

Advanced Lighting and Rendering

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Research

For both of my scenes, the museum and candle scene, I wanted to produce an ambience like setting. A dark interior with a warm comforting tone. And with the museum, I also wanted to create outer lighting as well by creating a moon effect using a mesh light, like the example that came with the model. For my research, I want to reference movies that have calming scenes, movies that rely on other light sources rather than bulbs or the sun, like candles or glowing objects. I also want to Research Museums similar to my chosen model, to see how they are lit at night and how the display cases and stairs are lit. My goals for this project are; To successfully create two lit and rendered scenes that match the references given and research. To walk away from this assignment with a better understanding of lighting and rendering in the animation industry and how I can use this knowledge to help me plan and start looking for a job after I graduate. And finally, to see where I went right and wrong during this practical and try again in the future to see my progression.



(Tangled 2010)

Tangled is a movie I take inspiration from a lot, especially the Lantern scene. The animators used a lot of warm lights to create a romantic and calming glow. The lanterns also reflect off the water in a

way, so it appears as if there are twice as many lantern boats floating around, it gives the illusion of the boat flying in the air. This is the type of style I am hoping to carry out during the project. As I look closer, I can see that the candles emit a foggy-like glow around the lantern. And that the candle also doesn't fully illuminate the lantern, only around the flame and then fades as you reach the top of the lantern.

The animators probably added some lighting features around Rapunzel and Flynn to increase the warm glow in the scene. And not just relying on the lantern lights.

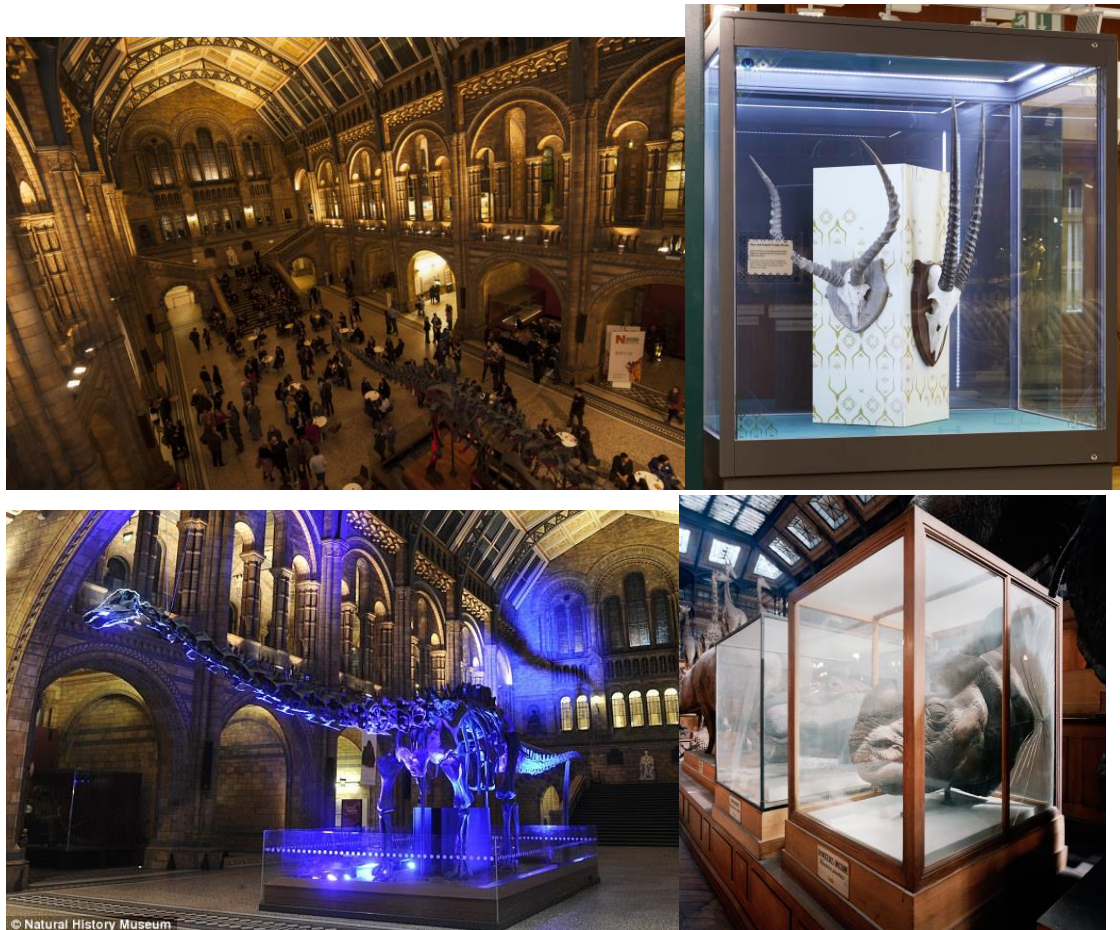
The lights intensity also bounces off different materials and objects. For example, Rapunzel is fully illuminated. Her hair, clothes and eyes are all brightly saturated colours, making her glow twice as much as Flynn, who has a complete opposite colour pallet as her. However, she could have been lit up more on purpose, as we see her through the perspective of Flynn. pascal is also well lit in this scene. However, he appears shinier than the pair, due to his scales and different textured skin. The boat is partially lit, due to the dark wood. I feel like it was intentional to make the boat a dark colour, so that the couple and Pascal can stand out more, since they are the main focus.



