

Dark Room Simulation

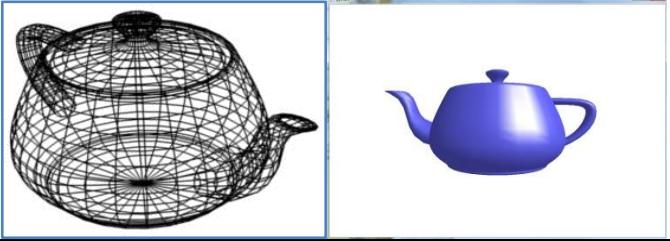
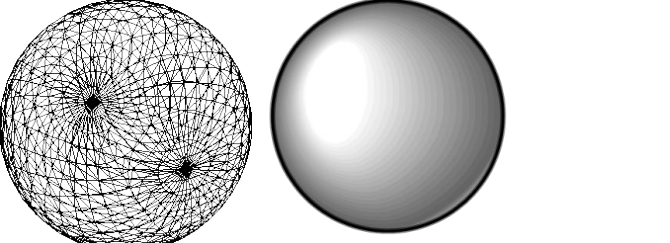
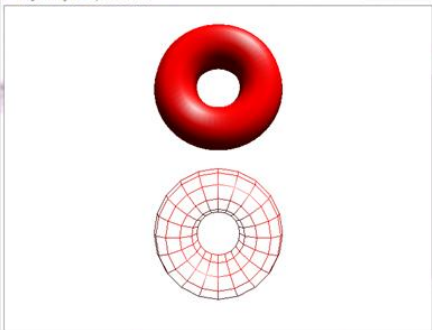
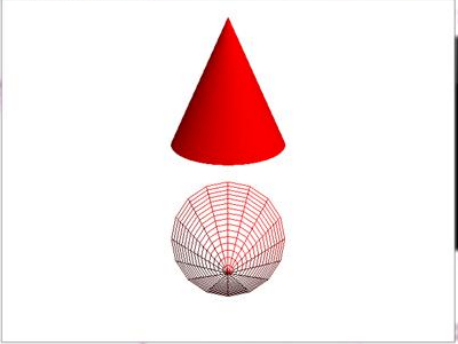
Essential Requirements

- Project's implementation should be done using Modern OpenGL pipeline taught in the labs.
- Your project should have the following features:
 - 1) A well designed code is essential.
 - 2) A textured skybox for the project's environment. (Choose appropriate six faces of any room).
 - 3) Basic collision detection between **the camera** (1st person camera) and the **environment's walls** (i.e. the skybox).
 - a. Use and manipulate a camera to move in the scene as discussed in the 6th lab "First Person Camera" lab.
 - 4) Scene lighting: a **spot light source** is required.
 - 5) Load basic models (**cubes** with different sizes, **pyramids** with different types and sizes, a **table** as a set of cubes and a **room door**) with different materials for each model.
 - 6) A reasonable room door movement in the beginning of the application.
 - 7) The camera should be able to see the room from above as well as from inside(as illustrated in some of the following screen shots).
 - 8) Apply shadow mapping: if taken in the last lab.

Bonuses

- 1) Build a scene-file reader.
- 2) Load more complex models (sphere, teapot, cone, torus, chairs, person, etc.).
- 9) Basic collision detection between the 3rd person camera and the **environment's walls** (i.e. the skybox).
- 3) Create at least one animation based on a key press that starts with the key press and ends after a certain period of time. (ex: jump)
- 4) Multiple light sources.
- 5) A model (such as a sphere or cube) acting as a point light source (illustrated in the following screen shots).
- 6) Advanced collision detection between the main object/camera and other models.
- 7) Build a more complex environment with different rooms and hallways.
- 8) Implement some kind of AI in the project.
- 9) Shadow mapping: if not taken in the last lab.

Helper screen shots

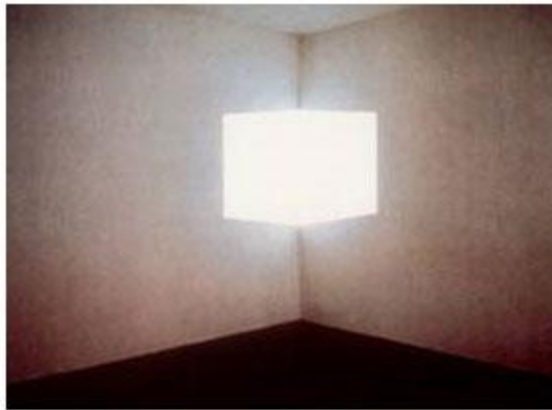
Some models	
A wired and solid “with light simulation” teapot	
A wired and solid “with light simulation” sphere	
A wired and solid torus	
A wired and solid cone	

Examples of How your scene should look like

Note: some shots have bonus requirements (e.g. complex models, shadows)



A cube act as a point light source:



James Turrell, *Afrum-Proto*, 1966.

