Lab 0

Name : Abdelaziz Mohamed Abdelaziz

I.D : 19015941

Screenshots of working code :

main.cpp

```
#include <GL/glew.h>
#include <GL/freeglut.h>
float orthoLeft = 0;
float orthoRight = 100;
float orthoBottom = 0;
float orthoTop = 100;
float orthoNear = -1;
float orthoFar = 1;
float offsetX = 100;
float offsetY = 100;
float windowWidth = 500;
float windowHeight = 500;
// Drawing routine.
void drawScene(void)
{
    glClear(GL_COLOR_BUFFER_BIT);
    glColor3f(0.0, 0.0, 0.0);
    glLineWidth(1.0); // Default line width.
    glBegin(GL_LINES);
    glVertex3f(20.0, 20.0, 0.0);
    glVertex3f(80.0, 20.0, 0.0);
    glVertex3f(80.0, 80.0, 0.0);
    glVertex3f(20.0, 80.0, 0.0);
    glEnd();
    glFlush();
}
// Initialization routine.
void setup(void)
{
    glClearColor(1.0, 1.0, 1.0, 0.0);
}
// OpenGL window reshape routine.
void resize(int w, int h)
{
    glViewport(0, 0, w, h);
    glMatrixMode(GL_PROJECTION);
    glLoadIdentity();
```

main.cpp

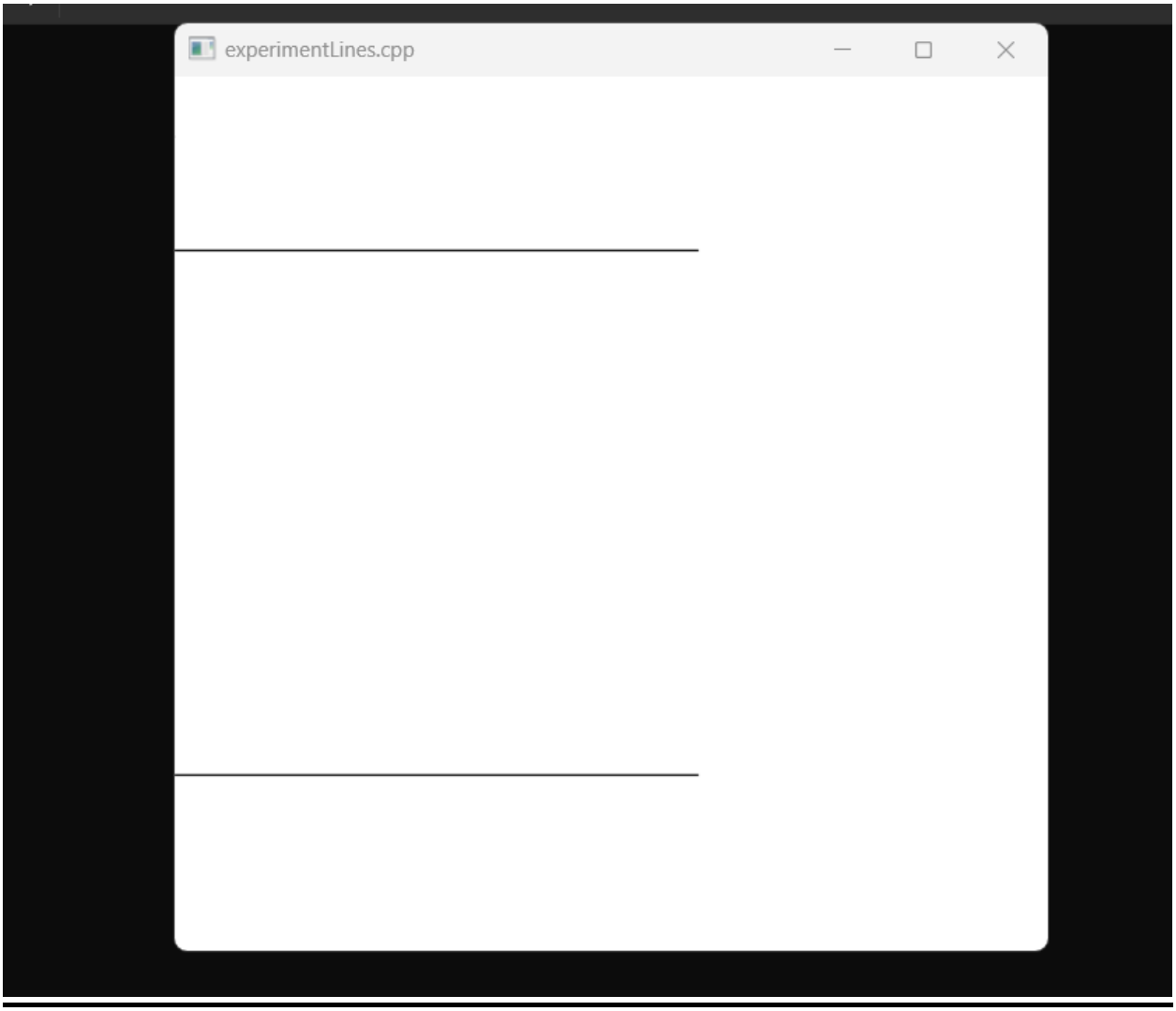
```
40      glLoadIdentity();
41  }
42  // Keyboard input processing routine.
43  void keyInput(unsigned char key, int x, int y)
44  {
45      switch (key)
46      {
47      case 27:
48          exit(0);
49          break;
50      default:
51          break;
52      }
53  }
54
55  // Main routine.
56  int main(int argc, char** argv)
57  {
58      glutInit(&argc, argv);
59
60      glutInitContextVersion(4, 3);
61      glutInitContextProfile(GLUT_COMPATIBILITY_PROFILE);
62
63      glutInitDisplayMode(GLUT_SINGLE | GLUT_RGBA);
64      glutInitWindowSize(windowWidth, windowHeight);
65      glutInitWindowPosition(offsetX, offsetY);
66      glutCreateWindow("experimentLines.cpp");
67      glutDisplayFunc(drawScene);
68      glutReshapeFunc(resize);
69      glutKeyboardFunc(keyInput);
70
71      glewExperimental = GL_TRUE;
72      glewInit();
73
74      setup();
75
76      glutMainLoop();
77  }
```

Without changing any of the variables :

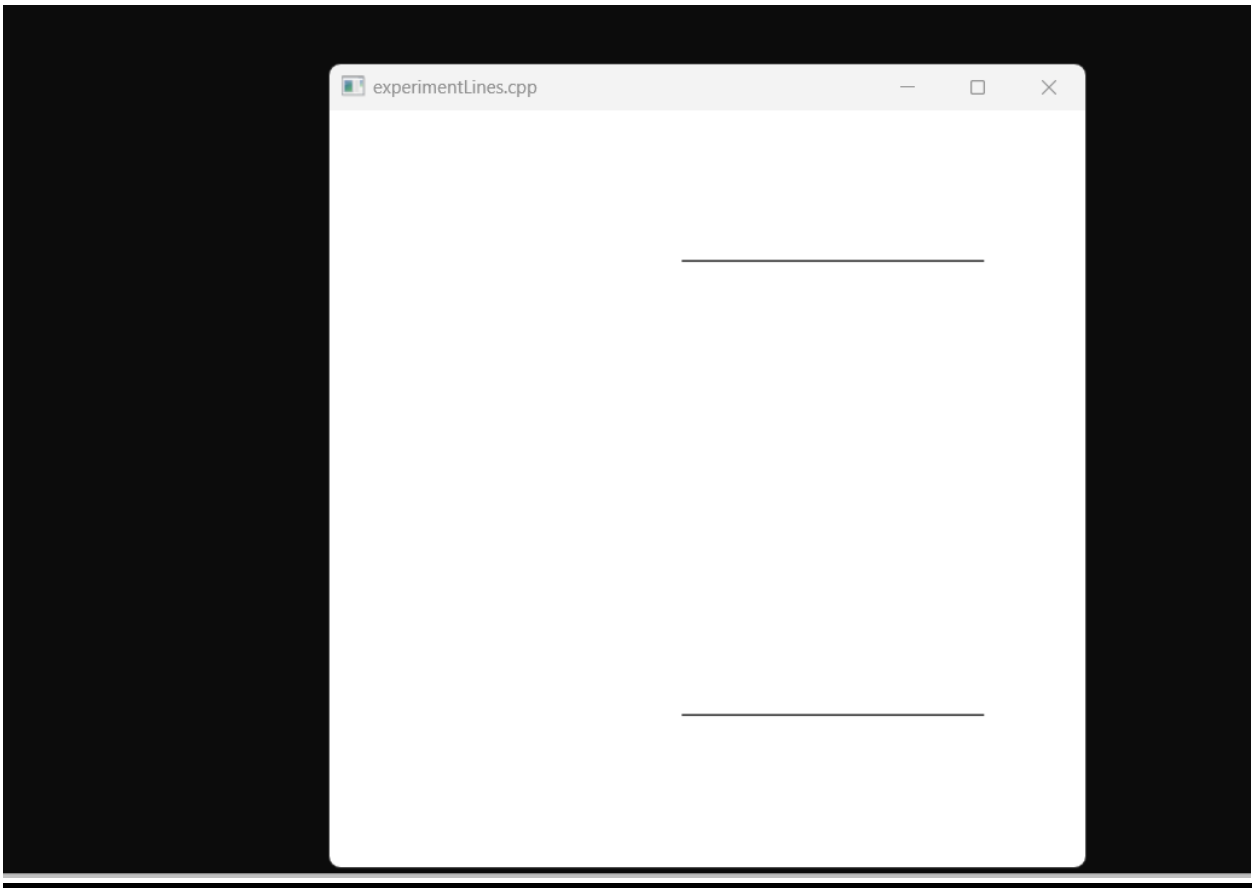
Change ortholeft:

