1. **OpenGL Basics**

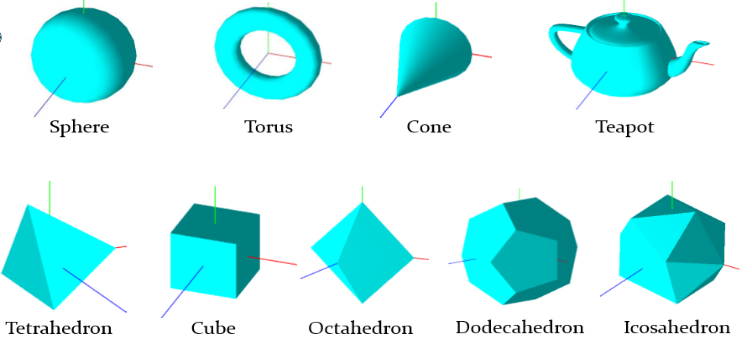


Figure 1 - GLUT Built-in Objects

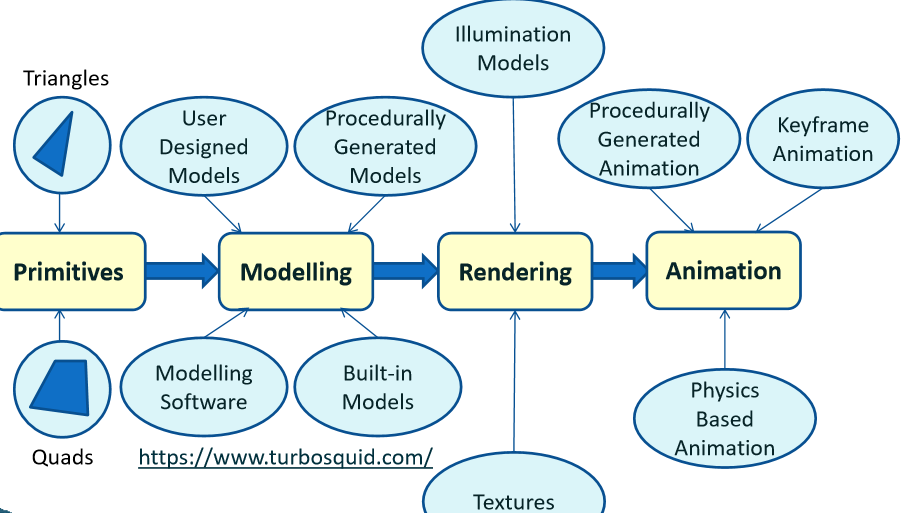
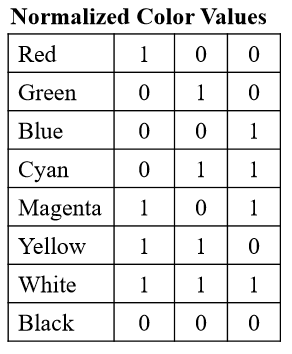


Figure 2 - Basic Pipeline, Models: https://www.turbosquid.com/



**Geometrical Objects**

Primitive types:

* GL\_TRIANGLES, GL\_QUADS, GL\_TRIANGLE\_STRIP, GL\_QUAD\_STRIP
* Vertices specified = anti-clockwise

