#task 1

import random

import math

def mortal\_kombat(first\_kick):

rounds\_played = 0

rounds\_winner = []

current\_player = first\_kick

def alpha\_beta\_prunning(depth,alpha,beta,player):

if depth == 0:

arr = [1,-1]

return random.choices(arr)[0]

if player == 1:

points = MIN

for child in range(2):

points = max(points, alpha\_beta\_prunning(depth - 1, alpha, beta, 1 - player))

alpha = max(alpha, points)

if beta <= alpha:

break

return points

else:

points = MAX

for child in range(2):

points = min(points, alpha\_beta\_prunning(depth - 1, alpha, beta, 1 - player))

beta = min(beta, points)

if beta <= alpha:

break

return points

while rounds\_played<3:

MIN = -math.inf

MAX = math.inf

result = alpha\_beta\_prunning(5, MIN, MAX, current\_player)

if result > 0:

rounds\_winner.append("Sub-Zero")

else:

rounds\_winner.append("Scorpion")

rounds\_played += 1

current\_player = 1 - current\_player

if rounds\_winner.count("Scorpion") >=2 :

break

if rounds\_winner.count("Sub-Zero") >=2 :

break

return rounds\_winner

inp = int(input("0 for Scorpion, 1 for Sub-Zero: "))

rounds\_winner = mortal\_kombat(inp)

if rounds\_winner.count("Scorpion") >=2 :

print("Game Winner: Scorpion")

else:

print("Game Winner: Sub-Zero")

print("Total Rounds Played:",len(rounds\_winner))

for i in range(len(rounds\_winner)):

print(f"Winner of Round {i+1}: {rounds\_winner[i]}")

#task 2

import math

def minimax(depth, idx, maximizingPlayer, arr, alpha, beta):

if depth == 3:

return arr[idx]

if maximizingPlayer:

best = MIN

for i in range(0, 2):

val = minimax(depth + 1, idx \* 2 + i, False, arr, alpha, beta)

best = max(best, val)

alpha = max(alpha, best)

if beta <= alpha:

break

return best

else:

best = MAX

for i in range(0, 2):

val = minimax(depth + 1, idx \* 2 + i, True, arr, alpha, beta)

best = min(best, val)

beta = min(beta, best)

if beta <= alpha:

break

return best

values = [3,6,2,3,7,1,2,0]

MAX, MIN = math.inf, -math.inf

final = minimax(0, 0, True, values, MIN, MAX)

c = int(input())

if (max(values) - c) > final:

print(f"The new minimax value is {max(values) - c}. Pacman goes right and uses dark magic")

else:

print(f"The minimax values is {final}. Pacman does not use dark magic")