

Computer Graphics and Animation L-3

Semester IV

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The background of the slide features a close-up, slightly blurred image of a display device, possibly a LED screen or a microdisplay, showing a grid of small, circular elements. The image is overlaid with a semi-transparent blue and purple gradient.

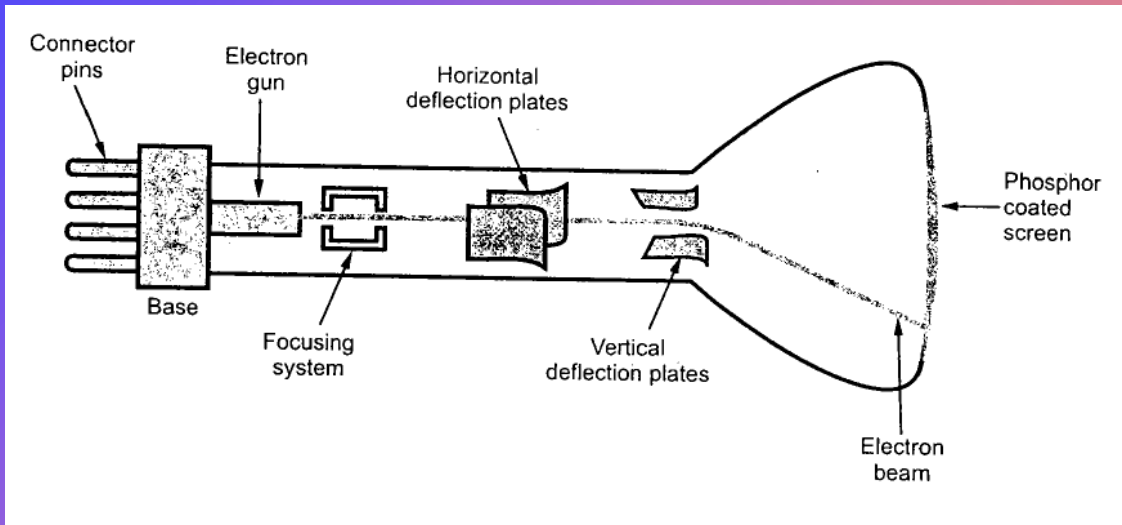
DISPLAY DEVICES

Chapter 1

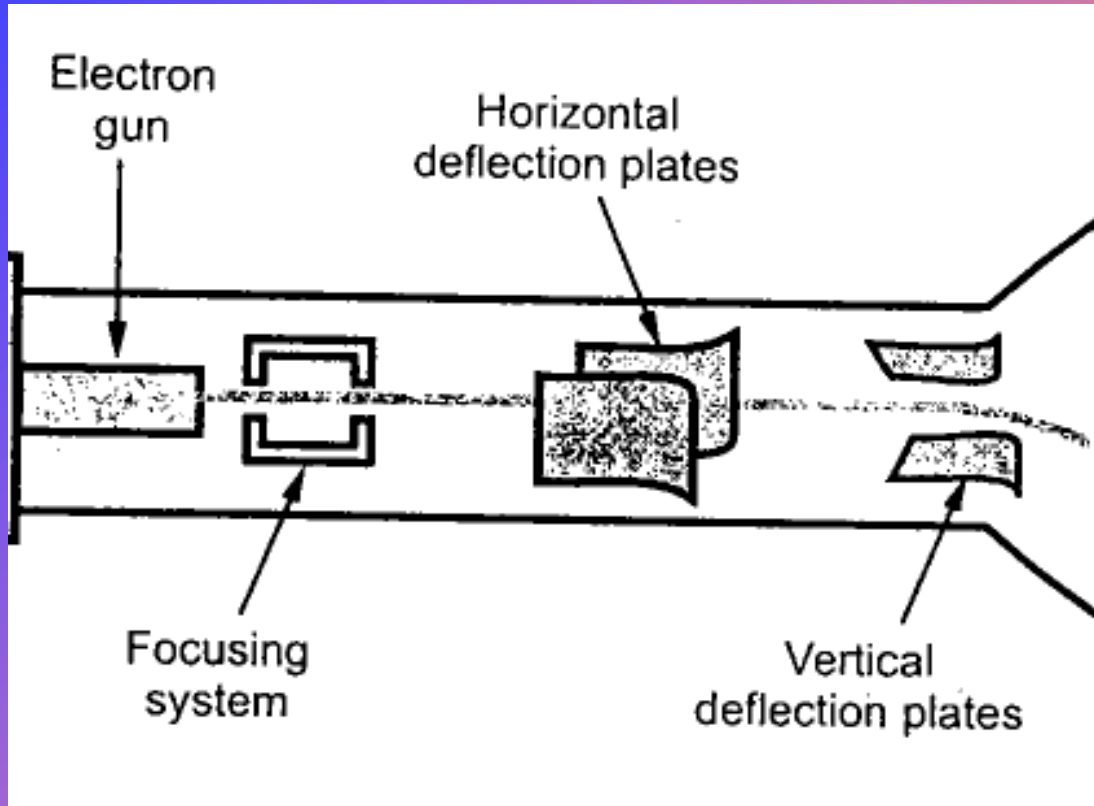
Bitmap v/s Vector Image

Bitmap	Vector
<ul style="list-style-type: none">• Composed of pixels• Created and edited in photo or paint program• Images are mapped to a grid or an array of pixels.• Not easily scalable• Used in photorealistic images involves complex variation• The larger we display a bitmap, the jagged it appears	<ul style="list-style-type: none">• Composed of paths• Created and edited in software like Coral draw & Adobe Illustrator• Images have smooth edges and create curves or shapes• Good for precise illustrator but not as good as bitmap• Easily scalable due to the use of mathematical formula• A vector image remains smooth in any size

