import math  
import random  
'''  
lst1 = [66, 74, 14, 73, 19, 26, 32, 40]  
A = int(len(lst1))  
#print(A)  
Z = math.log2(A).is\_integer()  
D = math.log2(A)%2  
#print(D)  
if Z == False:  
 while Z == False:  
 lst1.append(0)  
 A = int(len(lst1))  
 Z = math.log2(A).is\_integer()  
  
#print(lst1)  
  
#print(Depth)  
'''  
  
def alpha\_beta(lst,depth):  
 A = int(len(lst))  
 M = A//2  
  
 if A==1:  
 return 'invalid'  
 if A == 2:  
 return max(lst)  
 Ch1 = Beta(lst[:M],depth-1,0)  
 Ch2 = Beta(lst[M:],depth-1,0)  
 return max(Ch1,Ch2)  
def Beta(lst,depth,pos):  
 A = int(len(lst))  
 M = A//2  
 #print(lst)  
 #print('Beta')  
 if depth ==1:  
 return min(lst[pos],lst[pos+1])  
 else:  
 B1 = Alpha(lst[:M],depth-1,pos)  
 B2 = Alpha(lst[M:], depth-1,pos)  
 return min(B1,B2)  
  
def Alpha(lst,depth,pos):  
 A = int(len(lst))  
 M = A // 2  
 #print(lst)  
 #print('ALpha')  
 if depth == 1:  
 return max(lst[pos],lst[pos+1])  
 else:  
 A1 = Beta(lst[:M], depth - 1, pos)  
 A2 = Beta(lst[M:], depth - 1, pos)  
 return max(A1, A2)  
  
ID = str(input("Enter Your ID: "))  
  
ID = ID.replace('0','8')  
  
L = len(ID)  
R = int(ID[3])  
if R == 0:  
 R = 8  
Max = ID[-2:]  
High = int(Max[::-1])  
Max = math.ceil(int(Max[::-1])\*1.5)  
Min = int(ID[4])  
  
  
M = []  
j = 0  
  
X = []  
i = 0  
while i<L:  
 X.append(random.randint(Min, Max))  
 i = i+1  
  
count = int(len(X))  
Depth = 0  
  
while count!=1:  
 Depth = Depth+1  
 count =count/2  
A1 =alpha\_beta(X,Depth)  
print("Task1")  
print("Generated 8 random points between the minimum and maximum point limits: ",X)  
if A1>High:  
 print('The Winner is Optimus Prime')  
else:  
 print("The Winner is Megatron")  
C = 0  
while j<R:  
 random.shuffle(X)  
 A = alpha\_beta(X,Depth)  
 if A>High:  
 C +=1  
 M = M + [A]  
 j = j+1  
print("Task2")  
print("List of all points values from each shuffles: ",M)  
A2 = alpha\_beta(M,Depth)  
print("The maximum value of all shuffles: ", A2)  
print(A2)  
print("Won ",C, " Times out of 8 time")