CS-360 (Fall 2018): Artificial Intelligence

Assignment 01 – Exercise of Problem Solving

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Total Marks: 100
Average expected time for completion: 5 hours

Submission Deadline: Wednesday, March 7, 2018 06:00 PM

Instructions

Do not consult solution with your peers; produce your own assignment.

In case of cheating **"F"** grade will be awarded in the course. Good Luck ☺

Problem Statement 1

A robot has three beakers of 8, 5 and 3 liters each. First beaker has eight (8) litters of water in it, second and third beaker is empty. The robot needs to get exactly 4 litter of water in at least one beaker. The robot can perform only one primitive action such that it may pour from one beaker into the other until either the first beaker is empty, or the second beaker is full.

1. Show your work and steps that will be performed by the robot.
2. Is your solution optimal i.e. no sequence of actions exist that take less number of actions to reach goal?
3. Is it possible to have two optimal action sequences of actions (plan)?

Visit following URL for the flash/game of the above problem

http://www.gotoandplay.it/_games/playGame.php?g=169

Problem Statement 2

A robot must help a family of five persons namely A, B, C, D, and E to cross a bridge. At a time, at max two people can cross the bridge. The bridge cannot be crossed without torch. They have only one torch. If two people crossed, one person on the other side should bring back torch. Each person takes different time.

A, B, C, D, and E takes 1 second, 3 seconds, 6 seconds, 8 seconds, and 12 seconds respectively to cross the bridge. If two people cross bridge together slowest among both will lead. Find sequence of actions (plan) which allows the family to cross the bridge in minimum time.

Visit following URL for the flash/game of the above problem

https://www.learn4good.com/games/puzzle/the_bridge.htm

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