Inspiration

Our scene is inspired by many pictures of Bag End, Bilbo and Frodo Baggins’s home in Middle Earth. We tried to make our scene take place during twilight to create an interesting image different from anything we’ve found online. We’re proud of our scene because we worked really hard to have an interesting geometry and cohesive placement of objects.

Technical Process

We started the process by using 3ds Max to convert V-Ray materials on the hobbit hole model (with most of the furniture) to standard materials using a MAX script in order to export the model as a .obj with the correct .mtl file (the original model was a .fbx file). Surprisingly, a large part of our time was spent doing this conversion and getting all the models to show up in the raytracer framework because of issues with flipped normals, etc. The whole hobbit hole model, the wardrobe, the books in the closet, the chandelier, the wine bottles, and the sword were taken from online sources. The images for the background planes were also found online. We textured and modelled the door ourselves in Blender. Before bringing it to the raytracer, we put most of the scene together in Blender, ready for exporting.

We also converted all the bump maps to normal maps using the CrazyBump app on the chest, the beams, the rug, the floor, the cupboard and the walls. We did a fair amount of work getting all the textures to show up correctly, including UV mapping, flipping the normals and changing the .mtl files on the assets that came from the internet.

We decided to place one area light at an angle mimicking the outside light at twilight. This light is facing in the direction of the background planes but is a little ahead and above them. We also have an area light coming from the inside (facing away from camera) to create the indoor lighting. To do this, we had to cut out the back wall of the hobbit hole in Blender. There’s also a directional light facing away from the camera to soften the shadows to be a little more orange and indoorsy (to mimic twilight). Furthermore, there’s a very faint point light in the center of the room to increase the general illumination of the scene without casting strong shadows. Furthermore, both area lights are very large to create softer shadows. We wanted to create soft shadows using these different lights in combination. We also changed the background planes to be ambient and independent of lighting sources by modifying some of the BackwardRenderer.cpp code (and other places). Lastly, the camera is placed towards the bottom right of the room. We moved the camera to the right and down so that the image fits better with the rule of thirds and so that the leading lines of the ceiling beams and floor would give the room more depth and perspective.
Work Breakdown

We worked on the vast majority of the project together, but Stephen’s work leaned towards the technical side with lighting and formatting the files correctly, while Kat’s leaned towards the artistic side with texturing, editing the .obj files, and the placement and cohesion of the scene.