program for DSA, because the value of k is generated for each signature, even if the same message is signed twice on different occasions, the signatures will differ. This is not true of RSA signatures. Write a C program for implication of this difference?

import random

from hashlib import sha1

p = 23

q = 11

g = 4

x = random.randint(1, q-1)

y = pow(g, x, p)

def sign(msg, k):

r = pow(g, k, p) % q

k\_inv = pow(k, -1, q)

h = int(sha1(msg.encode()).hexdigest(), 16)

s = (k\_inv \* (h + x \* r)) % q

return r, s

msg = "HELLO"

k1 = random.randint(1, q-1)

k2 = random.randint(1, q-1)

sig1 = sign(msg, k1)

sig2 = sign(msg, k2)

print("Message:", msg)

print("Private key x:", x)

print("Public key y:", y)

print("Signature 1:", sig1)

print("Signature 2:", sig2) 