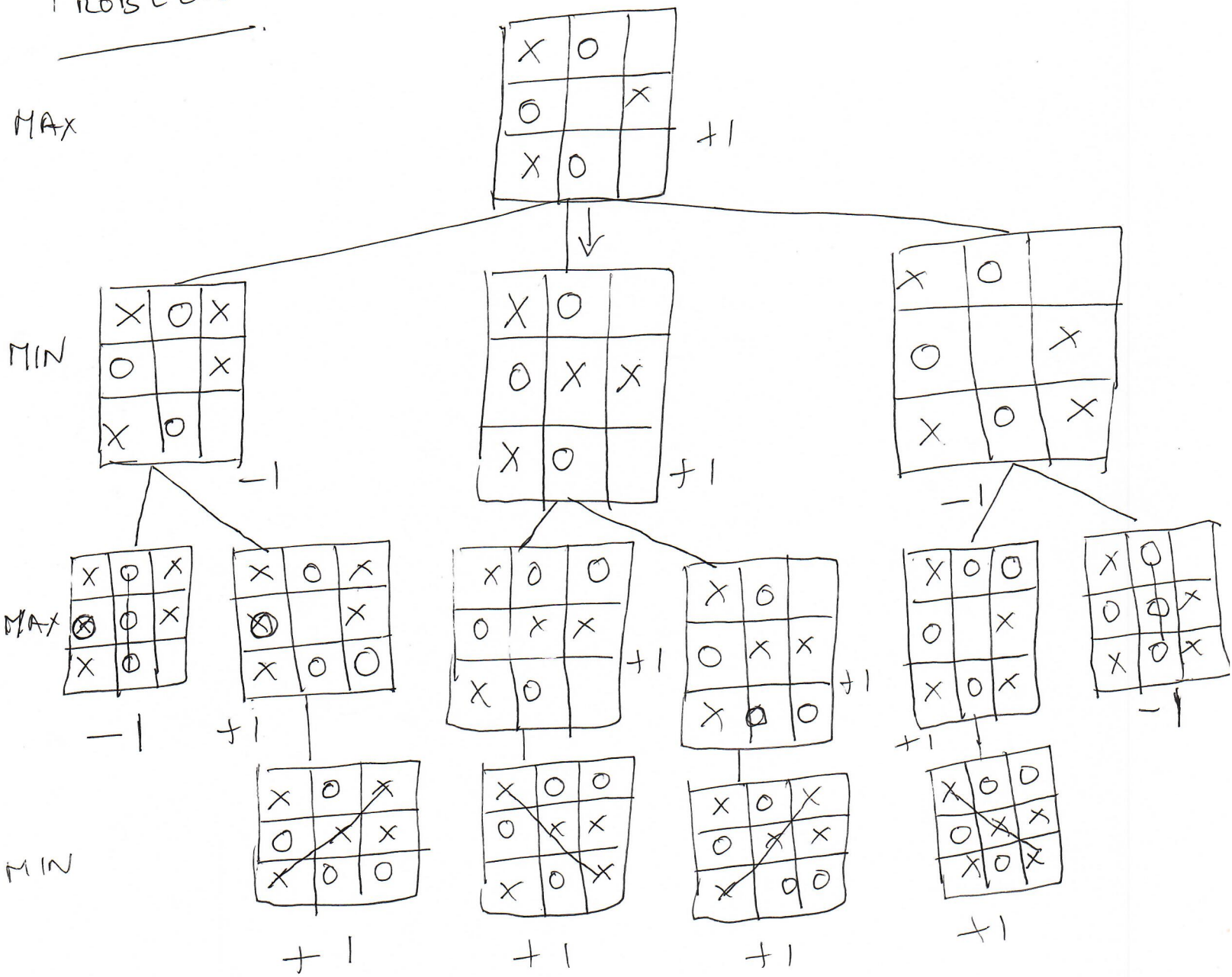
CSE 4308 / 5360

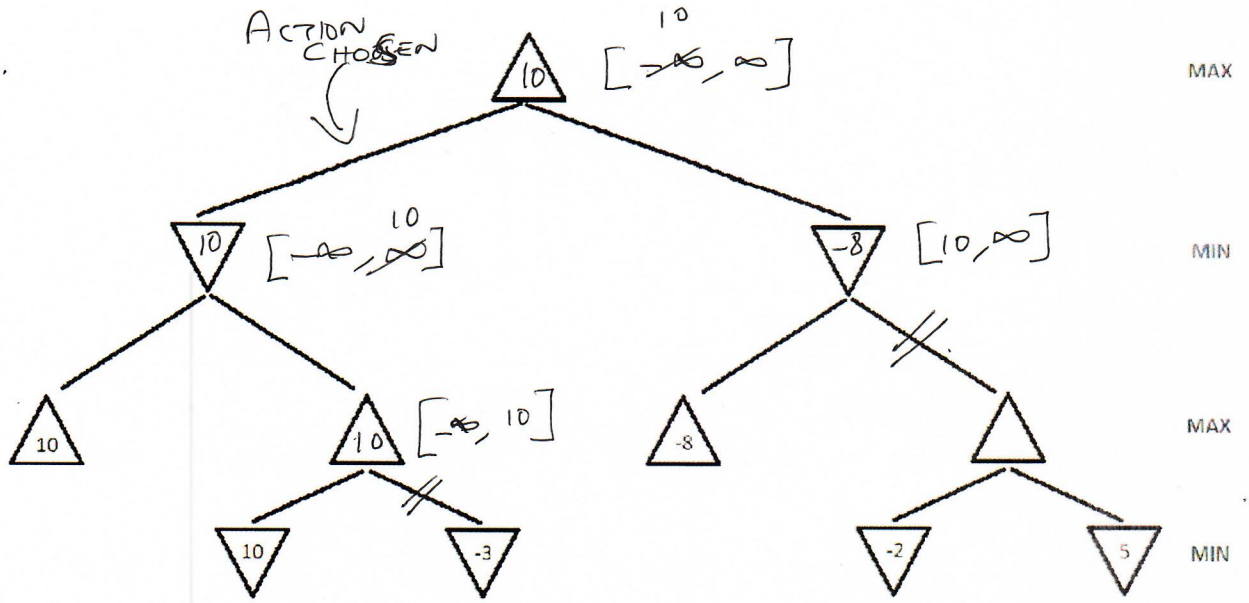
ASSIGNMENT 3