(when increase value than 0 it shift to left when decrease it than 0 shift to right)

When change value of ortho left to = 50 the two lines shifts to the left as appear in the picture



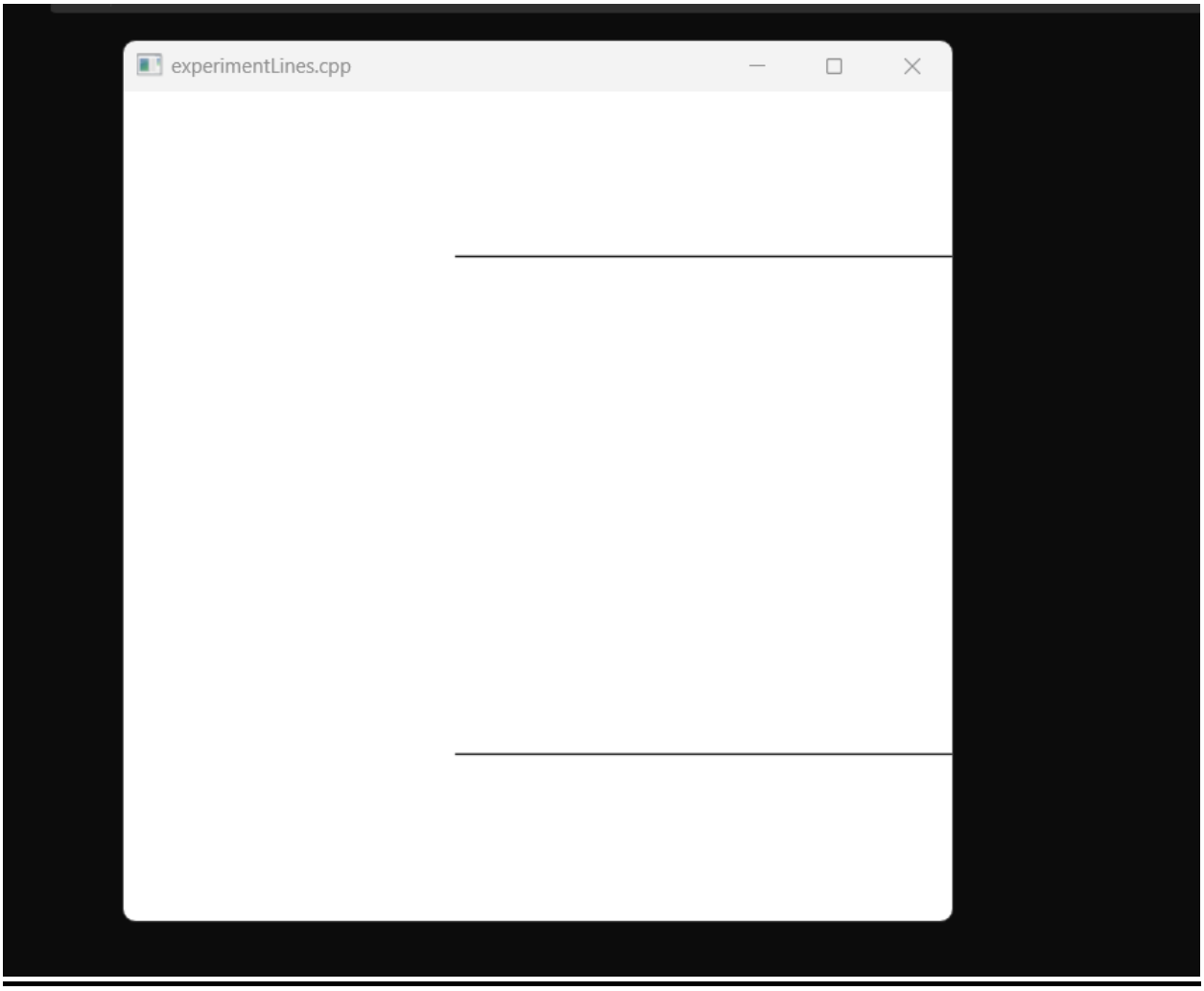
When change value of ortho left to = -50 the two lines shif to the right as appear in the picture



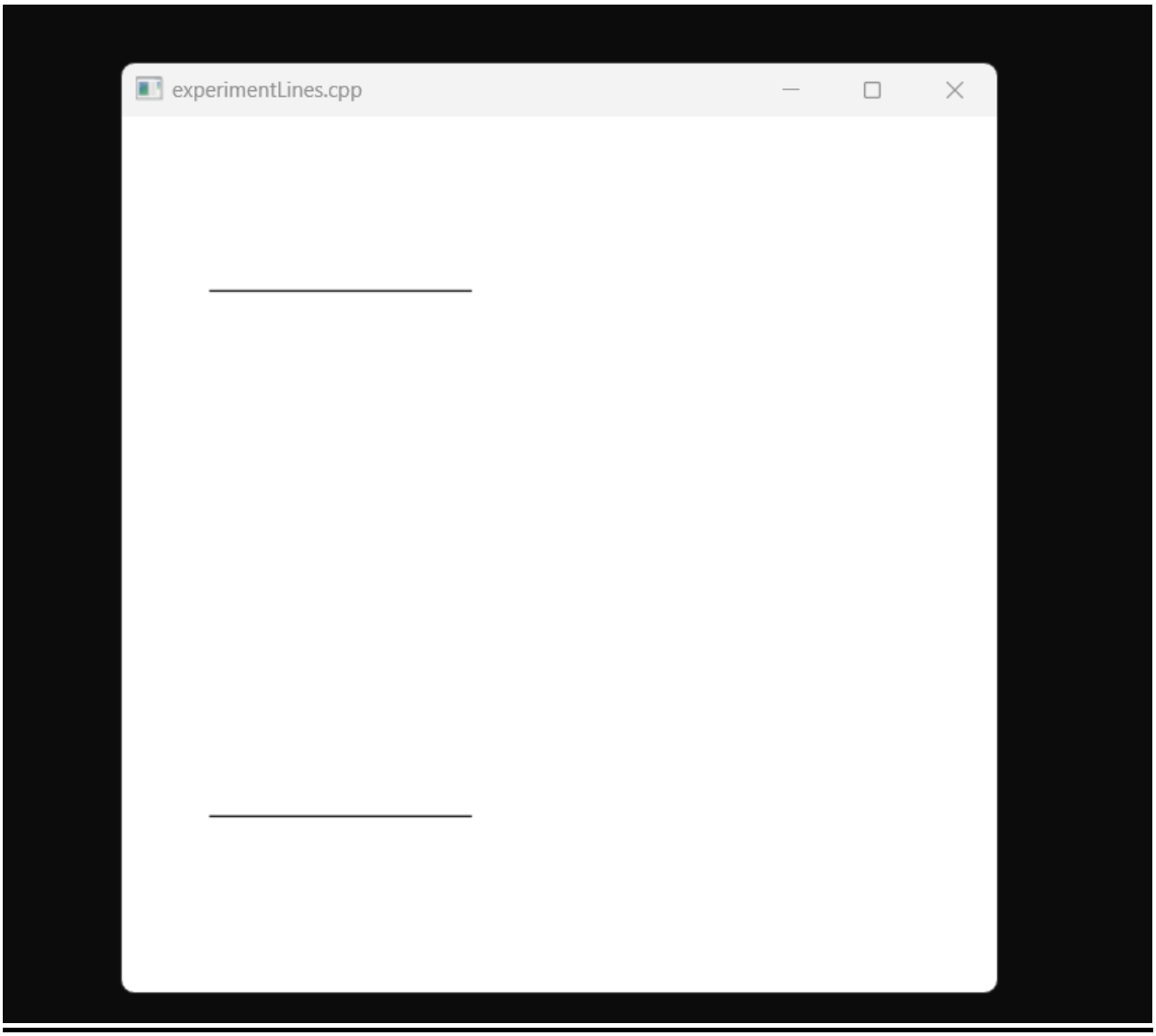
Change orthoRight:

(when decrease value than 100 it shift to right when increase it shift to left)

When change value of ortho right to = 50 the two lines shif to the right as appear in the picture



