

Computer Graphics Final Project Report

Submitted by-

Moordhan Songade (2021UCP1072)

Sushant Kumar Pal (2021UCP1094)

Goal

We wanted to create a simple but elegant looking structure of a study with a huge window, which beautifully lights up the room in the evening. This evokes a sense of comfort & coziness and in a way idolizes our dream study room.

Contributions

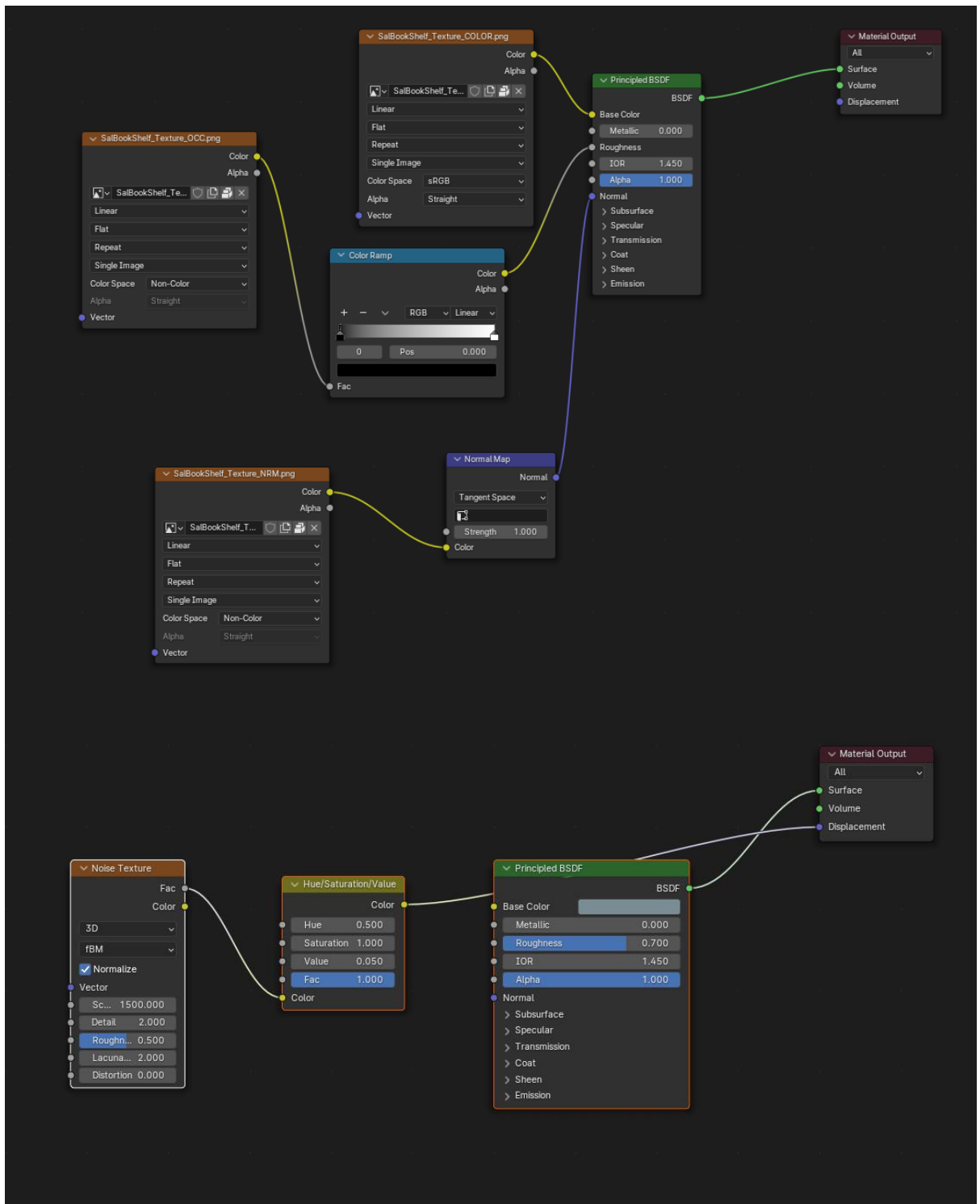
We designed the complete structure of the room along with the floor plan on our own on Blender 4.1.1.0.