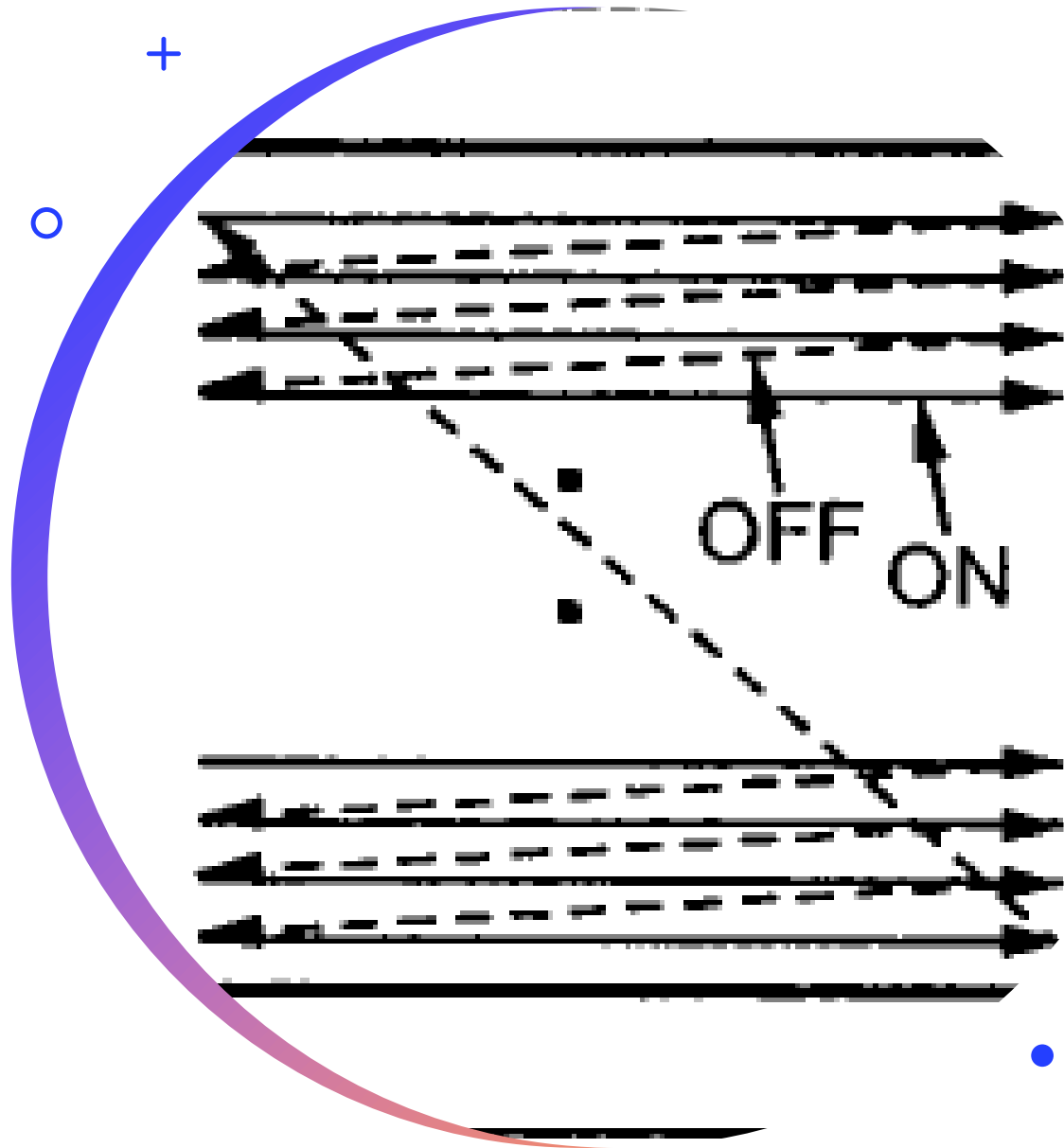
Cathode Ray Tube



- a specialized vacuum tube in which images are produced when an electron beam strikes a phosphorescent surface.
- Heat is supplied to the cathode by passing current through a heater element.
- The cathode is a cylindrical metallic structure.
- That is rich in electrons. On heating, electrons are released from cathode surface. The control grid is the next element that follows the cathode.



- Focusing and deflecting coils are needed to force the electron beam to converge into a small spot as it strikes the screen
- Deflecting coils produce an extremely low frequency electromagnetic that allows for the constant adjustment of the direction of the electron beam.
