3.0 IMPLEMENTATION

3.1 Header files included:

We have included the following HEADER FILES.
“GL/glut.h”: This is to include the graphics built in OpenGL functions
“windows.h”: This is used for the sleep function
“**math.h”:** This is used for Trigonometric functions

3.2 Functions used:

The frequently used functions in our project are listed below along with their brief explanation-
Inbuilt functions-

- glClearColor() **:** Specify clear values for the color buffers.
- glEnable()**:** glEnable and glDisable enable and disable various capabilities.
- glTranslatef () **:** multiply the current matrix by a translation matrix.
- glRotatef () **:** multiply the current matrix by a rotation matrix.
- glPushMatrix() and glPopMatrix() **:** push and pop the current matrix stack.
- glBegin() and glEnd() **:**Specifies the primitive or primitives that will be created from vertices presented between glBegin and the subsequent glEnd. Ten symbolic constants are accepted**:**

GL_POINTS, GL_LINES,GL_LINE_STRIP, GL_LINE_LOOP, GL_TRIANGLES,
and GL_POLYGON.

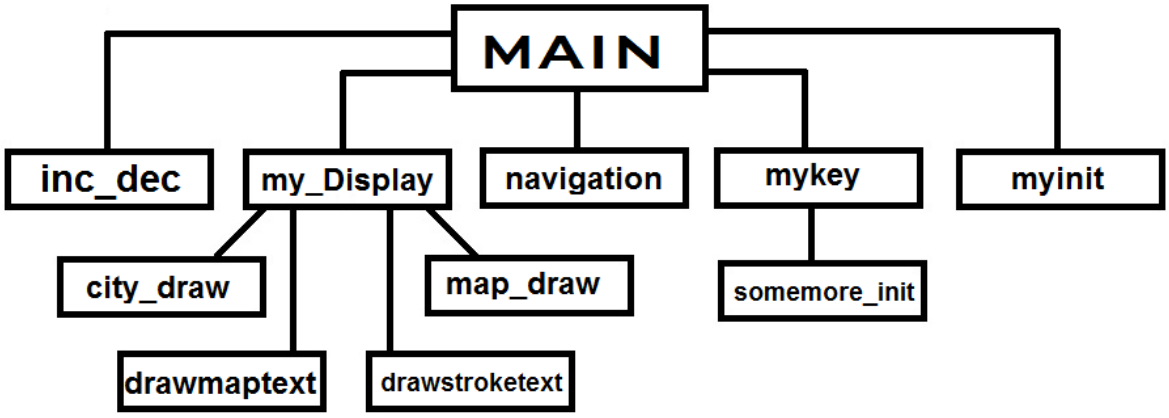
- glColor3f() **:** set the color.
- glVertex() **:** function commands are used within glBegin/glEnd pairs to specify point, line, and polygon vertices
- glClear () **:** clear buffers to preset values. It takes a single argument that is the bitwise OR of several values indicating which buffer is to be cleared.
- glMatrixMode () **:** specify which matrix is the current matrix. It sets the current matrix mode. Mode can assume one of three values**:** GL_MODELVIEW, GLPROJECTION, GL_TEXTURE.
- glLoadIdentity () **:** replace the current matrix with the identity matrix.
- glOrtho () **:** multiply the current matrix with an orthographic matrix.
- glutInit() **:**is used to initialize the GLUT library.
- glutInitDisplayMode () **:** sets the initial display mode. Display mode, normally the bitwise OR-ing of GLUT display mode bit masks.

- glutInitWindowPosition and glutInitWindowSize set the initial window position and size respectively.
- glutDisplayFunc sets the display callback for the current window.
- glutPostRedisplay: This function sets a flag at the end of a block..open gl checks to see if the flag is set and then executes display function. This function is used to avoid multiple execution of display function within one block.
- glutSwapBuffers: It is used to swap the contents of buffers, when we use double buffering.

User defined functions:

