Homework 4

Due Date: **3/17 11:59pm**

- Submit program to perforce in your student directory
    - Sub directory called: /Hmw4/…

Description:

You will be adding your own Navigation Graph and Search Algorithm to the Battle Bots Game. You have access to my Nav Graph at the moment but you will replace it with your own. Further you will navigate using your own search Algorithm.

Note you don't have to finish this to work on the project, but you must complete it to get credit for Homework 4.

Problems:

Features to Implement (Required) :

- Navigation Graph
    - You must create and use your own navigation graph
    - You need at least 2 new classes
        - myGraphNode, and myGraphEdge
    - You will create a graph using your two new classes.
        - A graph is composed of Nodes with edges.
    - Create the graph when the your bot gets created
        - Inside BotController constructor
    - Do not Generate your nav mesh more than once
        - There is only 1 map and the map will not change
    - The style you generate is up to you.
        - User made points (Grained Graphs)
            - Manually type out all the points and edges
            - Easiest but most tedious.
        - Flood Fill algorithm
            - Buckland book page 340
            - Harder to implement but would work on multiple maps
- Search Algorithm
    - Once you generated your map, you must use the map to help your bot to navigate the map.
    - You need search command that will generate a path for your controller

- Suggestions
  - FindPath(……..)
    - Parameters:
      - Start Node and End Node
    - Returns:
      - A list of nodes from start to end
- You have the option for which search algorithm use
  - ½ Credit: BFS/DFS
  - ¾ Credit: Dijkstra
  - Full Credit: A* search
    - A* will yield the best movement for your bot.
- You can look at my A* code to help you get started.

Validation:

Simple check list to make sure that everything is checked in correctly

- Program compiles and runs without crashing?
  - Program warning free?
  - Make sure program build without errors or level warnings
  - Project should be able to run without crashing
- Did you write your pdf file?
- Your code needs to be a 2013 solution and project
  - Check MINIMUM files
    - Suggest a cleanme.bat
    - No - *.pdb, *.suo, *.sdf, *.user, *.exe, *.log, ...
      - If it gets generated, do not submit it to perforce
    - No - /Debug dir, /Release dir, /ipch dir
    - Seriously do not include *.sdf or ipch directory
    - Make sure what's checked in works and runs!
  - Only validating Debug mode (I'm ignoring Release Mode)
    - Cleaning project triggered from the IDE
    - Rebuilding project triggered from the IDE
- see Perforce on how to verify what I see when evaluating your project
  - All I'm going to do on my side
  - Download your student directory
  - Start the IDE by clicking your sln file
    - Clean solution
    - Build solution
    - Run as stated above

Troubleshooting:

- Baby steps
    - You'll be in trouble if you don't
- This is so slow and painful, takes forever to get working.
    - You cannot escape the agony of this part
    - Just do it.
- Hard to debug print for this project
    - Suggest using stream or sprintf to a buffer