

CS148 Final Project

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INSPIRATION



<https://www.pinterest.com/pin/108860515986551098/>

Inspired by this image, I would like to re-create a similar studio space for displaying crafts, books, plants and other interesting items. In the final scene, I recreated the similar layout for the room layout and furniture, but modeled different items to be displayed. I also added a small side table into the scene and poured some wine on top to add more liveliness to the image. Instead of using the same flat and dull lighting in the image, I decided to go with more contrasted yet soft outdoor lighting for the final scene. Some special lighting techniques in blender are used to cast tree-like shadows to the shelf for a more realistic touch.

FINAL IMAGES (1324 px by 1920 px)



Main image



Ref 1: different camera angle



Ref 2: grey diffused material

REQUIREMENTS

- **Main Geometry from scratch**
 - Everything in the scene except for the plants and chair are made from scratch.
 - The curtain is modeled using cloth simulation techniques.
 - More details in the [models](#) section.
- **UV Mapping and Texturing from scratch**
 - All the books on the middle layer of the shelf are individually unwrapped and applied imaged textures.
 - The side table in the picture is UV edited in 2 different ways. For the top and bottom surface I projected the image texture directly onto the object and for the side, I uv-unwrapped the surface and applied same texture accordingly.
 - For the concrete floor I used Blender's material nodes to procedurally generate the pattern and indentation for the surface.
 - For the fragrance diffuser I used similar technique as the concrete for generating the pattern, but I lower the bump depth, and increase the color ramp for the base color to make it look more interesting.
 - For the plant's pot, I also used Blender's node to simulate different reflectivity and scratches for a more realistic metal texture.
 - For the colorful vase on the shelf, I used color ramp node to create an iridescent effect.
 - The curtain's fabric material is also made from scratch using voronoi texture for the bumps.
 - More details in the [textures](#) section.
- **Blender/Cycles feature**
 - I used volumetric rendering to add more defined shape to the lighting and more "softness" to the overall final image.

- More details in the [lighting and shadow](#) section.

MODELS

• **Curtain**

For the curtain, I decided to use the cloth simulation function to mimic the creases and fold. I started with a plane geometry, and followed this tutorial on [Youtube](#). By adding the vertex group on the top edge and using shape keys to create self colliding effect and further detailing the pinched pleats, I was able to create a pretty accurate geometry.

• **Bookshelf and room**

The bookshelf is a list of simple box object that I then transformed into the correct shape and position. Then I used boolean union to avoid having shaped colliding with each other and weird dark spots in the rendering. The room is modeled with similar technique, I first used the solidify modifier to add thickness to a box object, and then took the boolean different with a cylinder to create the window.

• **Books**

The shape of the book is created by using an add-on called [bookGen](#), however I didn't end up liking the final result of the layouts that the add-on provides. So I individually modify the position and size of each book in the model.

• **Wine bottle, wine glass and table**

The wine bottle is modeled from scratch following this [tutorial](#). I then used the similar methods to model the wine glasses and table. I also took some reference from this [tutorial](#) for modeling the wine glasses.

• **Vase and fragrance diffuser**

These 2 geometries are also modeled by following another Youtube tutorial. I first used a box then merge the box to get a vertex. I then draw the contour of the vase shape and added screw modifier and solidify modifier to create the shape and thickness.

