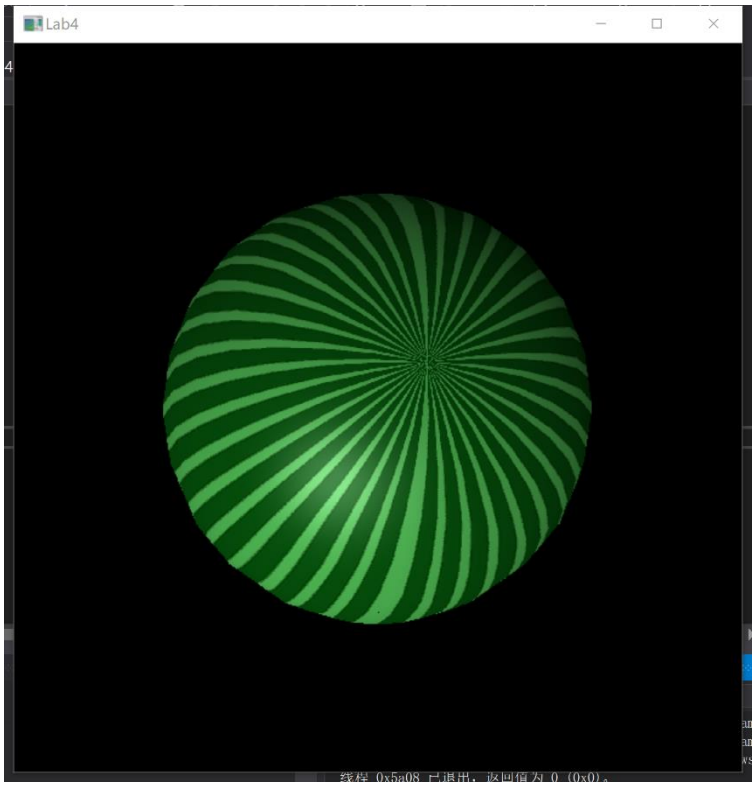
Pixel 2000X2000
Texture 600X600

```
float h=2.0f, dnear=25.0f, dfar=200.0f;
```

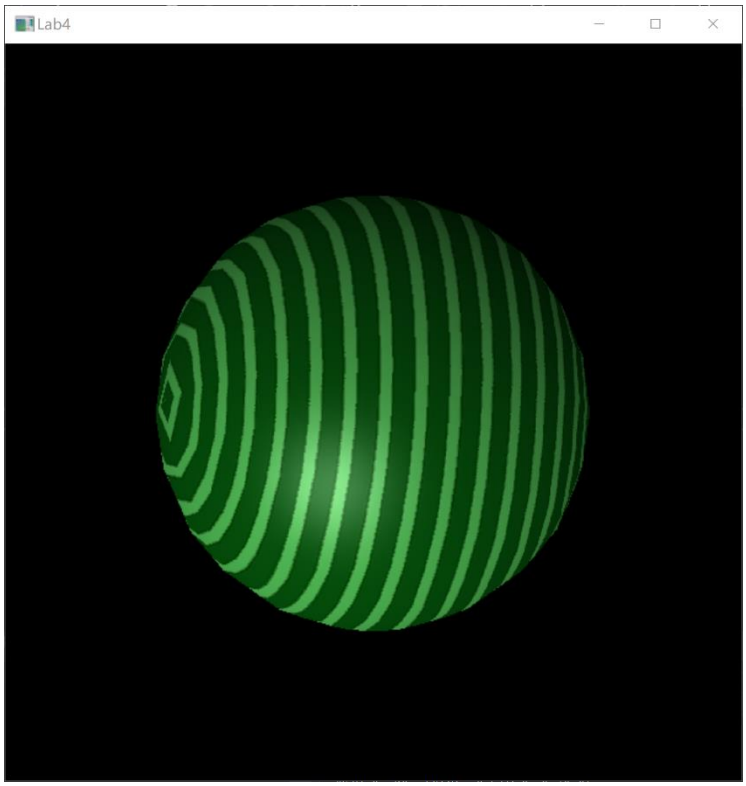
better-ball.d

```
MyVector C = {5,5,-20};
MyVector pref = {0,0,0};
MyVector Up = {0,-1,0};

MyVector LightDirection = { 60,100,-50 };
MyVector LightIntensity = { 0.5,0.5,0.5 };
MyVector LightColor = { 1,1,1};
MyVector ambientLightIntensity = { 0.3,0.3,1 };
float fatt = 1.0f;

objectColor = MyVector(0,0,1); //RGB
ka = 0.4;
kd = 0.6;
ks = 0.5;
focus = 24;
```