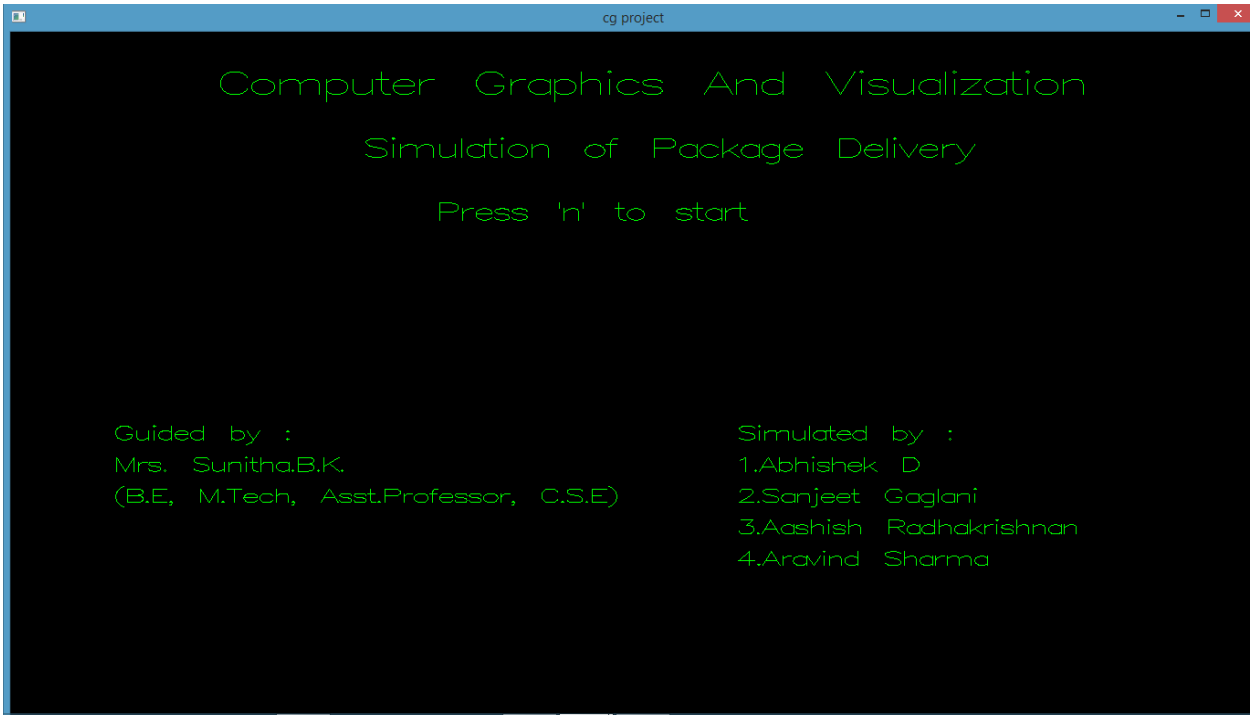
- void city_draw()
- void drawMapTexti(char*string1=NULL,double x=0.0,double y=0.0,double z=0.0 ,double scale=0.0);
- void drawStrokeText1(char*string1,char*string2, double x, double y, double z, double scale);
- void drawStrokeText2(char*string1,char*string2, double x, double y, double z, double scale)
- void drawStrokeText3(char*string, double x, double y, double z, double scale)//house text
- void drawStrokeTexti(char*string1=NULL,char*string2=NULL, double x=0.0,double y=0.0,double z=0.0 ,double scale=0.0)
- void inc_dec(int key,int x,int y)
- void map_draw()
- void mydisplay()
- void myinit()
- void myKey(unsigned char key, int x, int y)
- void navigation()
- void some_more_init()