• **Chair and Plants (downloaded both model and texture)**

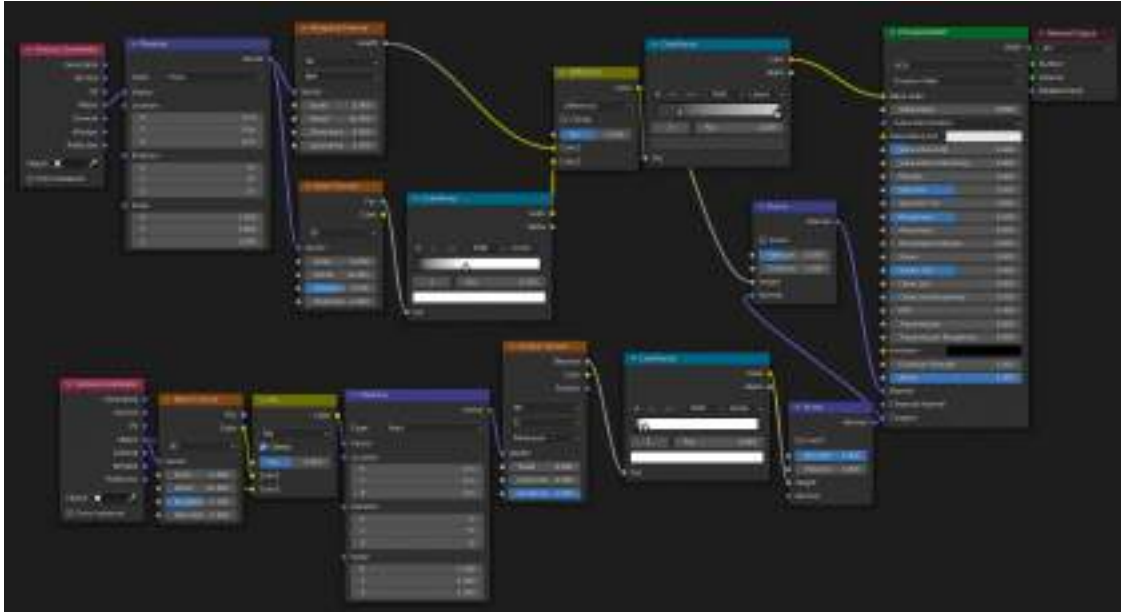
These assets are downloaded from the following links

- I. <https://cgaxis.com/product/grey-lounge-chair-footrest/>
- II. <https://sketchfab.com/3d-models/indoor-plants-pack-05-33b5187d69c146da8ab28c5e2aa39e1b>
- III. <https://sketchfab.com/3d-models/indoor-plants-pack-24-f83cad318e5b4c9a80cf6b61da639e2c>

TEXTURES

- **Concrete material**

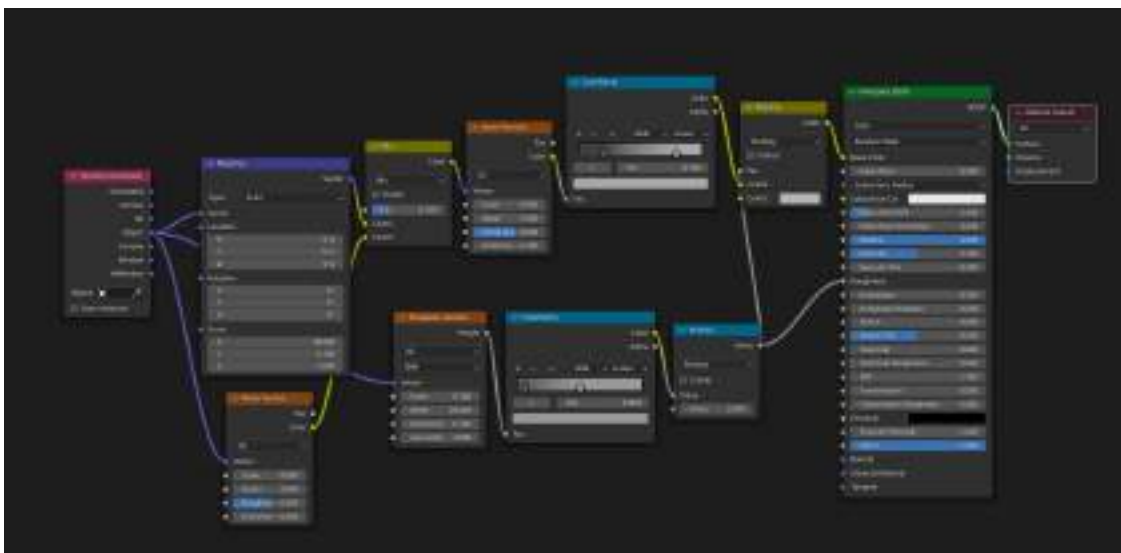
I followed this [tutorial](#) for the concrete material. I first used the Masgrave Texture node and Noise Texture node to get the patterns of the concrete as the base color. Then I added another Voronoi node to create the indent in the surface and lastly used a noise texture to reduce the indentation to only limited areas.



