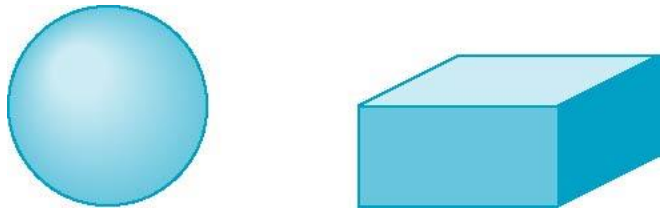
Hochiminh city University of Technology
Faculty of Computer Science and Engineering

COMPUTER GRAPHICS

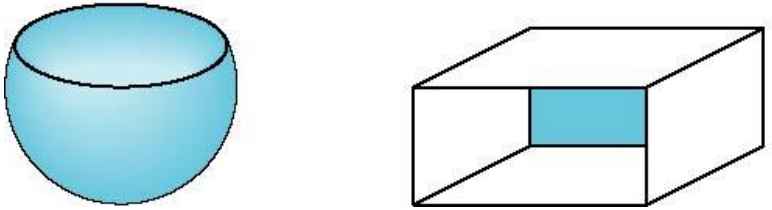
CHAPTER 3:

Front and Back Faces

- The default is shade only front faces which works correctly for convex objects
- If we set two sided lighting, OpenGL will shade both sides of a surface
- Each side can have its own properties which are set by using **GL_FRONT**, **GL_BACK**, or **GL_FRONT_AND_BACK**



back faces not visible

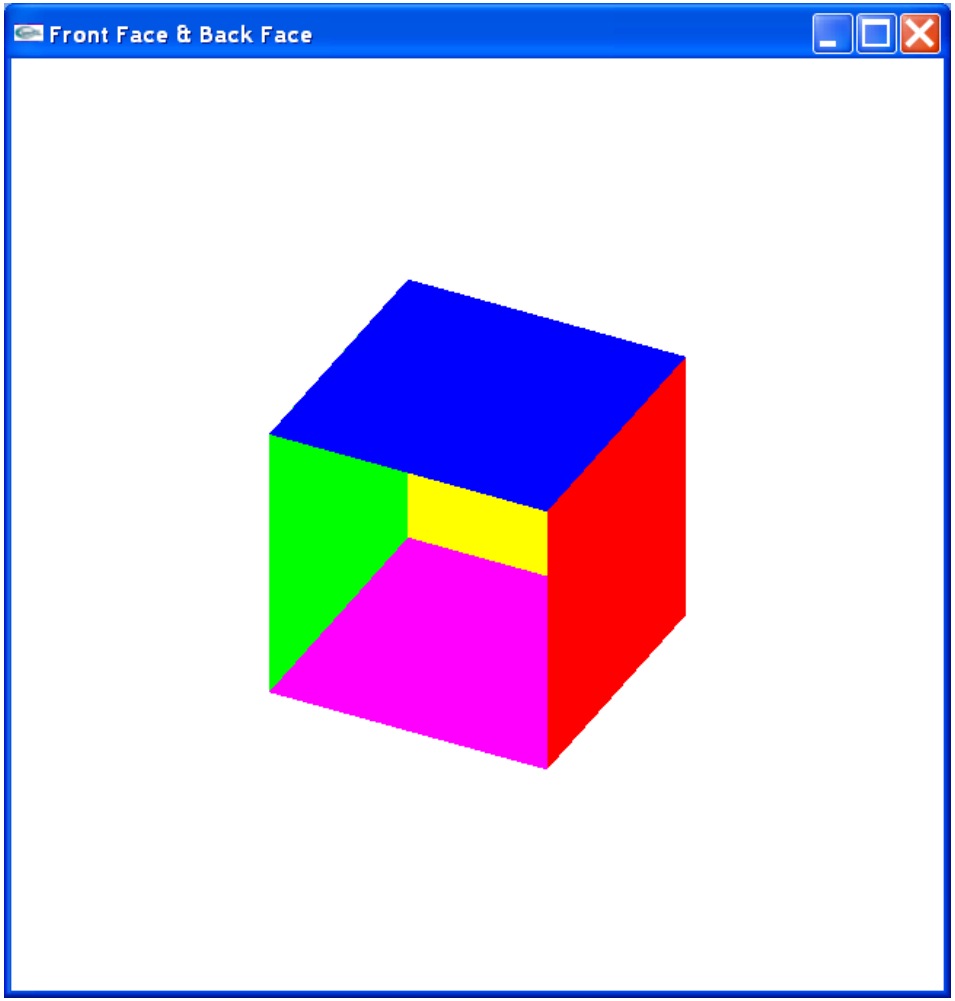


back faces visible

Front and Back Faces

- Specify Front Faces
  - glFrontFace(GL_CCW), glFrontFace(GL_CW)
- Cull Face
  - glEnable(GL_CULL_FACE)
  - glCullFace(GLenum mode);
    - GL_FRONT,
    - GL_BACK,
    - GL_FRONT_AND_BACK

