CS425 Game Programming 1
(Fall 2016)
Homework Assignment 3
(Grid Walkin')

Due September 27, 2016 at 3pm

Submission:

- This is an individual programming assignment. Please download the accompanying code for the grid classes and use it along with your code from assignment 2.
- When you have completed the assignment, delete the Debug directory and the .sdf file. Then zip together the rest of the directory. Be sure to include your .vcxproj and .sln files along with all of your source code files. If the project cannot be loaded and run properly, you will get a zero. Name the zipped file in the following way: **LastName_FirstName_HW3.zip** and submit it through Blackboard by the due date.

The goal of this assignment is to set up a grid structure to be used with an A* implementation (the next assignment).

1. Add the provided grid class implementation to your project and complete the grid class implementation by filling in the definitions of the get neighbor methods (e.g. GridNode* getNorthNode(GridNode* n)) and the getDistance method. (40 points)
   a. You may change the implementation from individual get direction node methods to a single get all neighbors method as talked about in class.
   b. Be sure to check for boundary conditions and return NULL pointers if the direction asked for isn't valid.
   c. getDistance should return the Manhattan distance between two nodes, as talked about in class.
2. Use a level loading routine to read environment configurations from files and populate the world with a floor plane, objects, obstacles, and agents. (20 points)
   a. You may use the routine provided or implement your own.
   b. You may also alter the loadObject method in the Grid class to better fit with your code design.
   c. The level loader should also create a Grid and set the obstacle, object, and agent placements on the Grid.
   d. Make sure that you include at least 2 sample level files with your submission.
   e. Enable dynamic loading of the sample level files. If '1' is pressed it should load the first level and if '2' is pressed it should load the second level. You'll have to do enough housekeeping in your code to make sure it does not crash and indeed continues to operate.
3. Add a method to your agent class that makes the agent walk to a specified GridNode. (40 points)
   a. The agent should walk from his current location to a GridNode sent as a parameter.
   b. Make sure that walking and idle animations are used appropriately and Sinbad is always facing the direction he is moving in.

c. Do not worry about colliding with objects along the path. The next assignment will address that.
d. Load at least 3 Sinbads, and set it up so that this method gets called for each Sinbad and they walk to different random points whenever the user presses the spacebar.

A few tips/hints/things to think about:

- Grid coordinates are different from grid positions as our grid squares are 10 by 10 (or defined by a precompiler directive). The getPosition method of GridNode takes this into account.
- Make sure that your implementations will work with different layouts and environments.
- You may want to continue to refine/redesign your existing classes.
- This assignment does NOT require you to implement A*. The next assignment will.
- Test each and every piece of code to ensure that it is working correctly (including the code provided to you).
- I'm giving you a good amount of time for this assignment, so I expect: Good, solid programming practices; Well documented code; Good error checking; Code that is well tested.