- When the electrons in the beam collide with phosphor coating, they are stopped and their kinetic energy is absorbed by the phosphor, resulting in the screen display.

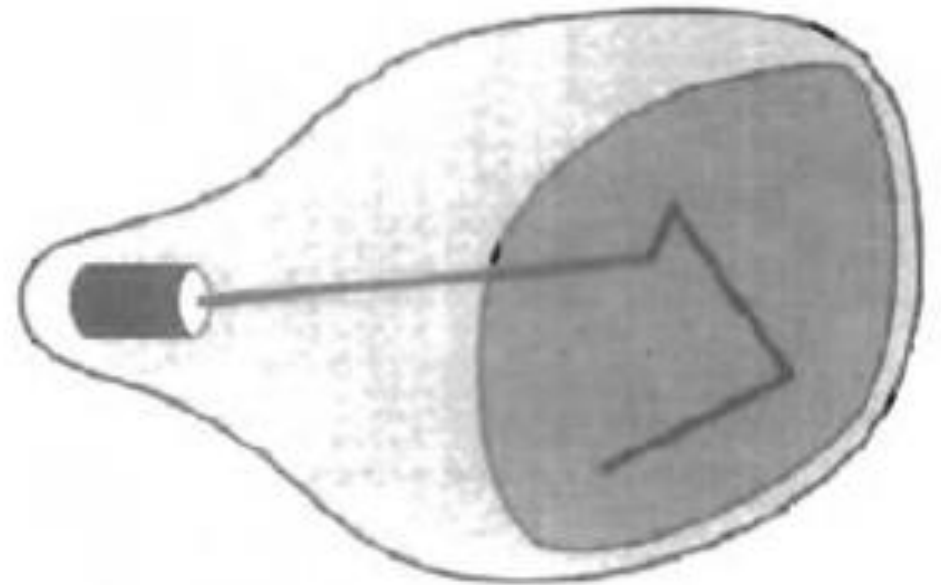


Raster Scan Display

- Electron beam is swept across the screen one row at a time from top to bottom.
- The beam is ON, while it moves from left to right & it is OFF when moves back right to left.
- This is called **horizontal retrace**.
- When the beam reaches the bottom of the screen it is turned OFF and is rapidly retraced back to the top to start again. This is called **vertical retrace**.
- Repeated scanning of the same image is known as refreshing of screen.

