**CSCI4120**

**Principle of Computer Game Software**

# Project guidelines

## Objective

Acquire the experience of building a computer game software through demo building

## Requirements

The project would proceed in two phases, and there are various expected output after each stage. The first phase would end at Mar 4, 2022 (Friday)

Expected Output after 1st phase:

1. Progress report details the work done during this period. A draft of the storyboard, as well as the principal design of the game etc, should be described in the report.
2. Initial models of characters, weapons, levels, etc. (if any)
3. Initial scripts/programs written (if any)

Expected Output after 2nd phase:

You should build an *interactive* game demo with the following features:

1. The demo can either be a) a technology demo which showcases a particular effect or technology which is being built by your team, or b) a playable game which illustrates your designated game play.
2. Your demo must be interactive i.e. the player’s input must include at least keyboard and mouse, and the program display the changes accordingly.
3. The game world must be 3D, or can have the option to switch to 3D view at any time when playing.
4. You can use any available 3D game engine to work on your demo. However you must clearly document the game engine you used and what is your contribution in the completed product i.e. which part of code is being finished by your team.
5. The game demo must be completed in the sense that it should be executed by a *binary executable* program. You need not implement the opening screen and the menu for the game. However the head up display (HUD) and other necessary in-game menu will be considered as part of the game demo itself.
6. A project report which summarize the project have to be submitted after the demo. The report should include the details in implementing the game demo. e.g. the theory and implementation of the technology, or the concept of the game play and its implementation etc. Discrepancies between phase 2 output and phase 1 proposal and the behind decisions can also be discussed here.

**More on game play & technology stream**

**Game play**

1. Our recommended platform is UE4 or Unity, but you may use any other free game engines such as *Panda3D*, *Blender,* or *Open3D* for your project in general.
2. There is no strict requirement on the complexity of the level in your demo. It may be even just a single room, but with plenty of different game play features built-in.
3. You may use any public domain character/model in your demo as long as you specify its origin.

## Technology stream

1. Pioneering features related to computer game development are encouraged. You are suggested to implement one or more engine features which is/are not available on a game engine. Typical examples are A\* path finding in a 3D level, shader capability, group dynamics etc.
2. Note that this would require you to hack an existing game engine, which is a difficult but rewarding adventure.

## Gradings

20% 1st phase output

40% Completing requirements pt. 1 – 6 of requirements of phase 2

40% 1. Presentation & report

2. Quality of final produced games:  
I. Creativity, II. playability, III. technical excellence

## Reference

**Unity3D Engine**

Another popular 3D game engine producing many popular commercial games

<https://unity3d.com/>

**Unreal Engine**

Studio grade development kit with enough tools and full documentation

<https://www.unrealengine.com/blog/welcome-to-unreal-engine-4>

**Panda3D**

Open source game engine, need Python programming much

<http://panda3d.org/>

**OGRE3D**

Open source 3D graphics engine, state-of-art graphics, don’t have game shell

<http://www.ogre3d.org/>

**Successor to Lumberyard/ CryEngine**

Open3D (O3DE)

<https://o3de.org/>