4.0 FLOW DIAGRAM

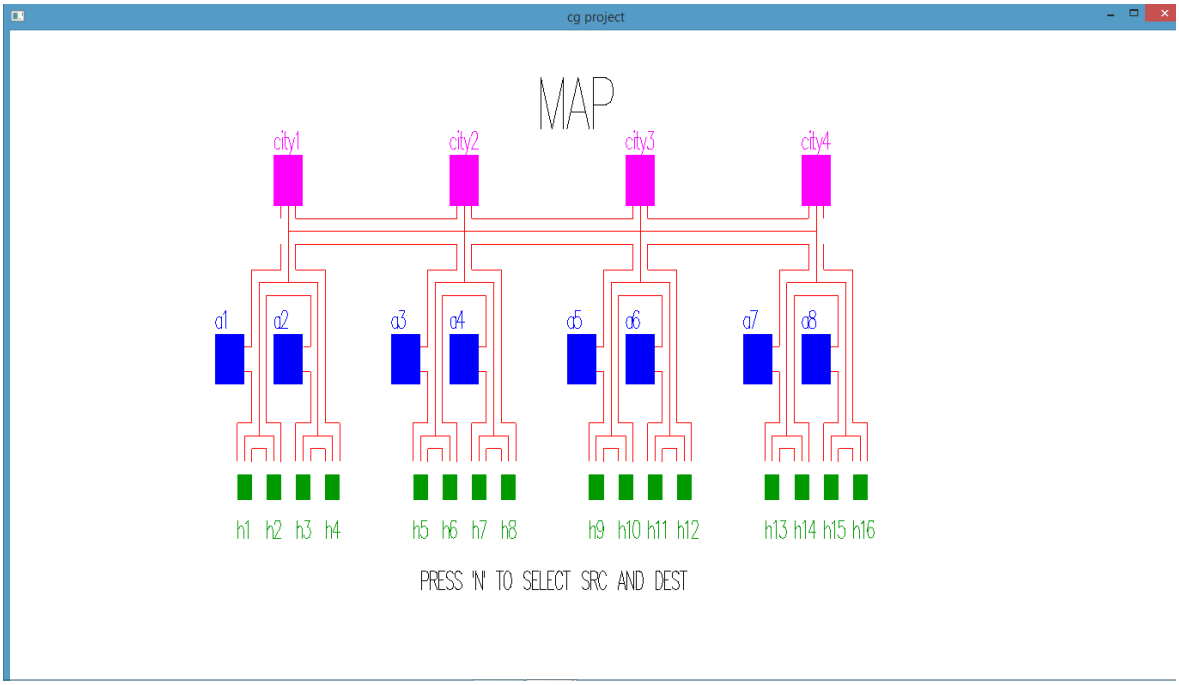


5.0 SCREEN SNAPS

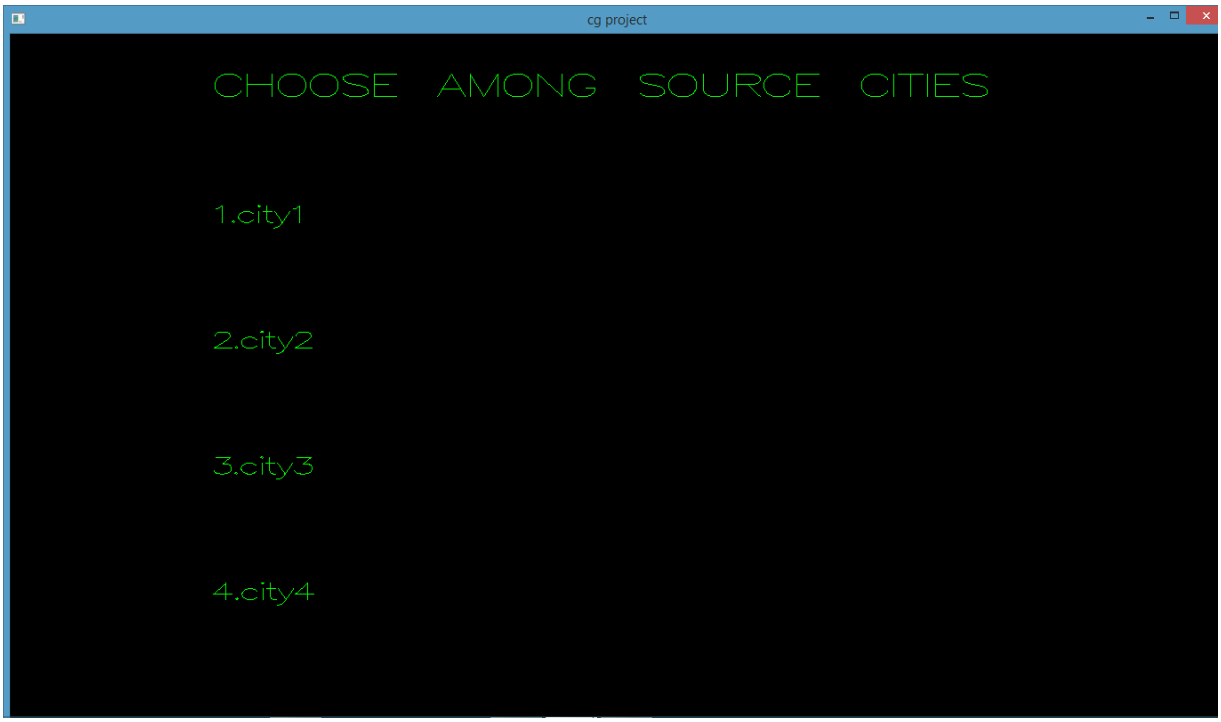
Main Page

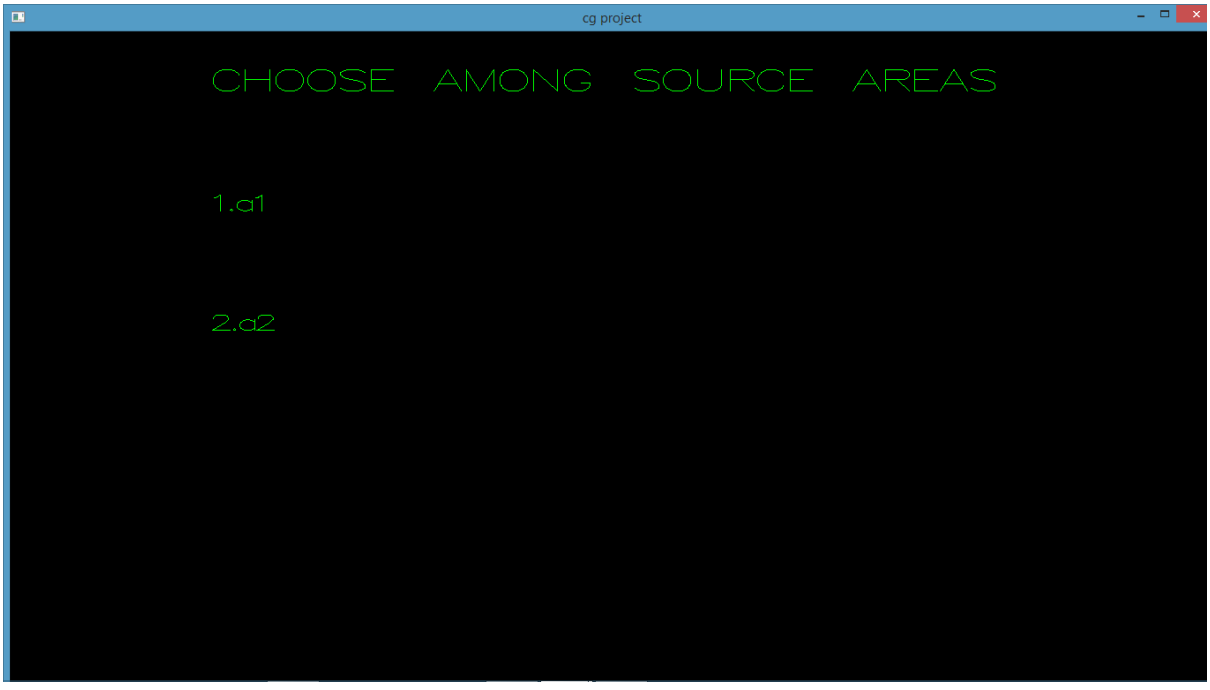


