# CSE 461 Programming Assignment 2 (Double weight point assignment)

## DUE

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## Description

- This is an individual assignment. Please do not collaborate
- If you think that this document does not clearly describes the assignment, ask questions before its too late.

This assignment is about implementing a simple OpenGL application

## Minimum Requirements

- A bounded 3D world. (for example: interiors of a building)
- Perspective projection
- Realistic and logical ordering of rendered objects (uze z-buffering and create realistic objects.)
- 4 different objects.(You can add more if you like).
- One(minimum) of the objects has at least 3 copies at different positions and with different scales. At least one instance of an object rotates around an axis.
- Different objects have different textures. One(minimum) of them has 2 textures blended.
- In addition to textures, objects support Phong shading (blended with textures)
- 4 different materials.
- Mouse interaction:
  - Mouse look around (Similar to a FPS game)
  - Scroll zoom in and out
- Keyboard interaction:
  - WASD and arrow keys are used in order to walk around in the 3D world.
  - ESC quits the program.
- Multiple light sources(minimum 3). One of them is directional and one of them is a point light source.
- **You have to use vertex and pixel shaders.**
- Hit test. (While wandering around in the bounded world, it should not be possible to pass through the objects and bounds(walls etc..))
- Any animation and movement speed should not depend on the rendering performance of the computer.

## Remarks

- Start as soon as possible (No extension will be given)
- You can use various tutorials and sample code as reference. but, understanding is essential. (You have to understand how it works and if asked you should be able to modify it.) (In order to decrease the chances of similarity with other submissions and example code, I advise you to understand the reference code and re-write according to what you understand.)
- If you include additional goodies (such as some advanced texture-light interactions, or jumping over the objects. . . ) in your application, you may receive bonus points.
- Since you can find sample code easily, receiving partial credit will be difficult. Your application should meet the minimum requirements.
- You are going to do a demo. (Prepare different scenarios, test cases etc. . . )
- You can use any programming language and environment you like to use but the application has to run at least 30fps.

## Turn in

- You are going to submit your implementation in a zip file. You will include a documentation about hot to compile and/or run your program. Include various screenshots as well.
- You are going to demonstrate the run of your program. It is going to be either through a teams meeting or in a face-to-face meeting.