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**paper: computer application**

**Q1**

**A)**

**Scanner can be use to convert images or text on paper into a digital format that can be used by the computer.**

**Scanner does not support shares name of more than 20 characters.**

**Scanner modifies the acces time of directories while traversing the file system.**

**It can waste our time and more expensive**

**Image scanner cannot scane some word on paragraph present on page**

**Image scanner cannot scan word on TV or LED**

**Optical character recognition can scane word or sign from TV or LED**

**OCR are less expensive**

**We can easily use OCR**

**We can easily scane some characters or words in OCR**

**Due to low weight we can easily scane words or characters from any where.**

**B)**

* **MICR is used by banking industry for faster processing of large volume of cheques**
* **Bank’s identification code (name, branch, etc.), account number and cheque number are pre-printed (encoded) using characters from a special character set on all cheques**
* **Special ink is used that contains magnetizable particles of iron oxide**
* **MICR reader-sorter reads data on cheques and sorts them for distribution to other banks or for further processing**

**Q2**

**A)**

|  |  |  |
| --- | --- | --- |
| **BASIS OF COMPARISON** | **PRINTER** | **PLOTTER** |
| **Description** | **A printer is an external (peripheral) hardware output device that takes the electronic data stored on a computer or any other storage device and generates a hard copy of the data.** | **A plotter is an output device commonly used for computer-aided design applications, to output large vector designs such as architectural blueprints.** |
| **Nature Of The Device** | **Printer is a peripheral device in nature and creates a solid copy of the digital data that is represented on the computer screen.** | **The plotter is either a peripheral component that you add to computer system or a standalone device with its own internal processor.** |
| **File Reading** | **Plotters can read files in the DWG, CDR, Al and other vector formats.** | **Printers can read BMP, PDF and JPG TIFF formats.** |
| **Software** | **Software for printers includes Photoshop and any other image-editing program.** | **Plotter software includes Adobe Illustrator, Corel, Flexi and CAD.** |
| **Cost** | **Printers are less costly when compared to plotters.** | **Plotters are relatively expensive when compared to printers.** |
| **Output Data Format** | **A printer provides the output file data in a format such as bitmap or pixels.** | **A plotter provides the output in a format that is similar to a vector graphic/ image created with lines.** |
| **Output Data Production Rate** | **Printer produces the data in hardcopy format at a faster speed when compared to a plotter.** | **Plotter produces the data in hardcopy at a relatively slower rate when compared to a printer.** |
| **Line Drawing** | **Printer can only print a single line at a time.** | **Plotters can easily draw continuous lines from point-to-point at same time.** |
| **Application** | **Printers are mainly used to produce graphics and text on a physical medium such as paper. They are also, mostly used by graphic artists for posters, signs and other professional quality display.** | **Plotters are mainly used in specialized fields such as drawing, architecture and engineering.** |
| **Pen Like Instrument** | **A printer uses a needle or a pen to draw lines and figure on a page.** | **In plotters, there is more than one automated pen like instrument that can create designs such as diagrams, blueprints etc.** |
| **Resolution** | **Printers are resolution dependent, an image produced by a printer (raster image) is enlarged, the size of the pixels simply gets bigger resulting in distortion of the image.** | **Usually, plotters are resolution independent, an image produce by a plotter can be enlarged to any size without losing clarity.** |
| **Types** | **There two main type of printers, they include impact and non impact printers.** | **There are four main types of plotters; they include Drum plotter, Flatbed plotter, Inkjet plotter and Cutting plotter.** |

**B)**

**Laser printing is an**[**electrostatic**](https://en.wikipedia.org/wiki/Electrostatic)[**digital printing**](https://en.wikipedia.org/wiki/Digital_printing)**process. It produces high-quality text and graphics (and moderate-quality photographs) by repeatedly passing a**[**laser beam**](https://en.wikipedia.org/wiki/Laser_beam)**back and forth over a negatively**[**charged**](https://en.wikipedia.org/wiki/Electric_charge)**cylinder called a "drum" to define a differentially charged image.**[**[1]**](https://en.wikipedia.org/wiki/Laser_printing#cite_note-1)**The drum then selectively collects electrically charged powdered ink (**[**toner**](https://en.wikipedia.org/wiki/Toner)**), and transfers the image to paper, which is then heated in order to permanently fuse the text, imagery, or both, to the paper. As with digital**[**photocopiers**](https://en.wikipedia.org/wiki/Photocopier)**, laser**[**printers**](https://en.wikipedia.org/wiki/Computer_printer)**employ a**[**xerographic**](https://en.wikipedia.org/wiki/Xerography)**printing process. Laser printing differs from traditional xerography as implemented in analog photocopiers in that in the latter, the image is formed by reflecting light off an existing document onto the exposed drum.**

