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Report of 3D Modeling Project

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Module CPT205 Computer Graphics

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Introduction

CPT205 assessment 2 requires to implement a 3D scene with a number of objects. It needs understanding of the topics and knowledge of the theory and methods by applying and implementing a range of the techniques / algorithms covered in the lecture and lab sessions.

In this project, I create a scene of church. It is a good scene to apply different Opengl techniques.

Fig. 1: a church

Technique

In this design, a number of techniques covered in the module are used to make good visual effect.

Creation of geometry
All the objects are created from cube, cylindrical, cone and sphere.

Transformations and hierarchical modeling
To create a real word object, basic objects are transformed together and hierarchical modeled to form an object like chair, pillar and table.

Lighting and materials
There is a light source above the church to shine the scene. Some materials of object can show the shadow of objects.

Texture mapping
To make the scene looks more beautiful, some textures added. For example, some church windows are added on the wall to create a feeling of European religion of middle age. Walls and floor tiles are also added to make it looks more real.

Viewing
You can see the church in different angles and distance. It can help you see the whole scene.

Animation
There is an effect of snowing above a tree to make it more interesting. The door can also be opened and closed gradually.

Interaction
Different point of view, animation and the light can all be controlled by keyboard or mouse.

Instruction

Keyboard Interaction

A or **a**: rotate the point of view to left

D or **d**: rotate the point of view to right

W or **w**: rotate the point of view to above

S or **s**: rotate the point of view to below

I or **i**: closer viewer

O or **o**: further viewer

Z or **z**: turn off the light

X or **x**: turn on the light

Mouse Interaction

Left mouse button: stop the move of the door

Right mouse button: start the move of the door.

