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# Compsciprep
# JR Contest 4

import sympy
import math

opponent_1 = []
rolls_1 = []

# All Corners that are between horizontal to vertical places
h_vCorners = [7, 12, 17, 22, 27, 25, 40, 45, 50]

# Finds nearest multiple place on path
def find_nearest_multiple(roll_val, end, start):
    for i in range(end, start, -1):
        if i % roll_val == 0:
            if i not in opponent_1:
                return i
    return start

# Checks if a horizontal to vertical path has been done
def is_htv(start, end):
    for i in h_vCorners:
        if start < i < end:
            return True
    return False

def patolli(num_str):
    lst = num_str.split(" ")
    opponent = lst[:3]
    global opponent_1
    opponent_1 = []
    player = int(lst[3])
    num_rolls = int(lst[4])
    rolls = lst[5:]
    global rolls_1
    rolls_1 = []
    # Convert Opponent string to an array
    for i in opponent:
        opponent_1.append(int(i))
    # Convert Rolls string to an array
    for i in rolls:
        rolls_1.append(int(i))
    for i in range(num_rolls):
        startPoint = player
        # Checks if on unoccupied location
        if player + rolls_1[i] in opponent_1 or player + rolls_1[i] > 52:
            continue
        else:
            player += rolls_1[i]
            if player == 52:
                # GAME OVER
                return "GAME OVER"
            # Checks if lands on prime
            if sympy.isprime(player):
                for j in range(6):
                    if player + 1 in opponent_1:
                        break
                else:
                    player += 1
            # Checks if lands on perfect square
            elif math.sqrt(player) == int(math.sqrt(player)) and player > 4:
                for j in range(6):
                    if player - 1 in opponent_1:
                        break

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        else:
            player -= 1
    else:
        if is_htv(startPoint, player):
            player = find_nearest_multiple(rolls_1[i], player, startPoint)

    return player

# All inputs
inputs = ["25 27 49 22 7 2 2 6 6 5 3 6",
          "50 41 38 45 9 4 2 5 3 1 6 4 3 1",
          "21 26 30 19 6 6 4 6 1 2 3",
          "5 14 18 2 7 2 5 4 5 2 1 6",
          "10 17 20 9 12 4 5 3 1 6 2 3 3 5 4 1 6"]

ind = 1
for inp in inputs:
    output = patolli(inp)
    print(str(ind) + ". " + str(output))
    ind += 1
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