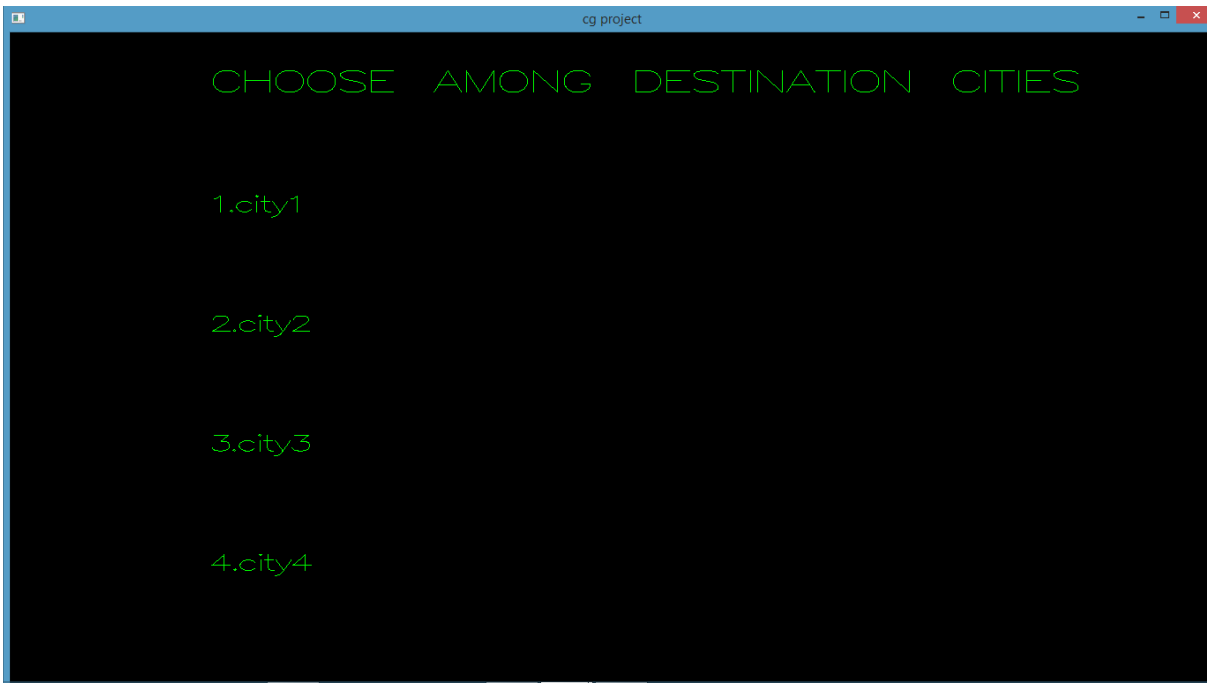
Map

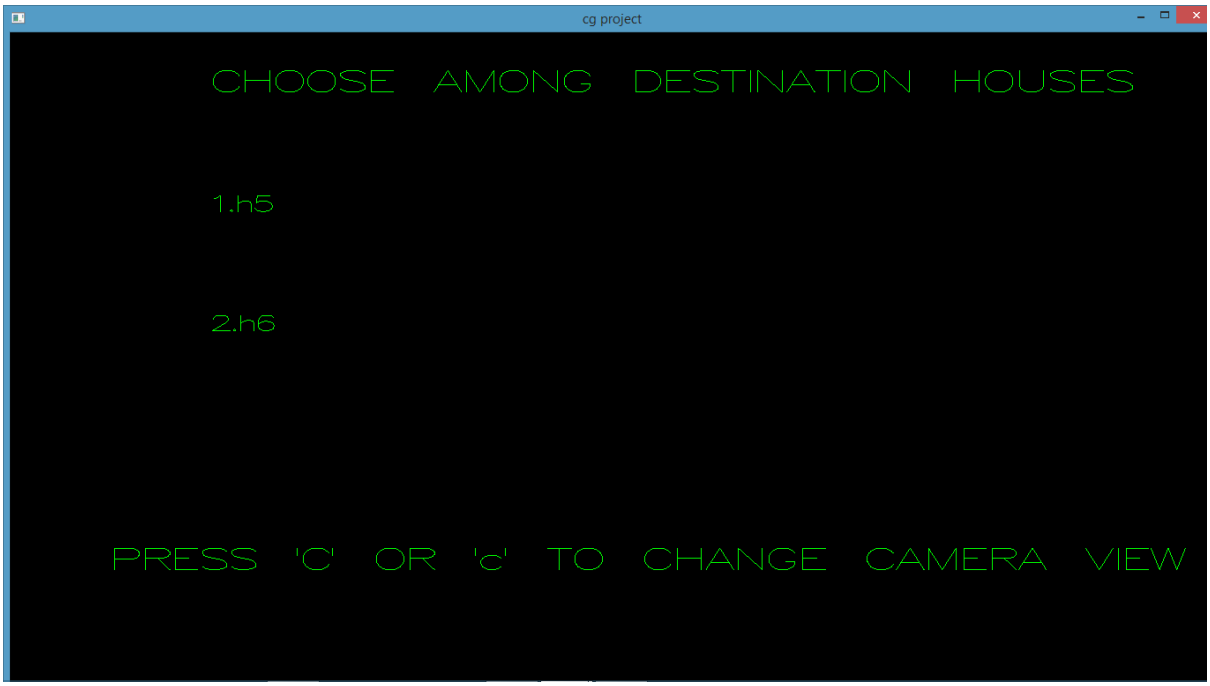


Menu

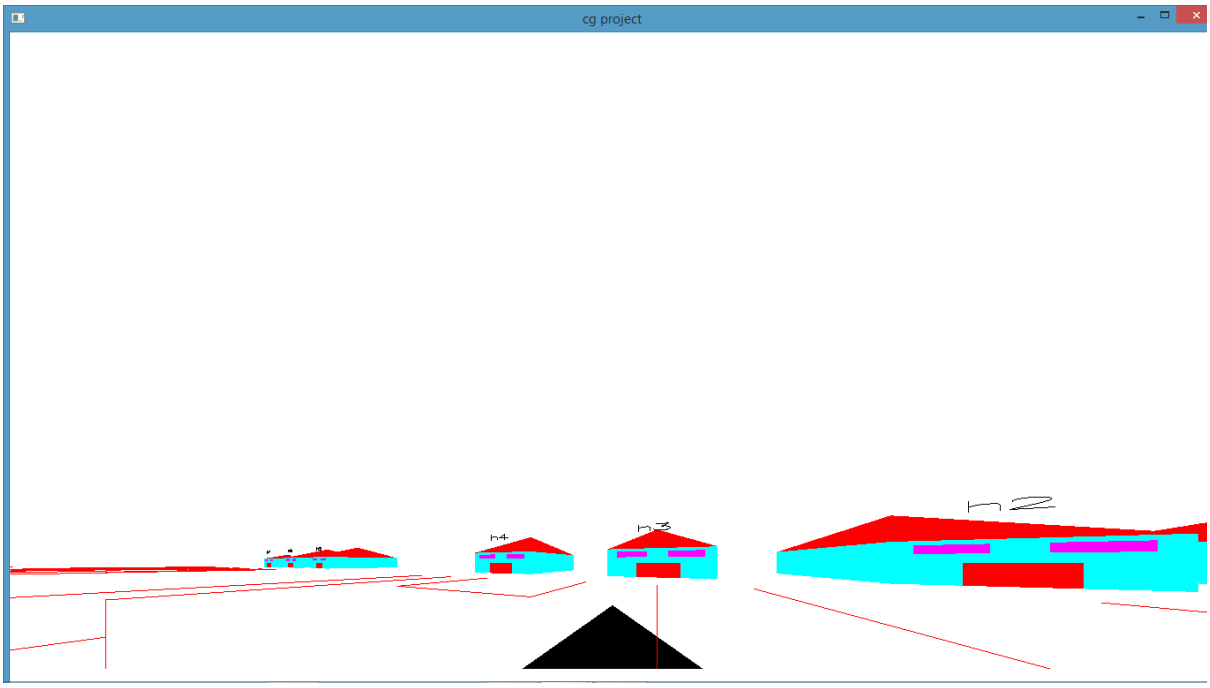

cg project
CHOOSE AMONG SOURCE CITIES
1.city1
2.city2
