CS 550 | Fall 2023

Project 5

"Texture Mapping"

By

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Instructor – Prof Mike Bailey

❖ Description →

Video Link: [Click Here]

✓ **Texture Loading**

- Texture Files: Stored each texture file, such as "venus.bmp" and "earth.bmp," within the file system.
- Texture Object Creation: Employed the BmpToTexture function to process each texture and generate corresponding texture objects. The texture objects were associated with texture names using the glGenTextures and glBindTexture functions.

✓ **Display Lists**

- Unit Sphere Display List: Created a display list (SphereDL) representing OSU sphere with a radius of 1.0.
- Planetary Display Lists: Generated separate display lists for each planet, such as MarsDL. Each display list contained the scaled planetary geometry and the corresponding texture bound using glBindTexture.

✓ **Light Source**

Dynamic Lighting: Introduced a moving point light source within the scene to illustrate the effects of dynamic lighting on the textures. The light's movement was designed to showcase the functionality of the GL_MODULATE mode.

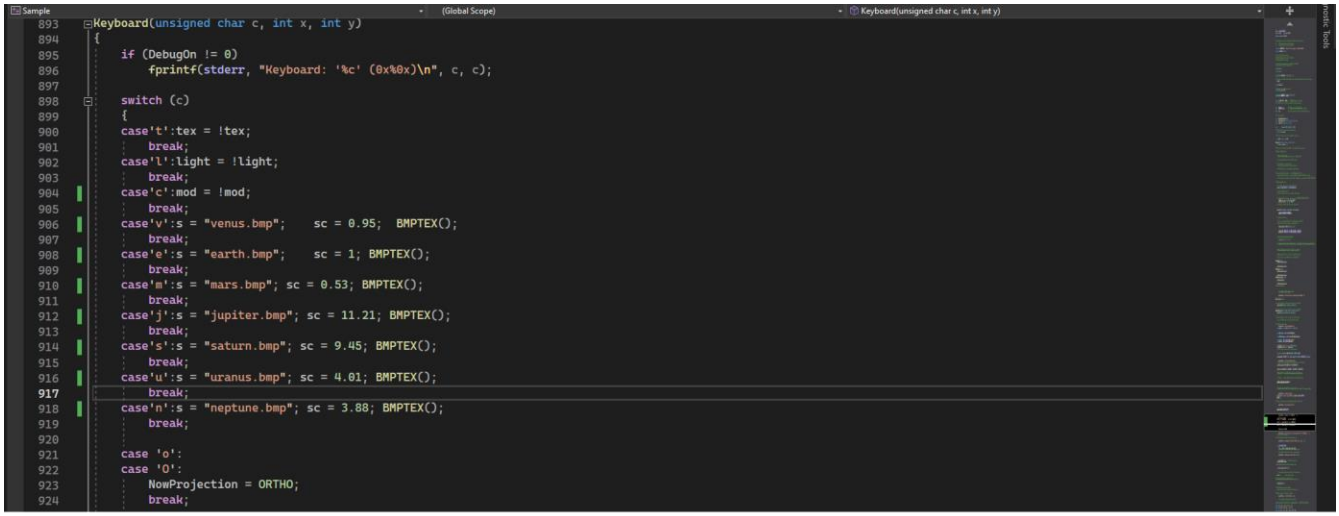
✓ **Keyboard Controls**

- Planet Switching: Implemented keyboard controls ('v', 'e', 'm', 'j', 's', 'u', 'n') to switch between different planets.
- Texture Modes: Enabled keyboard interaction to toggle between displaying:
    - A lit white sphere without texture (proper scale)
    - The texture image in GL_REPLACE mode
    - The texture image in GL_MODULATED mode
- Texture Mode Switching: Utilized a designated key (e.g., 't') to cycle through these three texture modes.