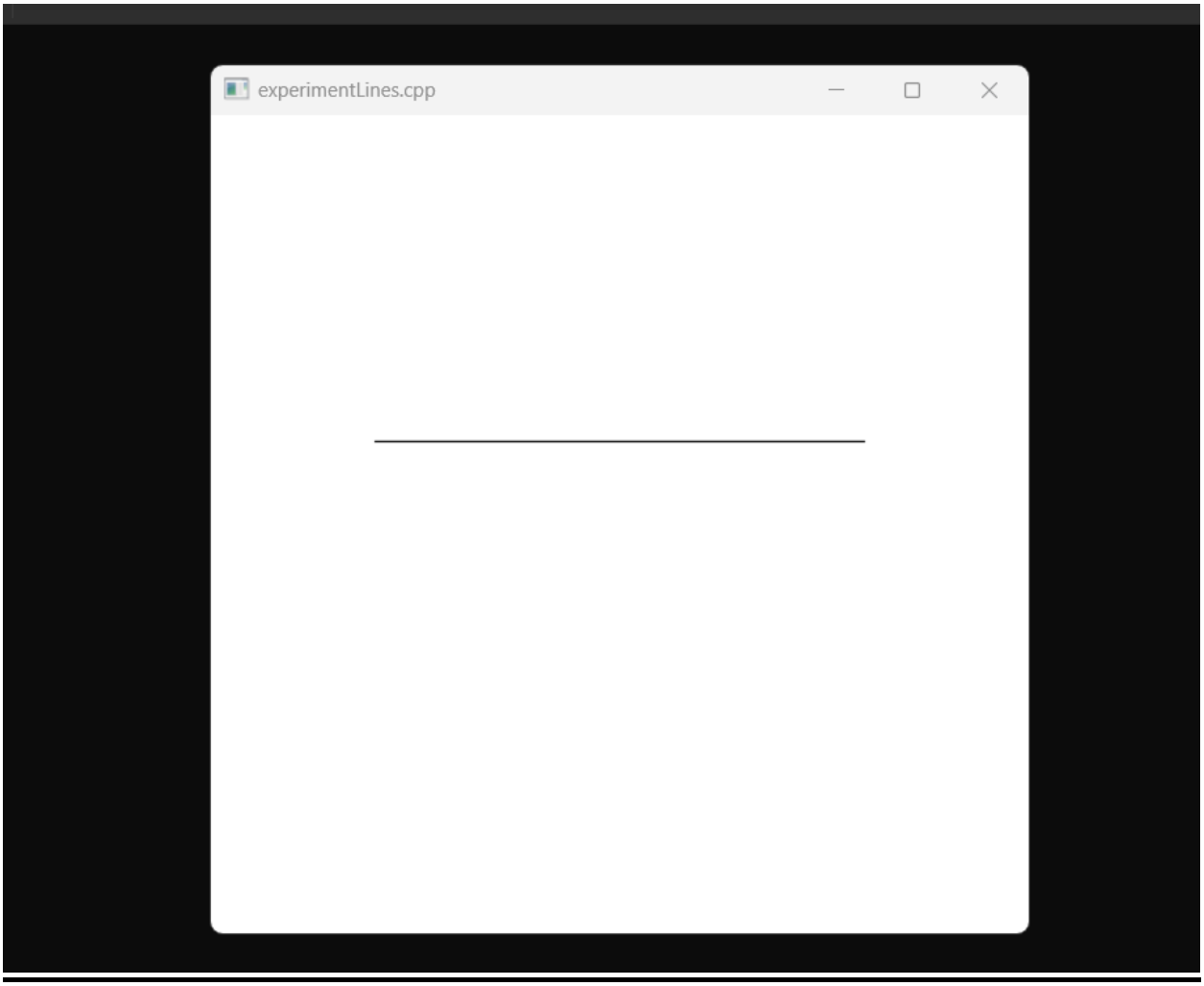
When change value of ortho right to = 200 the two lines shift to the left as appear in the picture



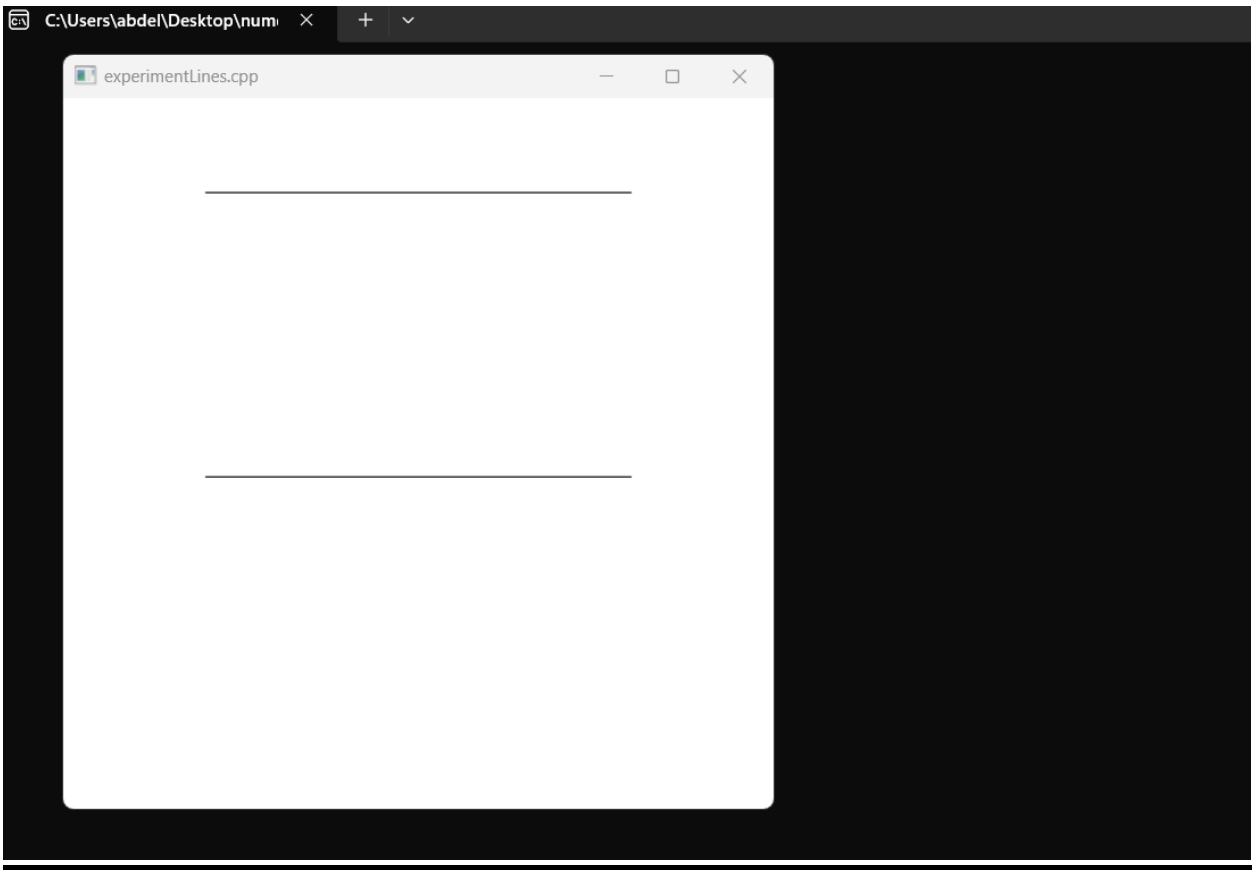
Change orthoBottom :

(when increase value than 0 it shift to down when decrease it shift to up)

When change value of ortho bottom to = 50 the two lines shift to the down as appear in the picture