Concrete material node

- **Metal material for flower pot**

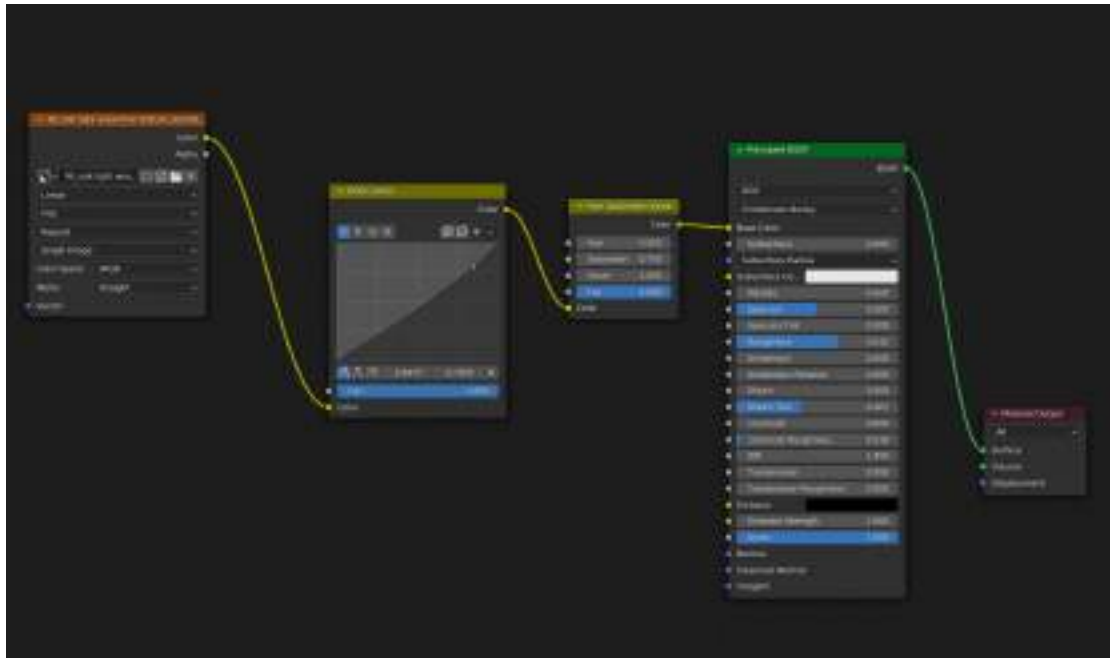
Although the geometry for the flower pot is downloaded from internet, but I decided to change the material of it to add more variety in the final scene. I followed this [tutorial](#) and use a different combination of Masgrave texture node and Noise texture node to create the wear and tear effect.



Metal material node

- **Wood material for bookshelf**

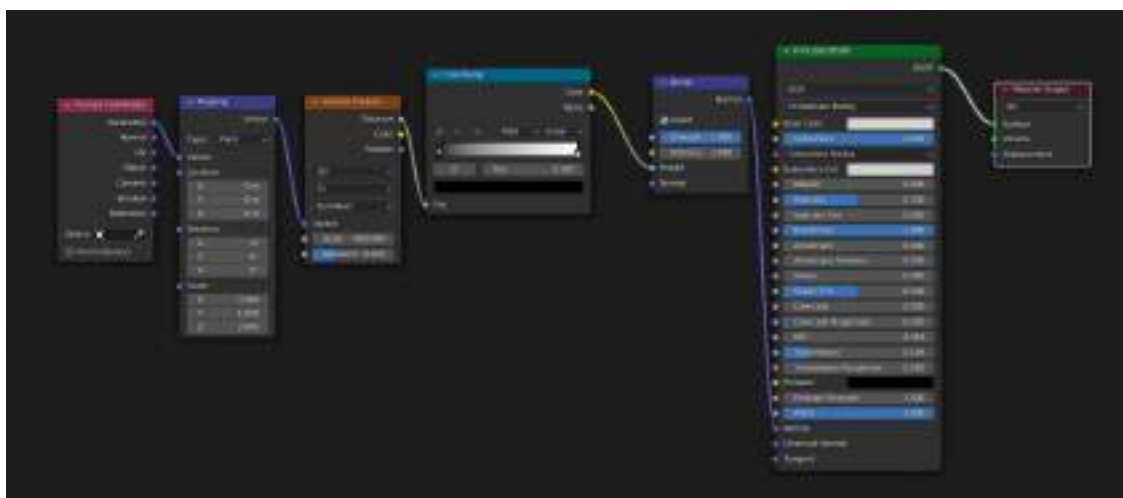
For the wood material for bookshelf, I used an oak texture image downloaded from [web](#). By adding the RGB Curve and Hue / Saturation node, I was able to fine tune the texture to the color I wanted. For the wall behind the shelf I used the same material, but I unwrap the surface and enlarged it on the UV map so that the material scaling looks correct in the final render.



