

Programming Assignment 1

(100 points)

Assigned Date: Monday, September 23, 2013

~~Due Date: 4:00 PM Wednesday, October 2, 2013~~

Extended Due Date: 4:00 PM Monday, October 7, 2013

Educational Goal

Become familiar with uninformed search strategies.

Requirements

Implement the Romania example (Lecture “Solving Problem by Searching”, Slides 16 and 19). Goal State is in Bucharest. A traveler could be initially in any city depicted in the map of Slide 16. Write a program that takes any city as an initial state, output the cities it visits, calculate total path cost (each step costs 1), and report the solution path from the initial state to the goal state.

- Uninformed Search: Implement breadth-first search, depth-first search, and iterative deepening, respectively. The program should be able to avoid repeated state in order to find the goal state.
- Based on your experimental results, write a report with minimum 500 words to discuss the strength and weakness of the 3 search strategies.

Submission Requirements

1. Your program should be well-documented. Variable names and function names should be self-descriptive. Major functions should be explained clearly in comments. The program outputs should be presented in a clear sequence.
2. Test your program thoroughly using all those cities one by one. Submit the outputs those test cases.
3. Turn in the paper copy and soft copy of all the files of this assignment. Submit a single zipped file of all the files of this assignment through your UMassOnline account. Submit the paper copy along with the cover page in class. Paper copy should be bound firmly together as one pack (for example, staple, but not limited to, at the left corner). 5 points will be deducted for unbounded homework.
4. Name your file with AI_ lastname_ firstname_pr1. For example, student John Smith should name his file as AI_Smith_John_pr1.zip.
5. No hard copies or soft copies results in 0 points.
6. Here are the requirements on how the students should show the code to me.

TA Requirements

TA will check assignments in web lab (S-3-028) on Monday Oct 7 from 5.30 to 6.30. (15 minutes after the class). To run the demo efficiently, please pre-setup your demo and ask TA to visit your computer when everything is ready.

TA will be grading only part 1.1 Programming Completeness (see the grading criteria of programming assignment 1).

TA will look for all three algorithms. Initial state should be **different** for different algorithms.

There should not be any repeated states or nodes.

Output the cities visited and total path cost.

TA will check assignments in web lab (S-3-028) on Wednesday Oct 2 from 5.30 to 6.30. (15 minutes after the class). To run the demo efficiently, please pre-setup your demo and ask TA to visit your computer when everything is ready.