3.city3
4.city4


cg project
CHOOSE AMONG SOURCE AREAS
1.a1
2.a2

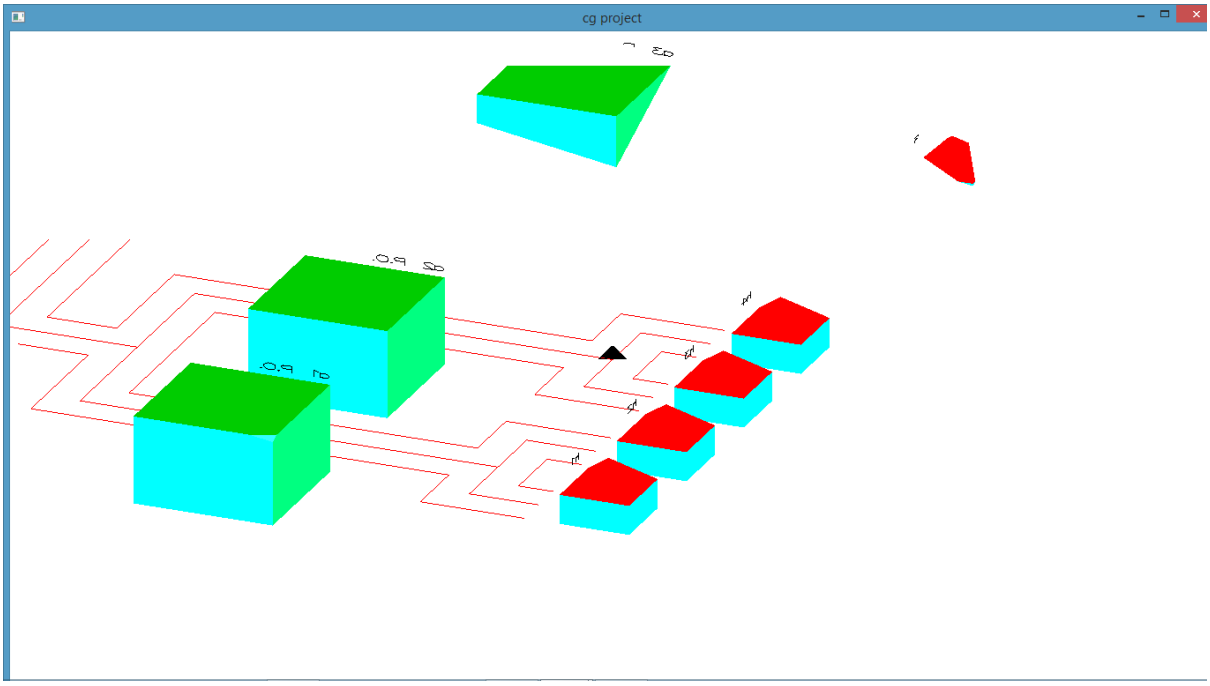

cg project
CHOOSE AMONG DESTINATION CITIES
1.city1
2.city2
3.city3
