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CS 450

Introduction to Computer Graphics

Project #3

Lighting

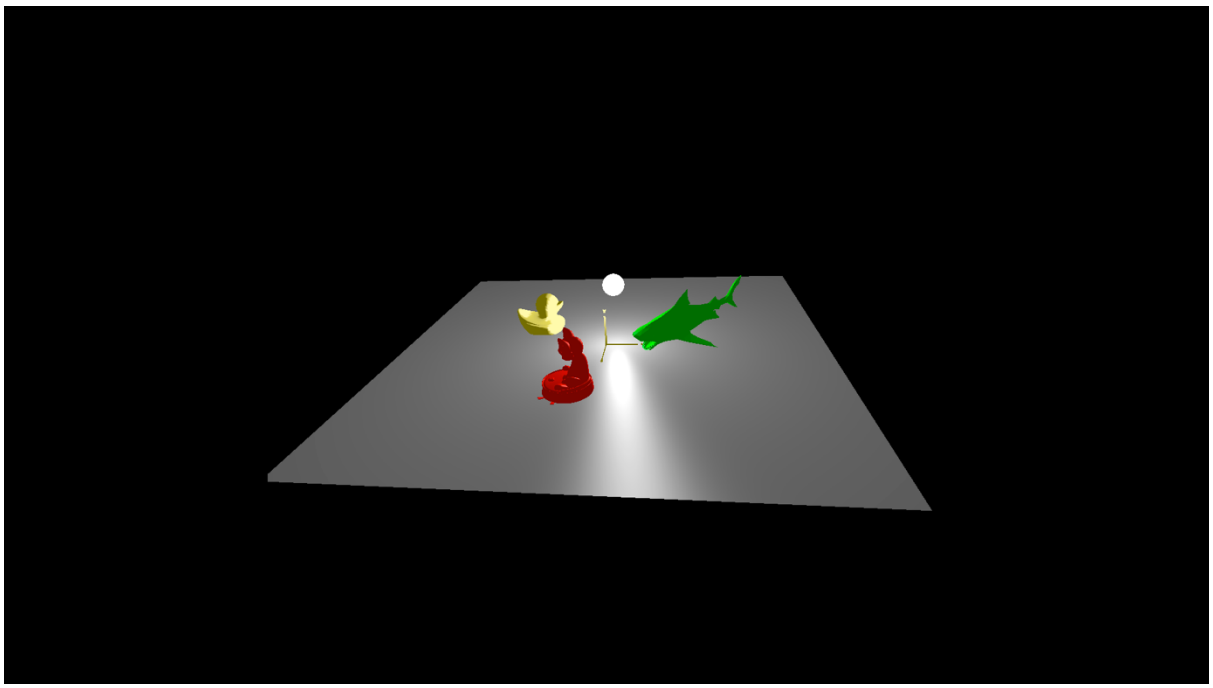
1) A description of what you did to get the display you got

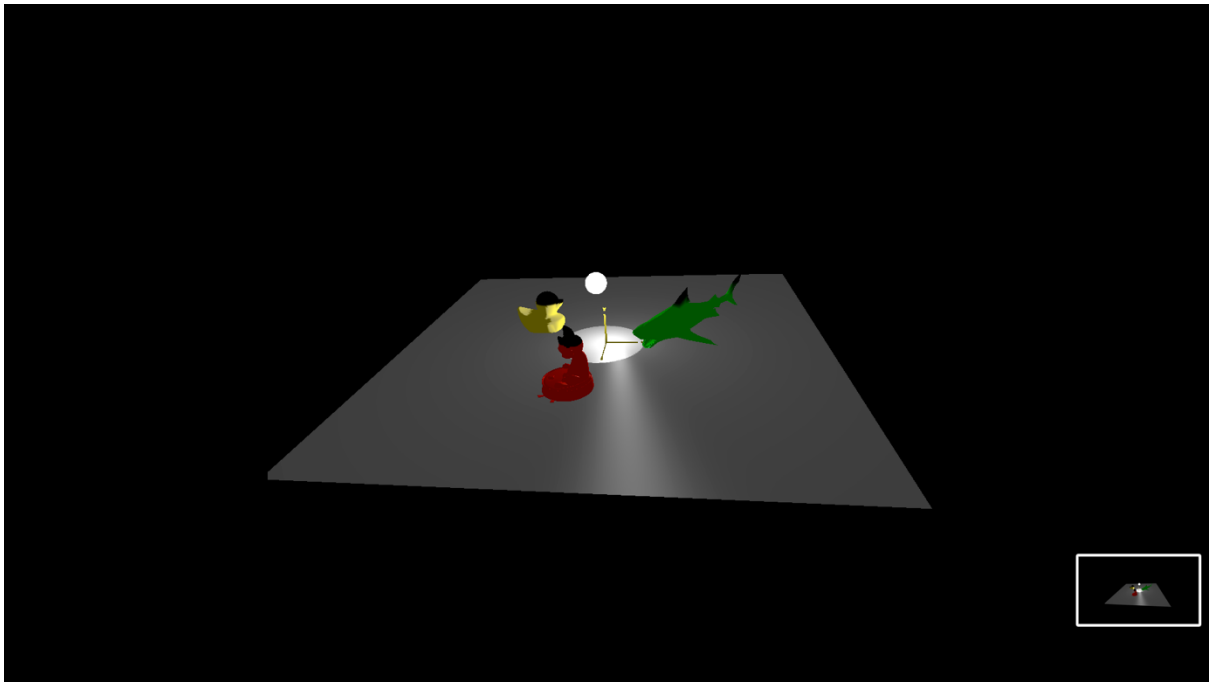
1. **Creation of 3D Scene:** Implemented a 3D scene with three distinct objects. One of these objects was loaded from an OBJ file. The remaining two were custom objects, ensuring each had a unique material color.
2. **Lighting Details:**
    - Ensured one object had a dull appearance and another was shiny using **GL_SHININESS**.
    - Introduced a dynamic light source that animates above the scene in a specific motion pattern(pendulum).
    - Implemented toggling mechanisms for the light source. Using the 'p' and 's' keys, the light can be changed from a point light to a spotlight. The spotlight direction is oriented downwards towards the scene.
    - Added functionality to toggle the light source's color using 'w', 'r', 'g', 'b', ‘c’, ’m’ and 'y' keys, which switch the color to white, red, green, blue, yellow, cyan and magenta respectively.
3. **Visual Aid for Light Source:** Placed a small sphere at the location of the light source. This sphere changes its color in sync with the light source. Made sure the sphere's lighting was disabled to keep it clearly visible.
4. **Grid Addition:** Inserted a grid below the 3D scene as per the provided code snippet. This was done to allow for a more evident display of the light source's impact.
5. **Animation Control:** Integrated an 'f' key function to freeze and unfreeze the animation.