**A laser beam (typically, an [aluminium gallium arsenide](https://en.wikipedia.org/wiki/Aluminium_gallium_arsenide" \o "Aluminium gallium arsenide) (AlGaAs)**[**semiconductor laser**](https://en.wikipedia.org/wiki/Semiconductor_laser)**) projects an image of the page to be printed onto an electrically charged,**[**selenium**](https://en.wikipedia.org/wiki/Selenium)**-coated, rotating, cylindrical drum**[**[16]**](https://en.wikipedia.org/wiki/Laser_printing#cite_note-Nagabhushana2010-16)**(or, more commonly in subsequent versions, a drum called an**[**organic**](https://en.wikipedia.org/wiki/Organic_compound)[**photoconductor**](https://en.wikipedia.org/wiki/Photoconductor)**made of**[**N-vinylcarbazole**](https://en.wikipedia.org/wiki/N-vinylcarbazole)**, an organic**[**monomer**](https://en.wikipedia.org/wiki/Monomer)**). Photoconductivity allows the charged electrons to fall away from the areas exposed to light. Powdered ink (**[**toner**](https://en.wikipedia.org/wiki/Toner)**) particles are then electrostatically attracted to the charged areas of the drum that have not been laser-beamed. The drum then transfers the image onto paper (which is passed through the machine) by direct contact. Finally, the paper is passed onto a finisher, which uses heat to instantly fuse the toner that represents the image onto the paper.**

**There are typically seven steps involved in the process:**

**Raster image processing**

### Charging

### Exposing

### Developing

### Transferring

### Fusing

### Cleaning and recharging

**Q3**

**A metropolitan area network (MAN) is a**[**computer network**](https://en.wikipedia.org/wiki/Computer_network)**that interconnects users with computer resources in a geographic region of the size of a**[**metropolitan area**](https://en.wikipedia.org/wiki/Metropolitan_area)**. The term MAN is applied to the interconnection of**[**local area networks**](https://en.wikipedia.org/wiki/Local_area_networks)**(LANs) in a**[**city**](https://en.wikipedia.org/wiki/City)**into a single larger network which may then also offer efficient connection to a**[**wide area network**](https://en.wikipedia.org/wiki/Wide_area_network)**. The term is also used to describe the interconnection of several local area networks in a metropolitan area through the use of**[**point-to-point connections**](https://en.wikipedia.org/wiki/Point-to-point_(telecommunications))**between them**

**Example**

**A company can use a MAN to connect the LANs in all of its offices throughout a city.**

**A Metropolitan Area Network is a class of network which serves a large geographical area between 5 to 50 kilometers in range. This geographical area can include several buildings, such as a college campus, sometimes referred to as a**[**campus network**](https://www.apposite-tech.com/blog/wp-content/uploads/2017/09/IEEE-Std-802-Metropolitan-Area-Networks.pdf)**, or an area as large as a city (metropolitan area)**

**B)**

* **They way computers are connected together in a network is called topology of network.**
* **The way a network is laid out, either physically or logically.**
* **The basic topologies are:**
  + **BUS Topology**
  + **Star Topology**
  + **Ring Topology**
  + **Mesh Topology**
* **BUS Topology**
  + **One long cable acts as a backbone to link all the devices in the network**
  + **Nodes are connected to the bus cable by drop lines and taps.**
  + **A drop line is a connection running between the device and the main cable.**
  + **A tap is a connector that either splices into the main cable**

**Star topology**

* **Each device has a dedicated point-to-point link only to a central controller, usually called a hub.**
* **The devices are not directly linked to each other.**

