

Animation

With single buffer

```
glBegin()  
    Vertices  
glEnd()  
glFlush // Send the graphics in the current single frame-buffer to the screen
```

With double buffer

```
glBegin()  
    Vertices  
glEnd()  
glutFlush // Send the graphics in the current front frame-buffer to the screen  
// Switch between front and back
```

OpenGL is using the Normal to the surface to be determined by the user.

For complex objects the normal can be found using the cross-product operation (not covered in our class).

Furthermore, a vertex can lie on more than one object then we get more than one normal → need to average.

For I3 you may be able to determine the normal manually

Procedure,

Choose light source types,

Enable,

Define Normal,

Set the 9 parameters for each light source (53)

For each vertex (state variable) Set the 10 parameters of material (54)

Uniformed Search

The state space is available We are looking for goal states (e.g., solution is achieved)

No information to direct the search.

Explore potentially exhaustively the space until a solution is found

Two main strategies

Assume that the state space is a tree

- Breadth first

- Depth first