(Coco 2018)

In the movie Coco, the land of the dead is set in an infinite night, surrounded by lights and candles and many saturated colours, to contrast the dullness and harsh sunlight of the living world. And

Miguel's music-band life. Also, to give the feeling that the land is a place of continuous Celebration with no end. The animators, once again, rely on the lights of vehicles, buildings, candles, bridges, and any space they can light. There are never any harsh lights or cool tones, only in dark scenes, like when Miguel faces intense and uneasy situations. The bridge is also a major part of the film. It is a glowing bridge made out of glowing petals. And when the dead stand on the bridge, the petals glow even more with each step, to represent them walking back and forth between the land of the dead and living. Or the warm embrace of death. The animators light these petals in way that feels like each petal is individually lit. Each one adds to the beautiful glow of the scene. The Ofrenda itself is very similar to the candle scene I will be doing, so I thought it would be important to include it in my research. I studied the candles and how they light up the pictures and other items. Also, the intensity of the flames, their reflections and overall, how the light bounces off other materials and the characters.





(Natural History Museum)

I used references from the Natural History Museum, to see how the hallways, arches and skeletons were lit and displayed. With the lights on the skeletons, they are projected from underneath the bones and reflect off the nearby walls, mixing with the warm temperature lights.

The lights in the Museum are warm, nothing harsh or too bright, most of the light coming from the arches and balcony. They are a mix of warm tones, Orange and Yellow. By looking at the references, it seems that different lights are on during different times of the day, so I need to balance my lights out, so I have a comfortable number on display, without lighting my scene too much and ruining the ambience look I want to achieve.

With the display cases, there are a few examples I've seen of lighting. Some displays have spotlights pointing at the objects, whilst others rely on the lights of the room. I will have to experiment a bit during this project before deciding on what route I want to take.

Video Research

Here are the videos I watched and took notes from whilst I was conducting my Research. Through these I learned the important fundamentals of lighting a scene and the impact it can have on your animation. Video Research was able to show the time and thought that goes behind each scene and moment through the movie. Like in "Over the Moon". Where the lights on earth are plain and simple, yet the lights on the moon are fun, loud, bright and illuminate the kingdom, since there is no other light source in space. Or in "Soul", where the animation and lighting is so advanced, the lights reflect off small objects, like glasses, picture frames and other small items you wouldn't even realise even after watching it more than once.

