```cpp
 1: // $Id: square.cpp,v 1.10 2016-05-04 15:13:37-07 - - $
 2:
 3: // Draw a square.
 4:
 5: #include <string>
 6: using namespace std;
 7:
 8: #include <GL/freeglut.h>
 9:
10: struct {
11:    string name;
12:    int width {256};
13:    int height {256};
14: } window;
15:
16: const GLubyte RED[] = {0xFF, 0x00, 0x00};
17:
18: void draw_square (GLfloat xpos, GLfloat ypos,
19:                   GLfloat width, const GLubyte* color) {
20:    glBegin (GL_POLYGON);
21:    glColor3ubv (color);
22:    glVertex2f (xpos, ypos);
23:    glVertex2f (xpos + width, ypos);
24:    glVertex2f (xpos + width, ypos + width);
25:    glVertex2f (xpos, ypos + width);
26:    glEnd();
27: }
28:
29: void display() {
30:    glClearColor (0.0, 0.0, 1.0, 1.0);
31:    glClear (GL_COLOR_BUFFER_BIT);
32:    draw_square (window.width * 0.25, window.height * 0.25,
33:                 window.height * 0.5, RED);
34:    glutSwapBuffers();
35: }
36:
37: void reshape (int width, int height) {
38:    window.width = width;
39:    window.height = height;
40:    glMatrixMode (GL_PROJECTION);
41:    glLoadIdentity();
42:    gluOrtho2D (0, window.width, 0, window.height);
43:    glMatrixMode (GL_MODELVIEW);
44:    glViewport (0, 0, window.width, window.height);
45:    glutPostRedisplay();
46: }
47:
48: int main (int argc, char** argv) {
49:    glutInit (&argc, argv);
50:    glutInitDisplayMode (GLUT_RGBA | GLUT_DOUBLE);
51:    glutInitWindowSize (window.width, window.height);
52:    glutInitWindowPosition (128, 128);
53:    glutCreateWindow (argv[0]);
54:    glutDisplayFunc (display);
55:    glutReshapeFunc (reshape);
56:    glutMainLoop();
57:    return 0;
58: }
```

59:

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$cmps109-wm/Assignments/asg4-oop-opengl/opengl-examples/
square.cpp

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59:

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1: @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ mkc: starting square.cpp
2: square.cpp:
3:      $Id: square.cpp,v 1.10 2016-05-04 15:13:37-07 - - $
4: g++ -g -O0 -Wall -Wextra -rdynamic -std=gnu++14 square.cpp
5:         -o square -lglut -lGLU -lGL -lX11 -lrt -lm
6: rm -f square.o
7: @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ mkc: finished square.cpp
```