CSE520
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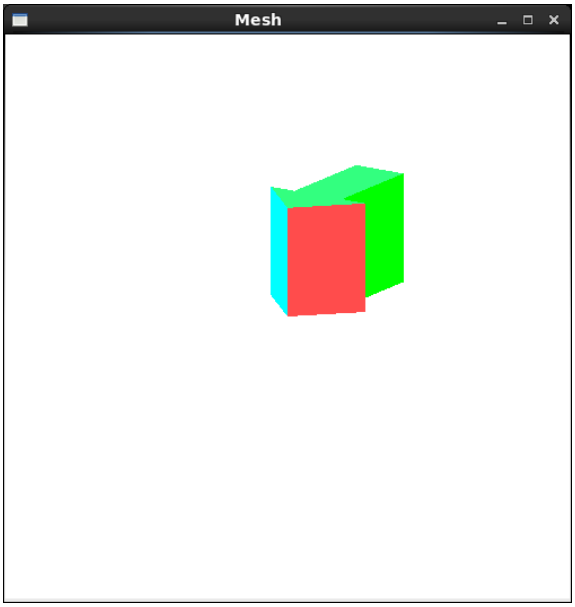
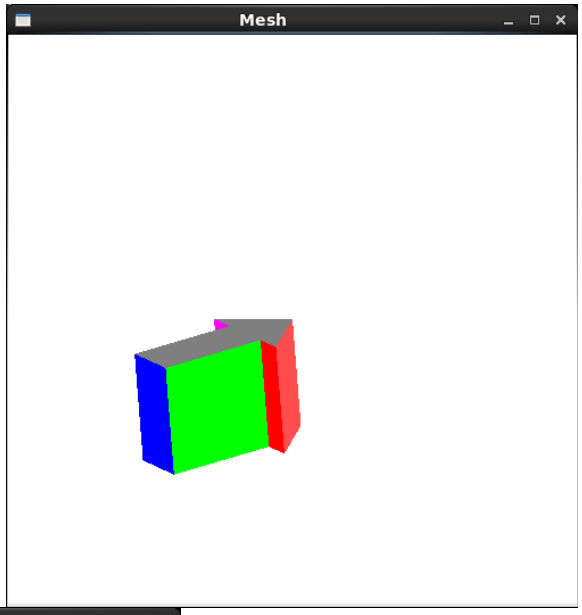
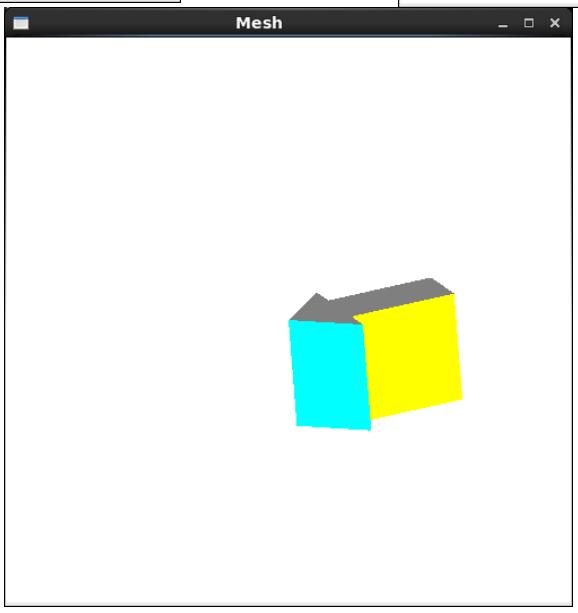
Lab 16

Use the program and to create a prism

In this lab, we are to use the program given and create a prism. I have completed the task:







Code:

```
//Mesh.cpp : Mesh class member functions

#include "Mesh.h"
#include <iostream>

using namespace std;

Mesh::Mesh()
{
  nVertices = nNormals = nFaces = 0;
}

//Read mesh data from file
bool Mesh::readData ( char fName[] )
{
  fstream ins;
  ins.open ( fName, ios::in );
  cout << "opening file " << fName << endl;
  if( ins.fail() ) return false;                // error - can't open file
  if( ins.eof() )  return false;          // error - empty file
  ins >> nVertices >> nNormals >> nFaces;       // read in number of vertices,
normals, and faces
  for ( int i = 0; i < nVertices; i++ ) { //read vertices
    Point3 p;
    ins >> p.x >> p.y >> p.z;
    vertexList.push_back ( p );
  }
  for ( int i = 0; i < nNormals; i++ ) {  //read normals
    Vector3 v;
    ins >> v.x >> v.y >> v.z;
    normalList.push_back ( v );
  }
  cout << endl;
  for ( int i = 0; i < nFaces; i++ ) {
    Polygon p;

    ins >> p.n;
    for ( int j = 0; j < p.n; j++ ) {
      int vertexIndex;
      ins >> vertexIndex;
      p.vertices.push_back ( vertexIndex );
    }
    for ( int j = 0; j < p.n; j++ ) {
      int normalIndex;
      ins >> normalIndex;
      p.normals.push_back ( normalIndex );
    }
    faceList.push_back ( p );
  }

  return true;
}

//render the mesh
void Mesh::renderMesh()
{
  //Draw each polygon of the mesh
```

```
  glEnable( GL_CULL_FACE );
  glCullFace ( GL_BACK );     //do not render back faces

  //draw one polygon at a time
  for ( int i = 0; i < nFaces; i++ ) {
    setColor ( i );
    glBegin ( GL_POLYGON );
      //specifying vertices of the polygon
      for ( int j = 0; j < faceList[i].n; j++ ) {
      int vi = faceList[i].vertices[j];   //vertex index
        int ni = faceList[i].normals[j];  //normal index
        glNormal3f ( normalList[ni].x, normalList[ni].y, normalList[ni].z );
      glVertex3f ( vertexList[vi].x, vertexList[vi].y, vertexList[vi].z );
      } //for j
    glEnd();
  }  //for i
}

void Mesh::setColor( int n )
{

  if (n == 1)
    glColor3f(1, 0, 0);
  else if (n == 2)
    glColor3f(0, 1, 0);
  else if (n == 3)
    glColor3f(0, 0, 1);
  else if (n == 4)
    glColor3f(1, 1, 0);
  else if (n == 5)
    glColor3f(1, 0, 1);
  else if (n == 6)
    glColor3f(0, 1, 1);
  else if (n == 7)
    glColor3f(0.5, 0.5, 0.5);
  else if (n == 8)
    glColor3f(0.2, 1, 0.5);
  else if (n == 0)
    glColor3f(1.0, 0.3, 0.3);
  else
    cout << "too many faces";
}
```

Prism.txt Code:

```
14 9 9
0 0 0   1 1 0   0.5 1 0   0.5 3 0   -0.5 3 0  -0.5 1 0  -1 1 0
0 0 2   1 1 2   0.5 1 2   0.5 3 2   -0.5 3 2  -0.5 1 2  -1 1 2

0.707 -0.707 0    0 1 0   1 0 0   0 1 0   0 -1 0   0 1 0  -0.707 -0.707 0
0 0 1   0 0 -1

4   0 1 8 7      0 0 0 0
4   1 2 9 8      1 1 1 1
4   2 3 10 9           2 2 2 2
4   3 4 11 10          3 3 3 3
4   4 5 12 11          4 4 4 4
4   5 6 13 12          5 5 5 5
```

```
4   6 0 7 13           6 6 6 6
7   0 6 5 4 3 2 1    7 7 7 7 7 7
7   7 8 9 10 11 12 13   8 8 8 8 8 8
```