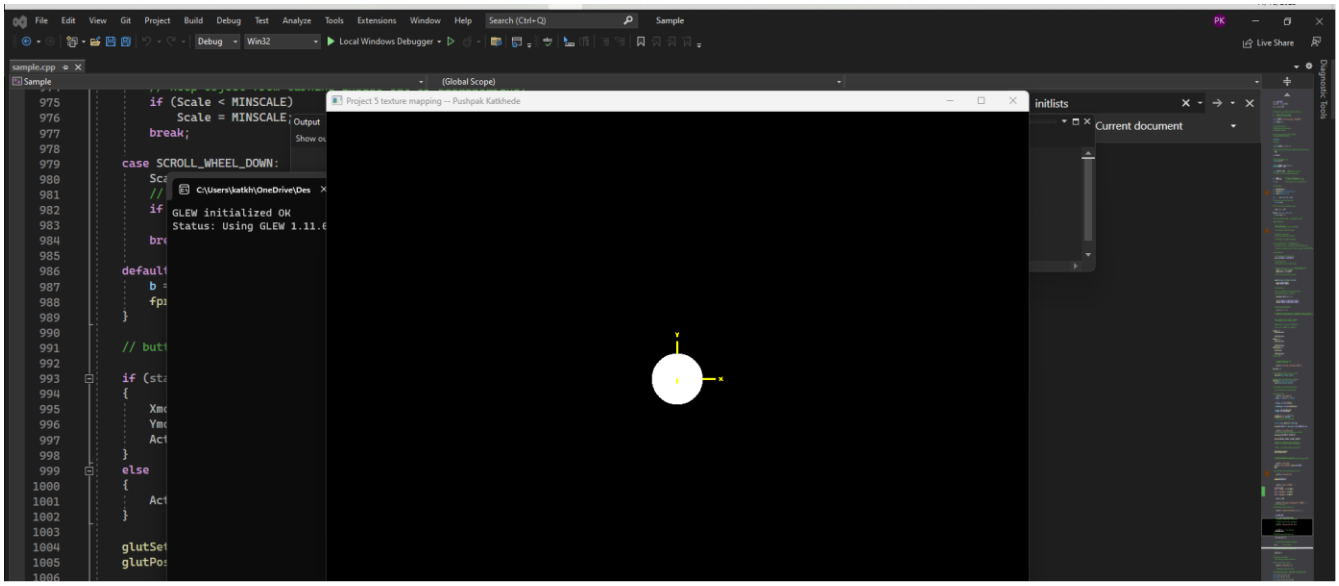
❖ Key and Function →

1. 't': Toggle Texture
2. 'l': Toggle Light
3. 'c': Toggle Modification
4. 'v': Venus
5. 'e': Earth
6. 'm': Mars
7. 'j': Jupiter
8. 's': Saturn
9. 'u': Uranus
10. 'n': Neptune
11. 'o' or 'O': Orthographic Projection
12. 'p' or 'P': Perspective Projection
13. 'q', 'Q', or ESCAPE: Quit

