

Intro to 3D
Reflection and Development Report
1SPIS1001

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Table of Contents

Table of Contents	1
1. Introduction and Inspiration	3
1.1 Project Concept: "The Waiting Room."	3
1.2 Aesthetic and Technical Inspiration	3
1.3 Tools and Scope	4
2. Progress and Methodology	5
2.1 Asset Creation mostly in Blender	5
2.2 Character Rigging and Animation	6
2.3 Scene Assembly and Interactivity in Unreal	7
3. Review and Summary	8
3.1 Challenges and Problem-Solving	8
3.2 Reflection	9
3.3 Conclusion/Documentation	9

1. Introduction and Inspiration

Hi there! Welcome to my quick report on this "Intro to 3D Exam Project".

I was asked to create a small scene in Unreal Engine using at least five static meshes, with two textures applied to them and UV unwrapping: one animated character and three blueprint interactions. Our scene had to be lit and functional, and we had to provide both a video showcasing the project and the Blender and Unreal files, along with the zipped executable folder. And of course this report. I will quickly review the concept I chose to build, its inspiration, and the timeline and progress made. Lastly, I will go over some cut features. And lastly references and such.

1.1 Project Concept: "The Waiting Room."

A small Room, with rows of simple chairs, a few plants on coffee tables, a few lights, and a light switch. Some windows and some doors. Muted colors, ala Stanley Parable, or Half-Life 2 style. Maybe even a hint of the matrix.

If time permits, duplicate the floor and add some stairs between the floors.

Due to time constraints, I left the old testing room next to the waiting room.

1.2 Aesthetic and Technical Inspiration

Low-poly PS1 / 2000s games inspire the aesthetic. This style meets the "low poly" requirement and allows me to focus development time on interactivity.

- **Modular Design:** Focusing on reusable wall, floor, and structure meshes to build the environment.
- **Color Palette:** Think Severance, Stanley Parable, Portal, Half-Life office space vibe.
- **Humor:** Inspiration from games like Stanley's Parable!



1.3 Tools and Scope

Tool	Purpose	Key Responsibilities
Blender	All 3D Modeling, UV Unwrapping, Rigging, and Animation	Assets: Door, Chair, Table, Magazine, Light Fixture. Character: Modeling, rigging, one idle animation, walking animation, (sitting animation?).
Unreal Engine	Scene Assembly, Lighting, Interactivity (Blueprints), Final Export	Importing assets, populating the scene, implementing three required interactions, and finishing the rest
Windows Snip function	Recording the project at the finish	Make a simple recording of the project when finished
Google docs	A tool to help create this report	Writing the report and exam study guide.

2. Progress and Methodology

2.1 Asset Creation mostly in Blender

I will model five unique static meshes in Blender. I will create the scene and apply materials in Unreal Engine.

Unique Assets:

1. **Waiting Room Chair:** Simple plastic design, with separate material IDs for the plastic and metal frame.
2. **Coffee Table:** Two variations (tall and short) using the same simple wooden texture.
3. **Magazine/Brochure:** A flat, low-poly object for texture swapping and interaction.
4. **Light Fixture:** Simple ceiling-mounted light, intended for use with a light blueprint
5. **Plant (Pot & Foliage):** A simple potted plant plays one of the required interactions.
6. **Door:** Simple door that rotates on a hinge, needs to be textured still
7. **Wall button:** A Simple button on the wall for lights.
8. **Window:** Inside, see-through.

Methodology :

1. **Modeling:** All meshes are unified and have checked geometry, except the chair.
2. **UV Unwrapping:** I did my best to perform the UV unwrapping, but time constraints prevented me from polishing it. The arms and feet of the main characters are a bit off.
3. **Texturing:** Each asset uses at least a diffuse (color) map and a normal map.
4. **Export:** I have exported all meshes as FBX/OBJ files for easy placement in Unreal.

2.2 Character Rigging and Animation

I made a low-poly character using Blender's skin modifier to achieve a stylized yet simple look.

Character Pipeline:

1. **Modeling & Texturing:** I will use simple, single-color textures to keep things simple.
 - a.  Start Creating Character Models In Minutes With The SKIN Modifier
 - b.  Easy Character Modeling, Simple and Stylized | | Blender 2.92
 - c.  Modifiers for Beginners (Blender Tutorial)
 - d.  Fast Character Modeling with the Skin Modifier in Blender
2. **Rigging:** I will make a basic armature. I renamed the bones to avoid messing up the Unreal export.
 - a. [Rigging for impatient people](#)
3. **Animation:** A simple idle and walking animation will be created, along with simple anime-style doors that open and close.
 - a. Idle anim
 - b. Walking anim
 - c. pushing/interacting anim
4. **Visuals:** The character will receive a texture map and a normal map, created in Blender and drawn there.

2.3 Scene Assembly and Interactivity in Unreal

I imported the modular assets and used them to build the waiting room. The primary focus then shifted to lighting and Blueprint implementation.

Interactions:

Interaction	Object	Description
1. Light Switch Toggle	Light Fixture and wall button	The player interacts with a wall switch or lamp to adjust the light's intensity and color. Hand out.
2. Object Spin	All loose meshes	Upon interaction, the plant begins spinning rapidly, accompanied by a humorous sound effect that references PK's Blueprint. Click R to spin stuff randomly!
3. Grab and toss plants	Plant	Character approaches the item, can pick up plants with H, and toss them with G.
4. Open doors	All doors	Click F on a door to open it
5. Spawn throwable items	Spawns plants	Z to spawn plants

3. Review and Summary

I have successfully created an interior scene with five unique low-poly assets, each with proper UVs and textures, a rigged character, and three interactions. I did not give myself enough time to polish, but the deadline is approaching, so I am delivering now.

3.1 Challenges and Problem-Solving

So many, more than I have time to write down.

Challenge	Strategy
UV Seams & Normal Maps	I first set up material slots in Blender, but the UE workflow required me to redo them there for texture maps and similar assets, so I finished the meshes in Unreal.
Character Retargeting	Actually went okay
.exe, and OBS	Fine, ended up using the Windows Snipping Tool to ensure on-time delivery.
Buttons	Loads of bad overlapping button inputs
Issues with collision	So many, but got most of them fixed.
Issue with grabbing too many items	If you grab more than one, you cannot throw more than one at a time. Tried to fix it, but it still happens occasionally.

3.2 Reflection

I only have 2 hours left to deliver this, so I will keep it short.

I should have started earlier. Having given myself only 48 hours to finish the project, and starting from scratch at that point, was more than I could chew.

If I had 24 more hours, I could have polished this to include proper gameplay, better animations, and overall polish. That said, I learned a lot from this exam, and I will take that with me.

Modelling and issues take longer than one would think to solve. Also, I will never put my Unreal and Blender files in Google Drive again; that really slowed down my workflow, as UE kept crashing when the content drawer was open for the first 24 hours. Really hard to work around. But figured out the problem eventually.

3.3 Conclusion/Documentation

What I Would Improve:

More animations, more interactions, and way more polish. Had to scrap several ideas, such as GUI text and audio changes during interaction with the paper. And more fun interactions across the scene (click item and 10 spawn and stuff like that)

Fabs were semi-used for some textures and the door. PK helped with the initial blueprints. The rest is all me, baby.

Final Deliverables:

Zipped folder containing:

- Blender Files and, if applicable, textures, zipped:
- UE Scene, work files, zipped.
- .Exe folder from UE build, zipped.
- Walkthrough Video, MP4, 1920x1080:
- Reflection Note (PDF): This Document