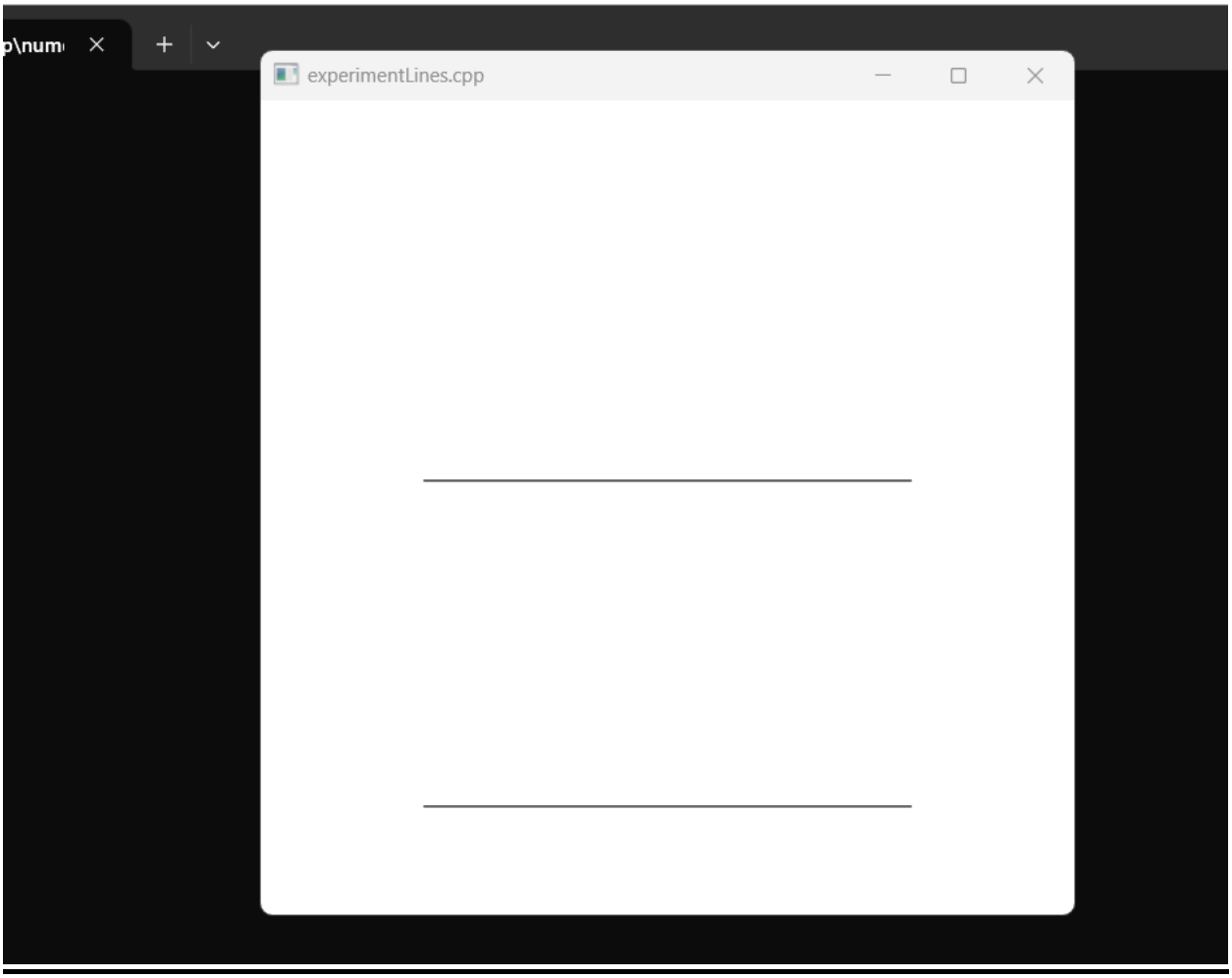
When change value of ortho bottom to = -50 the two lines shift to the up as appear in the picture



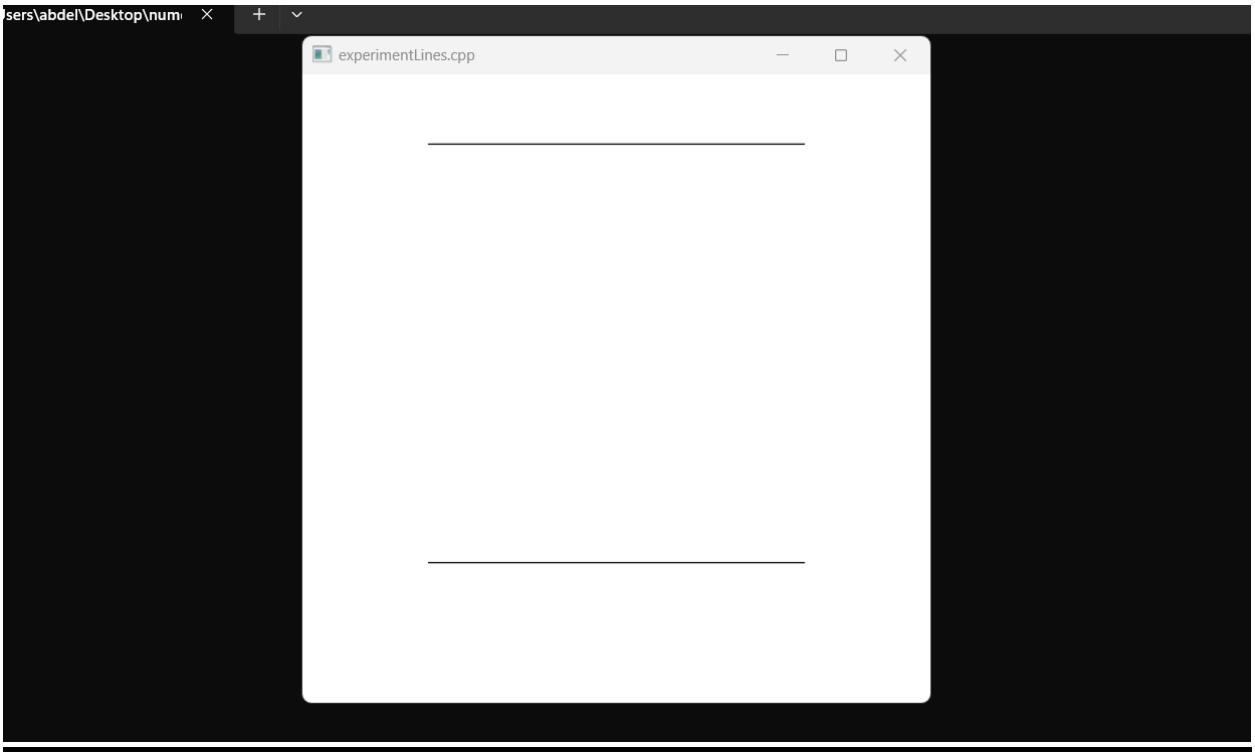
Change orthoTop :

(when increase value than 100 it shift to down when decrease it shift to up)

When change value of ortho bottom to = 150 the two lines shift to the down as appear in the picture

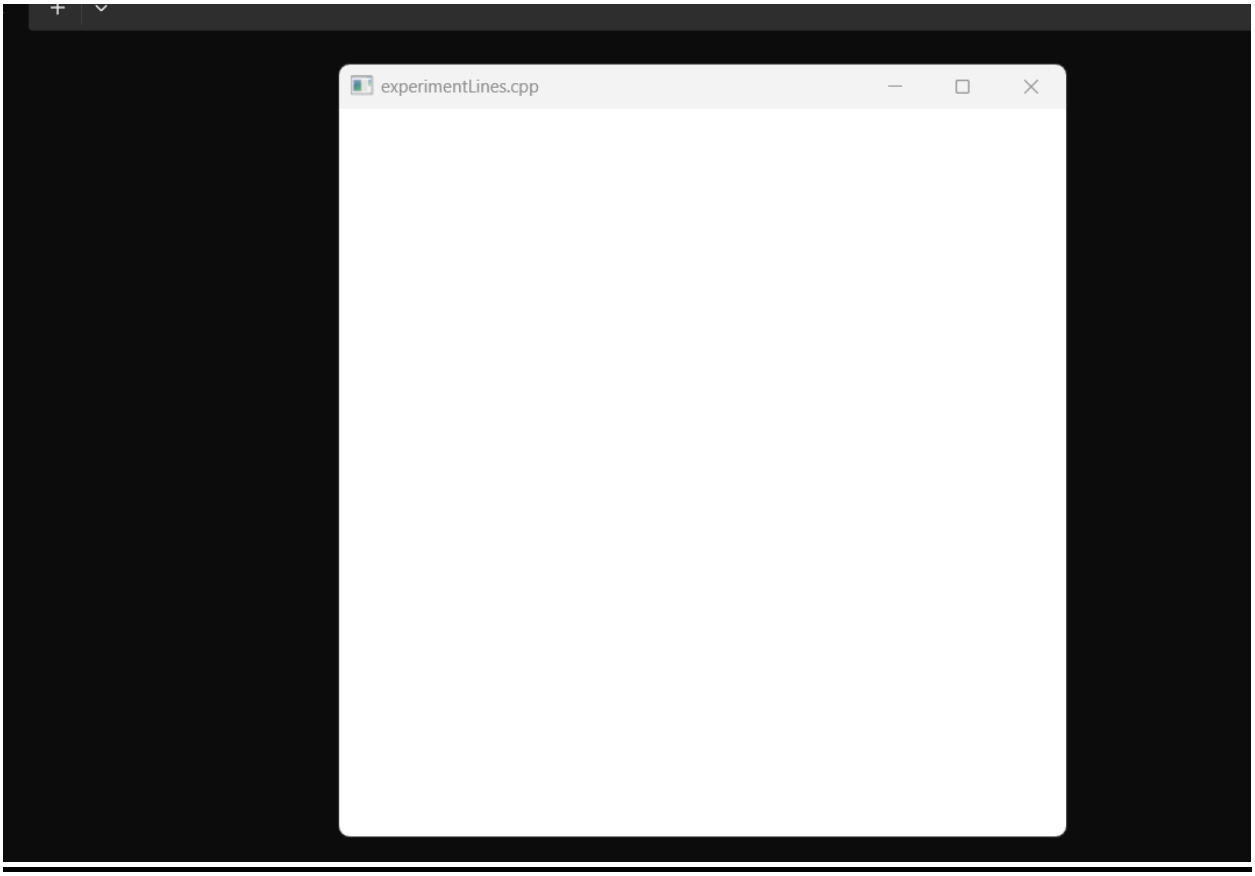


When change value of ortho bottom to = 90 the two lines shift to the up as appear in the picture