Concepts Used & Their Implementation in Blender

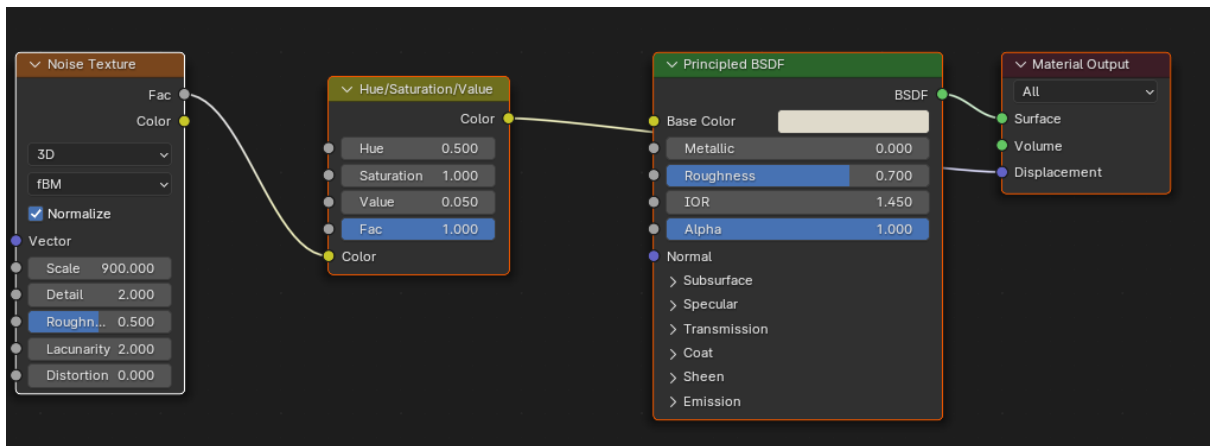
- *Ray Tracing:* We used 5 light sources in Blender to ray-trace shadows of the window panes as well as the lamp. We utilized the [Ray-Traced Shadows](#) property of light sources in Blender to implement it.
- *Gouroud Shading:* The lamp has a metallic texture & we utilized Gouroud shading model to show the shadow of the upper beam as well as the light from the beam on it. We used Geometry & Texture nodes as well as Shader Properties in Blender to pull it off.
- *Modelling:* We modelled the simple shapes like beam, walls, room, etc. using geometric shapes in Blender as portrayed in the next section. We also used some assets from online which are mentioned in the 'Downloaded Assets Section'.

Created Assets + Methodology used + Texture Maps

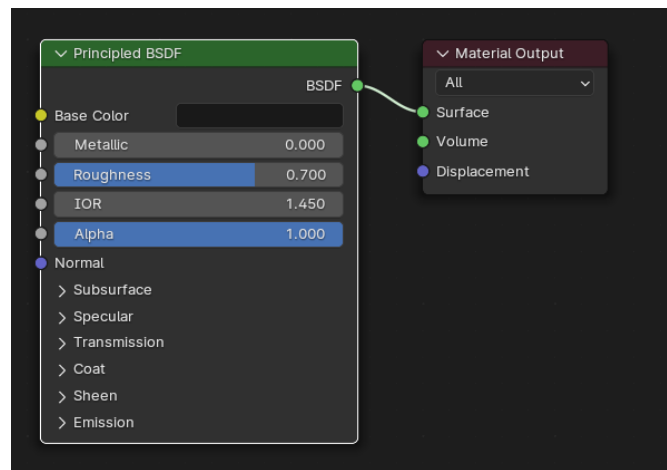
- *Walls & Floor:* The walls used only two types of texture maps. The front, right & the ceiling walls used the texture map described in the lower half whereas the wall accent used the texture map shown in the upper half. We used normal cubes of varying heights and widths to model the walls & the floor. The floor has no texture map as it illustrated the ray-tracing of shadows beautifully. The texture of cabinets and walls were taken from some online images as shown in orange nodes.



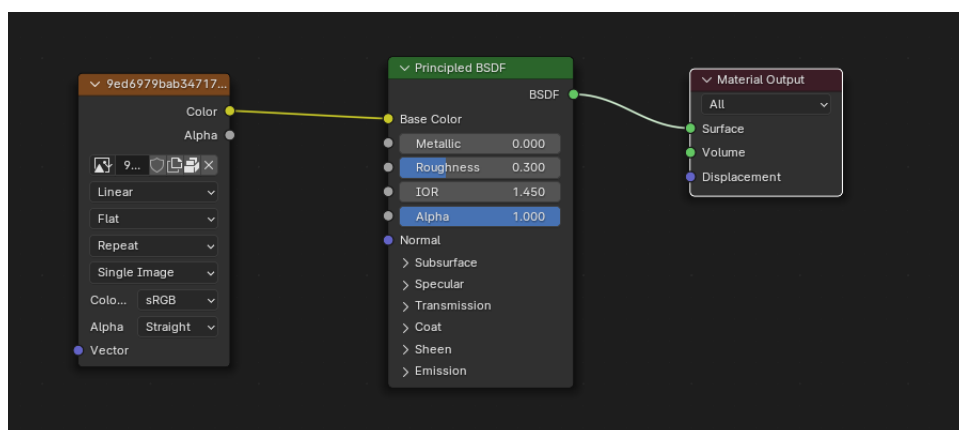
- *Ceiling:* The ceiling was modelled easily using the same idea, i.e. by using cubes. We added some beams as well to give an aesthetic feel. But as for the shaded light on the ceiling, we used the following texture map:



