

Color, Projections, and Viewports

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1 Administrivia

Announcements

Project 1 due Wednesday.

Assignment

Read Chapter 3.1–3.3, 3.6.

From Last Time

2-D OpenGL lab.

Outline

1. Color.
2. Projections.
3. Viewports.
4. Lab.

Coming Up

Interactive techniques.

2 Color

Additive color. Tristimulus values vs. continuous frequency of light.

Two color models:

1. RGB color.

The color cube.

2. Indexed color.

(a) What is it? Why use it?

(b) Where is it used?

In 8-bit mode, which 256 colors get displayed? Color map clashes in X Window system.

3 Orthographic Projection

Now we see the mapping:

$$(x, y, z) \rightarrow (x, y, 0)$$

```
glOrtho(GLdouble left, GLdouble right,  
        GLdouble bottom, GLdouble top,  
        GLdouble zNear, GLdouble zFar);
```

4 Viewports

What happens when the aspect ratio of the clipping region doesn't match that of the window?

How can we fix that:

- Use a viewport (sub-window) on the window:

```
glViewport(GLint x, GLint y, GLsizei width, GLsizei height);
```

We have a call-back whose parameters are the size of the resized window.

This essentially adjusts the window's aspect ratio to match the clipping region.

- Adjust the clipping region to match the window. Again, read the current window dimensions.
- Re-adjust the window size from the program. (Kinda obnoxious.)