Cryptography & Network Security

PRN - 2019BTECS00026

Name - Niraja Vasudev Kulkarni

Batch - B1

Assignment - 14

Title: Digital Certificate Generation

Aim: To Demonstrate Digital Certificate Generation using keytool

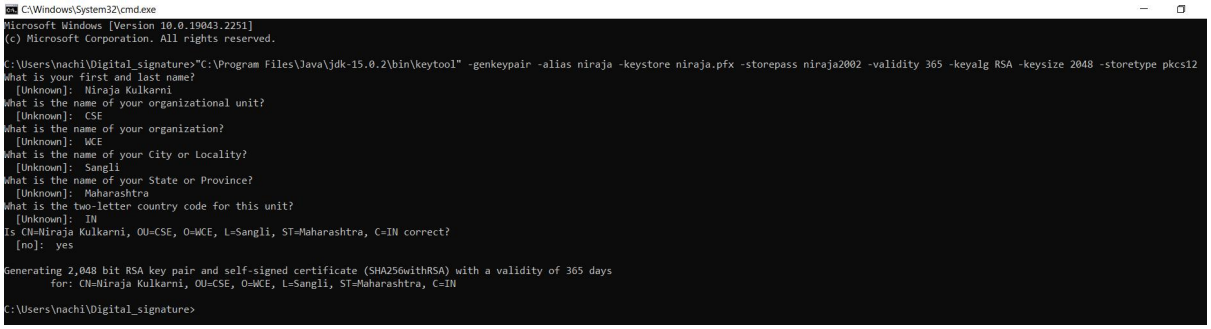
Theory:

Digital certificate is issued by a trusted third party which proves sender's identity to the receiver and receiver's identity to the sender. A digital certificate is a certificate issued by a Certificate Authority (CA) to verify the identity of the certificate holder. The CA issues an encrypted digital certificate containing the applicant's public key and a variety of other identification information. Digital certificate is used to attach public key with a particular individual or an entity.

Digital certificate contains:-

Name of certificate holder, Serial number which is used to uniquely identify a certificate, the individual or the entity identified by the certificate, Expiration dates, Copy of certificate holder's public key, Digital Signature of the certificate issuing authority.

Screenshots:



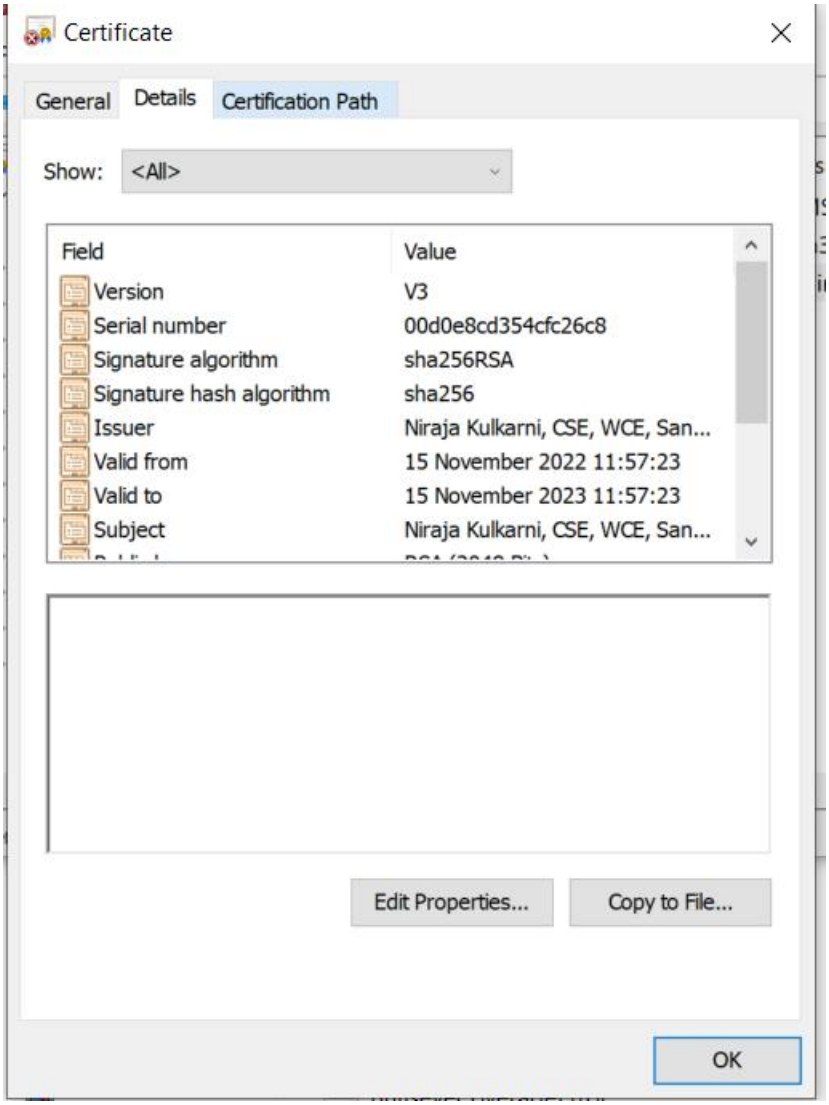

```
C:\Users\nachi\Digital_signature>keytool -v -list -keystore niraja.pfx
Enter keystore password:
Keystore type: PKCS12
Keystore provider: SUN

Your keystore contains 1 entry

Alias name: niraja
Creation date: 15-Nov-2022
Entry type: PrivateKeyEntry
Certificate chain length: 1
Certificate[1]:
Owner: CN=Niraja Kulkarni, OU=CSE, O=WCE, L=Sangli, ST=Maharashtra, C=IN
Issuer: CN=Niraja Kulkarni, OU=CSE, O=WCE, L=Sangli, ST=Maharashtra, C=IN
Serial number: d0e8cd354cfc26c8
Valid from: Tue Nov 15 11:57:23 IST 2022 until: Wed Nov 15 11:57:23 IST 2023
Certificate fingerprints:
         SHA1: 9F:F3:A3:B6:08:E0:DA:37:58:8C:02:DE:72:84:17:73:5A:66:CD:58
         SHA256: 4E:CB:23:94:90:A8:E4:D3:50:0A:BC:14:B5:51:10:F3:5F:8A:40:F7:6F:F2:47:44:52:F7:70:94:EC:2C:5E:EB
Signature algorithm name: SHA256withRSA
Subject Public Key Algorithm: 2048-bit RSA key
Version: 3

Extensions:

#1: ObjectId: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
KeyIdentifier [
0000: 0C BB 10 08 B3 B5 04 DD   75 76 34 29 DA 00 7C 1C  ........uv4)....
0010: 8B 06 E9 ED                                        ....
]
]
```



Conclusion:

Digital certificate is a file that ensures holder's identity and provides security. It is generated by CA (Certifying Authority) that involves four steps: Key Generation, Registration, Verification and Creation.