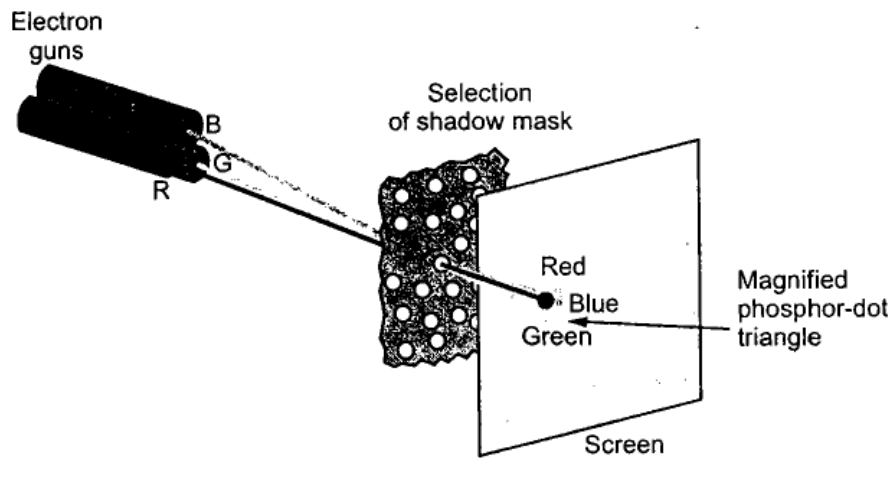
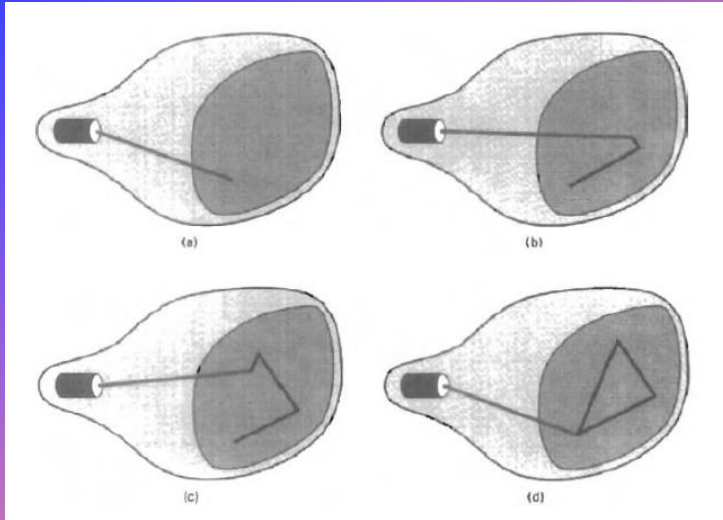
Random Scan Display

- A CRT, as a random scan display unit has an electric beam directed only to the parts of the screen where picture is to be drawn.
- Draws a picture one line at a time.
- Also referred to as vector display.
- The components of picture can be drawn and refreshed by random scan display.
- Also called as Calligraphic display

