CSE422 Lab Assignment 3

Md. Shamiul Islam

ID: 17301108

Theory Section: 8

Lab Section: 4

import random

import math

MAX = math.inf

MIN =-math.inf

maxdepth=0

count =0

maxbranch=0

def CreateleafValues(depth, branch, Range):

depth= depth\*2

global maxdepth

maxdepth= depth

global maxbranch

maxbranch = branch

List =[]

MAX = Range

MIN = -Range

print("depth : ",depth)

print("branch : ",branch)

print("terminal states (leaf nodes): ",str(pow(branch,depth)))

for i in range(pow(branch,depth)):

x= random.randint(MIN,MAX)

List.append(x)

print(List)

return List

def AlphaBetaPruning(depth, position, playermaximization,

treeleafvalues, A, B):

global count

count = count+1

if depth == maxdepth:

#ending recusion

return treeleafvalues[position]

if playermaximization:

temp = MIN

for i in range(0, maxbranch):

#loop for all childrens

val = AlphaBetaPruning(depth + 1, position \* 2 + i,

False, treeleafvalues, A, B)

temp = max(temp, val)

A = max(A, temp)

if A >= B:

#pruning

break

return temp

else:

temp = MAX

for i in range(0, maxbranch):

#loop for all childrens

val = AlphaBetaPruning(depth + 1, position \* 2 + i,

True, treeleafvalues, A, B)

temp = min(temp, val)

B = min(B, temp)

if A >= B :

#pruning

break

return temp

numTurn = int(input("enter number of turns for each participants (depth/2)\n"))

numNote = int(input("enter number of total notes to chose from (branch)\n"))

NoteRanges = int(input("enter maximum & minimum value for the notes (range)\n"))

print("outputs")

treeleafvalues = CreateleafValues(numTurn,numNote,NoteRanges)

print("list of leaf node amounts created")

print("maximum amount collected by Riyad : ", AlphaBetaPruning(0, 0, True, treeleafvalues, MIN, MAX))

print("comparison : ",count)