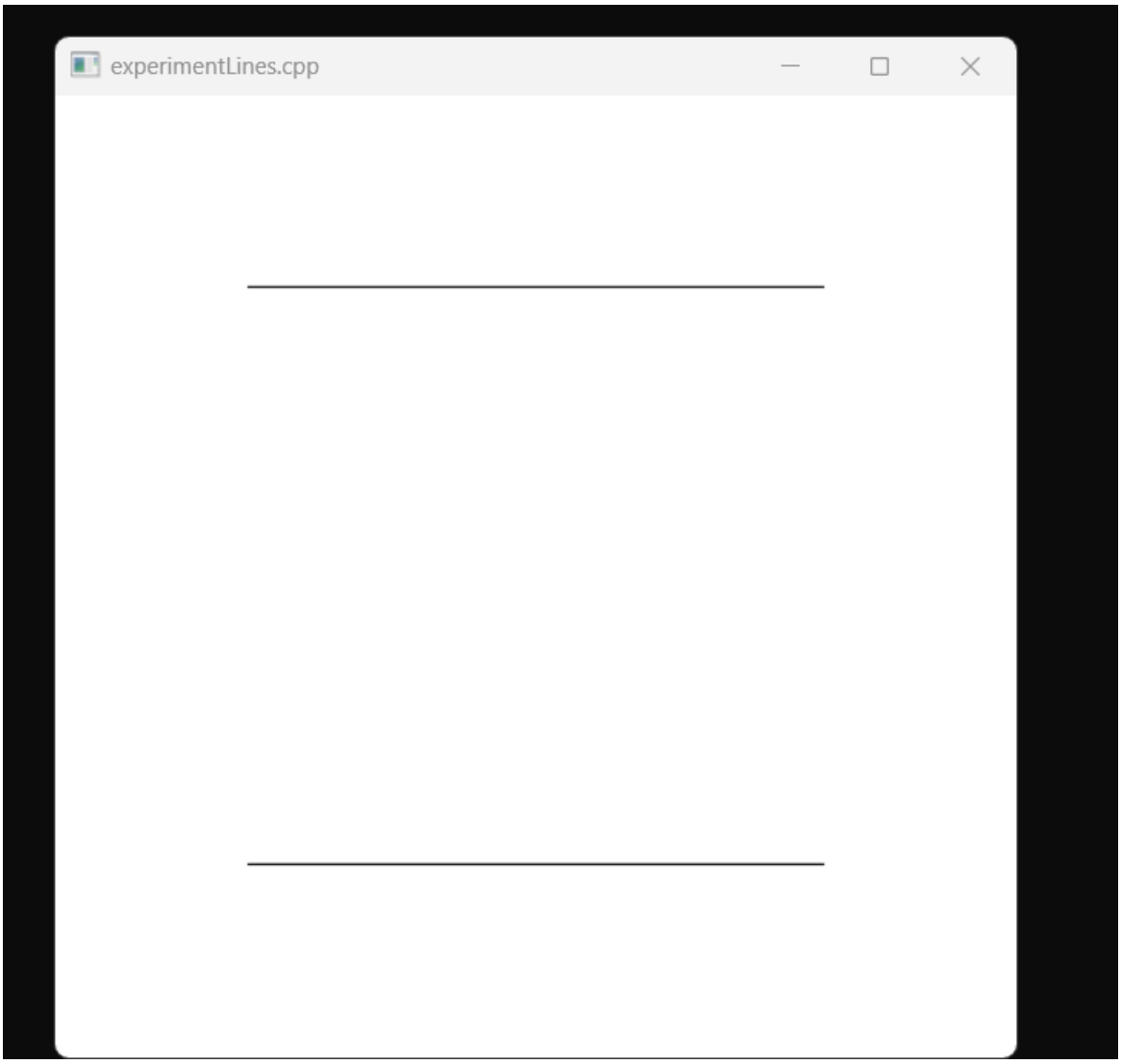


Change orthoNear :

When change value of orthoNear to = 0 the two lines dissappear as appear in the picture

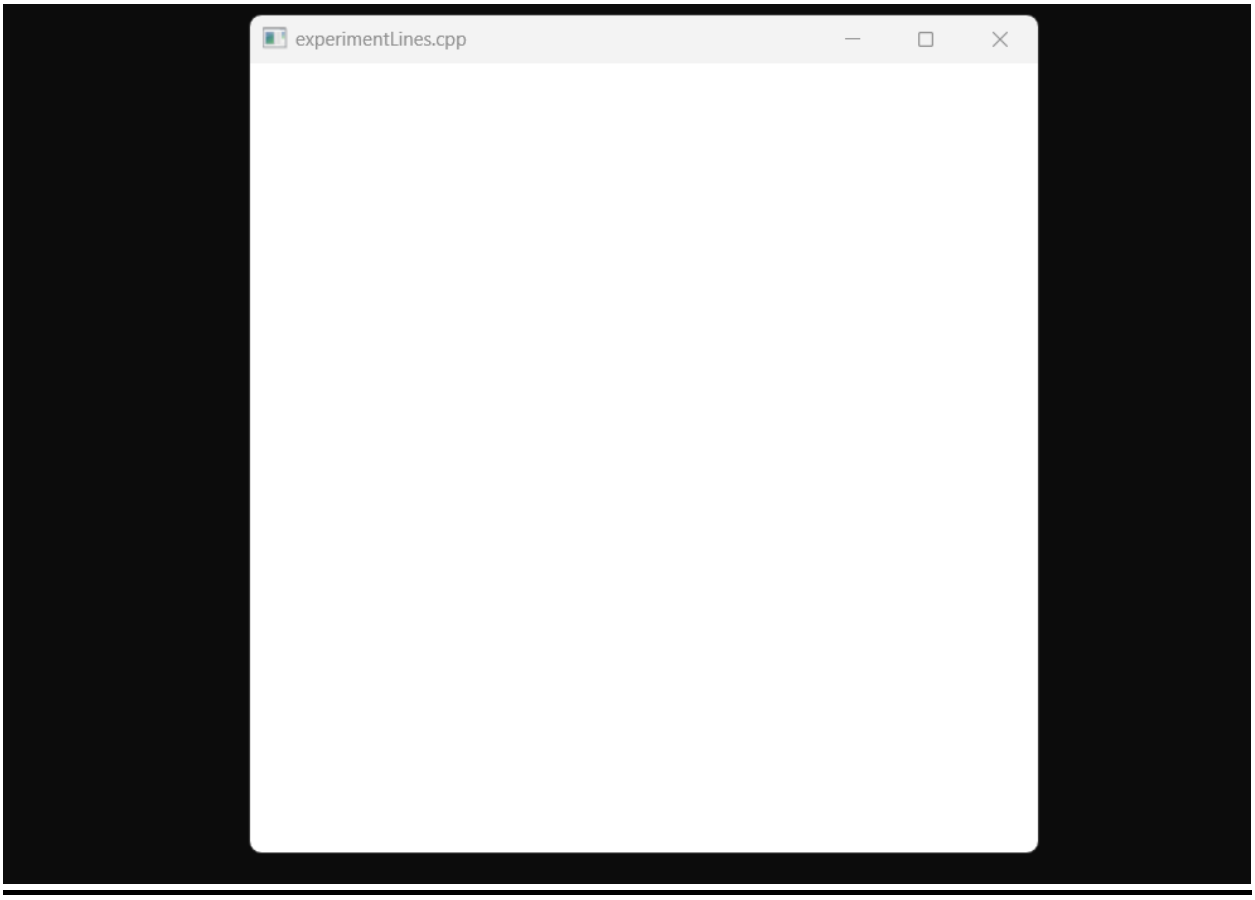


When change value of orthoNear to = -2 the two lines appear the same as appear in the picture

