Project Requirements

Session # 1: Requirements
Session # 4: Team Composition
Session #13: Final Submission

Description

The goal of the project is to enhance your understanding of the computer graphics principles and your graphics systems programming skills. You will do this by designing and implementing a project which emphasises certain aspects of computer graphics. You carry out the project in a team of **two** members. The project description and specific implementation related requirements are given in the following page. Your project submission will be checked for these requirements. You are expected to make improvisations of your own within this project.

At the end of the semester, you must submit a written report of about 3-4 pages, describing your project design and implementation, deficiencies and improvisations if any, what you learned as a result, and the list of references and resources that you used. You will also have to present/demo your project to the instructors and TAs. Both team members MUST participate in this final demo and MUST be able to explain in detail any part of their code. The demo will be scheduled in the lab. Only demonstrated and running programs will be evaluated.

The final project report should clearly state the specific contributions of each member of the team.

Submission of Team Members list

Submit using Moodle.

Submission of Final Project

Please create a zip file containing your C/C++ code, vertex shader, fragment shader, a readme text file (.txt) and representative screen shots of your project in action. In the readme file, document the input controls e.g. keyboard/mouse shortcuts, etc.

Submission instructions will be provided on the course website.

PROJECT DESCRIPTION AND REQUIREMENTS

A 3D Interactive OpenGl Program To Furnish An Apartment/House

The goal of this project is to create an interactive program using OpenGL to furnish an apartment with the following requirements:

1. The apartment must have a minimum of 3 enclosed spaces, say, living room, bedroom and kitchen connected through doorways. Choose your own layout and dimensions for these spaces.
2. Every room must have floor, walls and ceiling. Each room ceiling must have at least one light, and some of the walls must have windows.If you wish, you may use a utility like SketchUp for this.
3. Chose appropriate furnishing items (at least 5 different types and at least 15 in total in the 3 rooms) and locate them in each of the rooms. There are various open source furniture item (3D triangle mesh models) repositories. Here are a few:

- https://free3d.com/3d-models/furniture
- https://www.cgtrader.com/3d-models/furniture
- http://www.all3dfree.net/3d-models-furniture.html
- http://www.syncronia.com/free-3dmodels-furniture-interior-design/en0a

4. Use different textures for walls, floors, and ceilings. Us texture for furniture items, if available as part of the repository you use.
5. Implement a sky box for the world outside the apartment/house. This should be visible through the windows.
6. Have suitable controls (keyboard, menu, mouse) to turn the lights on/off in each of the rooms.
7. Have suitable controls (keyboard, menu, mouse) to move and orient furniture items within a room. Collision detection must be implemented.
8. Locate your camera in one of the rooms to start with and have suitable controls to change the camera view (position and orientation) within the apartment. Collision detection must be implemented, i.e. the camera should not move through walls, ceiling, floor, furniture, etc..
9. Shader requirements. There should be at least 3 different shaders used throughout. Examples: shader for the selected object e.g. with post-filtering effects, a shader for the rest of the objects in the scene, shader for post-filtering effects e.g. negative, sepia, etc.

EXTRAS:

1. Shadows.
2. Reflections.