Wood material node

- **Fabric material for curtain**

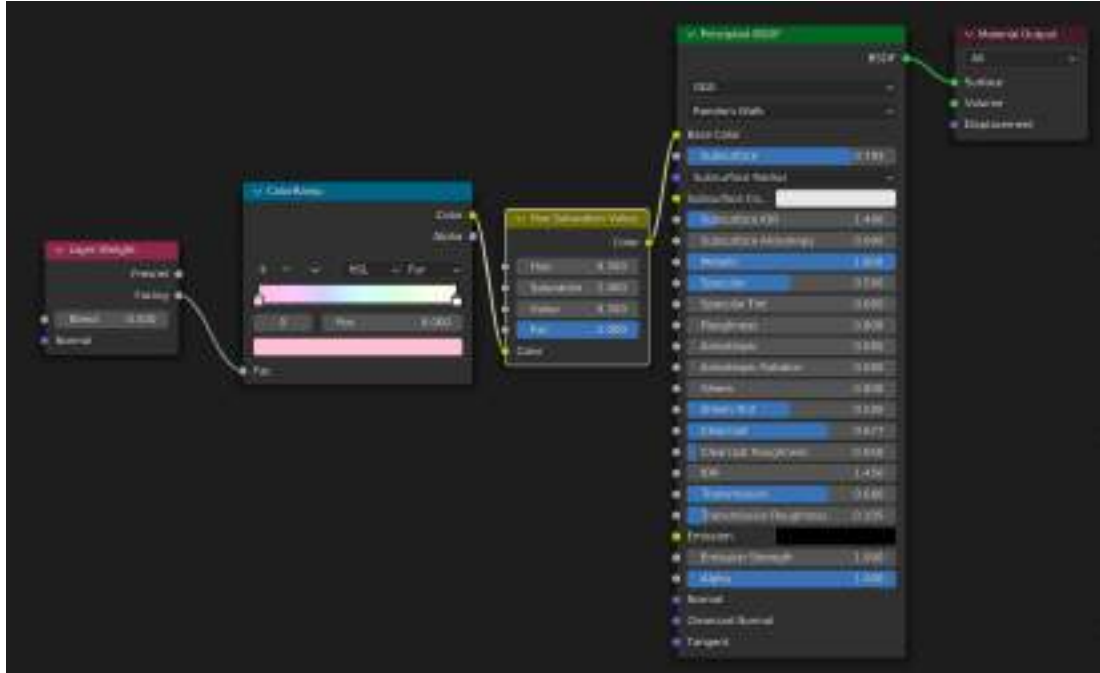
To create the fabric material, I used a Voronoi texture and by increasing the scaling the z direction, I was able to mimic the threading on the fabric and create the realistic texture. ([Tutorial](#))