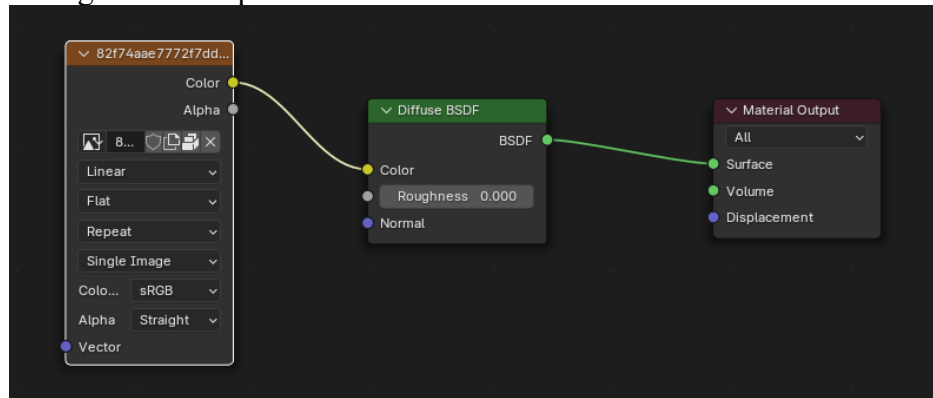
- *Windows*: The modelling of the windows was done using textured cubes whose texture map is as follows:



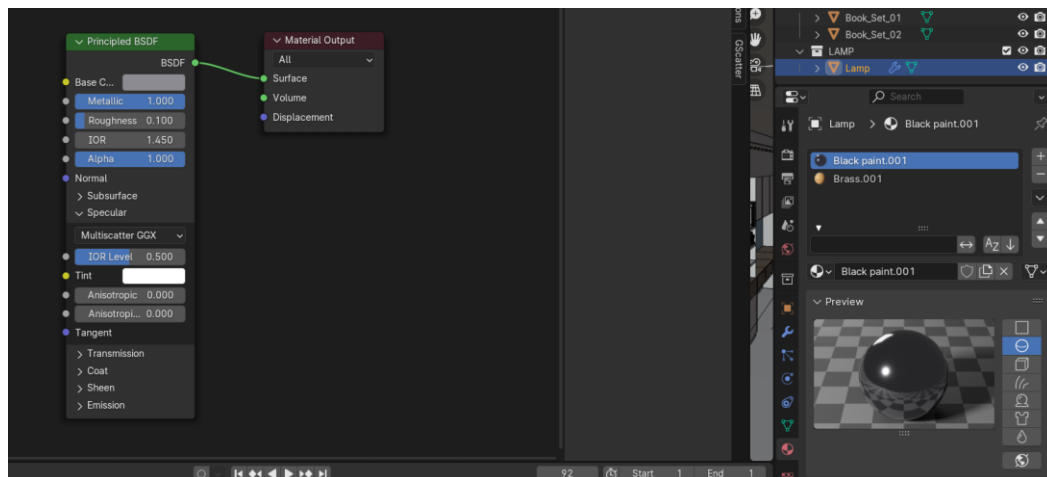
- *Cabinets & Dividers*: The top of the cabinet as well as the Table dividers are using the same texture map as above, and modelled using cubes and lines of varying sizes.
- *Plant*: The green part of the plant is an asset as was directly attached as downloaded. The basket was modelled by us using various modifiers like screw, mesh, net, etc and its texture map is as follows:



- *Books*: The books were an asset and downloaded from the source directly & they use the following texture map:



- *Lamp*: The lamp was designed by taking references from pictures online. We used Goround illumination model by using Material modifiers in Blender & the texture map and preview are as shown:



Downloaded Assets + Source

| <i>Asset</i> | <i>Source</i> |
|---------------------|---|
| <i>Plant Leaves</i> | Gscatter |
| <i>Books</i> | Free Blender Book Models TurboSquid |

Final Rendered Image (1920x1080 with 200 samples)

