Experiment Number 03

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Subject ::	Privacy & Security lab	CODE ::	CSD-431
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1. Aim :

Explore, visualize and summarize CRYPTOGRAPHY KEYS

2. Task :

1. To write the definations and important terms use in cryptography keys.

3. Observations :

Public Key Infrastructure (PKI)

PKI provides assurance of public key. It provides the identification of public keys and their distribution. An anatomy of PKI comprises of the following components.

- Public Key Certificate, commonly referred to as 'digital certificate'.
- Private Key tokens.
- Certification Authority.
- Registration Authority.
- Certificate Management System.

Digital Certificate

For analogy, a certificate can be considered as the ID card issued to the person. People use ID cards such as a driver's license, passport to prove their identity. A digital certificate does the same basic thing in the electronic world, but with one difference.
Digital Certificates are not only issued to people but they can be issued to computers, software packages or anything else that need to prove the identity in the electronic world.
Digital certificates are based on the ITU standard X.509 which defines a standard certificate format for public key certificates and certification validation. Hence digital certificates are sometimes also referred to as X.509 certificates.

Certifying Authority (CA)

As discussed above, the CA issues certificate to a client and assist other users to verify the certificate. The CA takes responsibility for identifying correctly the identity of the client asking for a certificate to be issued, and ensures that the information contained within the certificate is correct and digitally signs it.

Key Functions of CA

The key functions of a CA are as follows -

- Generating key pairs - The CA may generate a key pair independently or jointly with the client.
- Issuing digital certificates - The CA could be thought of as the PKI equivalent of a passport agency - the CA issues a certificate after client provides the credentials to confirm his identity. The CA then signs the certificate to prevent modification of the details contained in the certificate.
- Publishing Certificates - The CA need to publish certificates so that users can find them. There are two ways of achieving this. One is to publish certificates in the equivalent of an electronic telephone directory. The other is to send your certificate out to those people you think might need it by one means or another.
- Verifying Certificates - The CA makes its public key available in environment to assist verification of his signature on clients' digital certificate.
- Revocation of Certificates - At times, CA revokes the certificate issued due to some reason such as compromise of private key by user or loss of trust in the client. After revocation, CA maintains the list of all revoked certificate that is available to the environment.

Classes of a Digital Certificate:

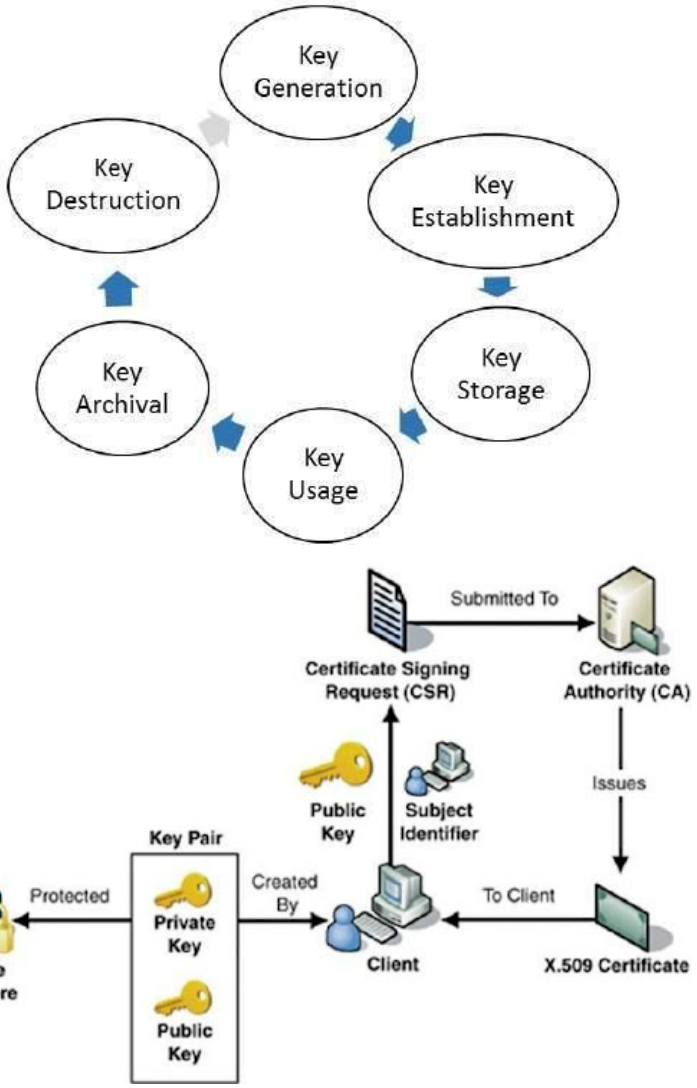
A digital certificate can be divided into four broad categories. These are :

- Class 1: These can be obtained by only providing the email address.
- Class 2: These need more personal information.
- Class 3: This first checks the identity of the person making a request.
- Class 4: They are used by organizations and governments.

Process of creation of certificate:

The creation of a certificate takes place as follows:

- Private and public keys are created.
- CA requests identifying attributes of the owner of a private key.
- Public key and attributes are encoded into a CSR or Certificate Signing Request.
- Key owner signs that CSR to prove the possession of a private key.
- CA signs the certificate after validation.



Learning Outcomes :

- Learned how cryptography keys work.
- Revocation in cryptography.
- Certification Authority.
- Public Key Infrastructure

S. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			