilobyte**
  A kilobyte consists of 1024 bytes. A kilobyte is usually abbreviated as KB or K. You will sometimes see a computer file as having a size of 640 KB. This means that the file is occupying 640 kilobytes of memory space on the computer.

- **Megabyte**
  It is abbreviated as MB and it consists of 1024 kilobytes.
  1 Mb= 1024 x 1024 bytes = 1048576 bytes

- **Gigabyte**
  It is the abbreviated as GB and consists of 1024 MB
  1 GB = 1024 x 1048576 = 1073741824 bytes Binary Numbers

- **Terabyte**
  It is abbreviated as TB and consists of 1024 gigabytes.

- **Petabyte**
  The next unit of data measurement after Terabyte is the Petabyte, abbreviated as PB. It is approximately 1024 terabytes.

Binary Unit	Value
Bit	1 or 0
Byte	8 bits
Kilobyte (KB)	1024 bytes
Megabyte (MB)	1024 kilobytes
Gigabyte (GB)	1024 megabytes
Terabyte (TB)	1024 gigabytes
Petabyte (PB)	1024 terabytes

Theory Question

Q1: State whether the following statements are True or False.

a) We can change the data stored in RAM.
b) A dot matrix printer is very fast.
c) Only a few computers make use of ROM.
d) The capacity of a hard disk is usually measured in Kilobytes.
e) A byte is made up of 12 bits.
f) Microcomputers are the most powerful computers`.
g) A laptop is an example of minicomputer.
h) The motherboard is also known as the brain of the computer.
i) The system unit is the main part of a desktop computer.
j) In the school computer room, there are many microcomputers.

Q2: State the purpose of the following devices

a) Keyboard
b) Projector
c) Mouse
d) Braille Printer
e) VDU

Q3: Shelley works in an office where everyone is disturbed by the noise that the dot-matrix printers make. Shelley suggests changing over to laser printers.

    a) Give two advantages and one disadvantage of changing to laser printers.

    b) Identify another drawback of dot-matrix printers.

    c) List another type of printer.

Q4: Differentiate between a digital camera and a traditional camera.

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Q5: Give one difference between the flash memory and the BIOS.

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Q6: Identify the purpose of sensors in hospitals.

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