Due: 11/1/19 "3D Haunted House"

http://pdd.if-legends.org/

https://en.wikipedia.org/wiki/Colossal_Cave_Adventure

The theme for this project is to build a 3D OpenGL program that lets a character walk through a haunted mansion. The basic idea is to build a set of connected rooms. You must implement a way to move the user's avatar (their in-game 3D representation) through your world, including smoothly moving through doorways to other rooms (**no teleporting**). There **must be a minimum of 6 rooms**. Each room **must contain objects that "do something,"** for example you could have a fireplace that the avatar can light. Some of the rooms **must have more than one exit** so as to make it a challenge to find the correct path to the exit. There can be light switches that can illuminate the room. In adventure games usually each room contains challenges that the user must figure out to proceed to other rooms (or unlock a door, etc.). You **must implement at least one challenge for each room** (find a key to unlock a door, say a magic word, get past a ghost, etc). You **must come up with a three dimensional representation for each of the objects** in your game (can be very simple, or use pre-defined shapes from example code, e.g. spheres, cubes). There **must be multiple instances** of some of the objects (i.e. more than one chair, lamp, etc.). Your program **may include the use of textures**. A great place to use textures is on the walls of the rooms to distinguish one room from the others. You could also include hints on the room's challenge in the textures.

You **must implement computer-controlled creatures** and/or other avatars that live in your maze of rooms and these creatures must move around the rooms. This can be implemented as a very simple AI, just moving around the rooms randomly, or it can be a more sophisticated AI trying to block you, or shoot you, etc.

You **must implement at least two different means of viewing the world**. The first is the view from the avatar (first person view). In this view, there must be a way to control the direction of view of your figure (including an ability to zoom the view). The second view must be a third person view of the avatar moving around the world (i.e. in this view you must be able to see your avatar). Again, there must be a way to control this view including zooming in or out to see more/less of your world. It should also be possible to position this view to get a good view of any of the objects in your world, including your avatar interacting with the objects in your world.

A user **must be able to switch between these views** at will.

Optionally, you can give the avatar weapons, implement collision detection so avatars can crash into tables, etc. However your avatar **must not be able to walk through your walls**!

Follow the coding standards from the course web page. Include with your submission a write-up of your implementation decisions in a file called `readme.txt`. Be prepared to explain how your program works in class to the other students, and to demo the working program. Submit as usual as assignment `prog3`.