CAP 4621 INTRODUCTION TO AI

**PROGRAMMING ASSIGNMENT 1**

**DUE: 1/28/2020, 11:59 PM**

**DESCRIPTION**

Write a program that will find **a path** from an initial location to a final location using a “depth-first” search method. While doing depth-first search, if there are several choices from a particular node, the node with the smallest alphanumeric name should be selected first.

Initial and final locations should be allowed to be input by the user

The “locations” file includes the names of the locations and their x and y positions.

The “connections” file includes how the locations are connected.

**OUTPUT**

The output should be the solution path from start city to end city as a series of segments. Each segment should include its length. The total length of the path should also be included at the end. – for example if the start city is B2 and the end city is E4 the output might be:

B2 to C2 length 3.4,

C2 to C3 length 4.8,

C3 to C4 length 1.5,

C4 to D4 length 7.1,

D4 to E4 length 3.7

Total path length 20.5

**SUBMISSION**

Through a link in Canvas. For those working in pairs, perform a single submission.

**DELIVERABLES**

Assignment should be submitted as a single ZIP file which include source files, and a readme text file with your and your partner’s name and instructions about how to compile and execute the program from a command line.

**PROGRAMMING GUIDELINES**

You are allowed to use the programming language of your preference. For grading purposes, the use of the following languages is recommended: Python, Java, C (gcc), C++ (g++), Javascript. For other languages, please contact the TA.

**GRADING CRITERIA**

* **Late submissions will lose points as stated on the syllabus – 10% for each day that is late.**
* **A program that does not compile will result in a zero!**
* Functionality:
* 10% - Program allows for the user input of initial and final location.
* 20% - Program extracts data from “locations” and “connections” files correctly.
* 50% - Program performs correctly while searching for the path.
* 20% - Program outputs the correct paths from initial to final location.

**PLAGIARISM !**

Your program must be your original work, as stated and described in the syllabus. **If you are unsure about whether some open source code can be used, contact the TA.**