Front and Back Faces

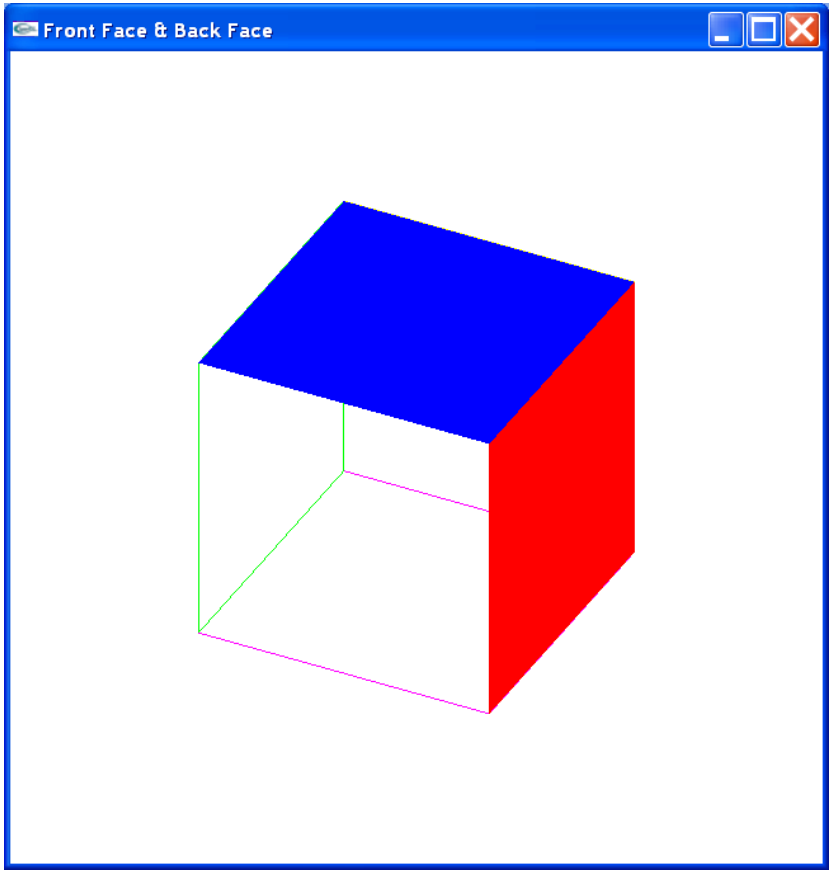


Front and Back Faces

```
glBegin(GL_QUADS);
        glColor3f(1, 0, 0);  // x  = 1
        glVertex3f(1, 1, 1);                glVertex3f(1, -1, 1);
        glVertex3f(1, -1, -1);              glVertex3f(1, 1, -1);
        glColor3f(0, 1, 0);  //x  = -1
        glVertex3f(-1, 1, 1);               glVertex3f(-1, 1, -1);
        glVertex3f(-1, -1, -1);             glVertex3f(-1, -1, 1);
        glColor3f(0, 0, 1);   // y = 1
        glVertex3f( 1, 1, 1);               glVertex3f( 1, 1, -1);
        glVertex3f(-1, 1, -1);              glVertex3f(-1, 1, 1);
        glColor3f(1, 0, 1);  // y = -1
        glVertex3f( 1, -1, 1);              glVertex3f(-1, -1, 1);
        glVertex3f(-1, -1, -1);             glVertex3f( 1, -1, -1);
        ……….        // z = -1
glEnd();
```