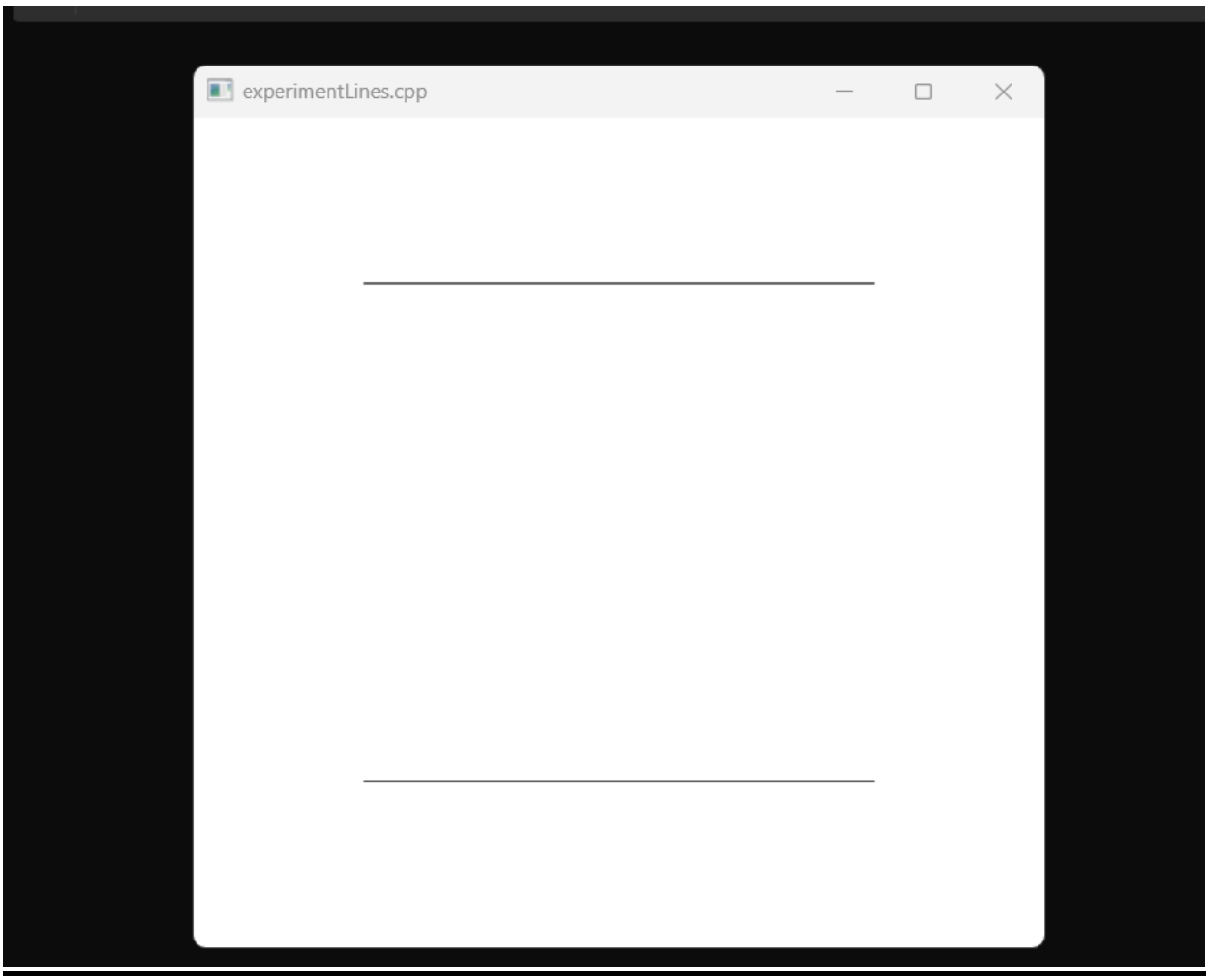


Change orthoFar :

When change value of orthofar to = -1 the two lines dissappear as appear in the picture



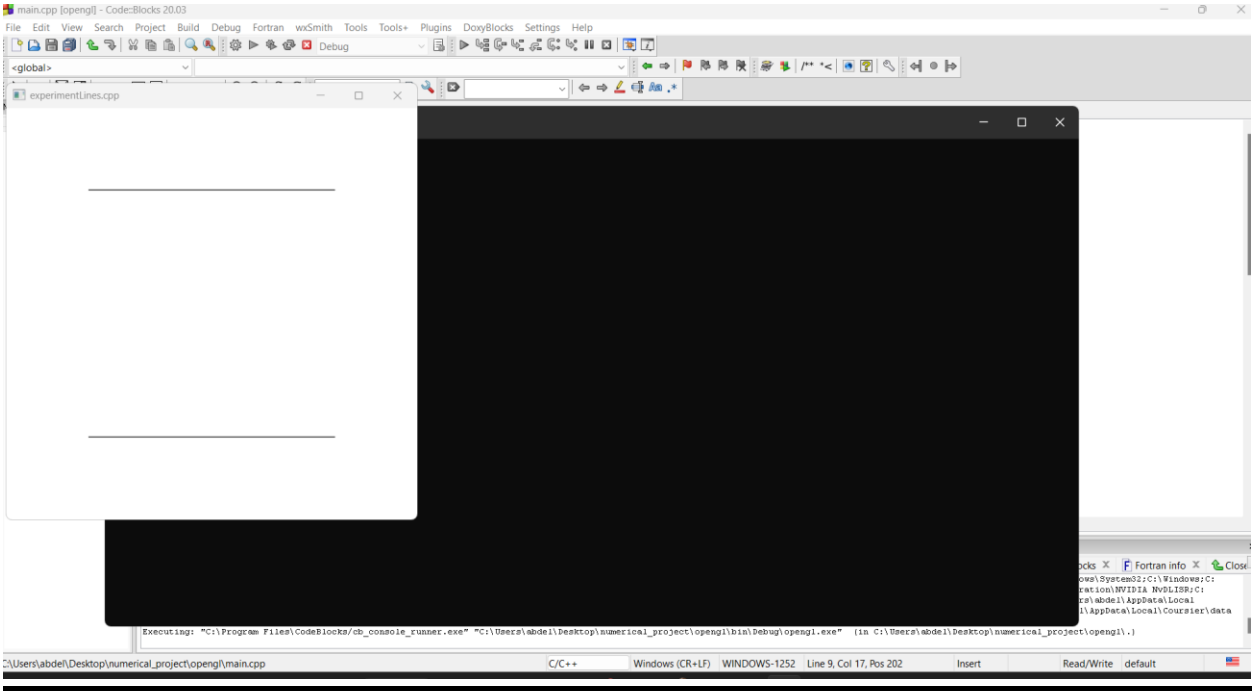
When change value of orthoFar to = 2 the two lines appear the same as appear in the picture



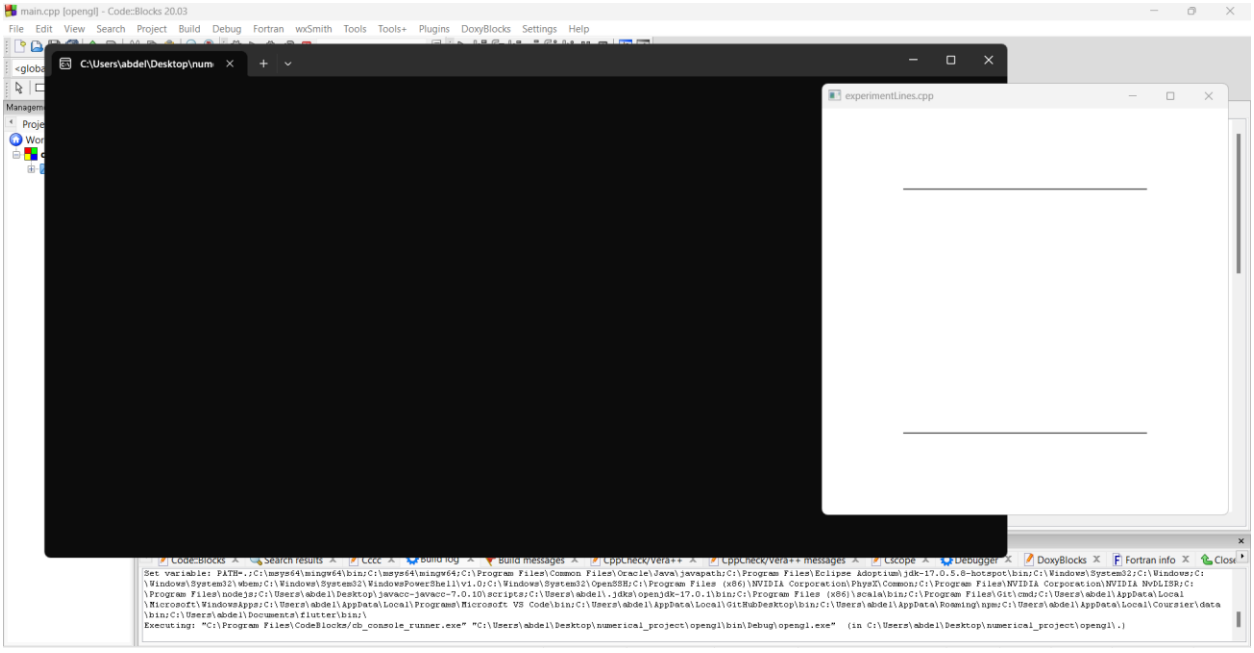
Change offsetX :

(when increase value than 100 the window shift to right when decrease it the window shift to left)

When change value of offsetX to = 0 the window shift to left as appear in the picture