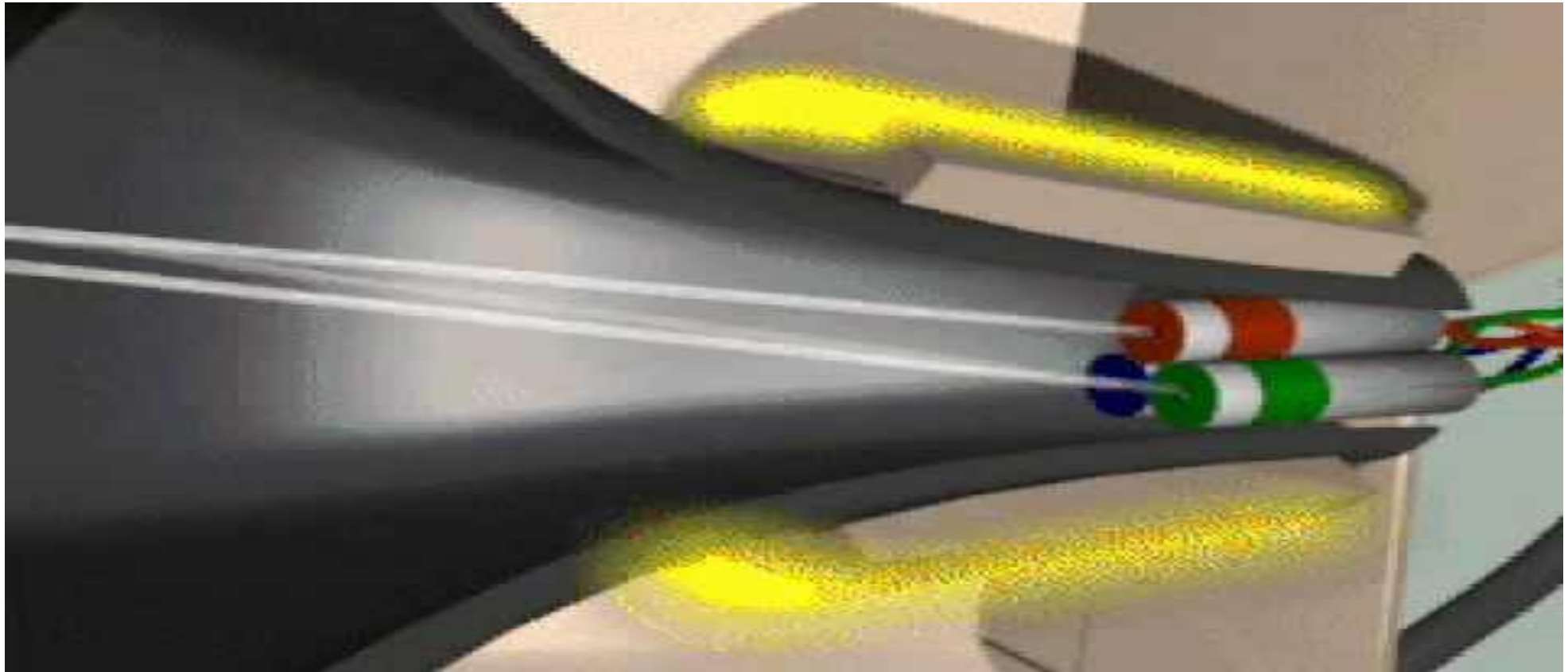


Color CRT Monitors

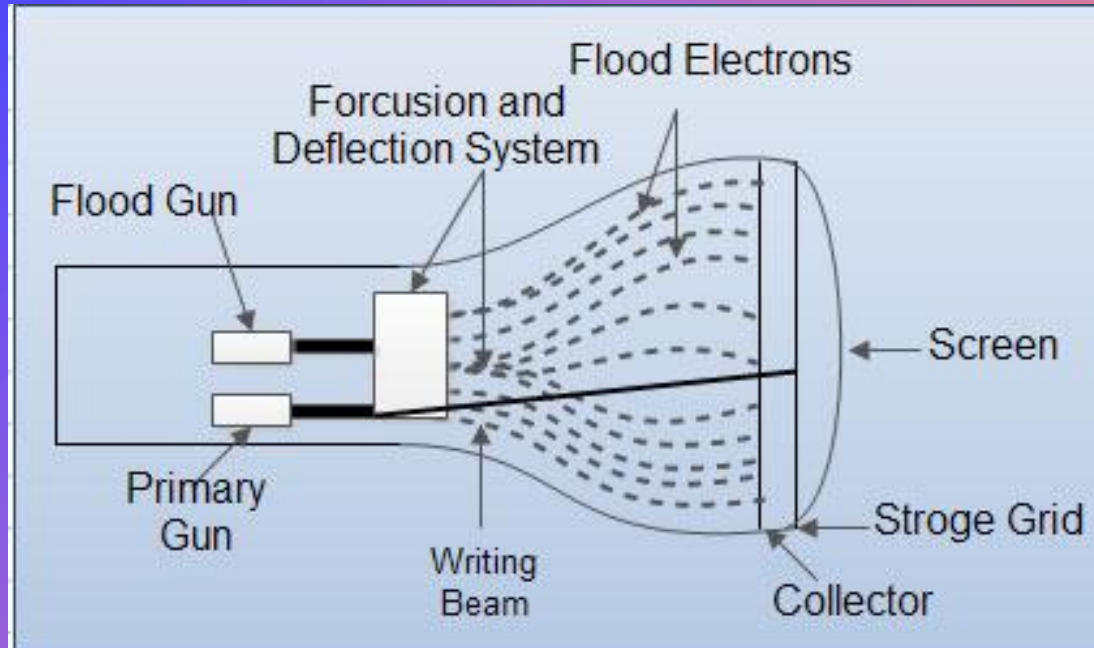
- A CRT displays color pictures by using a combination of phosphors that emit different colored light.
- There are 2 basic techniques for producing color displays.
 - Beam-Penetration method (Used in Random Scan display)
 - Shadow mask method (Used in Raster Scan display)