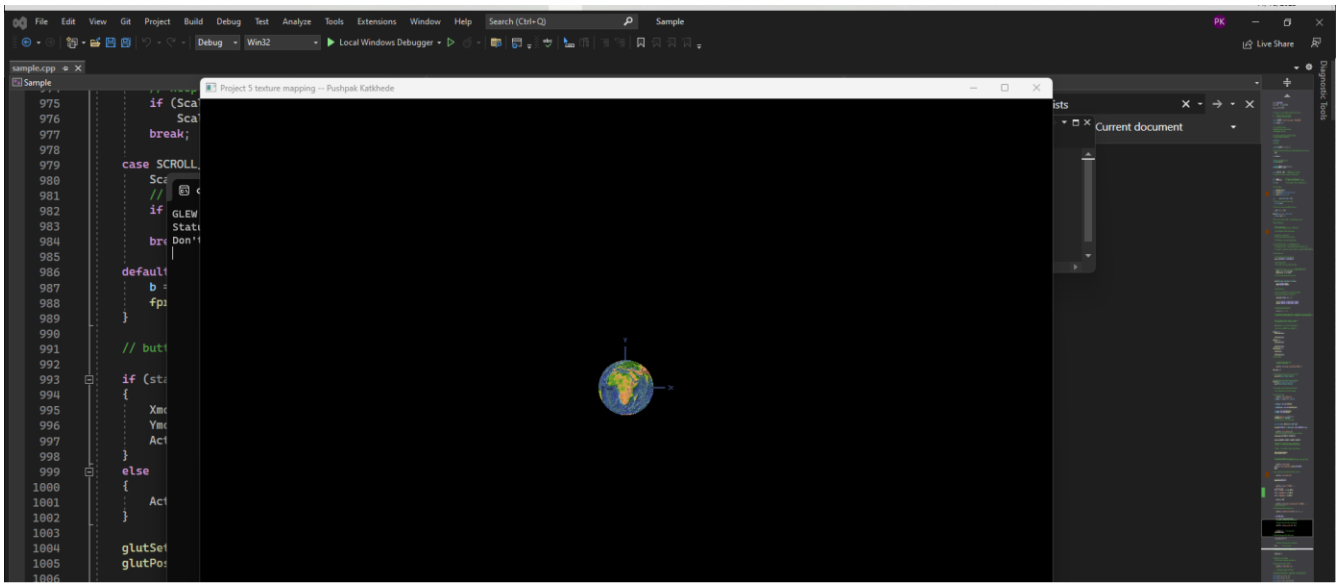
❖ Screenshots →

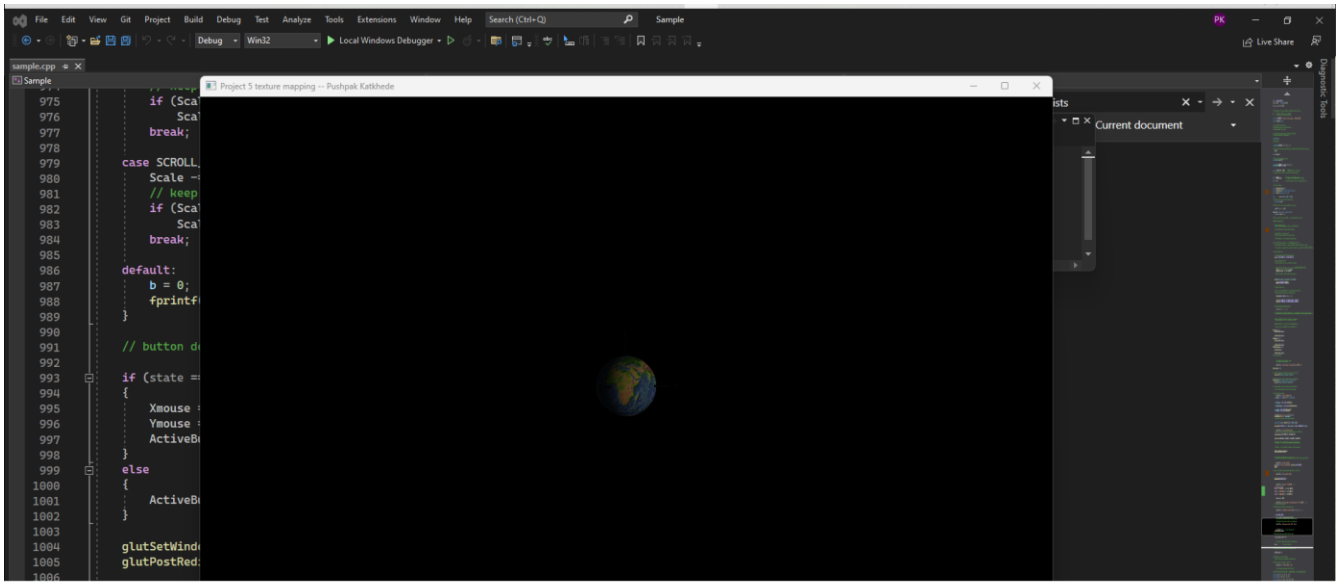


Osu sphere



GL_REPLACE vs GL_MODULATE

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sample.cpp
Sample
Project 5 texture mapping -- Pushpak Katkhede
Current document
Diagnostic Tools
975 if (Sca
976 Sca
977 break;
978
979 case SCROLL_
980 Scale -=
981 // keep
982 if (Sca
983 Sca
984 break;
985
986 default:
987 b = 0;
988 fprintf
989 }
990
991 // button d
992
993 if (state =
994 {
995 Xmouse
996 Ymouse
997 ActiveB
998 }
999 else
1000 {
1001 ActiveB
1002 }
1003
1004 glutSetWind
1005 glutPostRed
1006