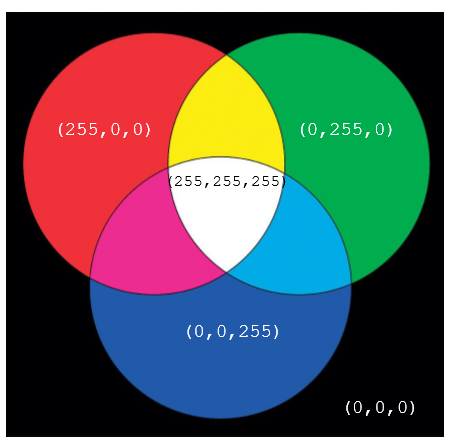


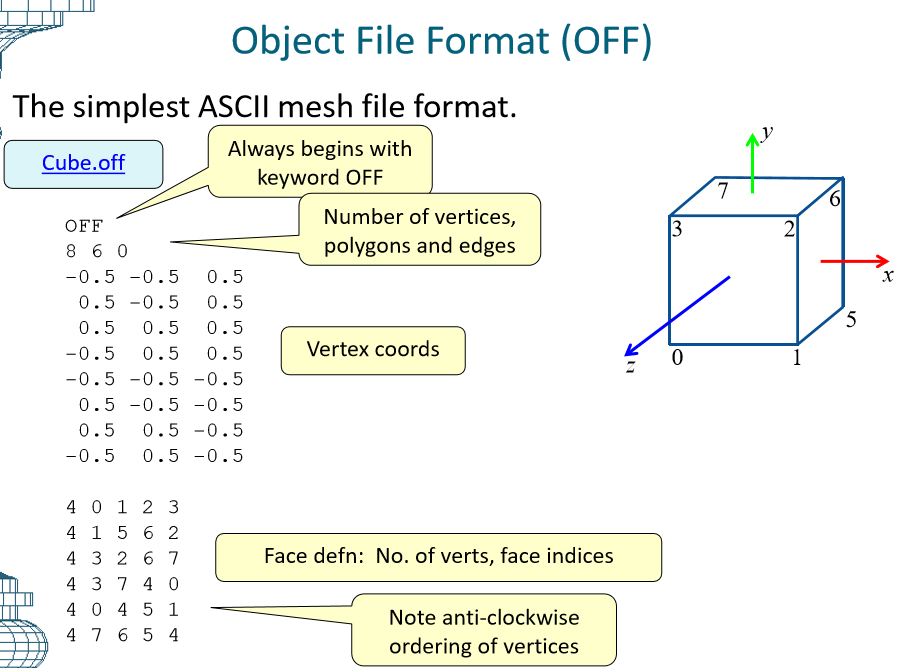
Figure 6 - Additive RGB color space

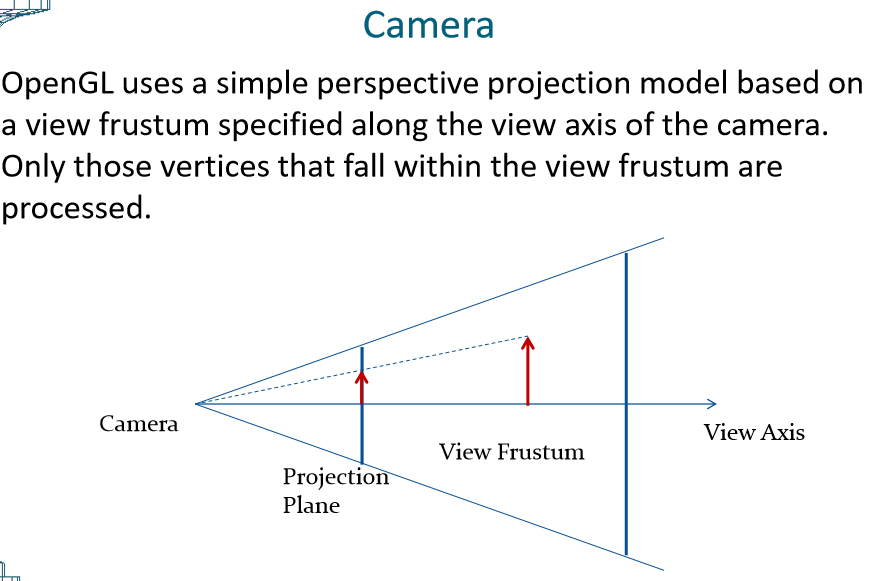
Mesh formats:

projection mechanism(lens select) = **glFrustum()**, **gluPerspective()**

position = **gluLookAt()**

* OBJ, PLY, **OFF**, DXF, 3DS, MAX, X3D





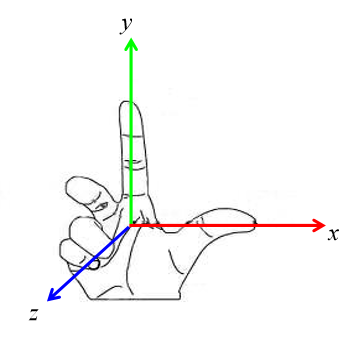
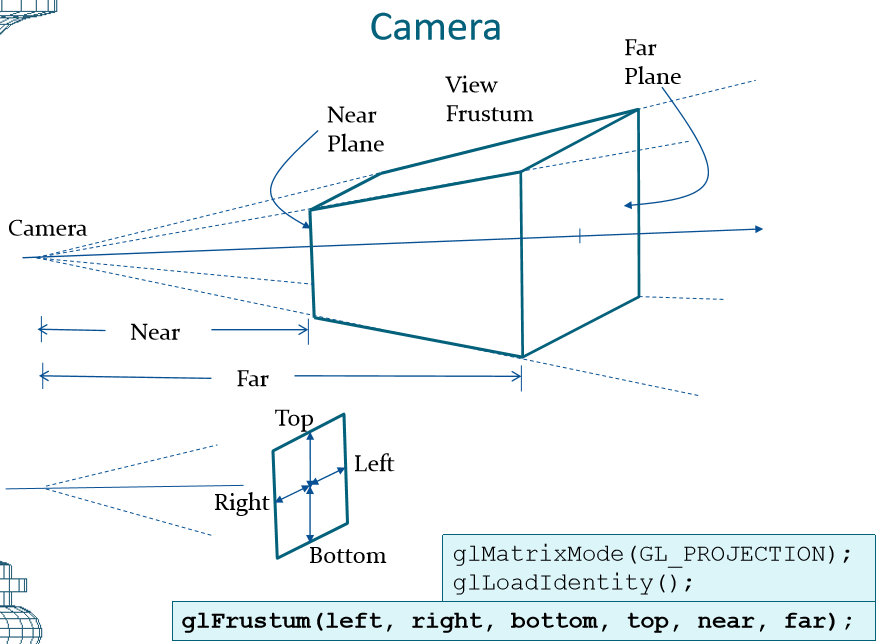


Figure 3 - Coordinate Frame

**Homogeneous Coordinates**

Use = Distinguish between points and vectors - **glVertex4f()**

* Point = glVertex4f (x, y, z, 1)
* Vector = glVertex4f (x, y, z, 0)
* Point/Vector = glVertex3f (4.0, 3.0, 0)

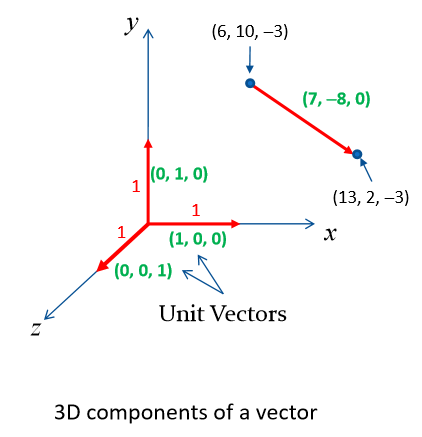


Figure 5 - 3D coordinates of a Vector

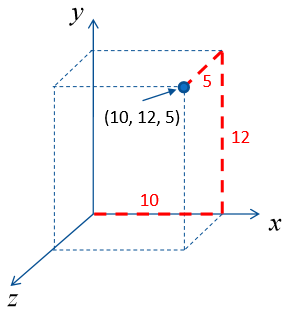


Figure 4 - 3D coordinates of a point

