X3D model-Twin Standard Room

Digital Media & Information Studies 2B Project: VR & 3D Modelling

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# INTRODUCTION

For my X3D project, I used the Twin-Standard room at Cairncross House as a model. The key justification for this decision is moderate complexity, which seemed simple to build but was nonetheless difficult to accomplish using all of the tools discussed in lectures. X3D primitives were used to build the model's form, and texture and transformation nodes were used to complete the items' appearance. Regarding my primary tool, sublime The purpose of this project report is to address further modelling to improve the model while also describing the procedures and constraints encountered while building the model.

# STAGES OF DESIGN PROCESS

1. Figures

Primitive figures served as the model's basis, and I built the walls, flooring, furniture, and decorative features primarily using box figures in various sizes. To add some variety to the general appearance of the furniture, I used cones and spheres.

Details:

* Box size(11.5 11 0.3) to establish 3 walls and a floor to represent a 3-dimensional environment.
* The bed was constructed of 2 boxes and a sphere that gave form to a wooden part, mattress and pillow. Box size (4 0.8 1.8) for the wooden part, box size (3.8 0.2 1.6) for the mattress and sphere radius ( 0.5) for the pillow.
* Wardrobe was built with the use of a simple box size (1.5 4 2)
* Desk required more details such as top and bottom shelves and side elements. The following were used to fully form a desk: Box size(1.5 1.2 1) - for the drawer, box size (1.5 0.1 3.6) - for the top element of the table, box size- (1.5 0.1 1.1) for the table side element. In addition to that, box size (0.4 0.1 3.6) and box size(0.4 0.1 2.2) were used to form complicated table shelves.
* Radiator is a simple box size (1 0.2 1.5)
* Chair was constructed using a cone bottomRadius ='0.3' height ='0.6' and 2 boxes size '0.6 0.1 0.6' for the seat and '0.8 0.1 0.6' for the back.
* Window - box size (3.5 0.05 2 )
* Pictures also were formed using a box size (2.5 0.1 2) and a slightly different 3rd picture on top of the bed box size ( 2 0.1 3)

Since this room is for two individuals and the furniture is the same for each, nearly every component was duplicated overall. Pictures are additional design items that are not real but complement the virtual interior design.

1. Transformation

Transformation translation is widely used to move duplicates within the room as well as to properly align all items to the right place as in the real room. Also, rotation was used to rotate the boxes for table shelves, table side and pictures.

1. Textures

All texture pictures were taken from the Wikimedia website.

Floor - carpet texture

Walls - grey wall texture

Wooden part of the Bed - dark brown wood texture

Mattress - blue bedsheet

Desk Top - light brown wood

Deskside, drawer and shelves - wood

Pictures - Starry night- Van Gogh, abstract picture and Korean national costumes pictures.

Radiator - standard radiator

Windows - view from the window

Chair - Leather for chair

Chair Bottom - solid dark colour

1. Light - I used only one directional light with an intensity of 0.7 and a shadow intensity of 0.5.
2. Viewpoints - I used 3 viewpoints Right, Top and Entry. However, it was a challenge to adjust the viewing angles to the desired outcome.

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# MODEL ENHANCEMENT

In terms of improving the model, the room can be retrofitted with details such as mirrors, sinks, and windows with more realistic ceilings. In addition, to make the desk more realistic, details such as books, notebooks, PC or laptops can be placed on the table and shelves. And finally, to complete the look, adding 4walls and a ceiling with light bulbs and a door completes the final structure and design of the room.

# LIMITATIONS

As for the limitations of this project, I think the main challenge was to correctly allocate time for the assignment. This project is meant to be completed in 2 weeks, but I started it on Monday and it took me 5 days to build and then edit the model. Therefore, it left less time for project report writing and working on details for the model. Additionally, I also wish I had finished my model earlier so I could show my work to tutors and get some feedback on my model and report structure. This would definitely affect the overall quality of the project in a good way.

# SUMMARY

To sum up, designing a room was a good challenge and an efficient way to practise using X3D primitives and advanced features such as applying textures, using colours, and rotating and moving objects in different directions. Throughout the entire construction process, there were challenges that required constant material revision and studying additional information online.

# REFERENCES

X3D Guidebook - <https://www.x3dom.org/>

Images for textures - <https://commons.wikimedia.org/wiki/Main_Page>

Groupig in X3D - [https://edutechwiki.unige.ch/en/X3D\_grouping\_and\_transform](https://edutechwiki.unige.ch/en/X3D_grouping_and_transforms)

Understanding Viewpoints <https://observablehq.com/@mcmcclur/understanding-x3d-viewpoints>