PROBLEM 1

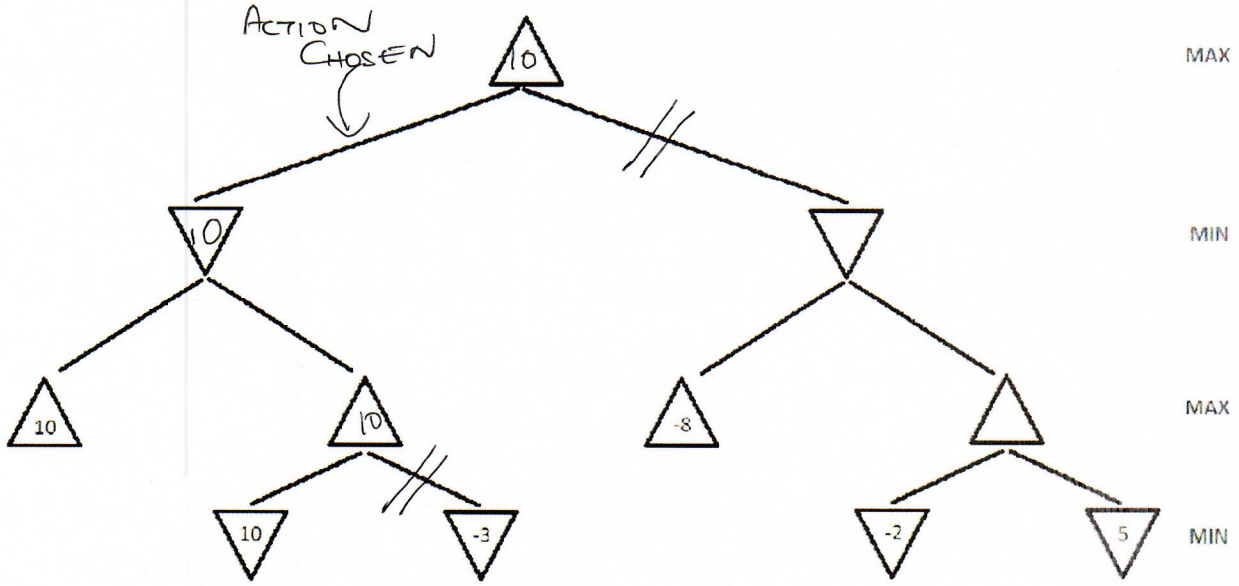


PROBLEM 2

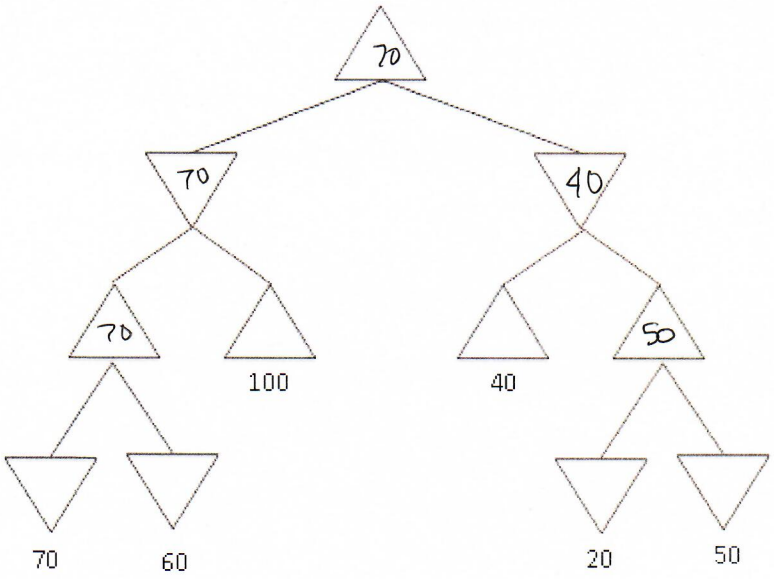
(a).



(b) If MAX knows highest possible value is 10 then it can prune all successors after finding one with value 10.