<https://youtu.be/A0mnFsp5LRg?si=HnmQKuXLbXn58BJ9>



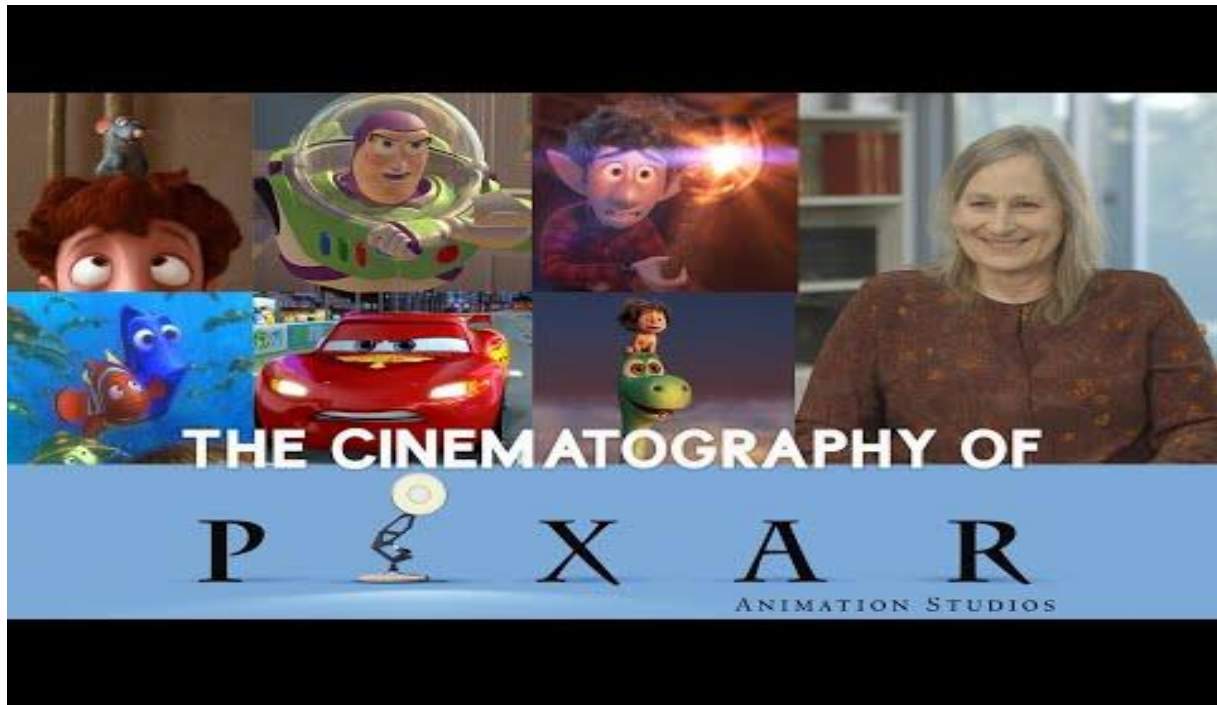
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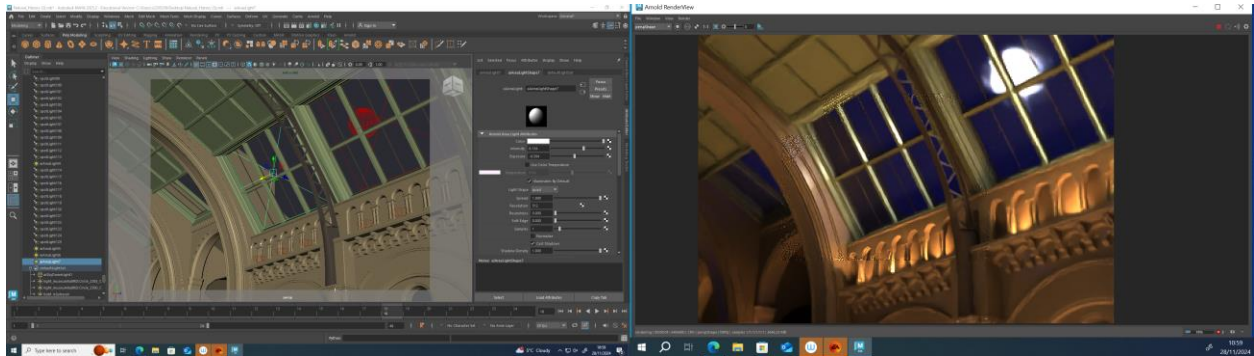
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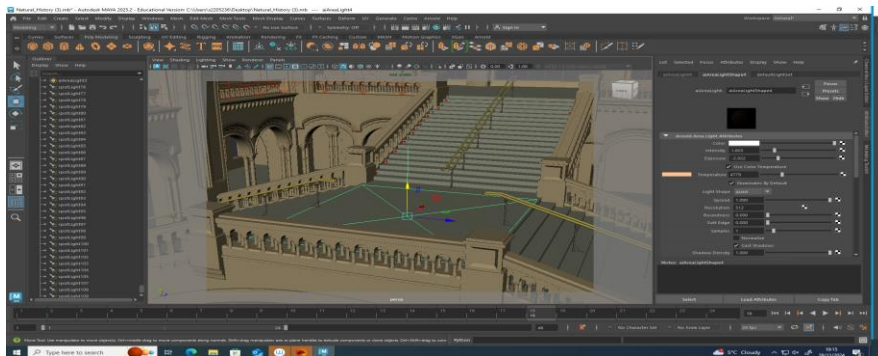
Museum Render

For my museum model, the first thing I did was, I changed the surface of the roof tiles to create windows, matching the Natural History Museum. This will allow the outside light (the moon) to reflect off the walls. To create the moon, I added a mesh light to a ball model and raised the intensity. I lowered the size of my “moon” and brought it closer to the window, so the glow is visible, and keeps the illusion of the moon being far away. I then added a Skydome to create the night sky, so I was able to see the areas that would need more lighting inside.

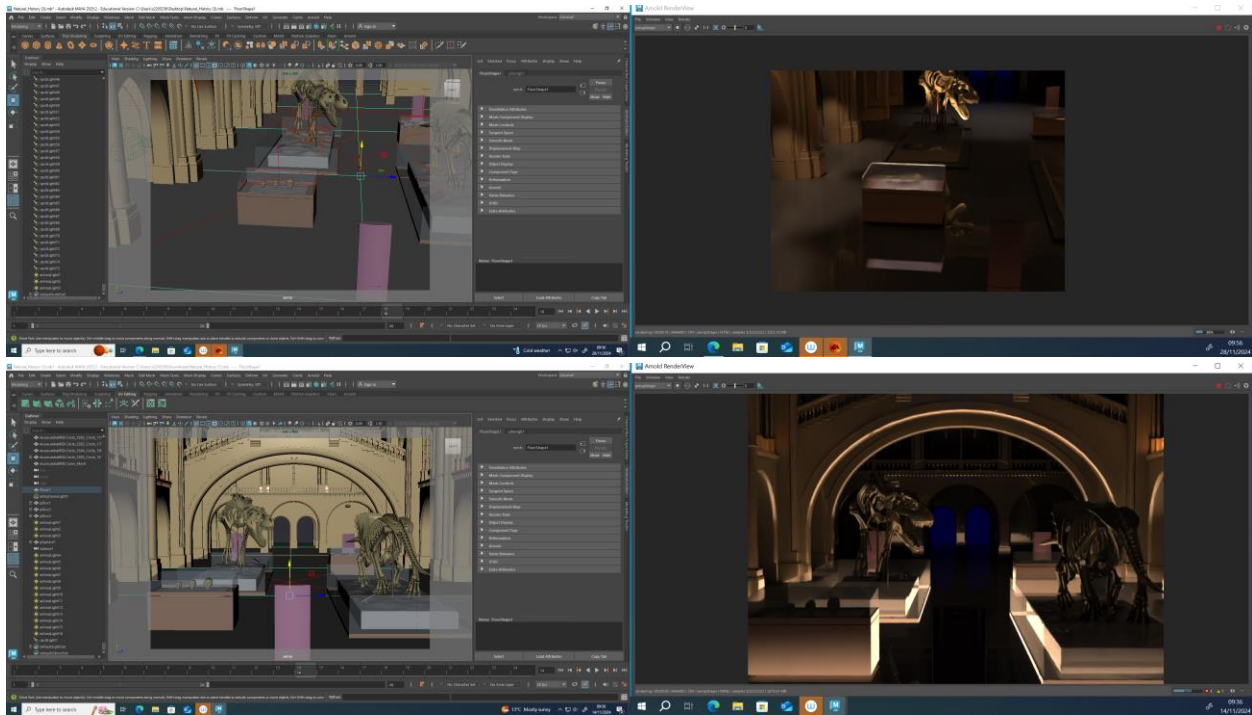
To create the lighting of the Balcony, I used spotlights all along the first floor and along the inside of the hallway as well. I made sure all the lights matched each other, and all had the same settings. Even though there are none in the reference pictures. I added some spotlights to the roof just underneath the windows, to add a bit of extra light. However, I only added light in areas where I would be rendering, so I wouldn't be wasting time in unseen areas.



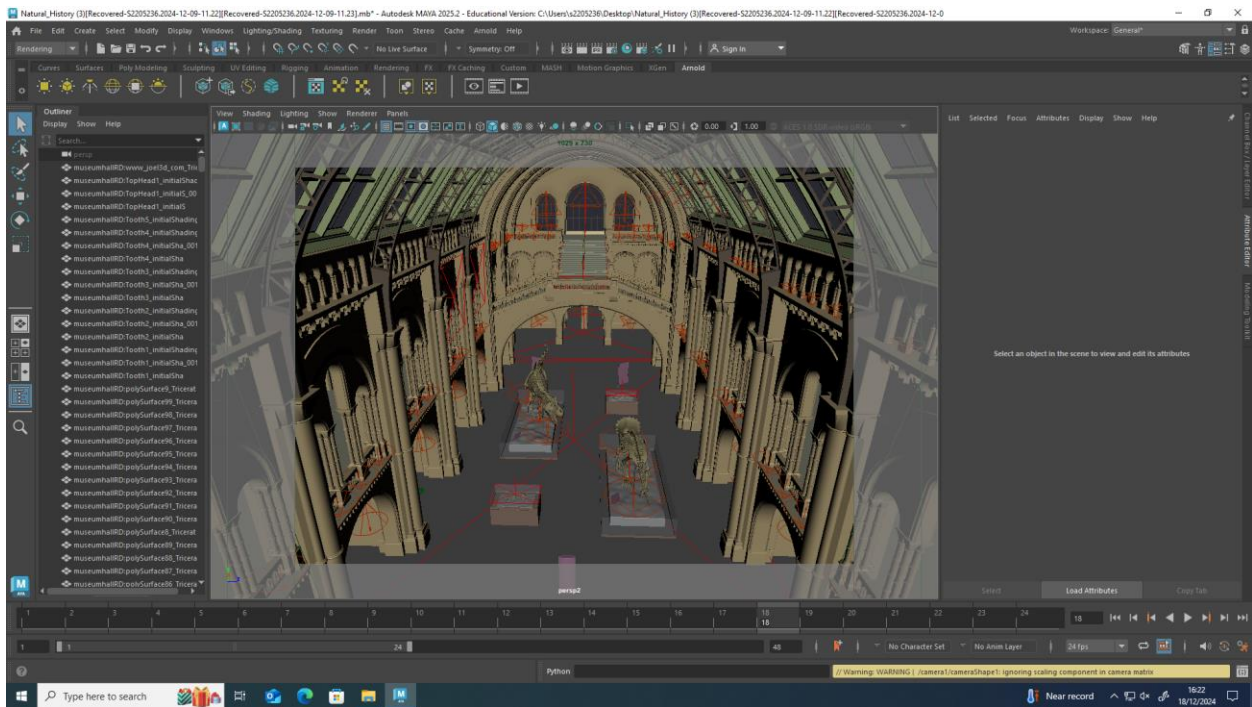
I decided to use the same method as the moon to the lights on the stairs. I created mesh lights on the balls that lined the stairs. It was an idea I had in mind that I thought would really bring the scene together. However, the mesh lights did not really give off the effect I was going for, the light was not reflecting well and if I increased the light too much, it would ruin the scene. I am glad I tried, however. It was a learning curve that helped me better understand the different lights and to properly articulate them.



I used the dinosaur display reference to help me articulate the lights for the display pieces. Like in the example picture, and the ones I used online, I used more spotlights to shine the dinosaurs from the bottom of the display. I also angled them a bit more towards their faces, so the light hits the skulls more. For the smaller displays I was stuck for a while brainstorming, I tried illuminating the bottom of the display or mess lighting the glass. However, with more research, I was able to find references of displays where the inside of the display was lit by L.E.D strip lights. so, I used that as inspiration. If I had the opportunity to go back and create the scene again, I would change the colour of the display lights to add a touch of colour to the scene like the museum does to their dinosaurs.



I added a few other spotlights around the model too. Under the arches on the ground floor, two area lights on the floor, to illuminate it and reflect off the ceiling to make the room a touch lighter, but not too bright. Most of the scene is lit by the help of spotlights, just like the reference pictures.



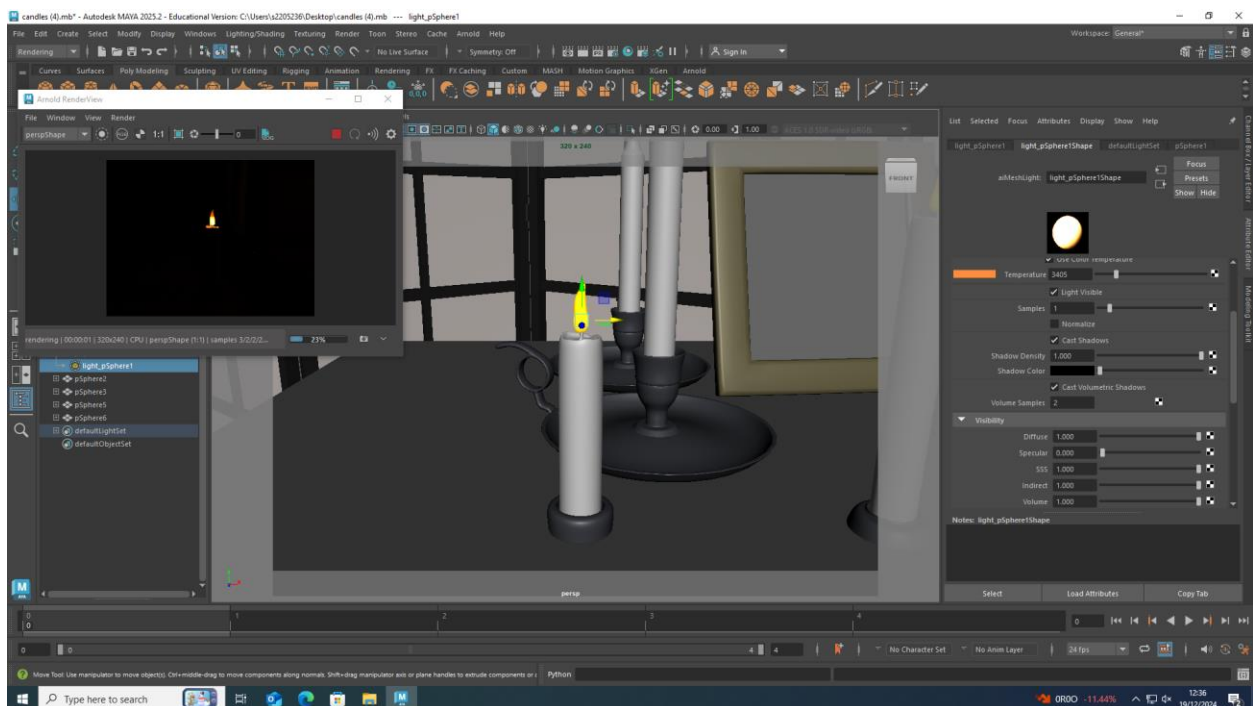
After finalising and going over the scene for the last time. I decided to add some area lights to the windows and walls to the areas that the moon illuminating. I added it to the windows on the other

side of the museum as well to make it look like the moon was coming through them too. I then added even more area lights to brighten up the walls and windows to add more shine to the scene and make it look more reflective.

When rendering, it was difficult to size down the scene to the assigned size of 1049 x 769, without the scene crashing. So, I resized it to 1029 x 749. Allowing it to render whilst still being close to the assigned size.

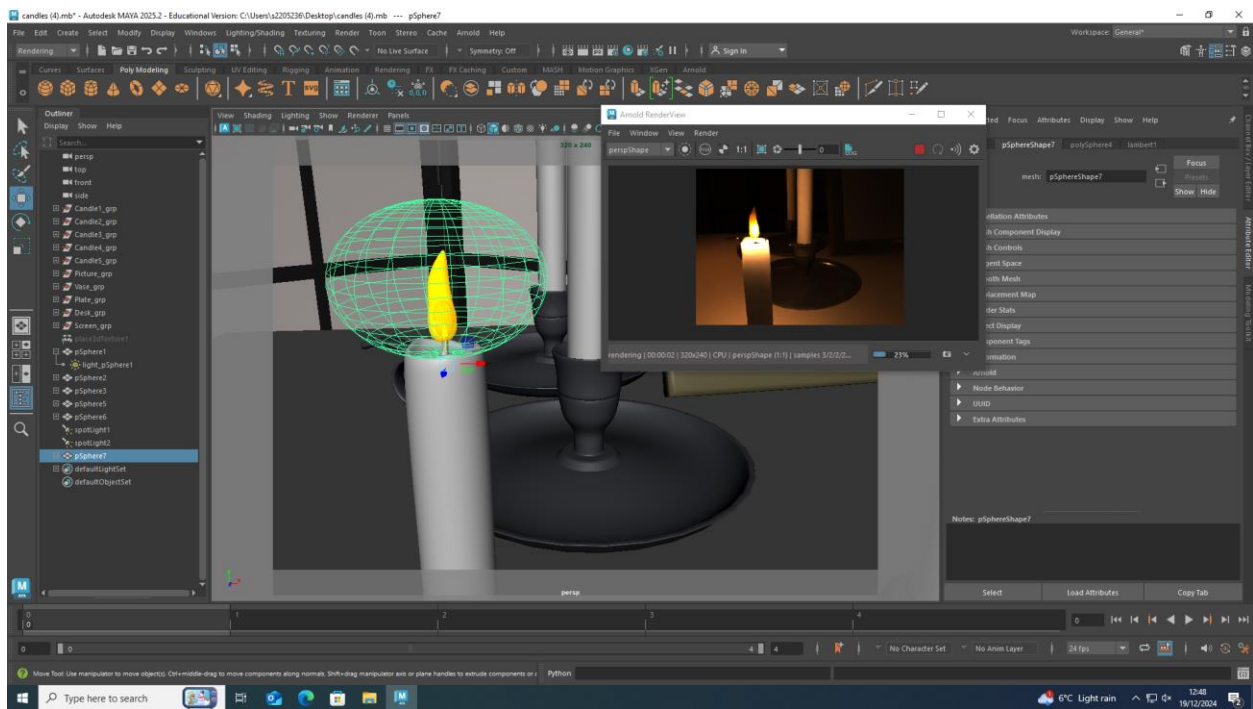
Candle Scene

I had less time with my other chosen scene, as the Museum acquired a lot of attention. However, I was able to complete and match the lighting scene to my best ability.

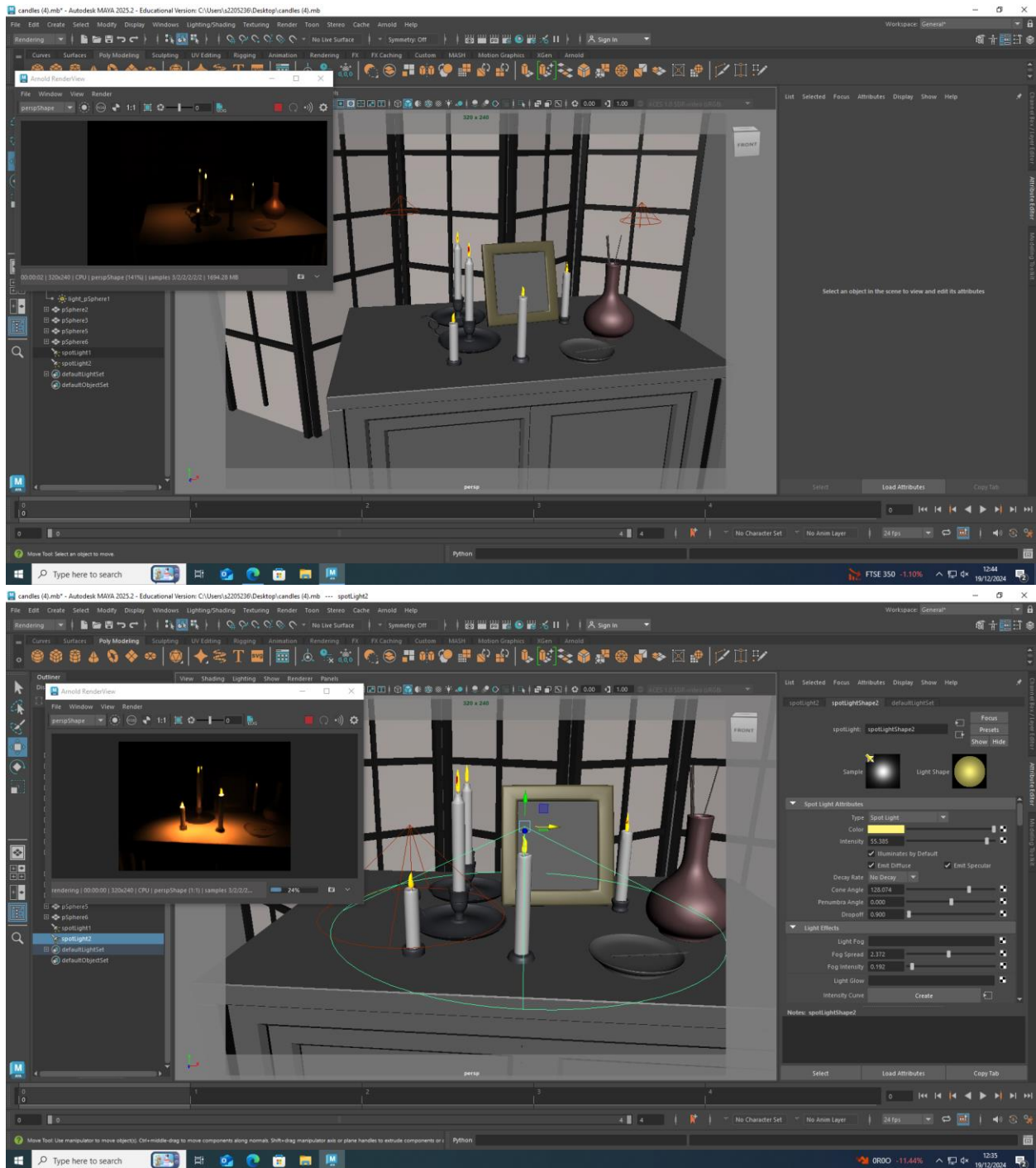


My first step was to light the flame with mesh lights. The flame model was not compatible with Mesh lights, I tried to change the material of the flame itself, however, nothing solved the issue. So instead, I added a ball model and fitted it into the flames. I then meshed lighted them, so it appears as if the candle is glowing. Colouring the light orange in the process using the temperature toggle.

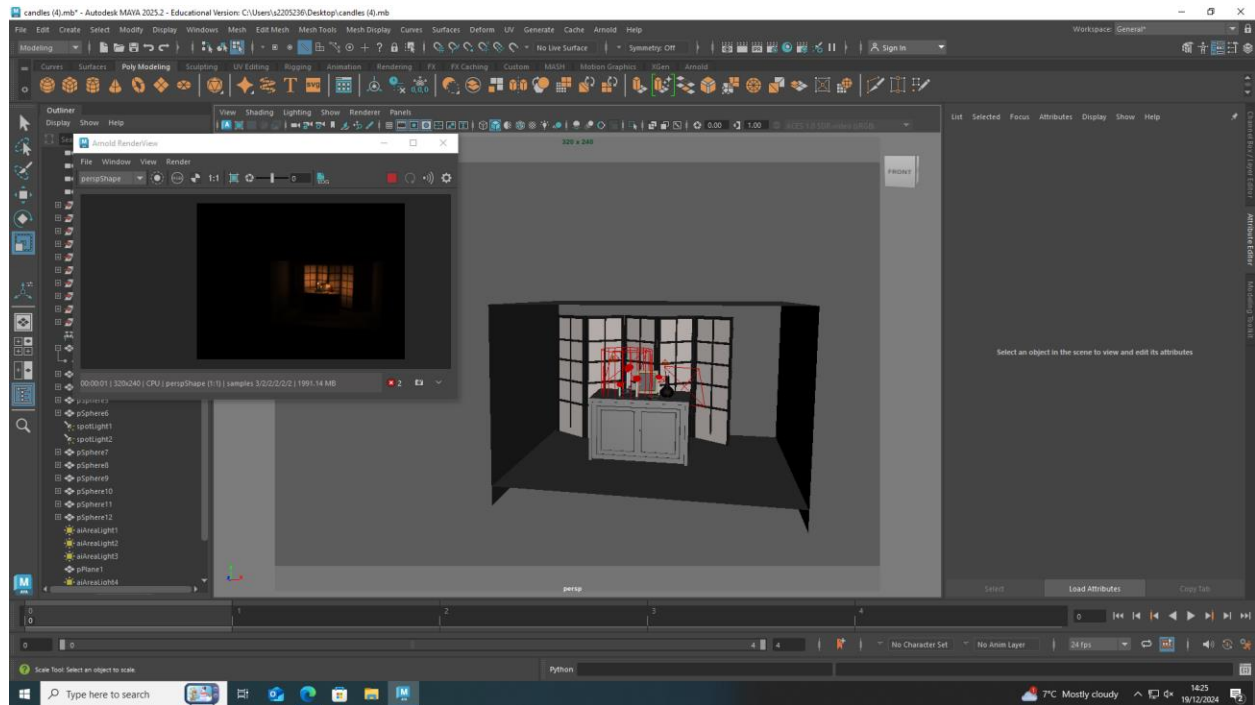
To create a brighter glow for the candles. I used the same method again and created cylinders around the candles to expand the glow of the frame and bounce off each other and against the picture frame and the divider behind the scene.



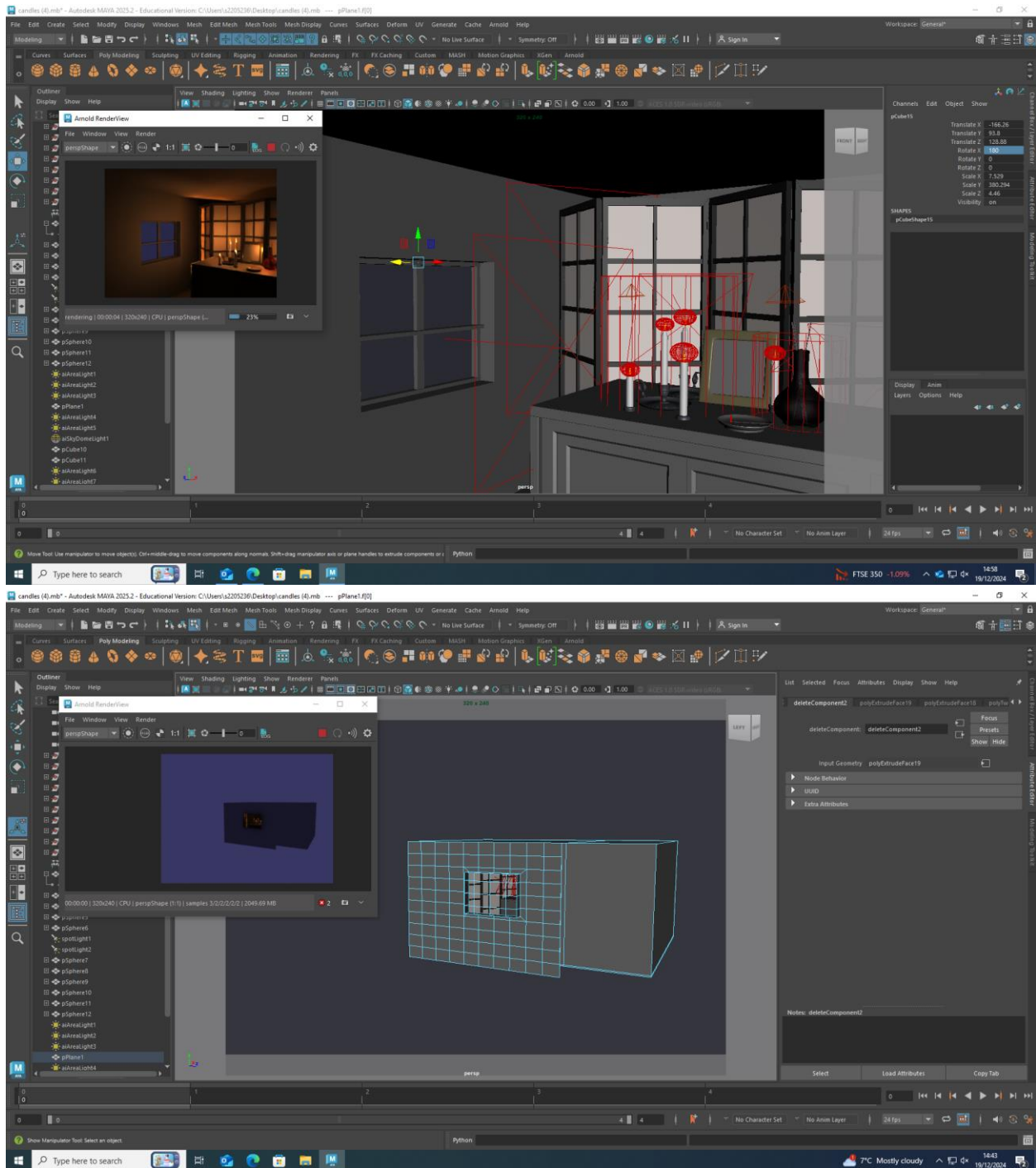
I Also added a few spotlights around the table as well to light up the table a bit more, whilst still making it look like it's coming from the candle.



When looking at the given reference, I saw there was a light source coming from behind the divider and reflecting off a wall. Since the model did not come with any walls, I decided to create my own from scratch to help replicate the reference. I extruded and expanded a flat surface all the way around the scene. This also increased the brightness of the candles, now that they light lit up againts walls. I then added an area light not only behind the divider. But, also some at the bottom of it to make the effect of the flames of the candle, lit up against it.



To add a little bit of detail to the scene, I also added a window. And using the skills I learned over the past few weeks, I modeled it into glass, as well as the vase for a bit of extra detail.



Unfortunately, I did not have much time to add textures to the scene. However, my main focus was the lighting and rendering of the scene, so I wasn't too disappointed.

Once again, I had the same problem with the rendering process as I did with the museum scene. However, I followed the same steps and was able to render my scene.

Finally, I put all my images of the scenes in Adobe Premiere. It was my first time using the software, so my renders did not come out perfectly. However, overtime, with a bit more experience, I will go back and improve these int the future.

Overall, I am satisfied with how my scenes turned out, especially as it's my first time with lighting and rendering scenes. This has opened my eyes to the possibilities of job Oppurtunites working with lighting. The research also made me understand the techniques used when lighting a scene. Whether in animation or in real life.

FINAL RENDERS

HISTORY MUSEUM











CANDLES









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