

Notes on OpenGL Learning

Yunfeng Li
December 26, 2015

Contents

1	Lesson01 Setting Up An OpenGL Window	1
2	Lesson02 Your First Polygon	1
3	Lesson03 Adding Color	2
4	Lesson04 Rotation	2
5	Outline Fonts	2

1 Lesson01 Setting Up An OpenGL Window

1. OpenGL uses some new symbol to represent commonly used ones, for example, `GLvoid` for `void`, `GLsizei` for `int`, `GLfloat` for `float`.
2. `glViewport` is used to reset the current viewport.
3. `glMatrixMode` is used to select matrices which may later be modified.
4. `glLoadIdentity` is used to reset matrix.
5. `gluPerspective` is used to calculate the aspect ratio of the window.
6. `glShadeModel` is used to set shade model, the parameter could be `GL_SMOOTH`, which indicates smooth shading.
7. `glClearColor` is used to set background color.
8. `glClearDepth` is used to clear depth buffer.
9. `glEnable` is used to enable some functions in OpenGL.
10. `glDepthFunc` is used to designate specific depth test function.
11. `glClear` can be used to clear the screen and the depth buffer.

2 Lesson02 Your First Polygon

1. The 3D coordinate system in OpenGL contains x-axis pointing from left to right, y-axis pointing from bottom to top and z-axis pointing from the back of screen to the front of screen.
2. `glTranslatef` is used to translate current drawing location relatively.
3. `glBegin` can be used to begin drawing. In this example, it is used to begin drawing triangles and quads with parameters `GL_TRIANGLES` and `GL_QUADS` respectively.

3 Lesson03 Adding Color

1. `glColor3f` can be used to set color at a point. When drawing a triangle and setting different colors for each of the three vertices, the inside of the triangle will be interpolated. When all the vertices are designated the same color, the triangle would have only one color.

4 Lesson04 Rotation

1. `glRotatef` contains four parameters, the first one indicating the degrees of rotation and the rest three altogether describe a direction vector indicating the axis around which the rotation takes place.
2. Note that in OpenGL, angles are measured in *degrees* not in *arcs*.

5 Lesson05 3D Shapes

1. When drawing 3D objects, it is important to keep drawing in a clockwise order or counter-clockwise order.

6 Lesson06 Texture Mapping

- 1.

7 Outline Fonts

It uses `GLYPHMETRICSFLOAT` to store information about fonts.

It generates 256 display lists to

References