4.city4


cg project
CHOOSE AMONG DESTINATION HOUSES
1.h5
2.h6
PRESS 'C' OR 'c' TO CHANGE CAMERA VIEW

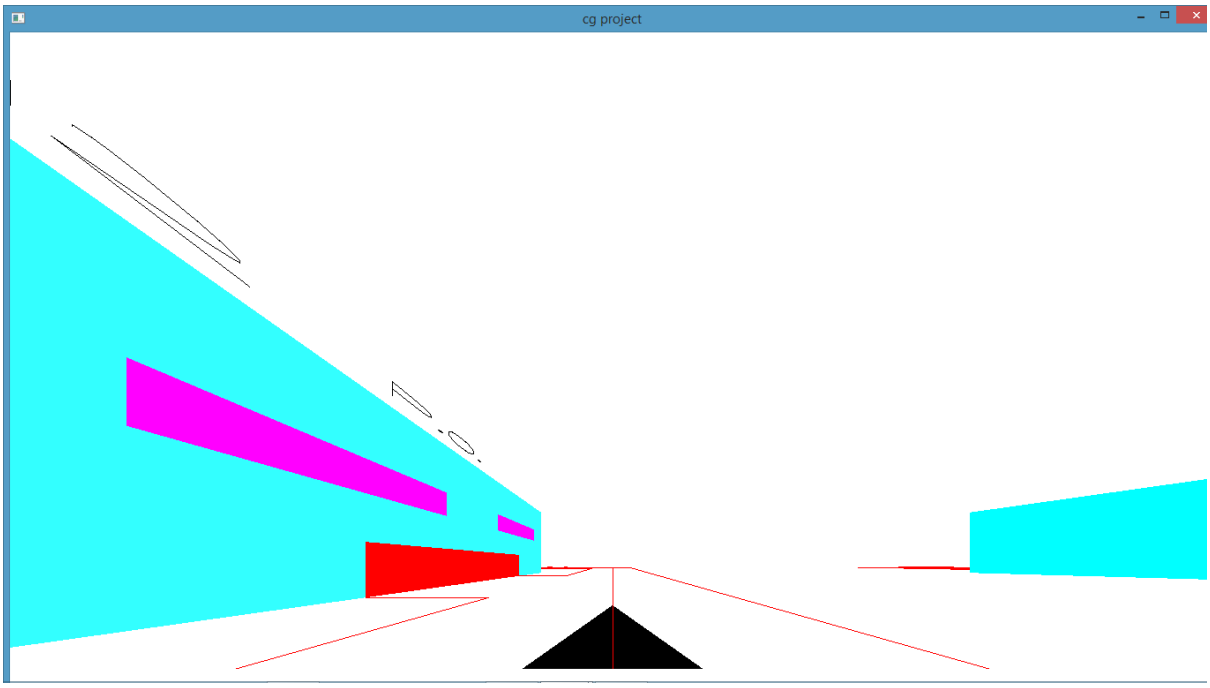
Perspective View of Navigation

