AI Assignment 1 Report

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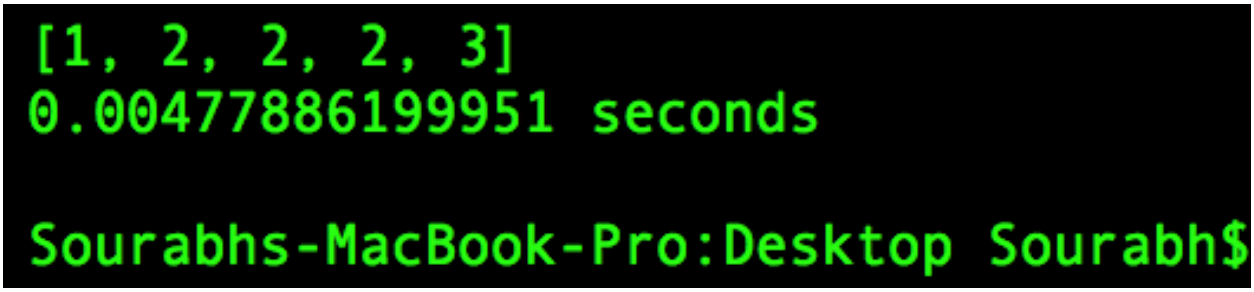
Game Playing:

Min Max:
To run the code, type:

python playinggame.py minmax <input>

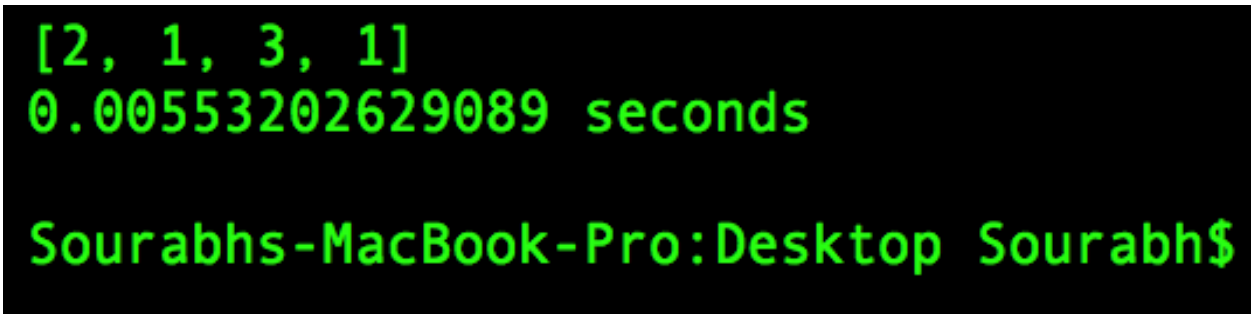
1) python playinggame.py minmax (((1 (4 7)) (3 ((5 2) (2 8 9) 0 -2) 7 (5 7 1)) (8 3)) (((8 (9 3 2) 5) 2(9 (3 2) 0)) ((3 1 9) 8 (3 4))))

Result:



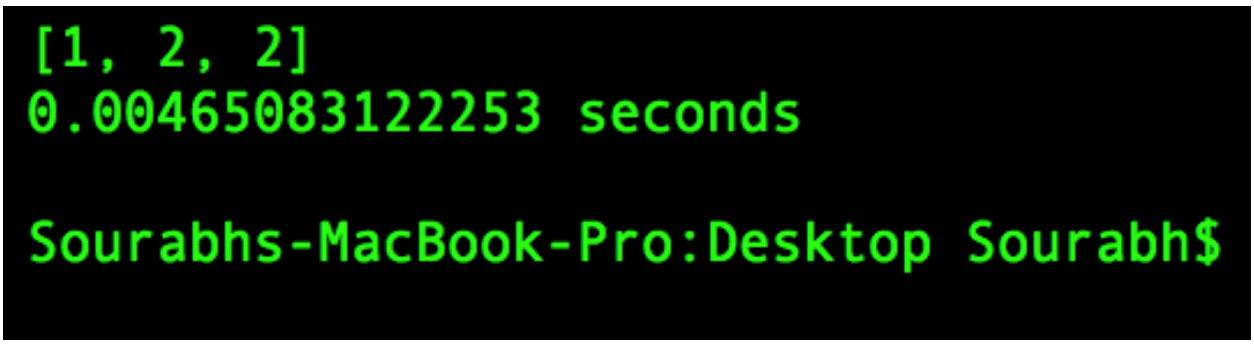
2)python playinggame.py minmax (((1 4) (3 (5 2 8 0) 7 (5 7 1)) (8 3)) (((3 6 4) 2 (9 3 0)) ((8 1 9) 8(3 4))))