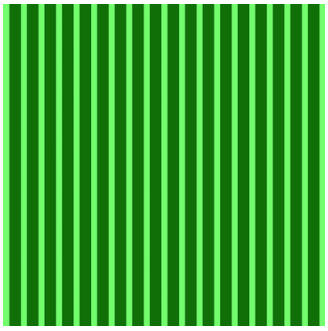
Cylinder Mapping



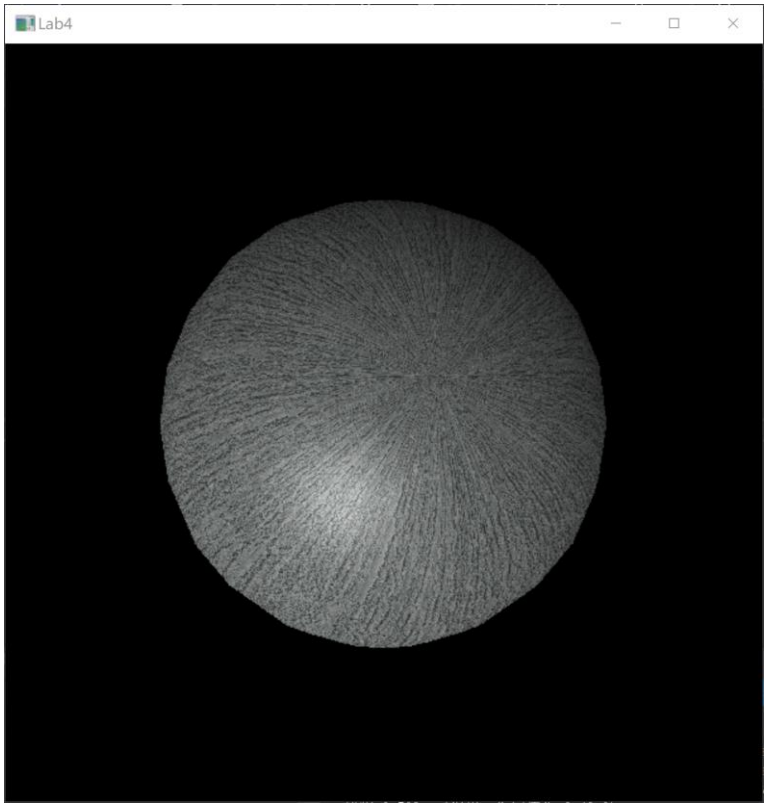
Sphere Mapping



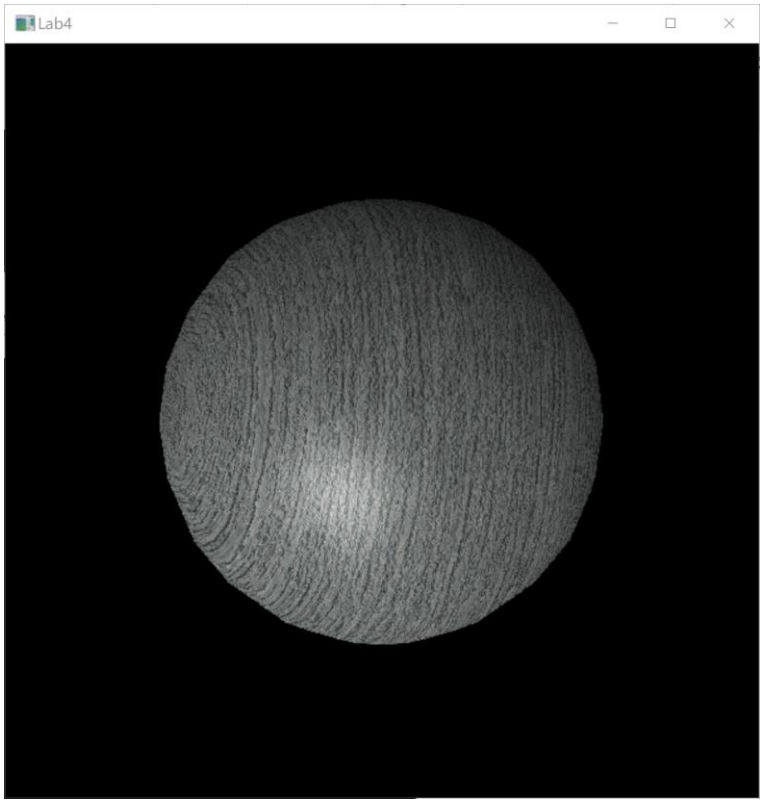
Texture



Cylinder Mapping



Sphere Mapping



Texture

How to run:

Edit variables in preference.cpp

```
//Camera
MyVector C = {5,5,-20};
MyVector pref = { 0,0,0 };
MyVector Up = {0,-1,0};
```

Edit C,pref,UP to control the Camera.

```
//Light
MyVector LightDirection = { 60,100,-50 };
MyVector LightIntensity = { 0.5,0.5,0.5 };
MyVector LightColor = { 1,1,1};
MyVector ambientLightIntensity = { 1,1,1 };
float fatt = 1.0f;
```

Edit LightDirection, LightIntensity, LightColor, ambientLightIntensity, fatt to set the Light.

```
//shading modle
int shading_model = 4;
// texture mapping (using phong shading model)
```

Edit shading_model to choose the shading model.

```
//mapping
int TextureW = 600; //cols
int TextureH = 600; //rows
string TextureSource = "Texture/1.jpg";
int mapping_model = 2;
//1 = Cylinder;
//2 = Sphere;
```

Edit TextureW, TextureH to set the size of texture, TextureSource to choose the texture file, mapping_model to choose mapping model.

Input the setting of the model in Computer Graphics Lab3.cpp

```
