**COMPUTER GRAPHICS LAB-VTH SEM**

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| S.NO | COMPUTER GRAPHICS PROGRAM NAME | PAGE NO | DATE | REMARK/  GRADE |
| 1 | Experiment 1: Introduction to OpenGL: [ Lab Environment Setup]   1. What is OpenGL? 2. What is GLU/GLUT? 3. What is OpenGL Architecture? 4. Setting up the environment. 5. First OpenGL Program: This initializes a window of green color. 6. Draw a Hut. |  |  |  |
| 2 | Experiment 2: Drawing a line [Usage of Open GL]   1. Draw a line using equation of line Y=m\*X+C. 2. Draw a line using DDA algorithm for slope m<1 and m>1. 3. Draw a line using Bresenham algorithm for slope m<1 and m>1.   # Take the input from user for all the three scenarios i.e. value of (x1, y1) and (x2, y2). |  |  |  |
| 3 | Experiment 3: Drawing a Circle and an Ellipse [Done on OpenGL]   1. Draw the circle with the help of polar equations 2. Draw the circle with the help of mid-point method. 3. Draw the Ellipse with the mid-point method.   # Take the value of radius, major axis and minor axis as input from the user. |  |  |  |
| 4 | Experiment 4: Seed Fill Algorithms [Small Project will be given for demonstration]   1. WAP to fill the polygon using scan lines. 2. WAP to fill a region using boundary fill algorithm using 4 or 8 connected approaches. 3. WAP to fill a region using flood fill algorithm using 4 or 8 connected approaches.   # Take the value of seed point, intensity of new color as input from user. |  |  |  |
| 5 | Experiment 5: Viewing and Clipping [Geographical Animation for demonstration]   1. Write an interactive program for line clipping using Cohen Sutherland line clipping algorithm. 2. Write an interactive program for line clipping using Liang-Barsky line clipping algorithm. 3. Write an interactive program for polygon clipping using Sutherland – Hodgeman polygon clipping algorithm.   # Take the window coordinates as input from the user, also take polygon coordinates as input. |  |  |  |
| 6 | Experiment 6 : Basic 2D & 3D Transformations   1. Write an interactive program for following basic transformation. 2. Translation 3. Rotation 4. Scaling 5. Reflection about axis. 6. Reflection about a line Y=mX+c and aX+bY+c=0. 7. Shear about an edge and about a vertex.   # Perform all the experiment for 3-D transformation.  # Take the following values as input from user: Theta (angle of rotation), translation factor, scaling factor and other values. Make necessary assumptions. |  |  |  |
| 7 | Experiment 7: Drawing Bezier curves. [ Virtual GLUT based demonstration]   1. Write a program to draw a cubic spline. 2. WAP to draw a Bezier curve.   # Take necessary values as input from the user like degree of the Bezier curve. |  |  |  |
| 8 | Experiment 8: Event Handling   1. Implement mouse input functionality. 2. Implement keypress functionality. 3. Implement another call back functions.   #Implement above with the help of animation. |  |  |  |
| 9 | Experiment 9: Creating 3D Shapes like Cube, Sphere and others. |  |  |  |