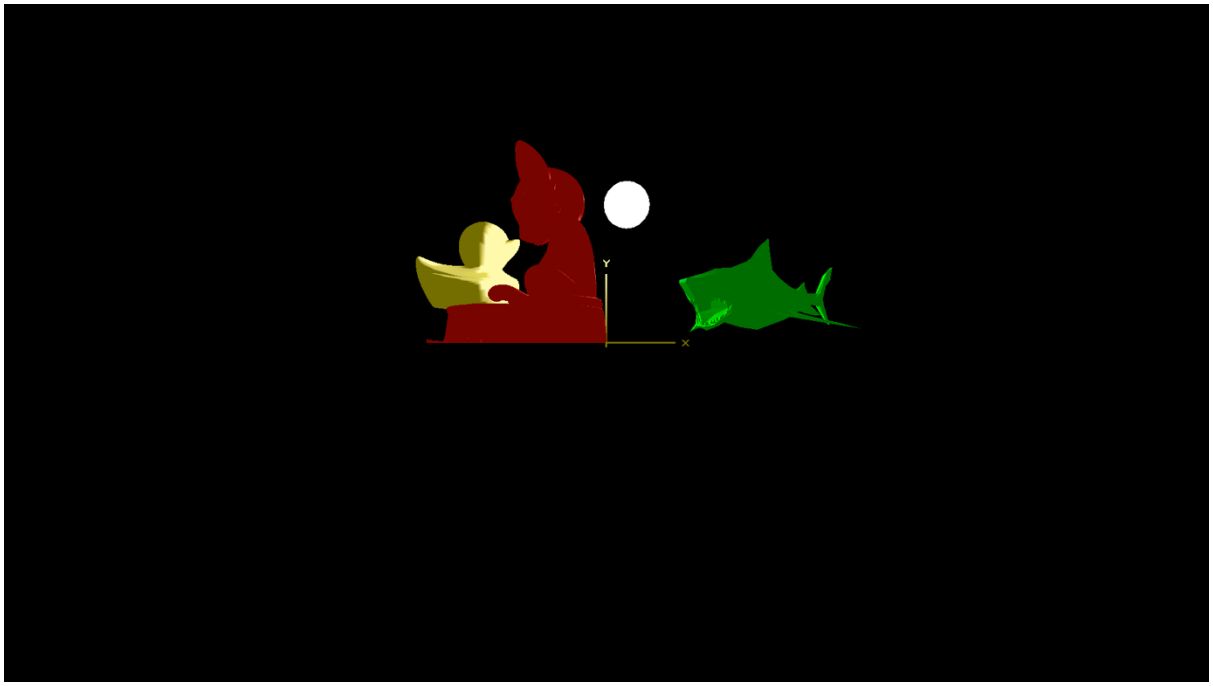
6. **Timing Implementation:** Employed a timing mechanism to control the rate and pattern of the light source's movement. Defined constants like **MS_PER_CYCLE** and **LIGHTRADIUS** to manage this.
7. **OBJ File Utilization:** Leveraged the **LoadObjFile()** function to incorporate an OBJ file into the scene. This involved creating a display list for the loaded object and rendering it within the scene.

2) Media Link : https://media.oregonstate.edu/media/t/1_ol5yb84b

3) A cool-looking screen shot from your program



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