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Subject: Computer graphics

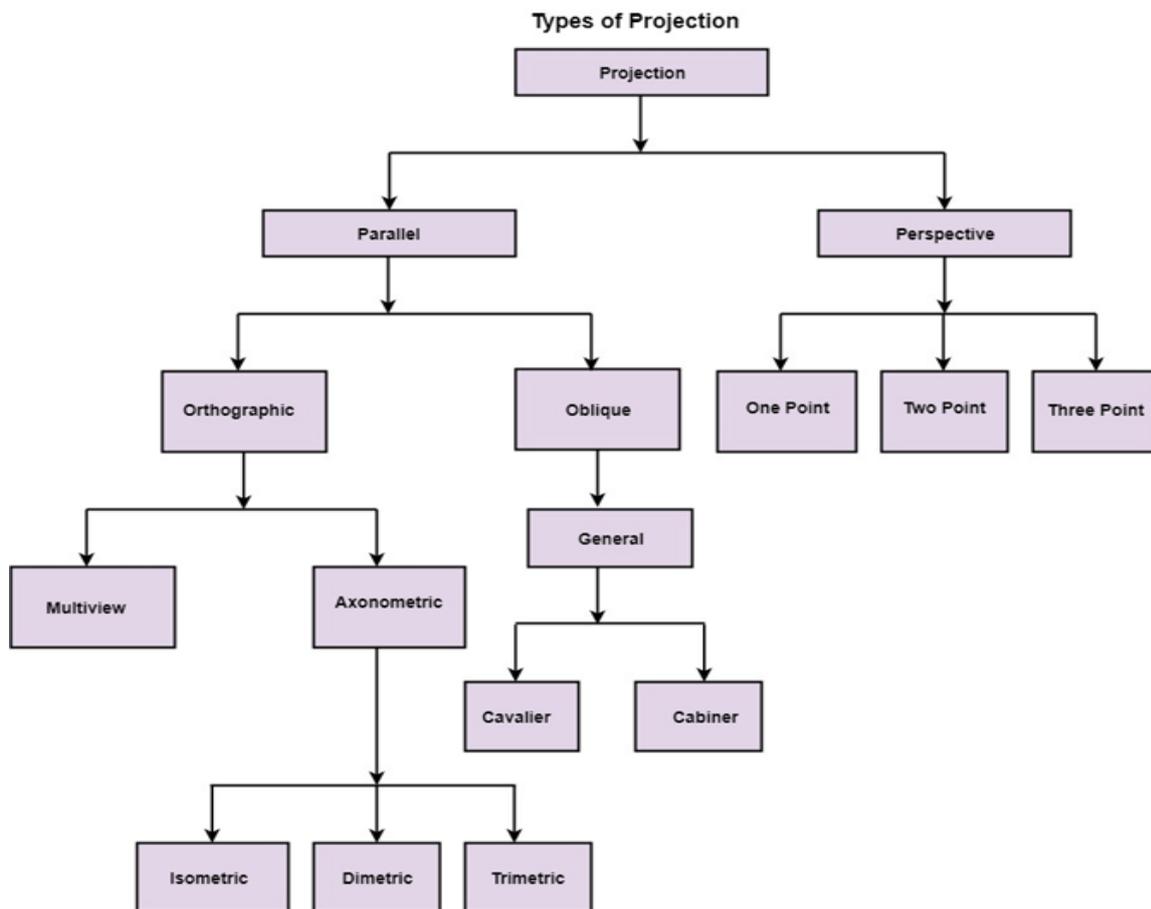
Unit: IV

Topic: PROJECTION

PROJECTION

Definition: It is the process of converting a 3D image or object into a 2D object. It is also defined as mapping or transformation of the object in projection plane or view plane. The view plane is displayed surface.

Types of Projection



Important terms related projection-

1. **View plane:** It is an area of world coordinate system which is projected into viewing plane.
2. **Center of Projection:** It is the location of the eye on which projected light rays converge.
3. **Projectors:** It is also called a projection vector. These are rays start from the object scene and are used to create an image of the object on viewing or view plane.

Perspective Projection

In perspective projection farther away object from the viewer, small it appears. This property of projection gives an idea about depth. The artist use perspective projection from drawing three-dimensional scenes.

Main Characteristics of Perspective are –

- Perspective Foreshortening
- Vanishing points

Perspective Foreshortening

Due to foreshortening object and lengths appear smaller from the center of projection. More we increase the distance from the center of projection, smaller will be the object appear.

Vanishing Point

It is the point where all lines will appear to meet. There can be one point, two point, and three point perspectives.

One Point: There is only one vanishing point as shown in fig (a).

Two Points: There are two vanishing points. One is the x-direction and other in the y - direction as shown in fig (b).

Three Points: There are three vanishing points. One is x second in y and third in two directions.

In Perspective projection lines of projection do not remain parallel. The lines converge at a single point called a Center of projection. The projected image on the screen is obtained by points of intersection of converging lines with the plane of the screen. The image on the screen is seen as of viewer's eye were located at the centre of projection, lines of projection would correspond to path travel by light beam originating from object.

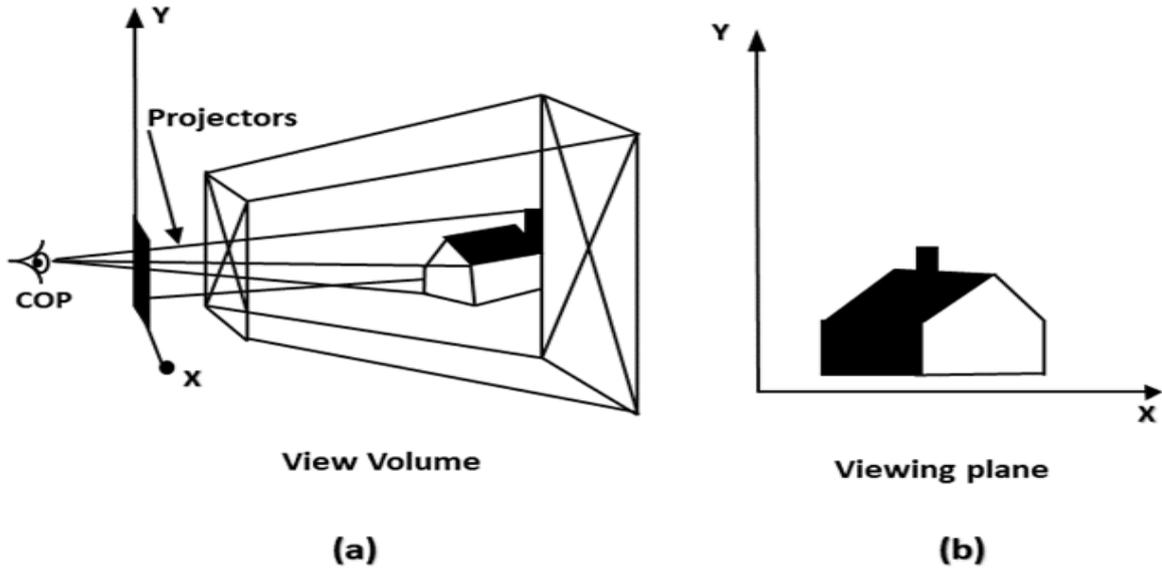


Fig: Perspective Projection