8.1.2 Printer Type Facts

Printers vary greatly in size, speed, sophistication, and cost. Let's talk about the various different types of printers you can choose from.

The table below lists and describes the most common types of printers:

Printer	Description
Dot Matrix	A dot matrix printer is an impact printer that transfers characters by striking a pattern (from a matrix) through an inked ribbon and onto paper. ▪ The most common number of pins on a dot matrix printer is 9, 18, or 24, with more pins providing a higher resolution. 24-pins create a near-letter quality print and anything with less than 24-pins provides a draft quality print. The overall print quality of a dot matrix printer is quite poor when compared to that of other types of printers. ▪ The speed of dot matrix printers is measured in characters per second (CPS). Common speeds for a dot matrix printer are 32 to 72 CPS. ▪ Dot matrix printers operate in either a font (letters, numbers and symbols) or dot-addressable (graphs and charts) mode. ▪ Dot matrix printers can use either a friction feed or a tractor feed system to move paper through the printing assembly. ▪ Because dot matrix printers strike the image onto paper, it is a good printer to use when carbon-copy documents are being printed. ▪ The print head can become dangerously hot due to pin friction. ▪ Dot matrix printers can be loud because printing takes place by pins physically striking the ink ribbon, paper, and the platen (a metal plate behind the paper).
Inkjet	Inkjet printers are quiet, non-impact printers with ink stored in a reservoir. Bubble jet printers are the most popular form of inkjet printers. ▪ The ink reservoir is in a disposable cartridge that includes the printing mechanism. ▪ Bubble jet printers print by heating the ink and squirting it through tiny nozzles in the print head and onto the paper. ▪ The crispness of an inkjet printer's image is usually rated as dots per inch or dpi. Inkjets range from 150 to over 1400 dpi. ▪ A new generation of inkjet printers produce photo-quality printouts when used with photo-quality paper. ▪ Photo-quality inkjet printers mix up to 16 drops of ink to form a single dot of color on the page. ▪ Inkjet printers feed single cut sheets of paper from a feed tray by clamping them between rollers and advancing them one print line at a time, from top to bottom, through the printer. The newly printed paper is then placed into a tray other than the feed tray. ▪ Inkjet printers are an inexpensive way to produce color printouts.
Dye Sublimation (Dye Diffusion Thermal Photo)	A dye sublimation printer is a non-impact printer that uses film-embedded dye. ▪ The print head heats and passes over the film, causing the dye to vaporize and soak into the film paper. ▪ Dye sublimation printing prints in transitioning colors rather than pixels. ▪ Produces photographic quality images.

Solid Ink	Solid ink printers melt ink onto the print head (which is as wide as the paper). The head jets the melted ink onto the paper as the paper passes by on the print drum (similar to the laser printing process).
	▪ Solid ink printers offer the following advantages:
	  ▪ Simple design
	  ▪ Excellent print quality
	  ▪ Easy set up and maintenance
	▪ The head takes as long as 15 minutes to heat prior to printing.

Thermal	A thermal printer is a non-impact printer that uses heat to cause a reaction on specially treated paper. ▪ Monochrome thermal paper is chemically treated to darken where heated (photosensitive). Many cash registers use this type of printer for creating receipts. ▪ Color thermal paper is chemically treated to absorb color from a ribbon where heated. ▪ Ink is applied using the ribbon in a similar manner to a solid ink printer. ▪ The color system used by thermal printers is CMYK (cyan, magenta, yellow, and black). ▪ The paper must make one pass for each application of a different color. ▪ The feed assembly takes the thermal paper off the roll and it sends it through the printer to the outside of the printer. ▪ Color thermal printers are very expensive, high quality, and operate quietly.
3D Printer	A 3D Printer creates a physical object by taking a digital model and manufacturing the object layer by layer. ▪ There are many different 3D printing technologies and materials that can be used depending on the object to be created. ▪ The materials that 3D printers use to create objects are called filaments. ▪ The most popular filaments are ABS (Acrylonitrile Butadiene Styrene) and PLA (Polylactic Acid).

	▪ 3D printing can be done using many different kinds of filaments such as PVA, PET, PETT, HIPS, nylon, wood, sand stone, metal, magnetic iron, conductive PLA, carbon fiber PLA, flexible/TPE 3D printer filament, glow in the dark, and amphora 3D printer filament.