OpenGL Code – Example 1

```
void display( void ) {
   ...
   glviewport( 0, 0, 800, 600 );
   glClear( GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT );

   glMatrixMode( GL_PROJECTION );
   glLoadIdentity();
   gluPerspective( viewFovY, viewAspect, nearDist, farDist );

   glMatrixMode( GL_MODELVIEW );
   glLoadIdentity();

   gluLookAt( viewerPosX, viewerPosY, viewerPosZ,
              lookAtX, lookAtY, lookAtZ, upX, upY, upZ );

   glTranslate3d( 100.0, 200.0, 300.0 );
   glScale3d( 3.0, 3.0, 3.0 );

   glBegin(GL_QUADS);
     glColor3d( 1, 0, 0 );  glVertex3d(0, 0, 0);
     glColor3d( 0, 1, 0 );  glVertex3d(1, 0, 0);
     glColor3d( 0, 0, 1 );  glVertex3d(1, 1, 0);
     glColor3d( 1, 1, 1 );  glVertex3d(0, 1, 0);
   glEnd();

   glutSwapBuffers();
}
```

camera space

world space

object space

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OpenGL Code – Example 2

```
void display( void ) {
    ...
    glViewport( 0, 0, 800, 600 );
    glClear( GL_COLOR_BUFFER_BIT | GL_DEPTH_BUFFER_BIT );

    glMatrixMode( GL_PROJECTION );
    glLoadIdentity();
    gluPerspective ( viewFovY, viewAspect, nearDist, farDist );

    glMatrixMode( GL_MODELVIEW );
    glLoadIdentity();

    gluLookAt( viewerPosX, viewerPosY, viewerPosZ,
               lookAtX, lookAtY, lookAtZ, upX, upY, upZ);

    glPushMatrix();
      glTranslate3d( 100.0, 200.0, 300.0 );
      glScale3d( 3.0, 3.0, 1.0 );
      glColor3d( 1.0, 0.0, 0.0 );  // Red
      drawUnitSquare();
    glPopMatrix();

    glPushMatrix();
      glTranslate3d( 400.0, 400.0, 500.0 );
      glScale3d( 6.0, 6.0, 1.0 );
      glColor3d( 0.0, 1.0, 0.0 );  // Green
      drawUnitSquare();
    glPopMatrix();

    glutSwapBuffers();
}
```

camera space

world space

object space

world space

object space

```
void drawUnitSquare(void) {
  glBegin(GL_QUADS);
    glVertex3d( 0, 0, 0 );
    glVertex3d( 1, 0, 0 );
    glVertex3d( 1, 1, 0 );
    glVertex3d( 0, 1, 0 );
  glEnd();
}
```

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