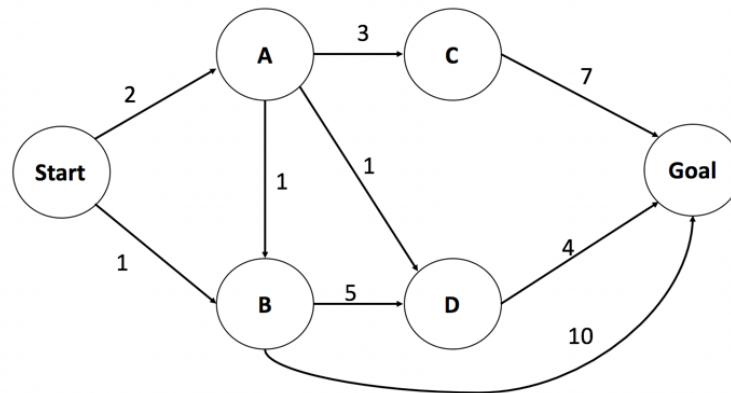


1st Homework

March 8, 2017



1. Answer the following questions about the search problem shown above.
Break any ties alphabetically. For each search algorithm, please give the resulted path and the sequence of nodes visited (removed from the queue) by the agent. (10 points)
 - a) What path would depth-first graph search return for this search problem? (2 points)
 - b) What path would breadth-first graph search return for this search problem? (2 points)
 - c) What path would uniform cost graph search return for this search problem? (2 points)
 - d) Design a consistent heuristic function for this graph; give $h(n)$ for each node and solve the search problem by A*. (4 points)
2. Write a program for uniform cost search. (10 points)
 - You will be given a file “input.txt” including graph information. Each line presents an edge consisting of a tuple of start node, end node and cost.

- Write a single python file taking the provided file as input and generate another file “output.txt” in the same directory.
- The output file should include a path for the input graph resulted from uniform graph search, in such a form $Start \rightarrow A \rightarrow B \rightarrow C \rightarrow Goal$ (no space).

Submission

- Generate a zip file with your student ID as the file name, e.g “14XXXXXXXXXX.zip”. It should include following files.
 - i. hw1.pdf (with solution for question 1)
 - ii. ucs.py
 - iii. input.txt (same as what is provided)
 - iv. output.txt
- Make sure the python file is runnable.
- We will check the code in detail.
- If plagiarism is identified, your score for this assignment will be ZERO.
- The homework is due at 11:59pm on Wednesday, 15 March 2017 (Updated: on Friday, 17 March, 2017).
- Send the zip file to the course email box data130008@163.com, with the title of “hw1-StudentID”.