Department of Computer Science and Engineering

Couse Name: Computer Graphics Lab

4. Projections: Aim is to understand 3D viewing by defining different planes of projections and different center of projections. To understand setting of a a viewing direction and the viewing pipeline.

Use your experimentation on a Unit Cube defined as a polygon with six planar surfaces in different colors. You should experiment with the complete classification of planar geometric projections. (This assignment is also to be implemented as key driven. For example, for orthographic projection press „o" key, for isometric „i", for diametric „d", trimetric „t" etc).

The aim is to experiment with the complete classification of projection (Parallel: Orthographic (and Axonometric: isometric, diametric, trimetric), Cavalier, Cabinet, General and Perspective: one point, two point and three point perspective) studied in the class and your textbook to answer the following questions.

Assessment: You should be able to answer the following questions. How does the image change if you make the plane of projection as the principal planes and the

center of projection is at infinity in the direction perpendicular to the plane of projection?

How does the image change if you define the plane of projection with a reference point and normal to the plane; and the center of projection is at infinity in the direction perpendicular to the plane of projection?

How does the image change if you define the plane of projection with a reference point and normal to the plane; and the center of projection is at a point i) on any of the axis, ii) or it is in a plane or iii) it is in space.

What is the main difference between parallel and perspective projection?

What is the main difference between orthographic and axonometric projections (isometric, diametric and trimetric projections)?

Show the difference between isometric, diametric and trimetric projections. What is the difference between cavalier, cabinet and general parallel projections?

What is the difference between one point perspective, two point perspective and three point perspective projections?