

GLUT: OpenGL Utility Toolkit



The basics...

```
int main(int argc, char **argv)
{
    glutInit( &argc, argv );
    glutInitDisplayMode( GLUT_RGB |
                        GLUT_DOUBLE | GLUT_DEPTH );
    glutInitWindowSize( 640, 480 );
    glutCreateWindow( "openGLDemo" );
    glutDisplayFunc( DrawWorld );
    glutIdleFunc(Idle);
    glClearColor( 1,1,1 );
    glutMainLoop();

    return 0;        // never reached
}

```

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GLUT Example



```
void DrawWorld() {
    glMatrixMode( GL_PROJECTION );
    glLoadIdentity();

    glMatrixMode( GL_MODELVIEW );
    glLoadIdentity();

    glClear( GL_COLOR_BUFFER_BIT );

    angle += 0.05;
    glRotatef(angle,0,0,1);

    ... // draw triangle

    glutSwapBuffers();
}

```

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GLUT Example



the triangle...

```
glColor3f(0,1,0);
glBegin( GL_TRIANGLES );
    glVertex3f( 0.0f, 0.5f, 0.0f );
    glVertex3f( -0.5f, -0.5f, 0.0f );
    glVertex3f( 0.5f, -0.5f, 0.0f );
glEnd();

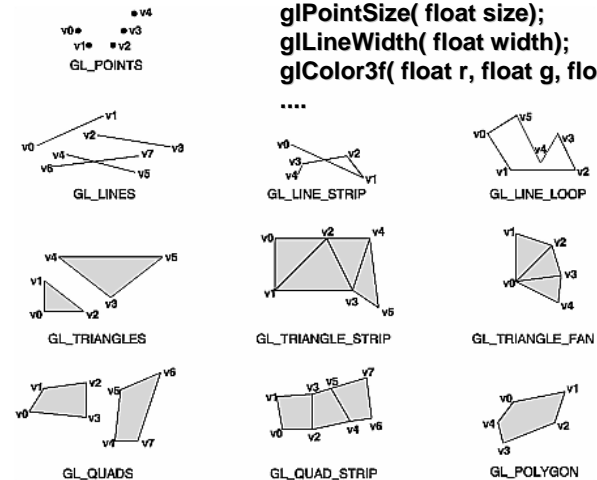
```

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GL Primitives



glPointSize(float size);
 glLineWidth(float width);
 glColor3f(float r, float g, float b);



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GLUT Example

```
void Idle() {  
    angle += 0.05;  
    glutPostRedisplay();  
}
```

GLUT Input Events

```
// you supply these kind of functions  
void reshape(int w, int h);  
void keyboard(unsigned char key, int x, int y);  
void mouse(int but, int state, int x, int y);  
  
// register them with glut  
glutReshapeFunc(reshape);  
glutKeyboardFunc(keyboard);  
glutMouseFunc(mouse);
```

GLUT and GLU primitives

```
gluSphere(...)  
gluCylinder(...)  
  
glutSolidSphere(...)  
glutWireSphere(...)  
  
glutSolidCube(...)  
glutWireCube(...)  
  
glutSolidTorus(...)  
glutWireTorus(...)  
  
glutSolidTeapot(...)  
glutWireTeapot(...)
```

Depth buffer

for visibility

- stores a z-value for every pixel
- smaller z means “closer”

```
// allocate depth buffer  
glutInitDisplayMode( GLUT_RGB | GLUT_DOUBLE | GLUT_DEPTH);  
  
// enabling the depth test  
glEnable( GL_DEPTH_TEST );  
  
// clearing the depth buffer for each frame  
glClear( GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT);
```

GLUT menus



University of
British Columbia

```
glutCreateMenu(...)  
glutSetMenu(...)  
glutGetMenu(...)  
glutDestroyMenu(...)  
glutAddMenuEntry(...)  
glutAddSubMenu(...)  
glutAttachMenu(...)
```

```
// Example usage  
glutCreateMenu(demo_menu);  
glutAddMenuEntry("quit", 1);  
glutAddMenuEntry("Increase Square Size", 2);  
glutAttachMenu(GLUT_RIGHT_BUTTON);
```

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