import random

import math

#Task1

inp=input("Enter your Student ID: ")

inp=inp.replace("0","8")

x=int(inp[4])

total=int(inp[7]+inp[6])

y=math.ceil(total\*1.5)

s=int(inp[3])

randompoints=random.sample(range(x,y),8)

lst=[0,0,0,0,0,0,0]

for i in randompoints:

lst.append(i)

child=[[1,2],[3,4],[5,6],[7,8],[9,10],[11,12],[13,14]]

def minimax(position,depth,alpha,beta,maximizingPlayer):

if depth==0:

return lst[position]

if maximizingPlayer==True:

maxEval=-5000

for i in child[position]:

eval=minimax(i,depth-1,alpha,beta,False)

maxEval=max(maxEval,eval)

alpha=max(alpha,eval)

if beta<=alpha:

break

return maxEval

else:

minEval=5000

for i in child[position]:

eval=minimax(i,depth-1,alpha,beta,True)

minEval=min(minEval,eval)

beta=min(beta,eval)

if beta<=alpha:

break

return minEval

result=minimax(0,3,-5000,5000,True)

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

print("Total points to win:",total)

print("Achieved point by applying alpha-beta pruning =",result)

if result>=total:

print("The winner is Optimus Prime")

else:

print("The Winner is Megatron")

#-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------#

#Task2

shufflepoints=[]

for i in range(s):

random.shuffle(randompoints)

lst=[0,0,0,0,0,0,0]

for i in randompoints:

lst.append(i)

result=minimax(0,3,-5000,5000,True)

shufflepoints.append(result)

print()

print("After the shuffle:")

print("List of all points values from each shuffles:",shufflepoints)

print("The maximum value of all shuffles:",max(shufflepoints))

count=0

for i in shufflepoints:

if i>=total:

count+=1

print(f"Won {count} times out of 8 number of shuffles")