GRAPHICS SYSTEMS AND MODELS

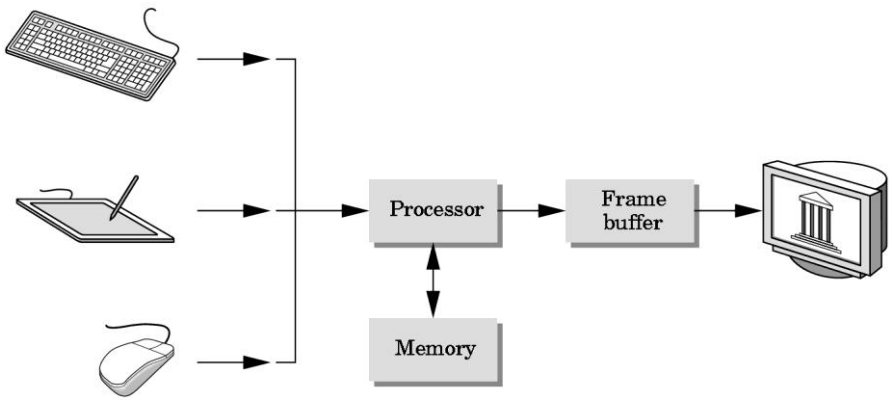
1.1 Applications of computer graphics:

- Display Of Information
- Design
- Simulation & Animation
- User Interfaces

1.2 Graphics systems

A Graphics system has 5 main elements:

- Input Devices
- Processor
- Memory
- Frame Buffer
- Output Devices



Pixels and the Frame Buffer

- A picture is produced as an array (raster) of picture elements (pixels).
- These pixels are collectively stored in the Frame Buffer.

Properties of frame buffer:

Resolution – number of pixels in the frame buffer

Depth or Precision – number of bits used for each pixel

E.g.: 1 bit deep frame buffer allows 2 colors

8 bit deep frame buffer allows 256 colors.

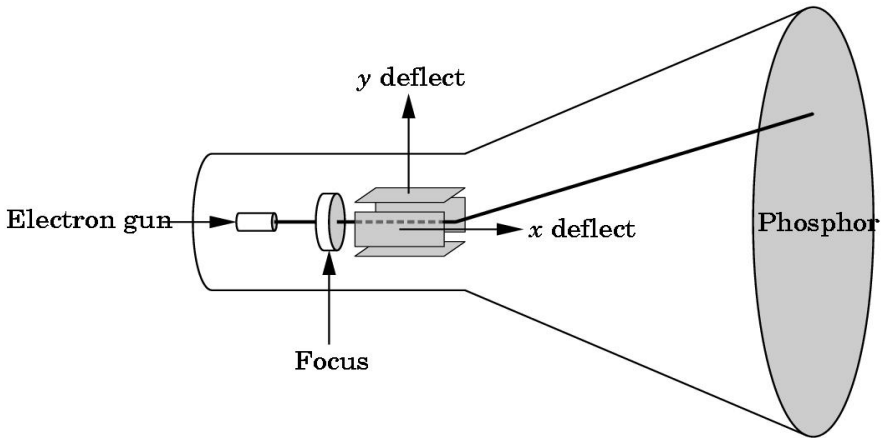
A Frame buffer is implemented either with special types of memory chips or it can be a part of system memory.

In simple systems the CPU does both normal and graphical processing.

Graphics processing - Take specifications of graphical primitives from application program and assign values to the pixels in the frame buffer It is also known as Rasterization or scan conversion.

Output Devices

The most predominant type of display has been the Cathode Ray Tube (CRT).



Various parts of a CRT :

- Electron Gun – emits electron beam which strikes the phosphor coating to emit light.
- Deflection Plates – controls the direction of beam. The output of the computer is converted by digital-to-analog converters o voltages across x & y deflection plates.
- Refresh Rate – In order to view a flicker free image, the image on the screen has to be retraced by the beam at a high rate (modern systems operate at 85Hz)

2 types of refresh:

- Noninterlaced display: Pixels are displayed row by row at the refresh rate.
- Interlaced display: Odd rows and even rows are refreshed alternately.

Source : http://elearningatria.files.wordpress.com/2013/10/cse-vi-computer-graphics-and-visualization-10cs65-notes.pdf