Adversarial Search - Bayesian Networks

Assignment 3

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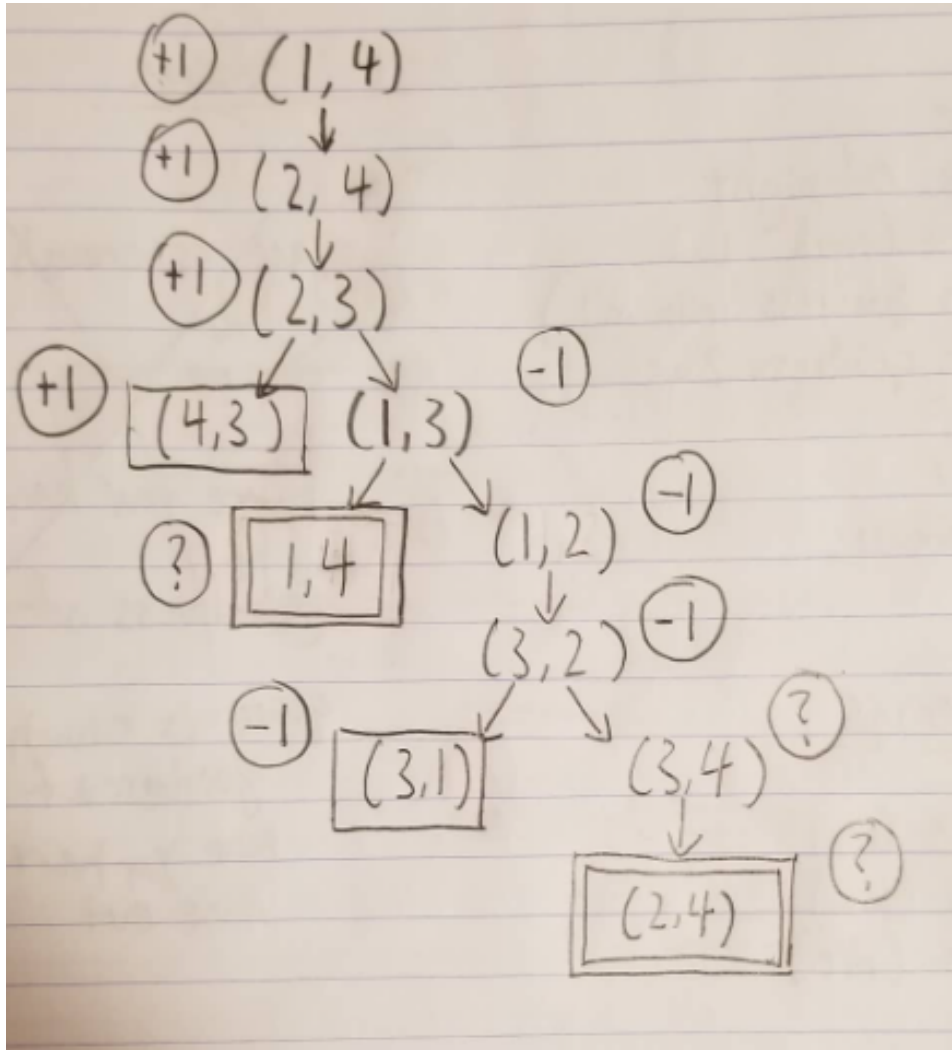**Robert Kulesa - 185009892**

Problem 1

(+1) (1, 4)

(+1) (2, 4)

(+1) (2,3)

(+1) [(4,3)] (1,3) (-1)

(?) [1,4] (1,2) (-1)

(3,2) (-1)

(-1) [(3,1)] (3,4) (?)

[(2,4)] (?)

"?" values are used to annotate loop states. When an agent has to choose between a +1 value and a "?" value (+1,?) the max player will always choose +1 while the min player will choose ?, and vice versa for (-1,?), with the min player choosing -1 and the max player choosing "?". Since the game value of a loop state is unknown, it is best for a max/min player to choose the corresponding max/min value if it is available, however if that value is not available the "?" state is a viable option to explore as it cannot be worse than an immediate loss. If all the successors of a state have a "?" value, the backed-up value is also "?".

1

Problem 2

(a)

(b)

(c)

Problem 3

(a)

(b)

Problem 4

(a)

(b)