Generate a Self-Signed SSL Certificate	
Generate a Private Key:	openssl genrsa -out private.key 2048
Create a Certificate Signing Request (CSR): You'll be prompted for details like: • Country Name (e.g., US) • State/Province • Organization Name • Common Name (your domain or localhost).	openssl req -new -key private.key -out request.csr
Generate the Self-Signed Certificate:	openssl x509 -req -days 365 -in request.csr -signkey private.key -out certificate.crt
You'll now have: • private.key (your private key) • request.csr (the CSR file) • certificate.crt (the self-signed certificate)	

Converting Certificates Between Formats	
Convert PEM to DER	openssl x509 -outform der -in certificate.crt -out certificate.der
Convert PEM to PKCS12 (for Windows IIS)	openssl pkcs12 -export -out certificate.pfx -inkey private.key -in certificate.crt

Encrypting and Decrypting Files	
Encrypt a File:	openssl enc -aes-256-cbc -salt -in file.txt -out file.enc
Decrypt a File:	openssl enc -aes-256-cbc -d -in file.enc -out file_decrypted.txt

Generating a Hash (Checksum)	openssl dgst -sha256 file.txt

Check HTTPS Certificate Details:	openssl s_client -connect google.com:443

Creating a Root CA If you need to act as your own Certificate Authority (CA), follow these steps.	
Generate the Root CA Key:	openssl genrsa -out rootCA.key 2048
Create the Root CA Certificate:	openssl req -x509 -new -nodes -key rootCA.key -sha256 -days 1024 -out rootCA.pem
Sign a Certificate with Your Root CA:	openssl x509 -req -in request.csr -CA rootCA.pem -CAkey rootCA.key -CAcreateserial -out signed_certificate.crt -days 500 -sha256

Checking Certificate Details	
Inspect a Certificate:	openssl x509 -in certificate.crt -text -noout
Verify a Certificate:	openssl verify -CAfile rootCA.pem signed_certificate.crt

Export Public Key	
To extract the public key from a private key:	openssl rsa -in private.key -pubout -out public.key

Create Random Passwords or Files	
Generate a Random Password:	openssl rand -base64 12
Generate a Random File:	openssl rand -out randomfile.bin 1024

Debugging SSL/TLS Issues	
Check for SSL/TLS Vulnerabilities:	openssl s_client -connect <hostname>:443 -tls1_2
Debug Certificate Chains:	openssl s_client -connect <hostname>:443 -showcerts