#========== task 1======================

import math

import random as rd

m, n = math.inf, -math.inf

def abprun(depth, pos, bool,values, alpha, beta):

if depth == 0:

return values[pos]

if bool:

maxeval = n

for i in range(0, 2):

val = abprun(depth - 1, pos \* 2 + i,False, values, alpha, beta)

maxeval = max(maxeval, val)

alpha = max(alpha, maxeval)

if beta <= alpha:

break

return maxeval

else:

mineval = m

for i in range(0, 2):

val = abprun(depth - 1, pos \* 2 + i,True, values, alpha, beta)

mineval = min(mineval, val)

beta = min(beta, mineval)

if beta <= alpha:

break

return mineval

Id='28181113'

s=int(Id[3])

mini=int(Id[4])

mv=int(Id[-1]+Id[-2])

maxi= (mv\*3)//2

values = []

for i in range(8):

values.append(rd.randint(mini,maxi))

print('Generated 8 random points between the minimum and maximum point limits:',values)

sol= abprun(0, 0, True, values, n, m)

print('Total points to win:',mv)

print('Achieved point by applying alpha-beta pruning =',sol)

if sol >= mv:

print('The winner is Optimus Prime')

else:

print('The Winner is Megatron')

#================ Task2 ====================

track=[]

count=0

for i in range(s):

rd.shuffle(values)

sol2 = abprun(3, 0, True, values, n, m)

track.append(sol2)

print('\nAfter the shuffle\nList of all points values from each shuffles:',track,'\nThe maximum value of all shuffles:',max(track))

for i in track:

if i>=mv:

count+=1

print('Won', count ,'times out of', len(track) ,'number of shuffles')