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 1: // $Id: translate.cpp,v 1.32 2014-05-08 22:00:26-07 - - $
 2:
 3: #include <iomanip>
 4: #include <iostream>
 5: #include <sstream>
 6: #include <string>
 7: using namespace std;
 8:
 9: #include <GL/freeglut.h>
10: #include <libgen.h>
11:
12: struct {
13:    string name;
14:    int width;
15:    int height;
16: } window;
17:
18: struct rgbcolor {
19:    union {
20:       GLubyte ubvec[3];
21:       struct {
22:          GLubyte red;
23:          GLubyte green;
24:          GLubyte blue;
25:       };
26:    };
27: };
28: const rgbcolor Red     {0xFF, 0x00, 0x00};
29: const rgbcolor Green   {0x00, 0xFF, 0x00};
30: const rgbcolor Blue    {0x00, 0x00, 0xFF};
31: const rgbcolor Cyan    {0x00, 0xFF, 0xFF};
32: const rgbcolor Magenta {0xFF, 0x00, 0xFF};
33: const rgbcolor Yellow  {0xFF, 0xFF, 0x00};
34: const rgbcolor White   {0xFF, 0xFF, 0xFF};
35: const rgbcolor Black   {0x00, 0x00, 0x00};
36:
37: string to_string (const rgbcolor& color) {
38:    ostringstream result;
39:    result << "0x"
40:           << hex << setiosflags (ios::uppercase) << setfill ('0')
41:           << setw(2) << (unsigned) color.red
42:           << setw(2) << (unsigned) color.green
43:           << setw(2) << (unsigned) color.blue;
44:    return result.str();
45: }
46:
```

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47:
48: void draw_rectangle (const rgbcolor& color, const string& name,
49:                      GLfloat xcenter, GLfloat ycenter) {
50:    cout << __func__ << "(" << to_string (color) << ", "
51:         << xcenter << ", " << ycenter << ")" << endl;
52:    GLfloat delta_x = window.width / 8;
53:    GLfloat delta_y = window.height / 4;
54:    glPushMatrix();
55:    glTranslatef (xcenter,  ycenter, 0);
56:    glBegin (GL_POLYGON);
57:    glColor3ubv (color.ubvec);
58:    glVertex2f (-delta_x, -delta_y);
59:    glVertex2f (+delta_x, -delta_y);
60:    glVertex2f (+delta_x, +delta_y);
61:    glVertex2f (-delta_x, +delta_y);
62:    glEnd();
63:    rgbcolor inverse = {(GLubyte) (0xFF - color.red),
64:                        (GLubyte) (0xFF - color.green),
65:                        (GLubyte) (0xFF - color.blue)};
66:    glColor3ubv (inverse.ubvec);
67:    void* font = GLUT_BITMAP_TIMES_ROMAN_24;
68:    float xpos = - glutBitmapLength (font, (GLubyte*) name.c_str()) / 2;
69:    float ypos = - glutBitmapHeight (font) / 2;
70:    glRasterPos2f (xpos, ypos);
71:    glutBitmapString (font, (GLubyte*) name.c_str());
72:    glPopMatrix();
73:    glutSwapBuffers();
74: }
75:
76: void display() {
77:    GLfloat width = window.width;
78:    GLfloat height = window.height;
79:    glClear (GL_COLOR_BUFFER_BIT);
80:    draw_rectangle (Red    , "Red"    ,  width * 0.125, height * 0.75);
81:    draw_rectangle (Green  , "Green"  ,  width * 0.375, height * 0.75);
82:    draw_rectangle (Blue   , "Blue"   ,  width * 0.625, height * 0.75);
83:    draw_rectangle (White  , "White"  ,  width * 0.875, height * 0.75);
84:    draw_rectangle (Cyan   , "Cyan"   ,  width * 0.125, height * 0.25);
85:    draw_rectangle (Magenta, "Magenta",  width * 0.375, height * 0.25);
86:    draw_rectangle (Yellow , "Yellow" ,  width * 0.625, height * 0.25);
87:    draw_rectangle (Black  , "Black"  ,  width * 0.875, height * 0.25);
88: }
89:
```

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 90:
 91: void reshape (int width, int height) {
 92:    cout << __func__ << "(" << width << ", " << height << ")" << endl;
 93:    window.width = width;
 94:    window.height = height;
 95:    ostringstream title;
 96:    title << window.name << "(" << window.width << ","
 97:          << window.height << ")";
 98:    glutSetWindowTitle (title.str().c_str());
 99:    glutSetIconTitle (title.str().c_str());
100:    glMatrixMode (GL_PROJECTION);
101:    glLoadIdentity();
102:    gluOrtho2D (0, window.width, 0, window.height);
103:    glViewport (0, 0, window.width, window.height);
104:    glClearColor (0.5, 0.5, 0.5, 1.0);
105: }
106:
107: int main (int argc, char** argv) {
108:    window.name = basename (argv[0]);
109:    glutInit (&argc, argv);
110:    glutInitWindowSize (480, 360);
111:    glutCreateWindow (window.name.c_str());
112:    glutDisplayFunc (display);
113:    glutReshapeFunc (reshape);
114:    glutMainLoop();
115:    return 0;
116: }
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1: @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ mkc: starting translate.cpp
2: translate.cpp:
3:      $Id: translate.cpp,v 1.32 2014-05-08 22:00:26-07 - - $
4: g++ -g -O0 -Wall -Wextra -rdynamic -std=gnu++14 translate.cpp
5:          -o translate -lglut -lGLU -lGL -lX11 -lrt -lm
6: rm -f translate.o
7: @@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@ mkc: finished translate.cpp
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