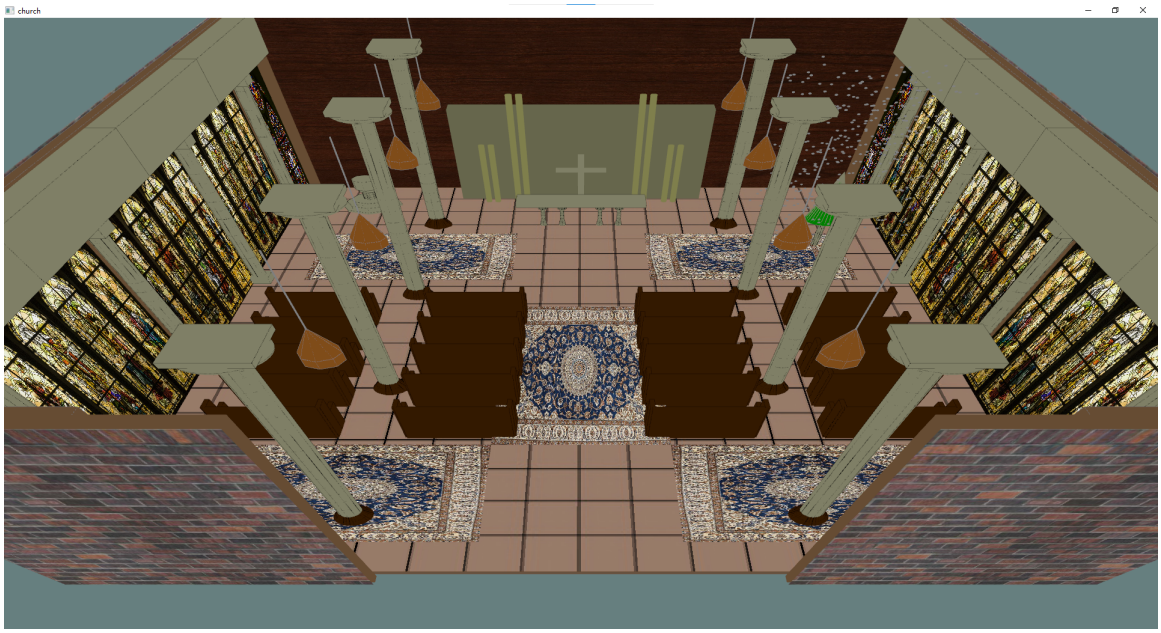

Fig. 2: The light is off

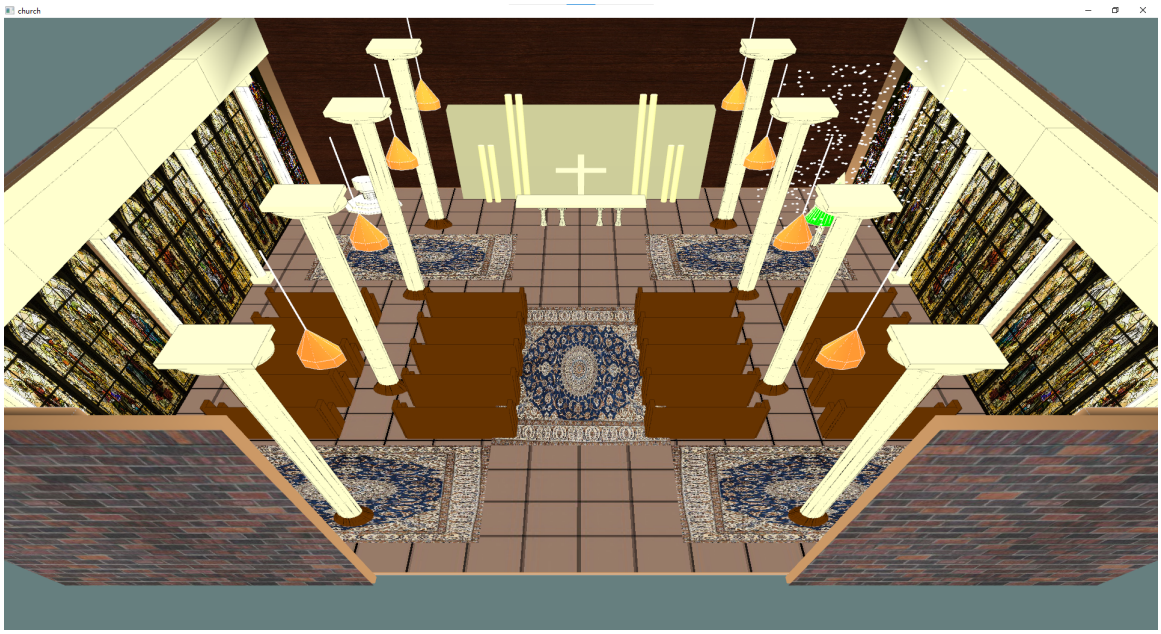

Fig. 3: The light is on

Fig. 4: Different view

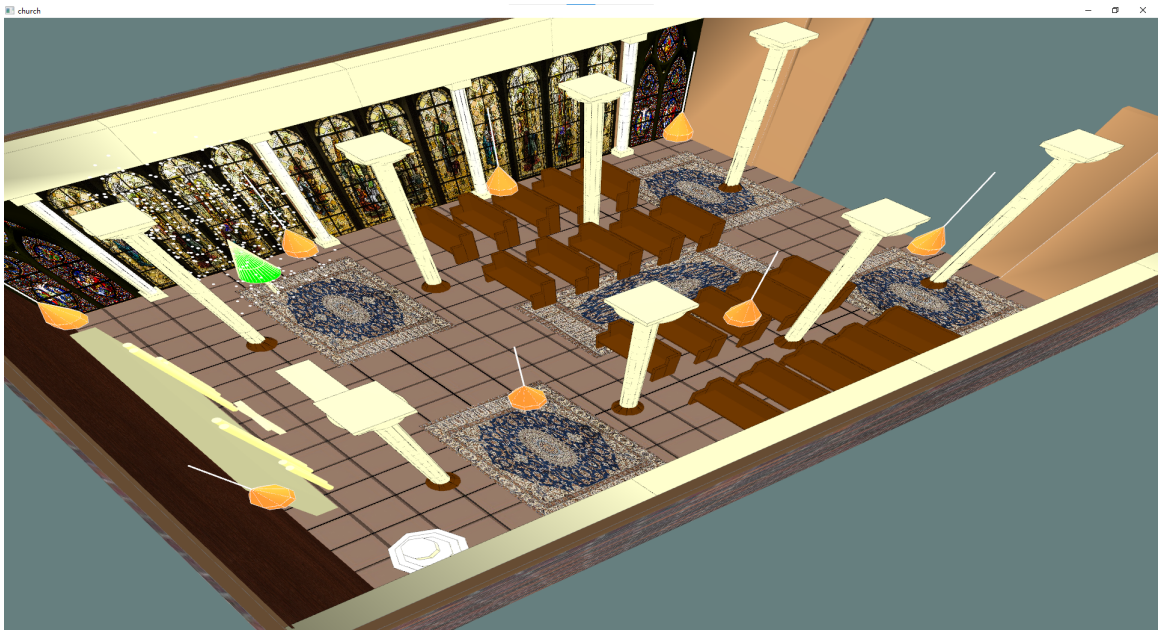

Fig. 5: Different view