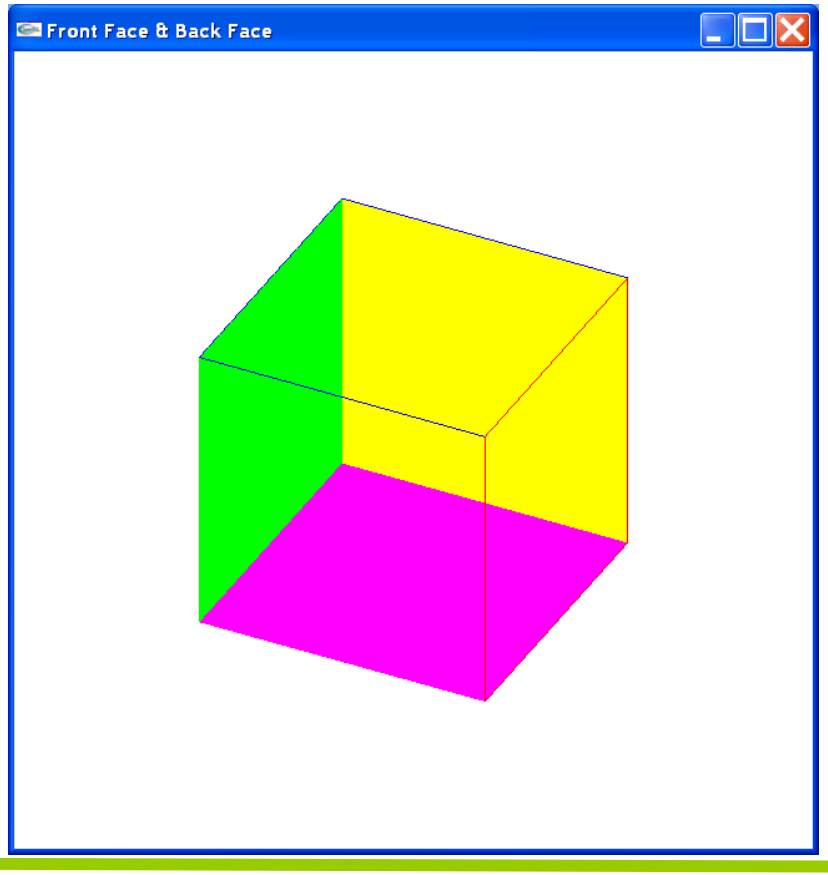
Front and Back Faces

```
glPolygonMode(GL_FRONT, GL_FILL);
glPolygonMode(GL_BACK, GL_LINE);
```



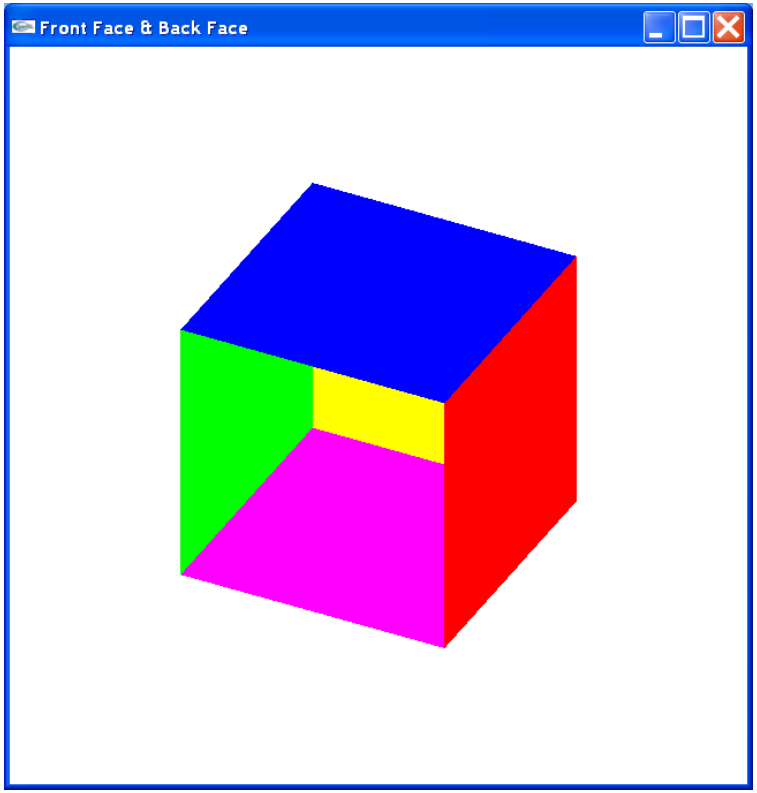
Front and Back Faces

```
glFrontFace(GL_CW);
glPolygonMode(GL_FRONT, GL_FILL);
glPolygonMode(GL_BACK, GL_LINE);
```



Front and Back Faces

```
glFrontFace(GL_CCW);                    //default
glPolygonMode(GL_FRONT, GL_FILL);
glPolygonMode(GL_BACK, GL_FILL);
```



Front and Back Faces

```
glFrontFace(GL_CCW);
glEnable(GL_CULL_FACE);
glCullFace(GL_BACK);
```