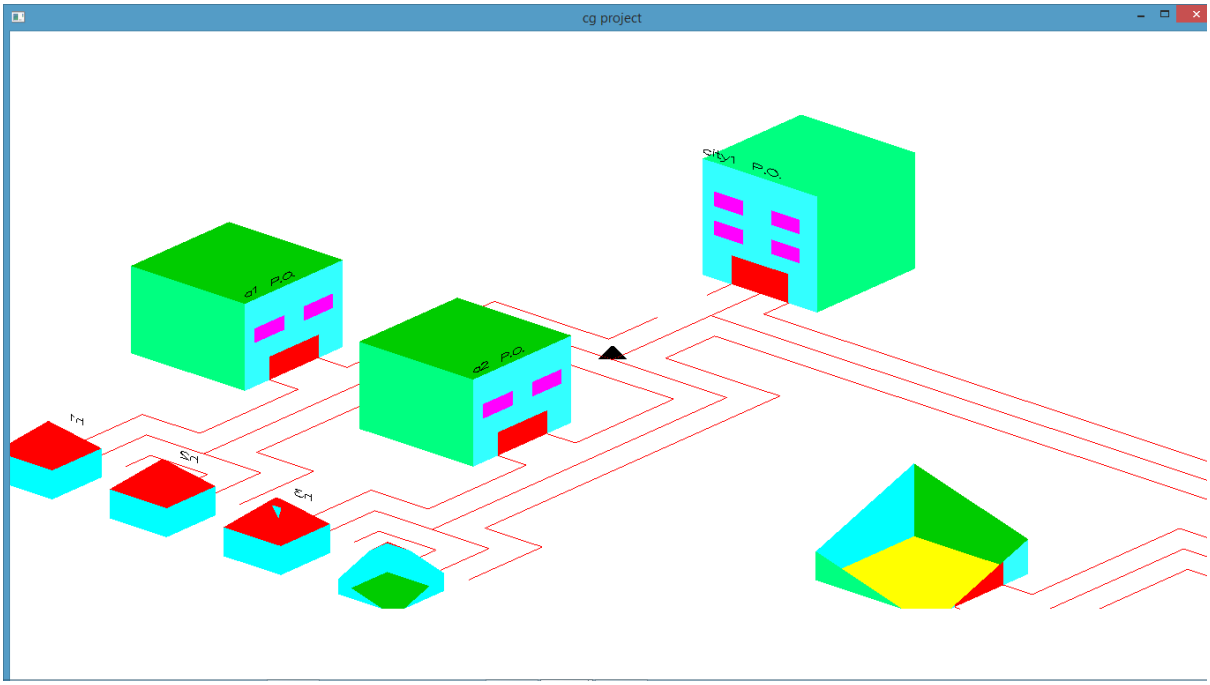


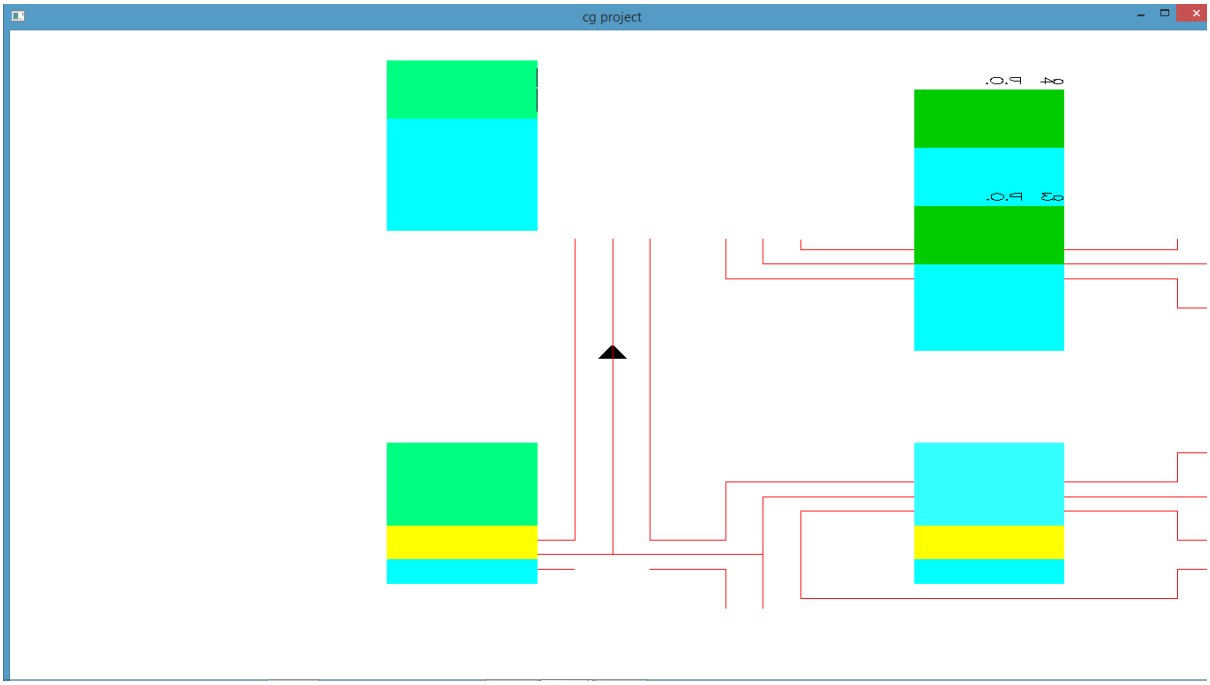
Orthographic view

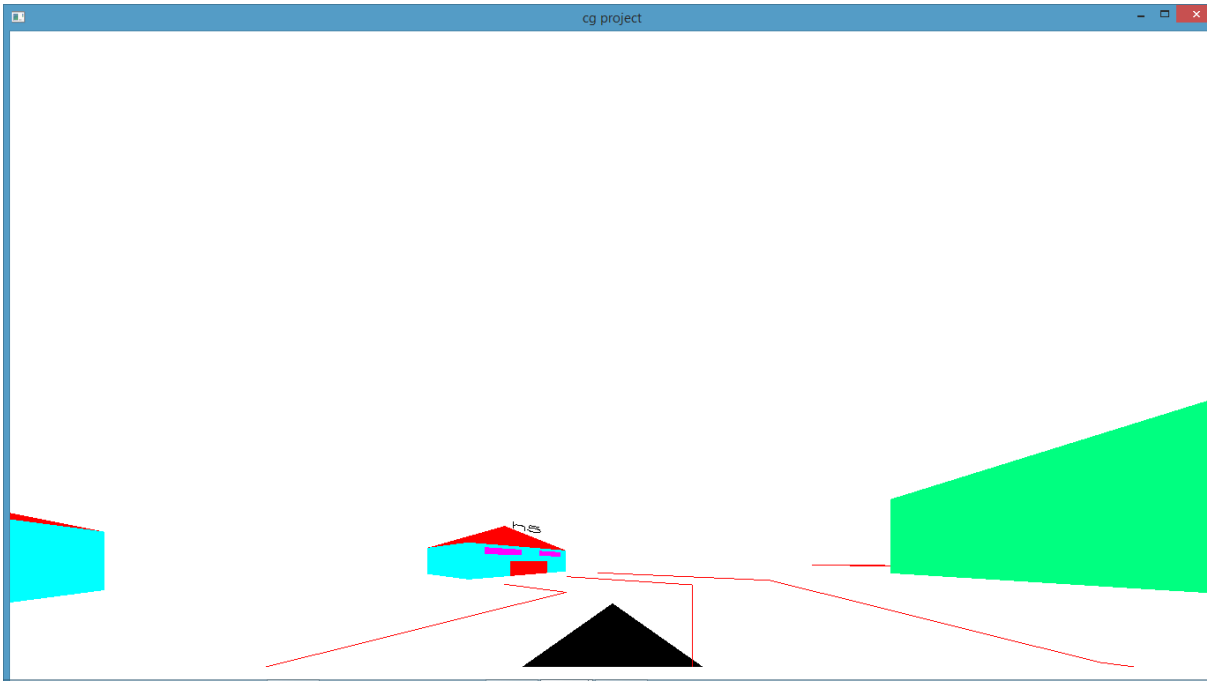


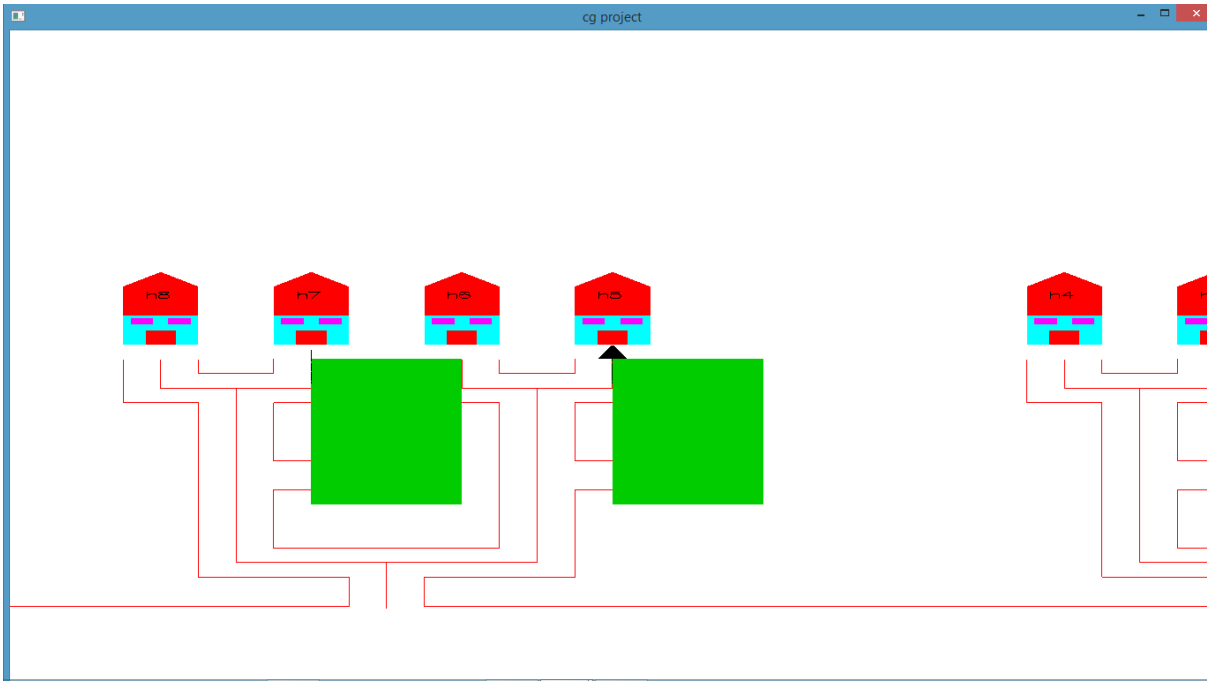
Views while Navigation






cg project


cg project


cg project
h8
h7
h6
h5
h4

6.0 References:

- Interactive computer graphics a top down approach: Edward Angel
- www.learnopengl.com