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**Q1:(a) discuss a few limitations of image scanner? How optical character recognition (0CR) device overcome these limitation limitations.**

**Limitations of image scanner:**

* image lose some quality in the scanning and digitizing process
* the quality of the final image is dependent on the quality of original image
* emotional value is there value in the original image.
* More expensive then other
* Images produced by the scanner can take up a lot of memory space

**Optical character Recognition: (OCR)**

* Scanner equipped with a character recognition software called OCR software that converts the bit images of a characters to equivalent ASCII codes.
* Enable word processing of input text and also requires less storage for storing the document as text rather than image
* OCR software is extremely complex because its difficult to make a computer recognize an unlimited number of type face and fonts
* Two standard OCR fonts are OCR-A (American standard­) and OCR-B (American standard)

**(b): elaborate the use of magnetic ink character recognition device: (MICR)**

* MICR is used by banking industry for faster processing of large volume of cheques
* Bank identification code. Account number and cheque number are pre printed using character from a special character cheque set on all cheque
* Special ink is used to contains magnetizable particles of iron oxide
* MICR reader sorter reads data on cheque and sort them for distribution to other banks or for further processing
* It contains of numerals 0 to 9 and four special character
* MICR is not adopted by other industries because it support only 14 symbol

**Q2: (a): Different between printer and plotter?**

**Printers:**

most common output device for producing had copy output.

* **Dot-matrix printers:**
* Character printers that form characters and all kind of images as a pattern of dots
* Pattern may special character, different types of print and graphics such as chart and graphs
* Slow with speed usually ranging between 30 to 600 character per second
* Cheap in both initial cost and cost of operation
* **Inkjet printers:**
* Character printer that form character and all kinds of images by spraying small drops of ink on to the paper
* Print head contains up to 64 tinny nozzles that can be selectively heated up in a few micro second by an integrated circuit register
* Can be both monochrome and color
* Slower than dot-matrix printer with speeds usually ranging between 40 to 300 character per second
* More expensive than a dot matrix printer
* **Drum printer:**
* Line printer that print one line
* Have a solid cylindrical drum with character embossed on the surface in the form of circular bonds
* Impact printers are usually monochrome
* Typical speeds are in the range of 300 to 2000 lines per minute

**Plotters:**

* plotter is an ideal output device for architects, engineer, city planner, and other who need to routinely generate high precision, hard copy graphic output of widely varying size.

Two types of plotter are:

* **drum plotter:**

the paper on which design has to be made is placed over a drum that can rotate in both clockwise and anticlockwise directions.

* **Flatbed plotter:**

In which the paper on which design has to be made is spread and fixed over a rectangular flatbed table.

**(b): Explain the printing process of a LESSER printer**

**Lesser printers:**

* Page printer that print one page at a time
* To print a page the leaser beam is focused on the electro astatically charged drum by the spinning multi sided mirror
* Toner stick to the drum in the place laser beam is charged the drums surface
* toner is permanently fused on the paper with heat and pressure to generate the printer output
* can print many special character, different size of print, and graphics such as charts and graphs
* are non-impact printer
* laser time the next step is exposing. in this step the phptosnsitive drum is exposed to a laser beam
* in the developing step, toner is applied to the latent image on drum
* transferring, the secondary corona, or transfer, applies a positive charge to the paper.
* Fusing is final step, heat and pressure are applied to the toner by the fusing rollers. The toner generates a permanent bond as it is pressed and melted into the paper.
* Most laser printer are monochrome, but color laser printer are also available.
* More expensive than other printers.

**Q3: (a) Explain metropolitan area network with a suitable example?**

 **(a):** M**etropolitan network**:

It is designed to extend over a district, council or even in a city. It may be a single network such as a cable is a cable television network, or it may be connecting many LANs into a larger network so that may connect LAN to LAN or device to device.

For example, a company can used a Metropolitan area network to connect the LANs in all of its offices throughout the city.

* **Wide area network:**

Provide long distance transmission of data, voice, image, and video information over large geographical areas that may comprise a country, continent, or even the whole word.

(**b): Define topology? Which topology would you choose to setup a local area network and why?**

 **Topology:**

When computer is connected together in a network is called topology of the network.

The way a network is laid out, either physically or logically.

**Local area network**:

When we link the devices in a single room, office or a building that is called LAN. It depends on the type of technology and the need of organization.

LANs have data rates in the 4 to 16 maps range.

We can share resources between personal computer or workstation through local area network. Currently, local network size is limited to a few kilometers.

**Q4: in your opinion, what are the different types of common media used for** **storage, access and transmission of information? Explain each type in detail?**

**Types of media:**

there are five main types of common media.

* **Text:**
* it is used to present information in the form of text. Computer are widely used for text processing. Keyboard, OCRs, computer screen and printers are some hardware devices for processing text media.
* text editing, text searching, hypertext, importing and exporting are some highly desirable features of a multimedia computer system for better presentation and use of text information.
* **Graphics media:**

the generation, representation, manipulation, and display of picture with a computer. Common hardware used for graphing is digitizers, scanner, digital camera, computer screen.

* **Animation media:**

the generation, display of set of images to create an affect of visual change or motion, similar to a movie film.

* Animation deals with the displaying a sequence of image at reasonable speed to create an impression of movement. For a jerk free full motion animation, 25 to 30 frames required per second.
* For processing animation media we used some common hardware such as scanner, digital camera, video capture, video camera, VCR etc.
* **Audio**:
* computer audio deals with synthesizing, recording, and playback of audio or sound with a computer.
* Some common hardware we used for processing audio media i.e. sound board, microphone, speaker, MIDI device, sound synthesizer, and audio mixer.
* **Video media**:
* A sequence of image at a responsible way speed to create an impression of movement. Each individual image of a sequence is called a frame.
* Video camera, video monitor, video board and video editor are some common hardware for processing video media.
* Some desirable features of multimedia computer system with video facility are video clips and recording and playback capabilities.