Fabric material node

- **Iridescent material**

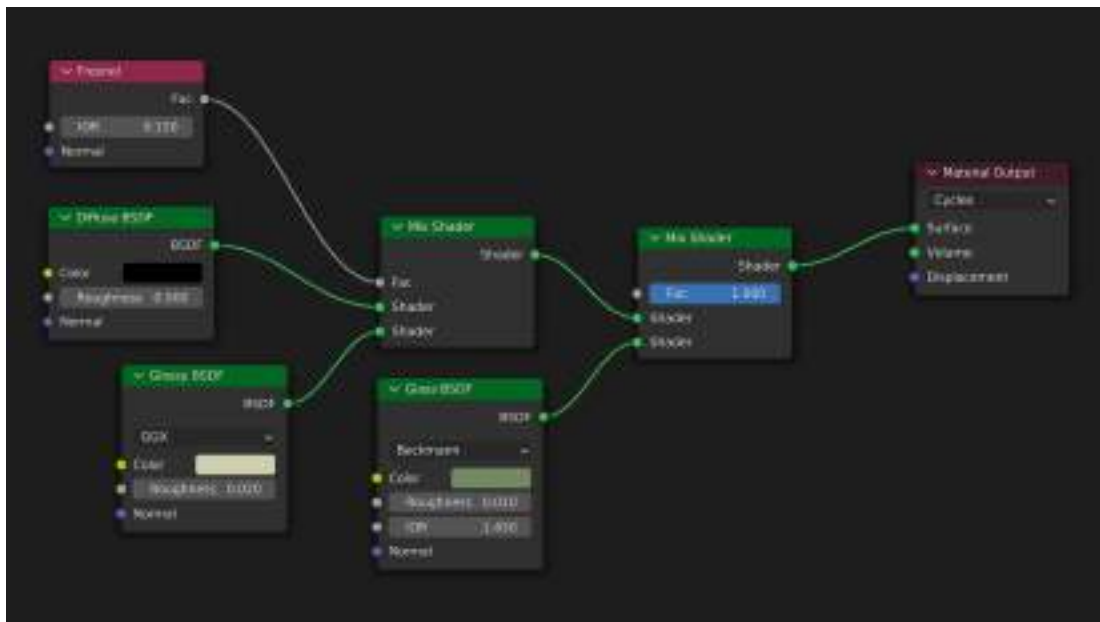
The iridescent material is created using a layer weight node and color ramp following this [tutorial](#). The metallic value in the Principle BSDF is also adjusted to the maximum and roughness is adjusted to minimum to give the shininess.



Iridescent material node

- **Transparent material**

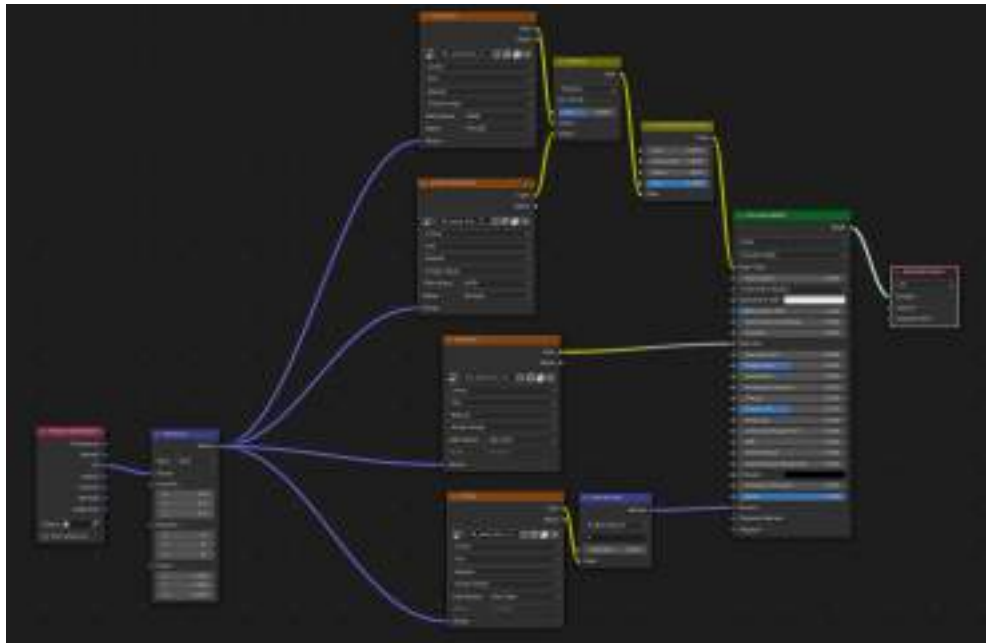
Instead of using the principle BSDF node or the simple glass node, I decided to play with the mix shader for all the transparent materials in the scene (wine bottle, wine glasses and wine). I used similar setup for these materials to create extra transparent and reflective feeling.



