**AES**

import javax.crypto.Cipher;

import javax.crypto.KeyGenerator;

import javax.crypto.SecretKey;

import java.util.Base64;

public class AES {

public static void main(String[] args) throws Exception {

KeyGenerator keyGen = KeyGenerator.getInstance("AES");

keyGen.init(128); // AES-128 bit key

SecretKey secretKey = keyGen.generateKey();

Cipher cipher = Cipher.getInstance("AES");

// Encrypt

String plainText = "Hello, AES!";

cipher.init(Cipher.ENCRYPT\_MODE, secretKey);

byte[] encryptedBytes = cipher.doFinal(plainText.getBytes());

String encryptedText = