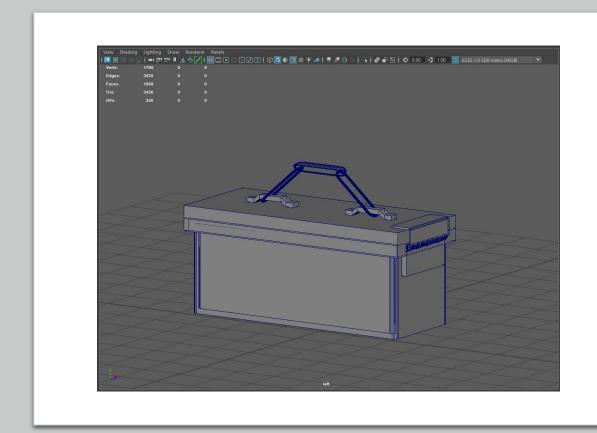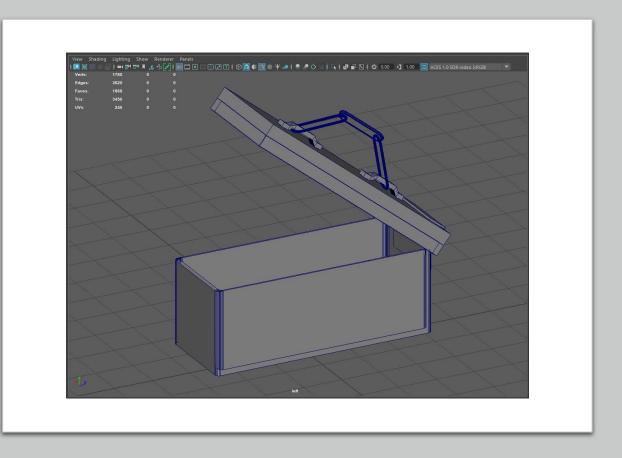# DES204 Final Portfolio

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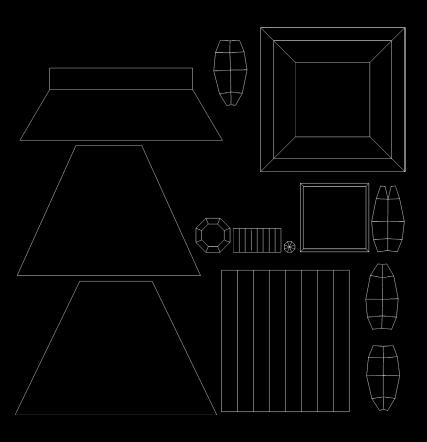 - Production
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Week 1: 3D Modelling

- I chose the Ammo Crate for the Week 1 task due to its relatively simple design, and my relative lack of experience in Maya and 3D modelling.

- I had some slight issues making the tubular bits on the handle, but other than that this project served as a good introduction to Maya.
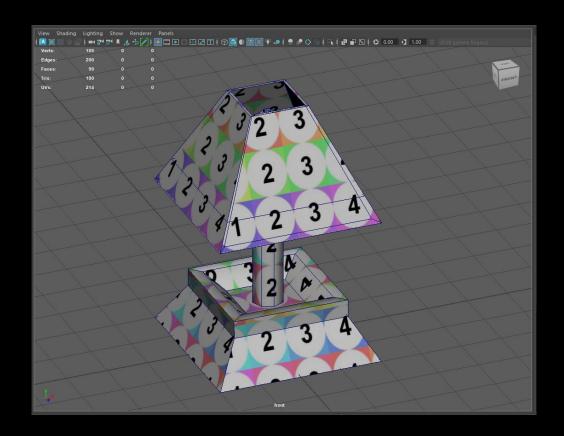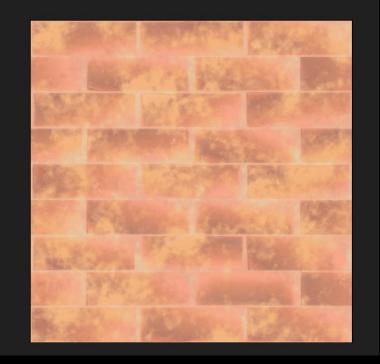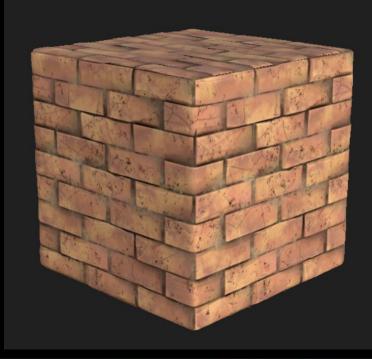
Week 2: UV Wrapping

- I chose the Lamp for the Week 2 project as I was already somewhat familiar with this shape, and I thought the small rounded shapes such as the lightbulb would be a fun challenge.

- I am happy with the results of my UV mapping, although I was unsure at first whether to prioritize texel density or space on the UV.

Week 4: Tileable Texture Creation

- For this project I created 3 Tileable textures: Bricks, Grass, and Wood.

- For Bricks I took the provided tutorial on Tiles and modified it to create this texture.
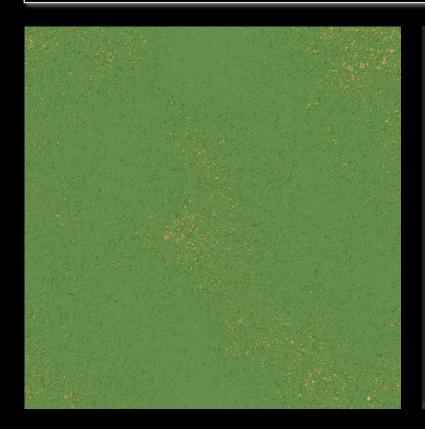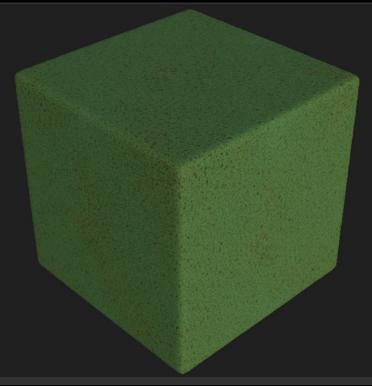
Grass

- For Grass I followed an online tutorial, then modified the texture for my own purposes.

- The grass is made of three layers: Dirt, dead grass, and green grass. I found getting the realistic effect of height difficult.

- Tutorial Used: https://www.youtube.com/watch?v=eyypuG8QOkc&t=2639s
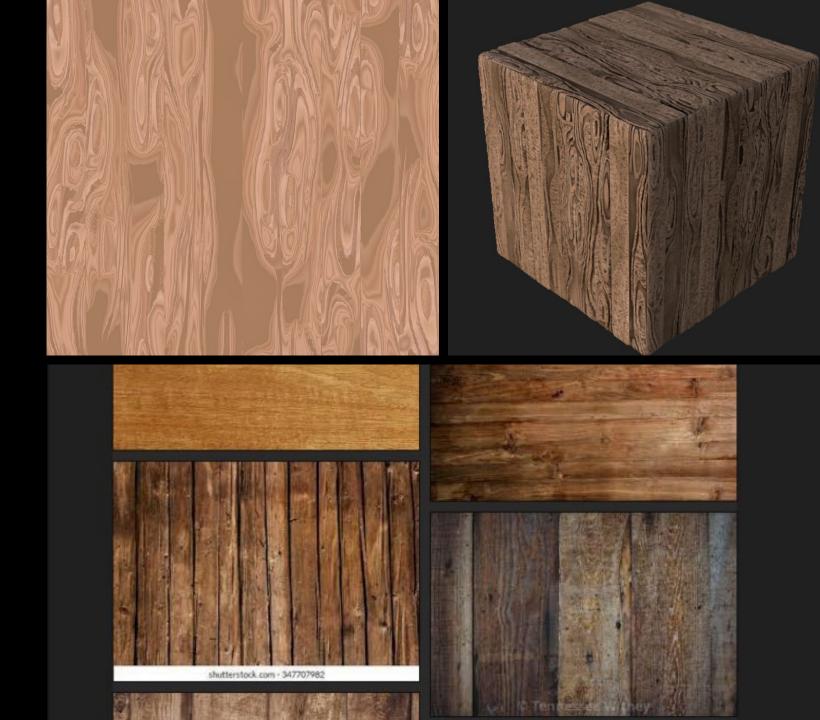
Wood

- For the Wood texture I again followed an online tutorial, which I then modified.

- Tutorial Used: https://www.youtube.com/watch?v=HVkExICVQes

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Week 5: Materials For Games

- For this assignment I took the 3 textures I made in Week 4 and followed the provided tutorial to apply those textures to 3 meshes in-engine.

Week 5 Continued

From Left:
- Meshes in Maya 2023, with applied placeholder materials
- Wall, with applied Brick and Wood textures
- Pillar, with applied Brick texture
- Floor, with applied Grass and Wood textures

Final Project: War Scythe

- For this project I decided upon creating a War Scythe. This is a medieval weapon, which began as an improvised weapon used by farmers and evolved into a polearm.

- Improvised war scythes were often made by taking the blade of a scythe, turning it 90 degrees so that it stood straight up from the handle, and reinforcing the join (Far Left).

- The key point of a war scythe was the concave blade, unlike many other polearms (such as halberds) which have convex blades.

- Later, war scythes were purpose made. Blade length and size vary. The model I chose to create has a more sickle-like blade, which was uncommon but not unheard of (Middle and Right).

Preproduction: Research

- I researched which types of wood were commonly used in medieval Europe, and based my wood materials on ash, alder, and hazel.

- I found a few tutorials on similar props, which I used for inspiration/guidance.

- Tutorials Utilized:

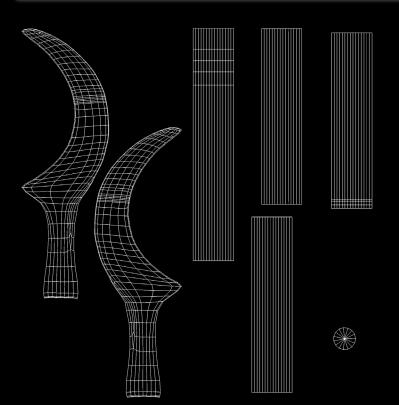 - How to make a medieval spear with Blender, Substance Painter and UE4: https://www.youtube.com/playlist?list=PL-waYY1DxE1LFTZEqP-FZNdMAv9CfOnzu
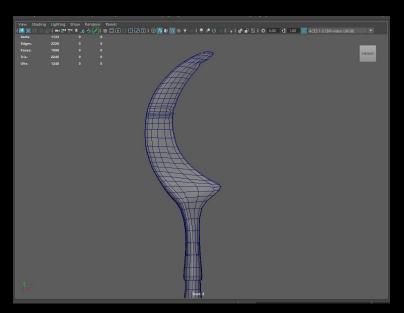
  - How to make a scythe: https://www.youtube.com/watch?v=QlRZVoeQtzM
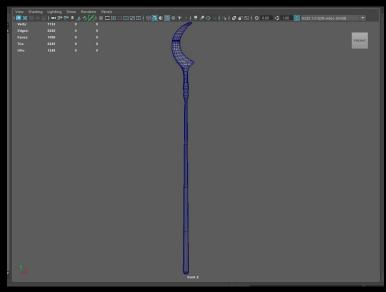
- Production Pipeline:

- Maya

  - Modelling, LP

  - UV Unwrapping

  - Modelling, HP

  - Export to S.P.

- Substance Painter

  - Import, Baking

  - Material Creation, Application

  - Detail Painting

  - Export Textures to Unreal 5

- Unreal

  - Master Material and Instance Creation

  - Scene Layout

  - Lighting/Camera Positions

Maya: Scythe Low Poly and UV

- To make the Low Poly Scythe, I started with an Image Plane of a war scythe head. After making the head and shaft as separate pieces, I combined them into one and started adding details, including dent and scratches along the blade and indents where the metal would have been hammered to conform to the shaft.
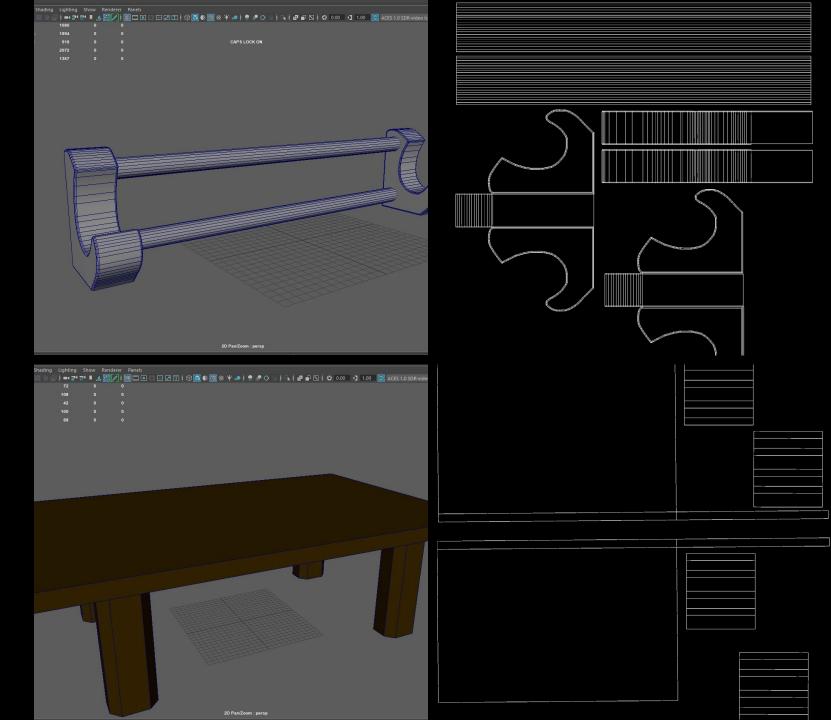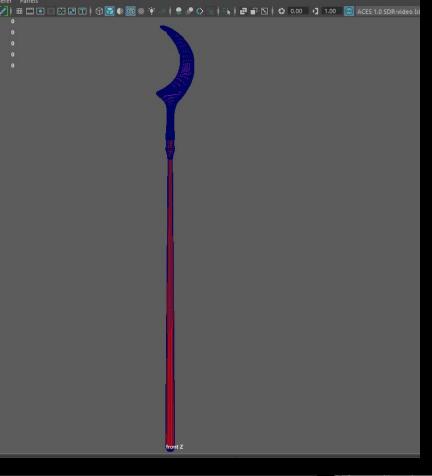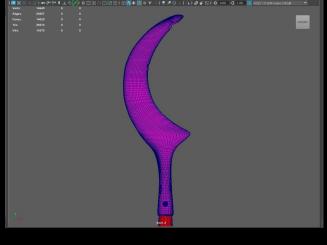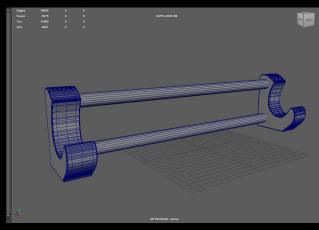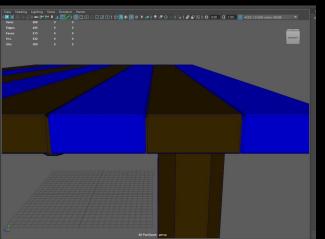
Maya: Stand and Table Low Poly and UV

- I followed the same technique for the stand as before, using an Image Plane of a stand for reference.

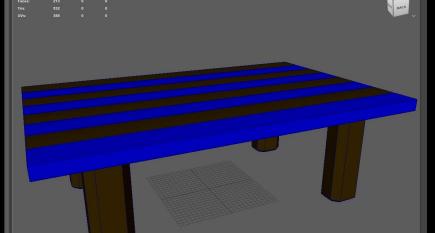- For table, I worked off reference but didn't require an Image Plane.

High Poly Modelling

- Scythe: I began by using the "Smooth" feature in Maya, before selecting and editing individual faces, edges, or vertices. I also created a nail, which would help to hold the blade onto the shaft. The scythe required little work, save for rounding out certain parts.

- Stand: Very similar process to above, but simpler.

- Table: Started out the same as previous. Addition of grooves between individual planks (Bottom Right).

Substance Painter:

- Each material was made by building layers of filters and adjustments on top of existing materials.

- The blade gained scratches and ware along its sides, the nail got a hammered texture, and a paint layer was used to scratch initials into the wood, as though the owner of this weapon carved them in with a knife.

- Getting the correct levels of shine on all three metals (nail, rough blade, and blade edge) was very difficult. This was an iterative process, the textures went through multiple stages of creation, export to UE5, view, and repeat before I was content.
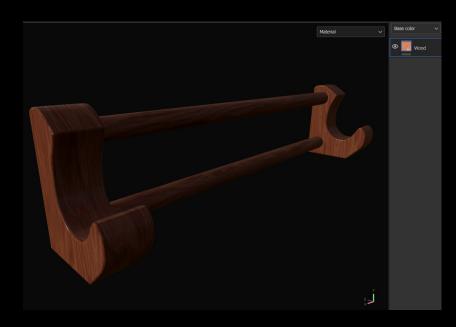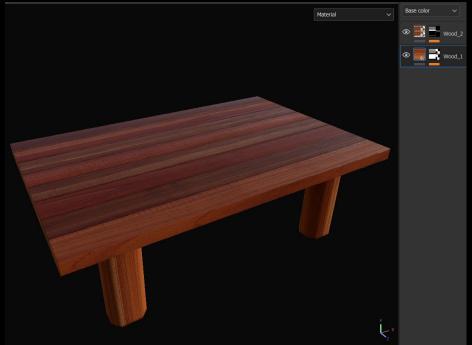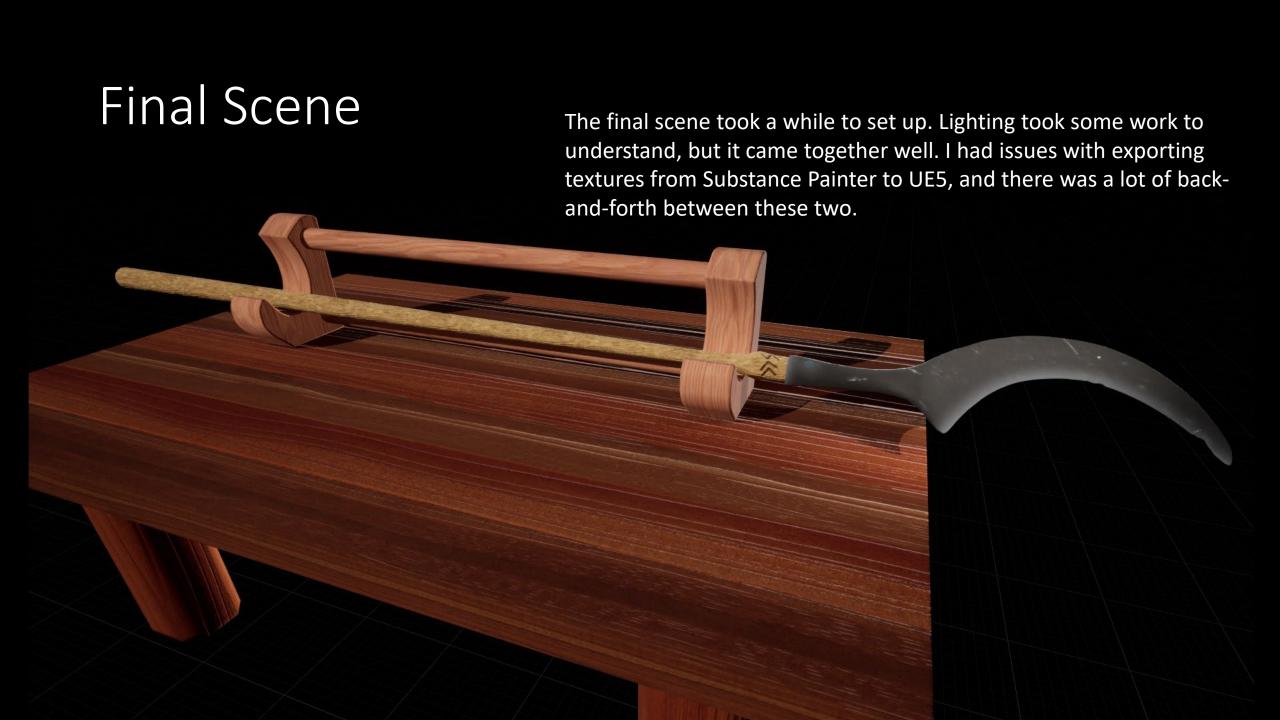
Substance Painter: Stand and Table

- The stand mesh was based on a reference image (Top Left), but the material was closer to that of the scythe's shaft, although darker to create contrast.
- The table has two wood textures, so that the different boards stand out against each other.

Final Scene

The final scene took a while to set up. Lighting took some work to understand, but it came together well. I had issues with exporting textures from Substance Painter to UE5, and there was a lot of back-and-forth between these two.

Final Scene: Angle Two

Reflections

This project was a challenge, and a valuable insight into the realm of 3D production for professional games use. Comparing my first two attempts at modelling the scythe (Far Right) to my final project (Near Right), I feel confident in my growth as an artist.

The area I struggled the most with was lighting. Trying to place props in such a way that the scene shows off materials, meshes, and effects properly was difficult.

And the area I wish I had more time to explore was sculpting, such as with Zbrush. It seemed like a fun program, but as it was not needed for my final project (and time was severely limited) I did not spend as much time with it as I would have liked.