

PSet 1

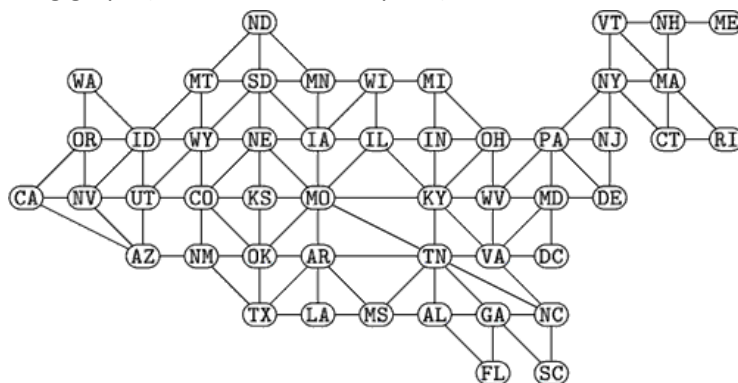
CS 7649 Robot Intelligence: Planning
Instructor: Matthew Gombolay

Instructions:

- You may work with one or more classmates on this assignment. However, all work must be your own, original work (i.e., no copy + pasting code). You must list all people you worked with and sources you used on the document you submit for your homework
- You must use Python version 3.8 to receive credit.**
- Zip all code and PDFs before submitting as a single, zipped folder.

Problem 1:

Consider the following graph (credit Knuth 2008, p. 15):



Write six Python scripts implementing depth-first search (DFS), breadth-first search (BFS), and Iterative Deepening Search (IDS), each with and without a visited list. Use these algorithms to solve for a simple path from $S \rightarrow G$, where S is Washington (WA) and G is Georgia (GA). Ties will be broken in alphabetical order. Augment your implementation to report the computational time, # of paths popped from the queue, maximum queue size, and length of returned path. You may manually define the graph in python or grab a definition from online. **Submit a PDF of this page having filled in these rows and columns:**

	Visited List	Time (s)	# Paths Popped from Queue	Max Queue Size	Returned Path's Length/Cost
DFS	No				
	Yes				
BFS	No				
	Yes				
IDS	No				
	Yes				

You should have one Python file for each type of search, and the code should be clearly documented. Files should be named “[METHOD]_[VISITED].py” (e.g., “dfs_yes.py”). Further, when the grader runs the python code, the script should print to the screen the relevant information reported in the table above. **Remember, if it does not run, you do not receive credit.**