**The controller(HUB) acts as an exchange**

**Ring topology**

* **Each device has a dedicated point-to-point line configuration only with the two devices on either side of it**
* **A signal is passed along the ring in one direction, from device to device, until it reaches its destination.**

**Mesh topology**

* **every device has a dedicated point-to-point link to every other device.**
* **The term dedicated means that the link carries traffic only between the two devices it connects.**
* **Requires n\*(n - l)/2 physical channels to link to connect with devices.**
* **For example: if we have 4 computers then**

**4\*(4-1)/2 = 6 links**

**The star topology is the most common topology in today's networks, and includes Ethernet, Fast Ethernet, and Gigabit Ethernet. Each node in a star topology connects to a dedicated link where the other end connects to a switch or hub.**

**each device is isolated by the link that connects it to the hub. By so doing it makes the isolation of the individual devices simple. This isolation nature also prevents any non centralized failure from affecting the network. In a star network, a cable failure will isolate the workstation that it links to the central computer, but only that workstation will be isolated. All the other workstations will continue to function normally, except that they will not be able to communicate with the isolated workstation.**

**The topology is easy to understand, establish, and navigate**

**Q4**

* **Common media for storage, access, and transmission of information are:**
  + **Text (alphanumeric characters)**
  + **Graphics (line drawings and images)**
  + **Animation (moving images)**
  + **Audio (sound)**
  + **Video (Videographed real-life events)**
* **Multimedia in information technology refers to use of more than one of these media for information presentation to users**
* **Multimedia computer system is a computer having capability to integrate two or more types of media (text, graphics, animation, audio, and video)**
* **In general, size for multimedia information is much larger than plain text information**
* **Multimedia computer systems require:**
  + **Faster CPU**
  + **Larger storage devices (for storing large data files)**
  + **Larger main memory (for large data size)**
  + **Good graphics terminals**
  + **I/O devices to play any multimedia**

**Text media**

* **Alphanumeric characters are used to present information in text form. Computers are widely used for text processing**
* **Keyboards, OCRs, computer screens, and printers are some commonly used hardware devices for processing text media**
* **Text editing, text searching, hypertext, and text importing/exporting are some highly desirable features of a multimedia computer system for better presentation and use of text information**

**Graphics media**

* **Computer graphics deals with generation, representation, manipulation, and display of pictures (line drawings and images) with a computer**
* **Locating devices (such as a mouse, a joystick, or a stylus), digitizers, scanners, digital cameras, computer screens with graphics display capability, laser printers, and plotters are some common hardware devices for processing graphics media**
* **Some desirable features of a multimedia computer system are painting or drawing software, screen capture software, clip art, graphics importing, and software support for high resolution**

**Animation media**

* **Computer animation deals with generation, sequencing, and display (at a specified rate) of a set of images (called frames) to create an effect of visual change or motion, similar to a movie film (video)**
* **Animation is commonly used in those instances where videography is not possible or animation can better illustrate the concept than video**
* **Animation deals with displaying a sequence of images at a reasonable speed to create an impression of movement. For a jerk-free full motion animation, 25 to 30 frames per second is required**
* **Scanners, digital cameras, video capture board interfaced to a video camera or VCR, computer monitors with image display capability, and graphics accelerator board are some common hardware devices for processing animation media**
* **Some desirable features of a multimedia computer system with animation facility are animation creation software, screen capture software, animation clips, animation file importing, software support for high resolution, recording and playback capabilities, and transition effects**

**Audio media**

* **Computer audio deals with synthesizing, recording, and playback of audio or sound with a computer**
* **Sound board, microphone, speaker, MIDI devices, sound synthesizer, sound editor and audio mixer are some commonly used hardware devices for processing audio media**
* **Some desirable features of a multimedia computer system are audio clips, audio file importing, software support for high quality sound, recording and playback capabilities, text-to-speech conversion software, speech-to-text conversion software, and voice recognition software**

**Video media**

* **Computer video deals with recording and display of a sequence of images at a reasonable speed to create an impression of movement. Each individual image of such a sequence is called a frame**
* **Video camera, video monitor, video board, and video editor are some of the commonly used hardware devices for processing video media**
* **Some desirable features of a multimedia computer system with video facility are video clips and recording and playback capabilities**