ICT 328 Spring 2016 Homework 3

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By turning in this assignment, I agree by the academic honor code and declare that all of this is my own work.

Problem 1

(a) There are 9 choices for the 1st move, 8 for the 2nd move, 7 for the 3rd move, etc., giving us an upper bound of 9! = 9*8*7*6*5*4*3*2*1 = 362880. But this is an overestimate, because some games end in 5, 6, 7 or 8 moves. The true figure is actually 255168. If we take symmetry into account, the number reduces substancially. For example, there are now only 3 choices for the first move and at most 5 choices for the second move. In fact, the total is reduced to 26830 distinct games, of which 172 end in 5 moves, 579 end in 6 moves, 5115 end in 7 moves, 7426 end in 8 moves, 8670 result in a win in 9 moves and 4868 result in a draw.

(b) Refer Figure 1 for answer.

(c) Refer Figure 1 for answer.

(d) Refer Figure 1 for answer.

Figure 1 shows a Game Tree.

Problem 2

(a) function AND-OR-GRAPH-SEARCH(problem) returns a conditional plan, or failure OR-SEARCH(problem.INITIAL-STATE, problem, [ ]) function OR-SEARCH(state, problem, path) returns a conditional plan, or failure if problem.GOAL-TEST(state) then return the empty plan if state is on path then return failure for each action in problem.ACTIONS(state) do plan AND-SEARCH(RESULTS(state, action), problem, [state — path]) if plan 6= failure then return [action — plan] return failure function AND-SEARCH(states, problem, path) returns a conditional plan, or failure for each s(i) in states do:
plan(i) OR-SEARCH(s(i), problem, path) if plan(i) = failure then return failure return [if s1 then plan1 else if s2 then plan2 else if s(n1) then plan(n)1 else plan(n)]

For slippery world, the graph shows corresponding conditions of going sucking one

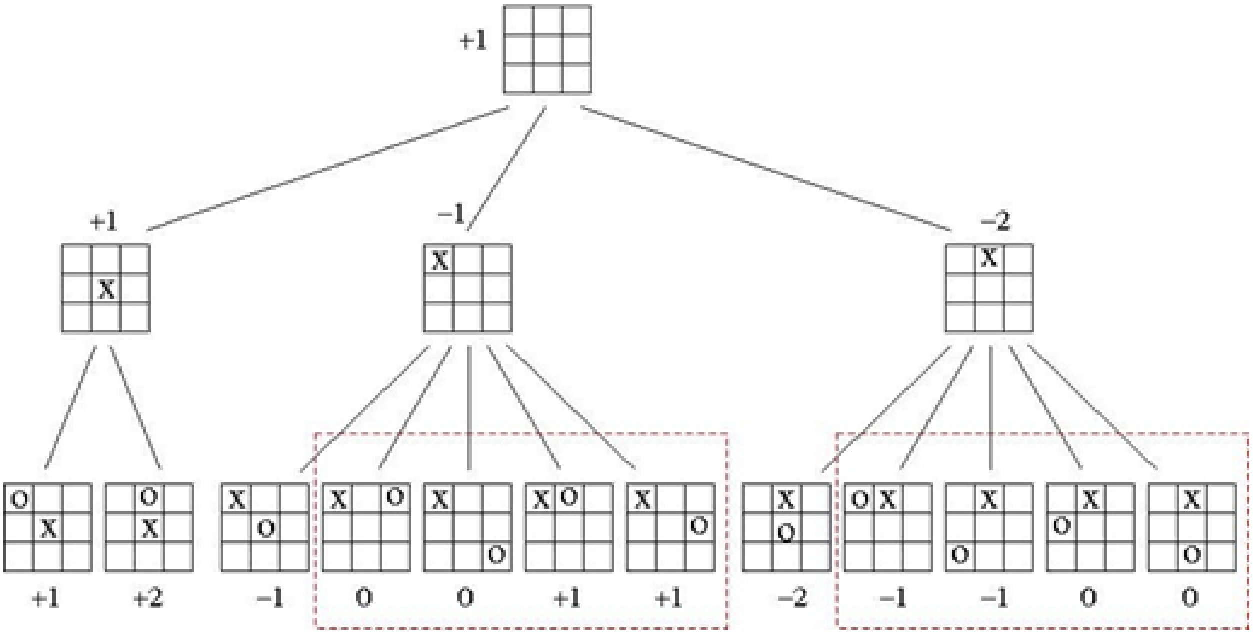

Figure 1: Game Tree

or both the blocks in AND.For erratic world, the graph shows AND condition of staying back or moving to the next block.