Cathode Ray Tube



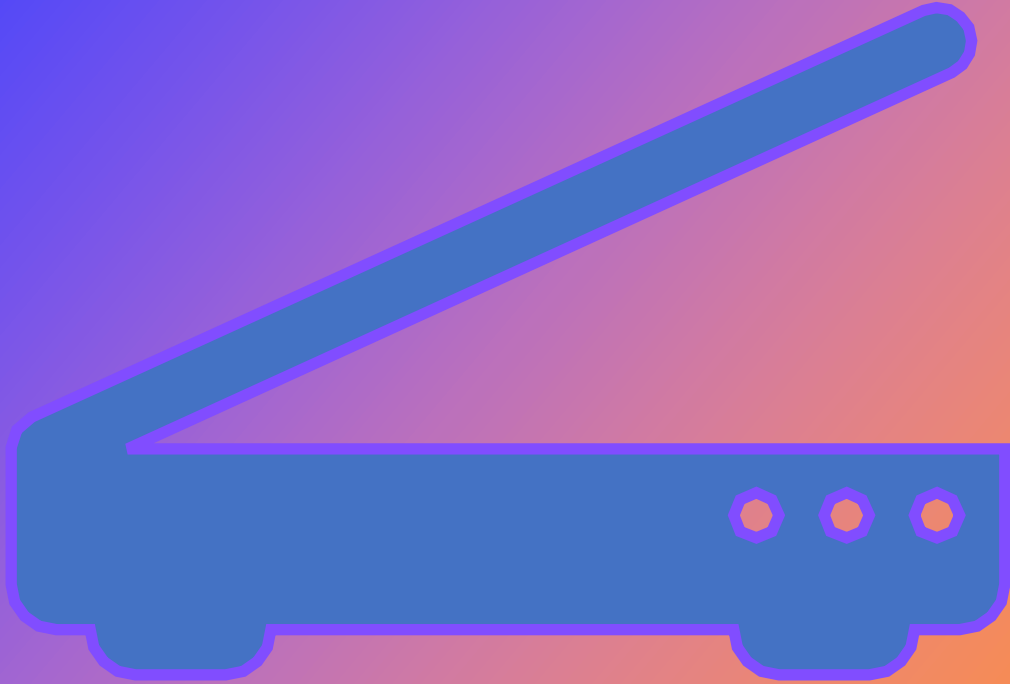
Direct View Storage Tubes (DVST)



- A method for maintaining a screen image is to store picture information inside the CRT instead of Refreshing the screen.
- It stores the picture information as a charge distribution.
- Two electron guns are used in DVST, the primary gun and flood gun.
- Primary helps in storing picture patterns and flood gun maintains picture.

Flat Panel Display

- Video display that are much lighter & thinner than traditional television.
- Examples: cellular phones, digital camera, LCD(Liquid Crystal display)TV and computer displays etc.
- Two categories- Emissive & Non-emissive
- Emissive: It converts electric energy into light.
 - Eg. Plasma Panel
- Non-emissive: It uses optical effects to convert sunlight or light from some other resources into graphics pattern.
 - Eg. LCD



Revision

- CRT
- Raster Scan & Random Scan
- Color CRT
- DVST
- Flat Panel Display



Flipped Classroom

- Working of LCD
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QUIZ





Thank You

