

Byron Magofna
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CS 450
Project 5

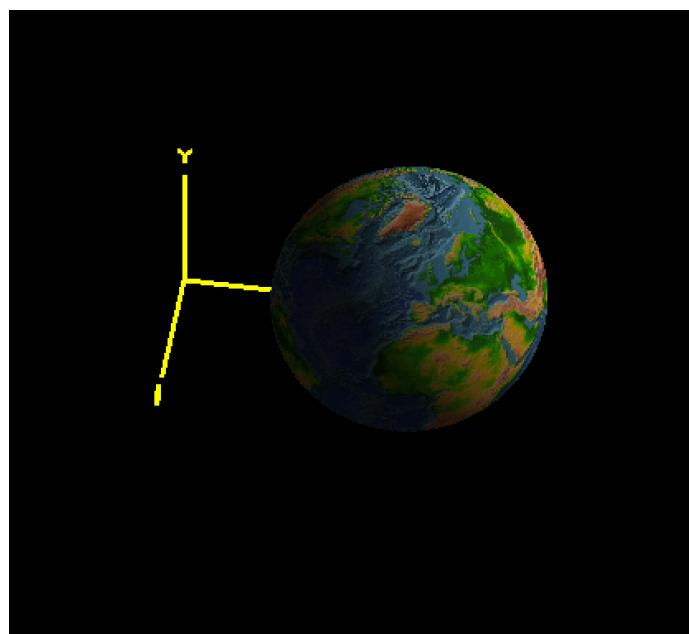
I made display lists for each planet—scaling them using 'glScalef' to get the proper scaling factor. For applying the correct textures to the correct planets I used the following code ('planet' in the code below is where I would list each individual planet):

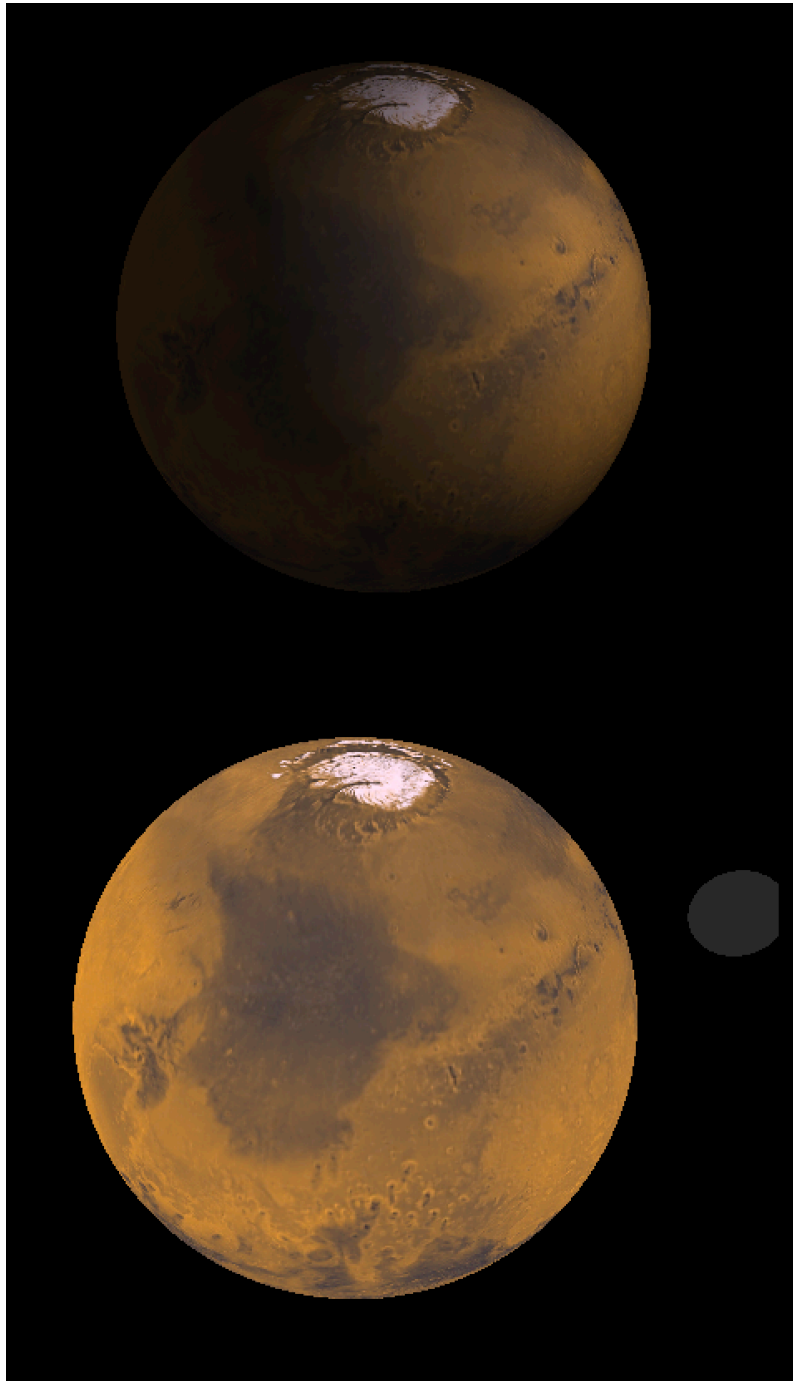
```
file = (char*) "../Textures/planet.bmp";  
texture = BmpToTexture(file, &width, &height);  
  
glGenTextures(1, &planetTex);  
glBindTexture(GL_TEXTURE_2D, planetTex);  
glPixelStorei(GL_UNPACK_ALIGNMENT, 1);  
glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_S, GL_REPEAT);  
glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_WRAP_T, GL_REPEAT);  
glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER, GL_LINEAR);  
glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER, GL_LINEAR);  
glTexImage2D(GL_TEXTURE_2D, 0, 3, width, height, 0, GL_RGB,  
             GL_UNSIGNED_BYTE, texture);
```

Then in each planet's display list I used glBindTexture() to bind the correct texture to its planet. Then I used glCallList() to display each planet in the display function.

To toggle between each planet, I used a switch statement in the display function before displaying the planet. I created a flag int variable for each planet and a 'currentPlanetFlag.' In the keyboard function I set it up so that whenever the character that corresponds to a certain planet was entered, it would set the 'currentPlanetFlag' variable to match that planet's case number that I used in the switch statement. For toggling between no textures, GL_REPLACE, and GL_MODULATE, I implemented another switch statement. I created a toggle int variable, in the keyboard function, whenever 't' is pressed the toggle variable would increase by one—basically it counted the number of times 't' was pressed. Then in the switch statement in the display function, I created an int variable called 'toggleMode' that was set to equal whatever the 'toggle' variable was and then mod it by 3 to produce a number from 0 - 2. If 'toggleMode' = 0, I disabled textures; if it was equal to 1 or 2 I enabled GL_REPLACE or GL_MODULATE, respectively.

GL_MODULATED





GL_MODULATED

GL_REPLACE

Link to video: https://media.oregonstate.edu/media/t/1_0v1mwpdz