    //LoadData("D files/house.d");
    //LoadData("D files/cow.d");
    //LoadData("D files/ball.d");
    LoadData("D files/better-ball.d");
    //LoadData("D files/bench.d");
    //LoadData("D files/rect.d");
```

```
//LoadData("D files/car.d");
//LoadData("D files/donut.d");
//LoadData("D files/knight.d");
```

Edit the filename to select which data file to load.

```
//first object
//objectColor[0] = MyVector(0,0,1); //RGB
ka[0] = MyVector(0.4, 0.4, 0.4);  //ka for RGB
kd[0] = MyVector(0.6, 0.6, 0.6); //kd for RGB
ks[0] = MyVector(0.5, 0.5, 0.5);//ks for RGB
focus[0] = 24;
```

Edit the ka[i], kd[i], ks[i] to set the parameter of each loaded file.

Cylinder Mapping

`MyVector find_uv_cylinder(MyVector Normal) in texture.cpp`

Project the texture into a cylinder, then project the cylinder onto the object.

For a point on the object, calculate x, y, z of the intersection of the object and the cylinder, and then convert to u, v.

Sphere Mapping

`MyVector find_uv_sphere(MyVector Normal) in texture.cpp`

Project the texture into a sphere, then project the sphere onto the object.

For a point on the object, calculate x, y, z of the intersection of the object and the sphere, and then convert to u, v.