import hashlib

def calculate\_hash(data):

return hashlib.sha256(data.encode('utf-8')).hexdigest()

def find\_nonce(difficulty\_level):

sender\_email = input("Sender's email address: ")

recipient\_email = input("Recipient's email address: ")

email\_subject = input("Email subject: ")

message\_body = input("Message body: ")

nonce = 0

attempts = 0

while True:

data = sender\_email + recipient\_email + email\_subject + message\_body + str(nonce)

hash\_result = calculate\_hash(data)

if hash\_result[:difficulty\_level] == 'f' \* difficulty\_level:

return nonce, attempts

nonce += 1

attempts += 1

# Task 1

print("Task 1: Finding nonce with difficulty level of 2 bytes (first two hex digits as 'ff')")

nonce\_1, attempts\_1 = find\_nonce(2)

print(f"Nonce found: {nonce\_1}")

print(f"Attempts made: {attempts\_1}")

# Task 2

print("Task 2: Finding nonce with difficulty level of 4 bytes (first four hex digits as 'ffff')")

nonce\_2, attempts\_2 = find\_nonce(4)

print(f"Nonce found: {nonce\_2}")

print(f"Attempts made: {attempts\_2}")