Game AI Projects

This course will have a multiple projects. Many of the projects will be tied to a game environment that you will create. This environment will have additional functionality added to it as the course progresses. (There may be a couple of projects that will not be tied to the game environment.)

# **Project 1: (Weeks 1 – 4) [Design Due 9/9 by 11:59 PM, Environment on 9/23 by 11:59 PM]**

# **Introduction:**

For this part, your team will create a basic game environment. In order to do this, you can use one of the following tools:

1. Unity
2. Unreal
3. CryEngine

If there is a different tool that your team wants to use, you will need to talk to me about it. (The main requirements I have for use of a different tool: there must be a free version available and the programming language used with the tool is C++/Java/C#.)

# **Requirements:**

The environment you create must have the following features:

1. The overall environment must be at least 100 times larger than the size of a typical unit.
2. Obstacles of some type are available that units in the game environment cannot pass through (i.e. rocks, trees, etc.).
3. Two separate areas in the environment with some type of division between the two sides of the environment. I mean the use of water or impassible terrain to separate one part of the environment from the other part.
4. Related to #2, one or two areas of limited access from one side of the environment to the other side. It could be a bridge, pass, or other restricted type of connection between the two sides.
5. The terrain should contain areas of different height, since the ability to see other units will play a part in some of the AI programming later in the course.
6. Place a unit in the environment that can be controlled using the keyboard. Use a WASD set of movement commands to control the unit.

The units you use DO NOT need to be models. I’m fine with different colored cubes or other shapes to represent the units in the game. However, if you want to get artistic, that’s fine too.

As far as the camera goes, your environment should support an isometric view of the terrain and units.

# **Planning Document:**

Your team will create a planning document that describes the environment you plan to create. The document will cover the following topics:

1. What tools you are planning to use and why you selected them.
2. A description of the environment you plan to create. Include a diagram of the environment. (It doesn’t need to be exact, but should convey the main features you plan to implement.)
3. Describe how the work is going to be broken up by the team. Team organization is up to your group, but assigning roles often works well. (“Team Lead”, “Designer”, “Programmer”). Note that everyone is expected to contribute code, not just design something and sit back while others do the rest of the work.
4. There must be a set of instructions for using the environment. In this case, how to start the tool you are using and getting environment to appear, describing the camera controls and how to move the unit around on the screen should be sufficient. You should assume I am unfamiliar with the game development environment you are using (Unity, Unreal, etc.).

# **Completed Project:**

The remainder of the grade comes from the completed project. Your project must meet the requirements listed in the “Requirements” section above.

# **Deliverables:**

There are two deliverables for this project:

1. Plan: provide a planning document that describes the environment being created. See the grading rubric for the plan to see what is included in this document. (25% of the project grade.)
2. Project: the complete project that can be compiled and executed. (75% of the project grade.)

For both of these parts, read the grading rubric to see how the grade will be assigned.

Planning Document Grading

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Criteria** | **Max Pts.** | **Earned Pts.** |
| Uses a 12 point font for most text. | 5 |  |
| Proofread and checked for grammar, missing words, etc. | 10 |  |
| Describe what tool you plan to use (Unity, Unreal, etc.) and why | 20 |  |
| Describe the environment you plan to create, use a diagram and narrative. | 20 |  |
| Describe how the work will be performed. Explain what each team member will do. | 25 |  |
| Describe how the environment will be started and controlled. | 20 |  |
| Design Grade: | 100 |  |
| X .25 | X .25 |  |
| Points | 25 |  |

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| **Criteria** | **Max Pts.** | **Earned Pts.** |
| Final instructions for use of project provided. | 10 |  |
| Project Criteria Followed:   * Environment size is correct * Obstacles units can’t pass through are present * Two sides of the environment are divided from one another by a barrier of some type. * The two areas are connected by a pass/bridge/ford, etc. * The terrain contains areas of different height * A unit is present that can be moved around with WASD commands from the keyboard. | 10  10  10  10  10  15 |  |
| Project is delivered as a single zip file, containing all required code and documentation. | 10 |  |
| The project compiles and runs correctly | 15 |  |
| Project Deliverable Grade: | 100 |  |
| X .75 | X .75 |  |
| Project Points | 75 |  |
| Design Points | 25 |  |
| Project 1 Total Grade | 100 |  |