SMAI: Assignment 2

Submission due: Sunday September 24, 2300 hrs.

For your chosen problem for Assignment 1

- implement the Depth First Search Algorithm
- implement the Breadth First Search Algorithm
- define a heuristic function and implement the Best First Search Algorithm

Submit your code by the due date (no extensions). Along with the code, submit a small report describing your implementation and also performance of the three programs on the same problem, or a set of problems. Program demonstrations will be scheduled in due course.

The assignment is for 10 points when done individually. You may do the assignment in groups of two. If you do, then both your problems must be implemented, and each will be scaled down to 5 points for both team members.

Choose a new problem that can be posed as a state space search problem. Design a domain representation for the state to facilitate defining the following:

- a MoveGen or a neighbourhood function to take a given state as an argument and return the set of neighbouring states. Eliminate states that do not respect the domain constraints. For example, the lion should not be left alone with the goat in the MGLC problem.
- a GoalTest function that accepts a state as input and returns *true* if the state is a goal state, and *false* otherwise.

Think about how a user can be allowed to specify the start state. For example, a state in an instance of a water jug problem with the jug sizes and contents being user defined. Also, how can a user specify the goal state. For example, how much water is to be measured.

Credit will be assigned for choosing a new and interesting domain. Do not choose examples used in the class or commonly found in text books.