22) Write a PYTHON 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?

PROGRAM:-

```
from cryptography.hazmat.primitives import hashes
from cryptography.hazmat.primitives.asymmetric import dsa
from cryptography.hazmat.primitives.asymmetric.utils import Prehashed
# Generate a DSA private key
private_key = dsa.generate_private_key(key_size=2048)
public_key = private_key.public_key()
# Message to be signed
message = b"This is a test message."
# Sign the message twice
signature1 = private_key.sign(message, hashes.SHA256())
signature2 = private_key.sign(message, hashes.SHA256())
# Output the signatures
print("DSA Signature 1:", signature1.hex())
print("DSA Signature 2:", signature2.hex())
print("Signatures are equal?", signature1 == signature2)
```

OUTPUT:-

```
DSA Signature 1: 3045022011c25f6bda4732e1ea2f4edb32551fc3db3b0f9cd79f540fd660000c9cdacaeb022100b37fbc0c8a7a57b10c30af1803797ac2ee7f0d4ca65b8a51b06eec9dd36f70b3
DSA Signature 2: 3046022100b1f561fc0ed15a3acf4de8c4dd371343e2ebf422ce7b9c4ed2619870bb45825f0221008de21b459b41a1a4148860081419309 4b7a91510964fae1492ca7795ea8aa939
Signatures are equal? False
```