```
1: // $Id: squares.cpp,v 1.17 2019-02-22 17:38:45-08 - - $
 3: // Draw a square.
 4:
 5: #include <iostream>
 6: #include <string>
7: using namespace std;
8:
9: #include <GL/freeglut.h>
10: #include <libgen.h>
11:
12: struct {
13:
       string name;
       int width {256};
14:
       int height {256};
15:
16: } window;
17:
18: const GLubyte RED[] = \{0xFF, 0x00, 0x00\};
19: const GLubyte GREEN[] = \{0x00, 0xFF, 0x00\};
20: const GLubyte BLUE[] = \{0x00, 0x00, 0xFF\};
21: const GLubyte* colors[] = {RED, GREEN, BLUE};
22: constexpr size_t colors_size = sizeof colors / sizeof *colors;
24: void draw_square (GLfloat xpos, GLfloat ypos,
25:
                      GLfloat width, const GLubyte* color) {
26:
       glBegin (GL_POLYGON);
27:
       glColor3ubv (color);
       glVertex2f (xpos, ypos);
28:
       glVertex2f (xpos + width, ypos);
29:
       glVertex2f (xpos + width, ypos + width);
30:
31:
       glVertex2f (xpos, ypos + width);
32:
       glEnd();
33: }
34:
35: void display() {
       glClearColor (0.5, 0.5, 0.5, 1.0);
37:
       glClear (GL_COLOR_BUFFER_BIT);
38:
       for (size_t index = 0; index < colors_size; ++index) {</pre>
39:
          GLfloat offset = (index + 1) * 0.10;
40:
          GLfloat width = 1 - 2 * offset;
41:
          draw_square (window.width * offset, window.height * offset,
42:
                    window.width * width, colors[index]);
43:
44:
       glutSwapBuffers();
45: }
46:
```

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47:
48: void reshape (int width, int height) {
       window.width = width;
49:
50:
       window.height = height;
51:
       glMatrixMode (GL_PROJECTION);
52:
       glLoadIdentity();
       gluOrtho2D (0, window.width, 0, window.height);
53:
54:
       glMatrixMode (GL_MODELVIEW);
55:
       glViewport (0, 0, window.width, window.height);
56:
       glutPostRedisplay();
57: }
58:
59: int main (int argc, char** argv) {
       glutInit (&argc, argv);
60:
       glutInitDisplayMode (GLUT_RGBA | GLUT_DOUBLE);
61:
       glutInitWindowSize (window.width, window.height);
62:
63:
       glutInitWindowPosition (128, 128);
       glutCreateWindow (basename (argv[0]));
64:
65:
       glutDisplayFunc (display);
66:
       glutReshapeFunc (reshape);
67:
       glutMainLoop();
68:
       return 0;
69: }
70:
71: //TEST// mkpspdf squares.ps squares.cpp*
72:
```

\$cmps109-wm/Examples/opengl-examples 02/22/19 1/1 17:38:46 squares.cpp.log 1: @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ mkc: starting squares.cpp 2: checksource squares.cpp 3: ident squares.cpp 4: squares.cpp: \$Id: squares.cpp,v 1.17 2019-02-22 17:38:45-08 - - \$ 6: cpplint.py.perl squares.cpp 7: Done processing squares.cpp 8: g++ -g -00 -Wall -Wextra -Werror -Wpedantic -Wshadow -fdiagnostics-color =never -std=gnu++17 -Wold-style-cast squares.cpp -o squares -lm -lglut -lGLU -l GL -1X11 -1drm -1m 9: rm -f squares.o 10: @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ mkc: finished squares.cpp