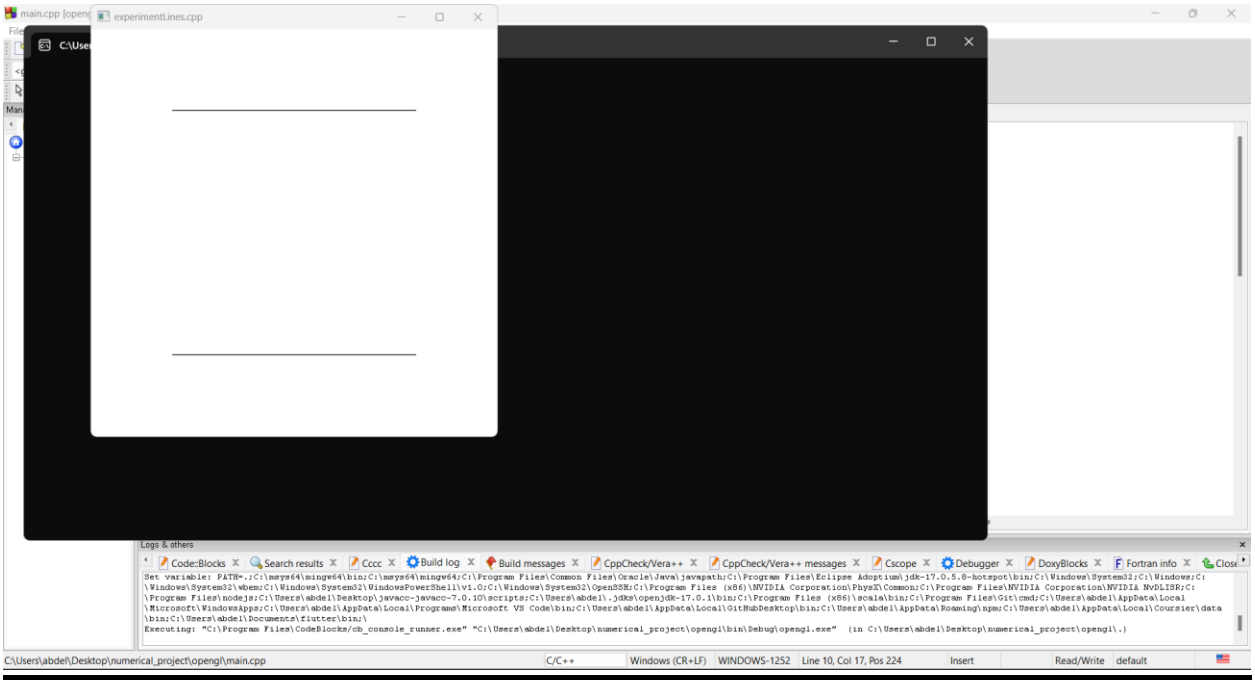
When change value of offsetX to = 1000 the window shift to right as appear in the picture



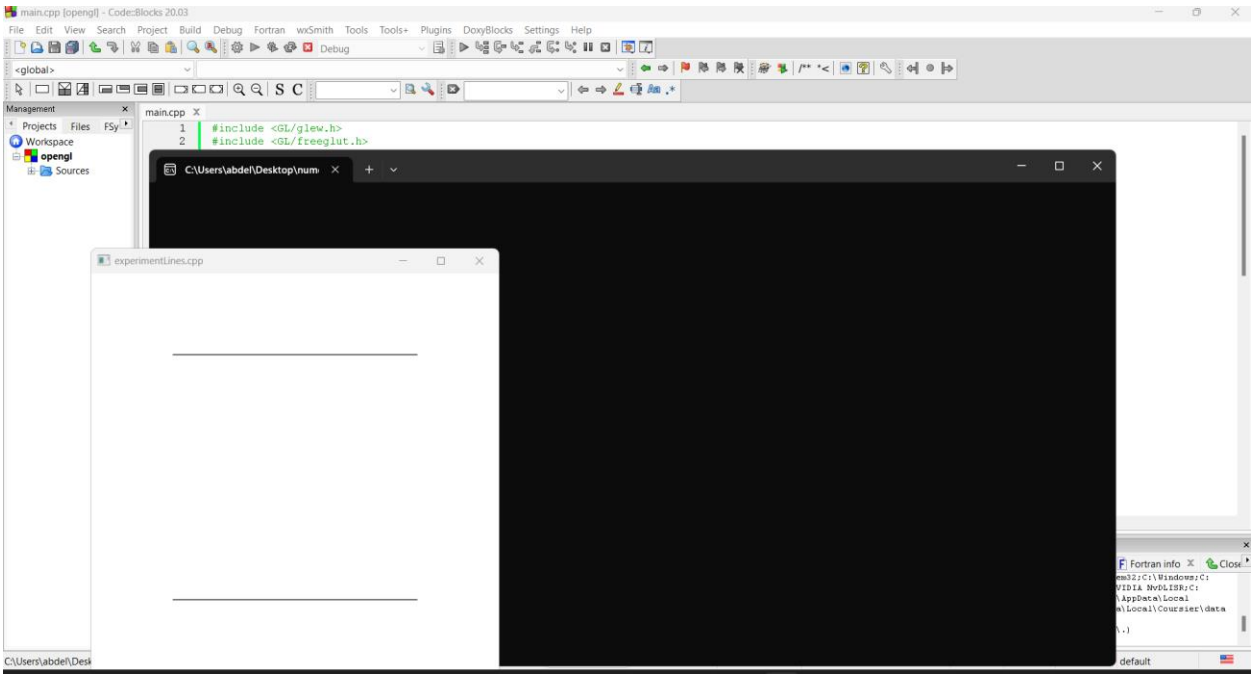
Change offsetY :

(when increase value than 100 the window shift to down when decrease it the window shift to up)

When change value of offsetY to = 0 the window shift to Up as appear in the picture



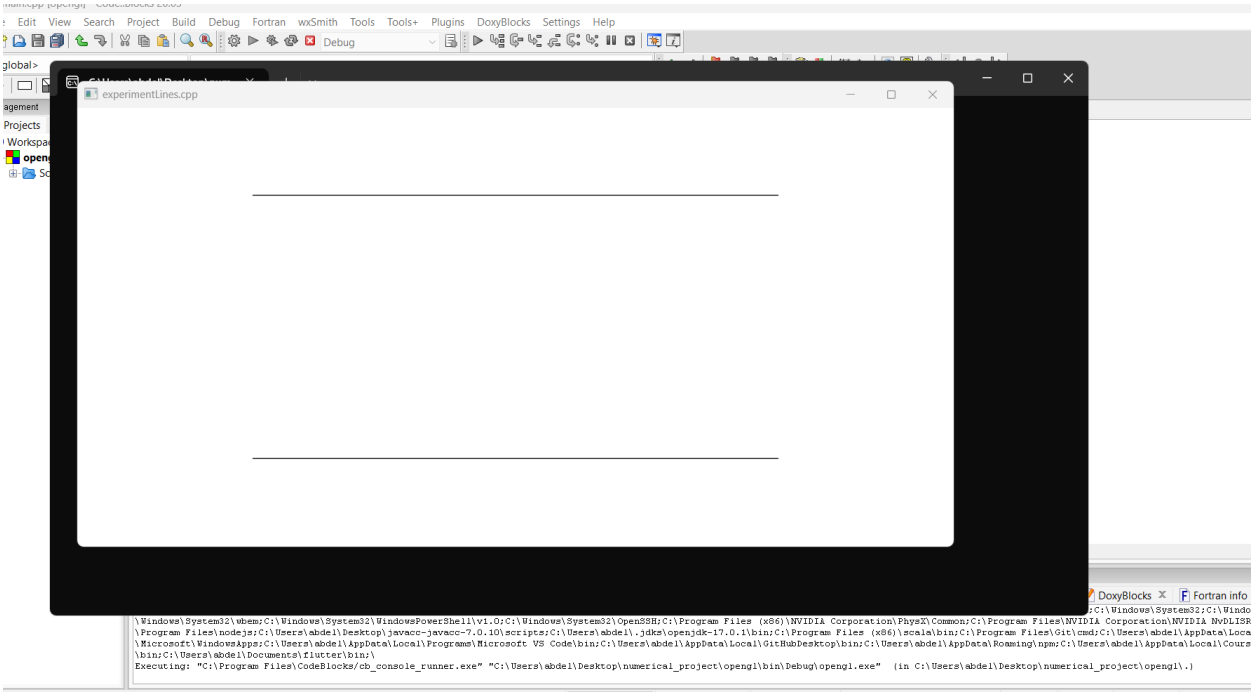
When change value of offsetY to = 1000 the window shift to down as appear in the picture