PROBLEM 3

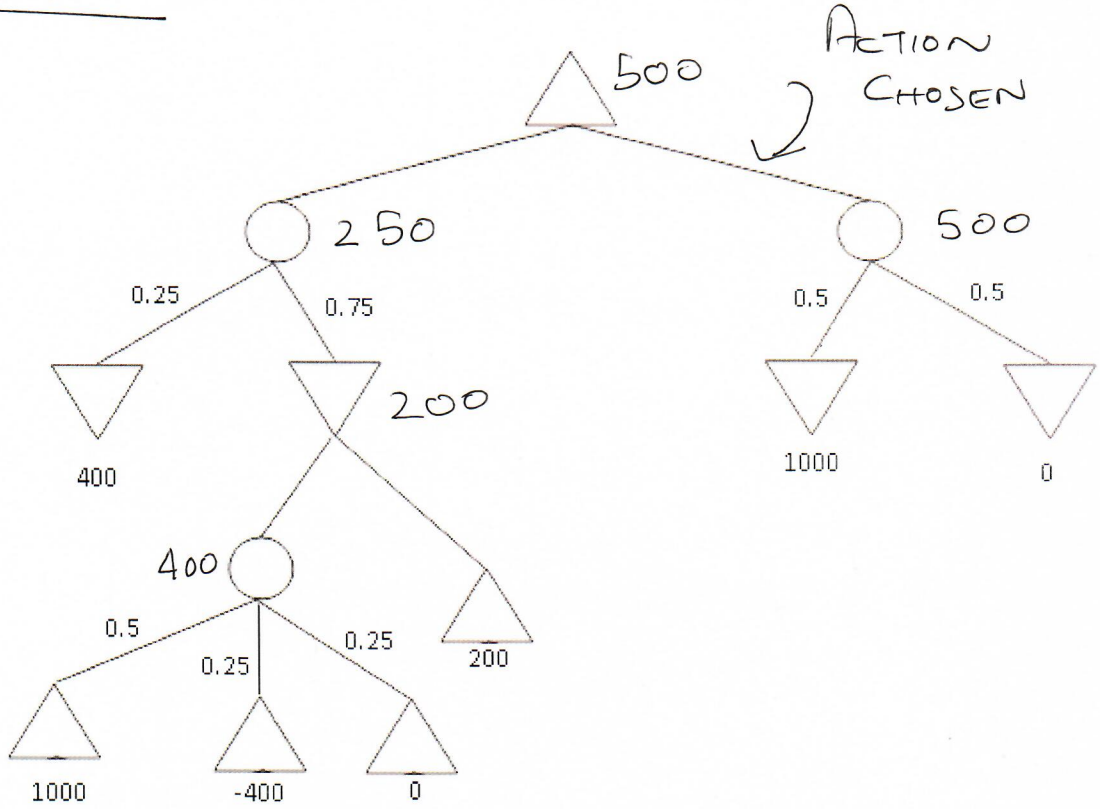


If both MAX & MIN follow optimal strategy MAX will ~~play~~ win 70 (AS MINMAX States)

If MAX plays optimal and MIN plays some random strategy, MAX can win either 70 or 100

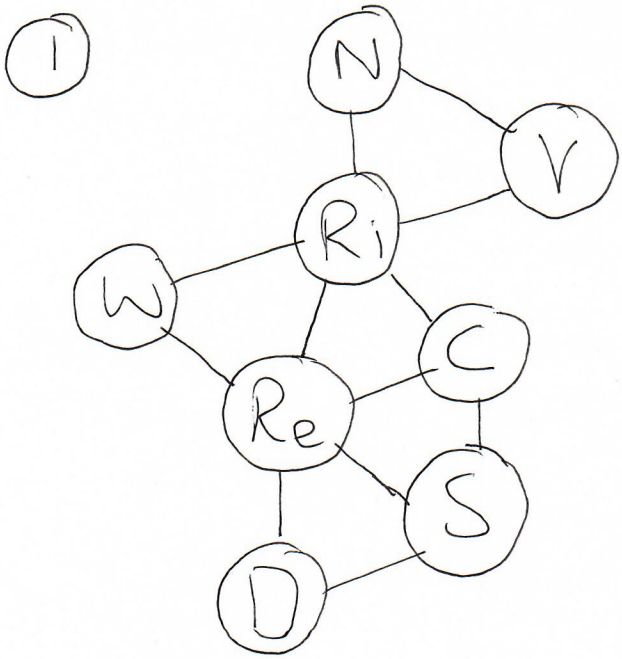
So for MAX: Best: 100
Worst: 70

Problem 4



Problem 5

(a)



I is independat of all other vertices so it can be considered as an independat sub-problem and solved seperately

(b.)

All nodes have RV of 3 initially.

Both Re & Ri have degree heuristic of 5

Pick one.

Let Re be just random

Now W, Ri, C, S, D have MRV (2)

Of these Ri has Degree heuristic of 4

Pick Ri next

Now W, C have MRV (1)

Of this C has Degree heuristic of 1.

Pick C next.

Now W, S have MRV (1)

Of this S has Degree heuristic of 1

Pick S next.

Now W, D have MRV(1).

Of these both D, W have Degree heuristic of 0.

Pick I.

Let us pick W next

Now D has MRV(1).

Pick D next

Now N and V have MRV(2)

Of thes both have Degree heuristic of 1

Pick one.

Let us pick N next.

Now V has MRV(1)

Pick V last followed by I

(c)

Re : G.

Ri : B

C : R.

S : B

D : R

W : R

N : R.

V : B

I : B

PROBLEM 6.

The modified algorithm is given by taking MINMAX and changing MIN-VALUE to.

function MIN-VALUE (state) returns a utility value.
if TERMINAL-TEST (state) then return UTILITY (state)
return MAX-VALUE (DEEPGREEN MOVE (state))

If deep green move picks the optimal strategy then this algorithm will return the exact strategy as MINMAX and have the same payoff but will explore fewer nodes (since we don't iterate over all moves that MIN would make). If deep green move is sub optimal then it is possible for this modified version to get a better result

because it can take advantage of sub-optimal moves. It will also visit fewer nodes.