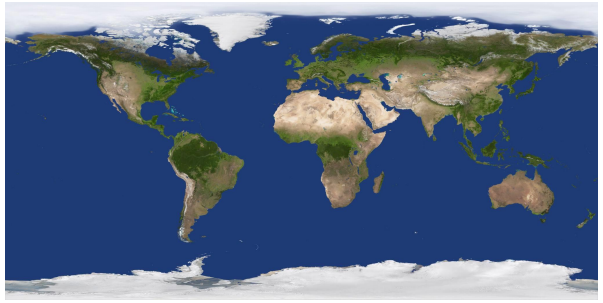
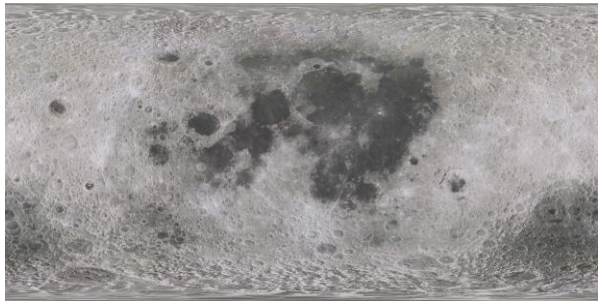
HW2

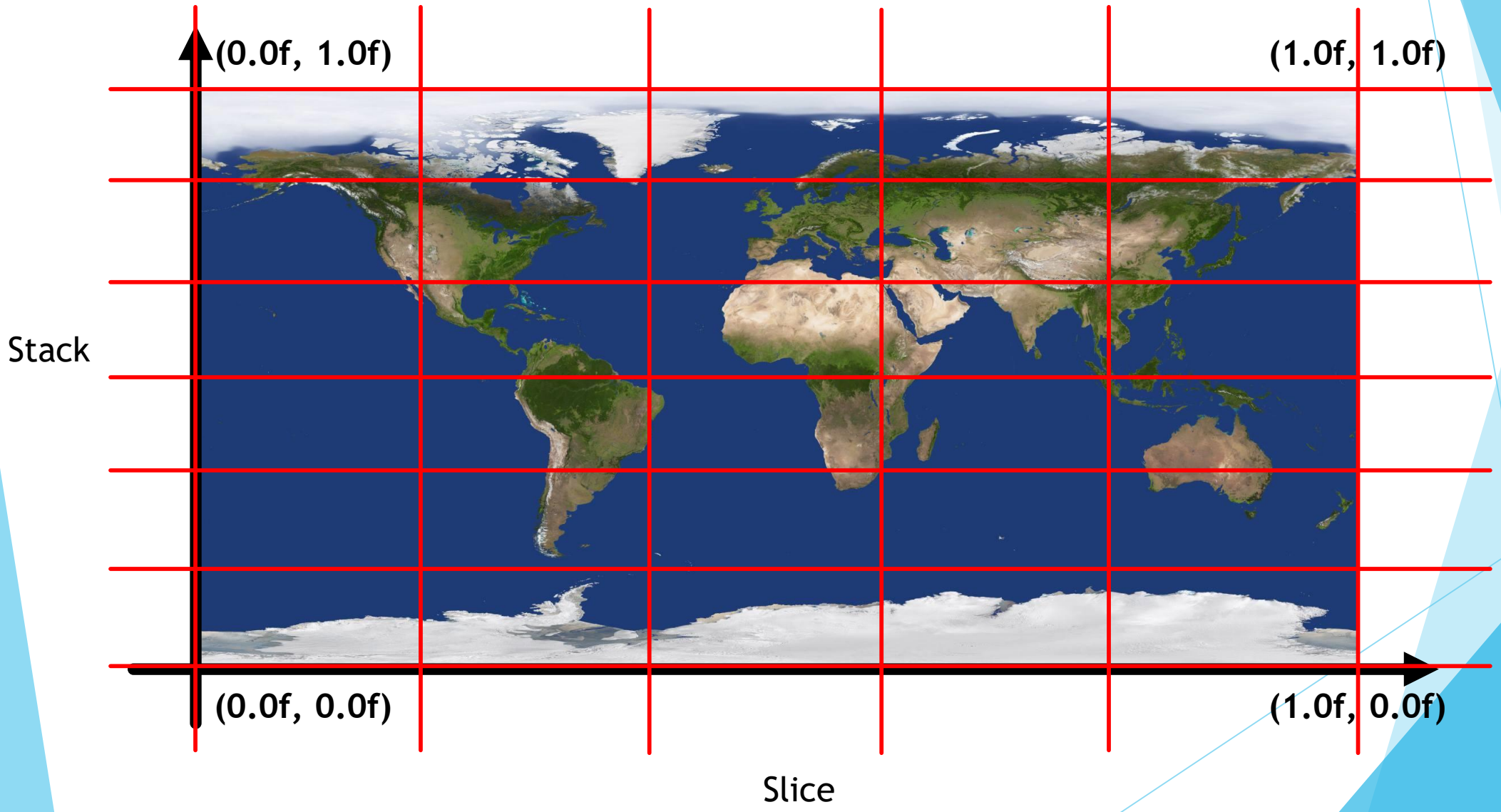
Introduction

- Draw two sphere: earth, moon.
- Map textures to the earth and the moon.
  - (Find texture coordinate at each vertex and map)
- Implement rotation and revolution





Texture coordinate



FreeImage

- Put “FreeImage.h” in folder “include”.
- Put “FreeImage.lib” in folder “lib”.
- Put “FreeImage.dll” in folder “dll”.
- Load texture by following code.

```
FIBITMAP* pImage = FreeImage_Load(FreeImage_GetFileType(pFilename, 0), pFilename);
FIBITMAP *p32BitsImage = FreeImage_ConvertTo32Bits(pImage);
int iWidth = FreeImage_GetWidth(p32BitsImage);
int iHeight = FreeImage_GetHeight(p32BitsImage);

glBindTexture(GL_TEXTURE_2D, textObj[num]);
glTexImage2D(GL_TEXTURE_2D, 0, GL_RGBA8, iWidth, iHeight,
    0, GL_BGRA, GL_UNSIGNED_BYTE, (void*)FreeImage_GetBits(p32BitsImage));
glHint(GL_PERSPECTIVE_CORRECTION_HINT, GL_NICEST);
```

Spec

- Global value:
  - Speed: X(any value)
  - Radius: Y(any value)
- Camera:
  - Position: (0, 5, 10)
  - Center: (0, 0, 0)
  - Up vector: (0, 1, 0)
- Light:
  - Position: (0, 10, 0)
  - Diffuse: (1, 1, 1, 1)
  - Ambient: (0.5, 0.5, 0.5, 1)
- Keyboard:
  - P(p): pause

Spec

- Earth:
  - Slice: 360|4 (switch when pressing key ”o”)
  - Stack: 180|2 (switch when pressing key ”o”)
  - Rotation: X
  - Radius: Y
  - Obliquity: 23.5
  - Texture: earth.jpg

Spec

- Moon:
  - Slice: 240
  - Stack: 60
  - Rotation: X/28
  - Revolution: X/28
  - Radius: 0.5*Y
  - Revolution radius(around earth): 3*Y
  - Texture: moon.jpg

Upload

- Zip your
  - (1) visual studio project

    or
  - (2) source code + Makefile
- Into “HW2_<student_id>.zip”, then upload to new E3.