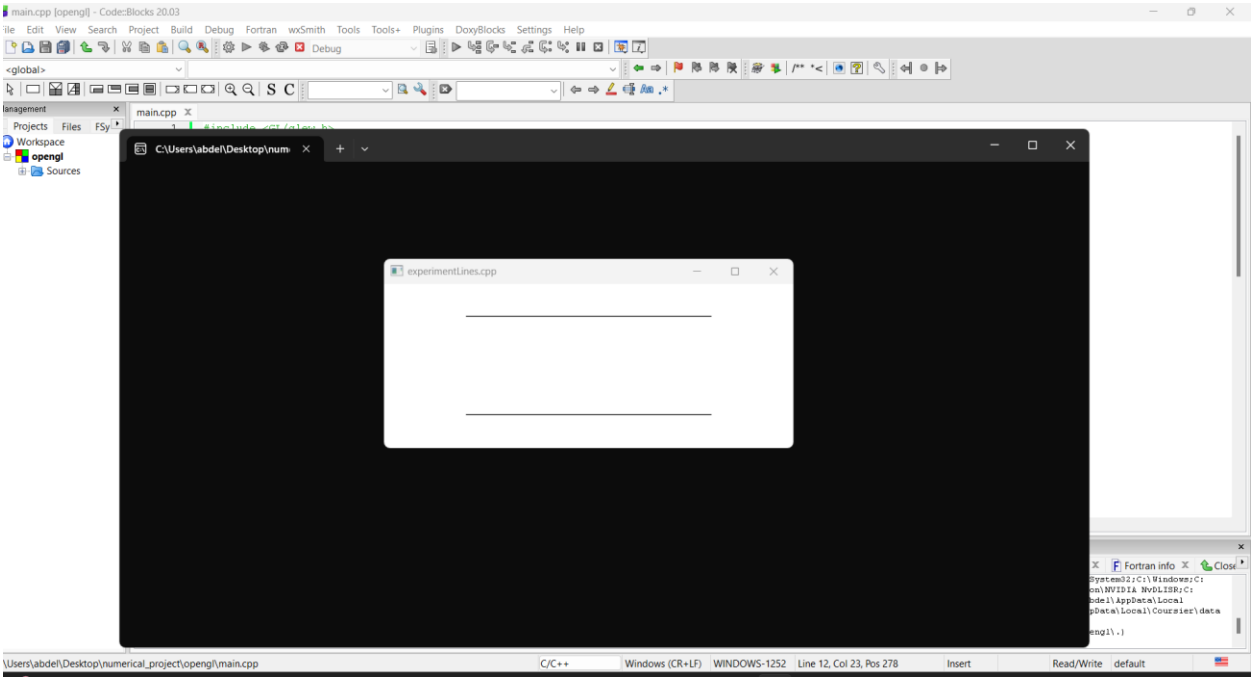
Change windowWidth :

(when increase value than 500 the window width increase when decrease it the window width increase when)

When change value of window width to = 1000 the window width increase as appear in the picture



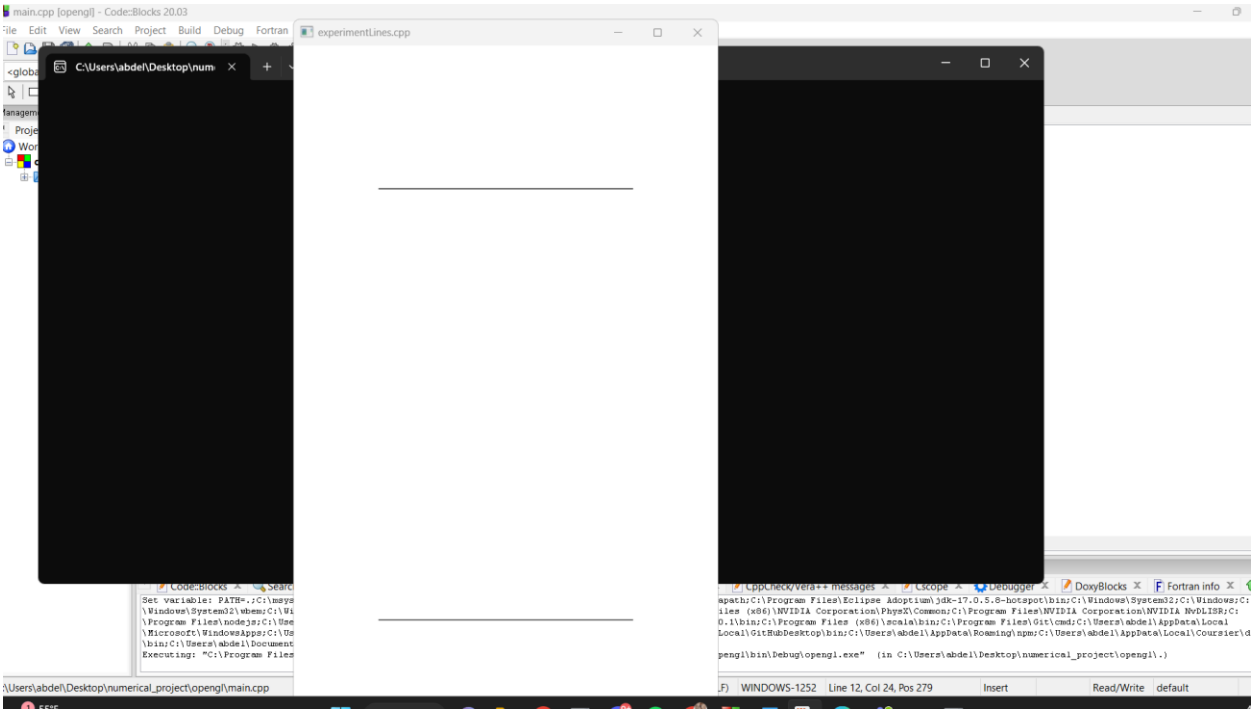
When change value of window width to = 200 the window width decrease as appear in the picture



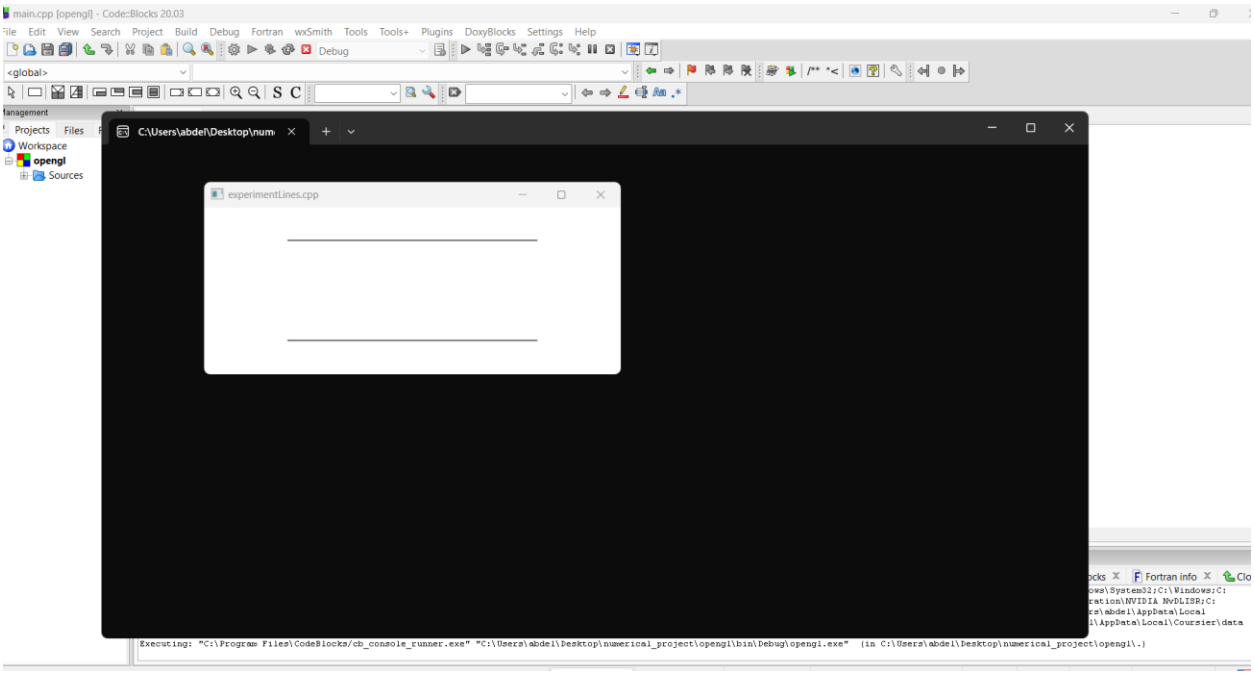
Change windowHeight :

(when increase value than 500 the window height increase when decrease it the window height increase when)

When change value of window width to = 1000 the window height increase as appear in the picture



When change value of window width to = 200 the window height decrease as appear in the picture



You are also required to deduce the coordination system of the screen and specify the location of its origin(e.g. which screen corner contains(0, 0)point of the screen)based on this experiment.

I think that when change in parameters offsetx and offsety the change the place of the origin as when making offset x =0 and offset y=0 the window appear in the top left as appear in the picture so I think coordination system depend on these two parameters (offset x, offset y).