Result:



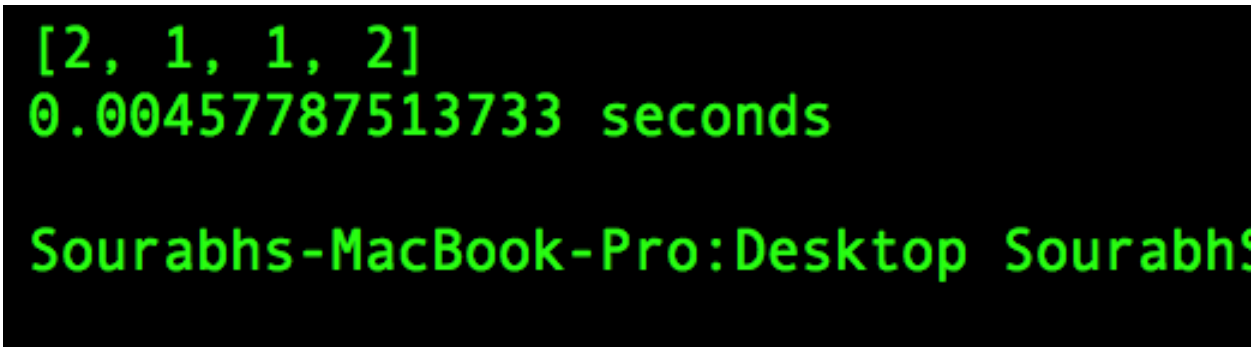
3) python playinggame.py minmax ((4 (7 9 8) 8) (((3 6 4) 2 6) ((9 2 9) 4 7 (6 4 5))))

Result:



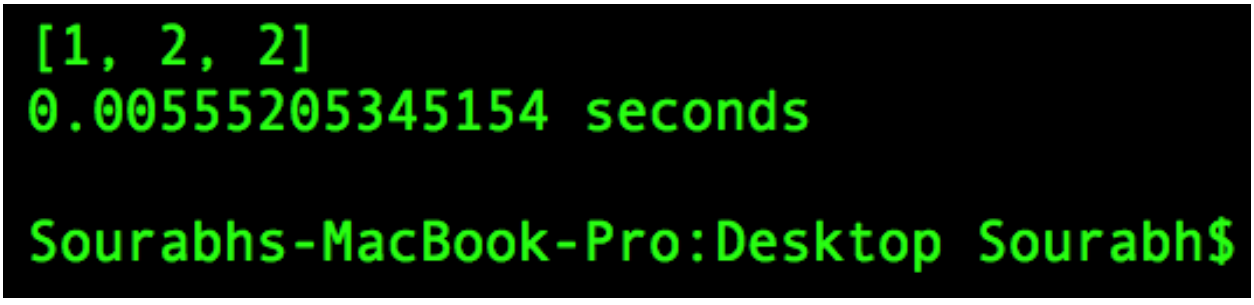
4) python playinggame.py minmax (5 (((4 7 -2) 7) 6))

Result:



5) python playinggame.py minmax ((8 (7 9 8) 4) (((3 6 4) 2 1) ((6 2 9) 4 7 (6 4 5))))

Result:



Analysis: Min Max has exponential complexity because it explores each and every possibility, even if it is not needed. Advanced methods like alpha beta pruning, reduces the computation by avoiding unnecessary ones. Complexity of Alpha Beta Pruning is O(b^(m/2)), where as that of min max is O(b^m).