Transparent material node

- **Wood material for side table**

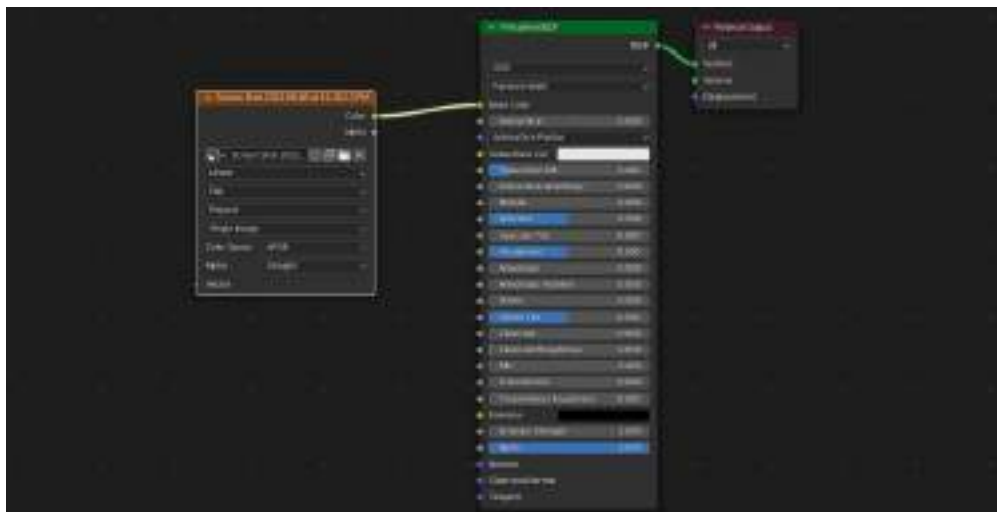
For this node, I used diffused, specular, normal and ambient occlusion map downloaded from [shareTextures](#) to reconstruct the material with these images. The mapping of the side table is also a bit tricky due to the curvy shape of the table. Simply unwrapping the table and fitted on the image will create a distorted texture of the wood. So instead of doing that, I added a couple of edge seam and split the table into 3 different surfaces: top, bottom and side. For top and bottom, I used the projection tool to project the uv map directly onto the surface and for the side, I unwrap the surface and fitted it on the texture map.



Wood material node 2

- **Book Covers**

The book covers are all just simple image texture map from random pictures I download from [Pinterest](#). I took extra care for the books on the middle layer of the shelf because they are in the center of the final image. Those are all uv-unwrapped and fitted to the image individually so that the book spine and cover lines up with each other and book pages stays white.



Book material node

LIGHTING AND SHADOW



A combination of spot light, directional light, plane light and lighting from a [EXR image](#) is used for the final rendering to create a soft illuminated effect. One interesting detail I added is the tree shadow. For that effect, I modeled a plane and using subdivision tool and random select tool to delete the faces partially. I then use the subdivision surface modifier to round up all the edges of the plane so that everything looks less squared and sharp. Noted that this plane is only for the shadow effect and we don't want it to actually show up on the rendering. So I have to unselect camera ray visibility for that panel in the object property. Lastly I adjusted the position of the panel to make sure it doesn't cast any weird shadow onto the surrounding surfaces.

I also used volumetric rendering to give light a more defined shaped and the entire scene an overall softness. I played with different settings of the volumetric density and volumetric color to get the ideal effect for the final result. ([Tutorial](#))



Density 0.15



Density 0.25



Density 0.35



Hex BCB594



Hex D3CBA6



Hex FFFFFFFF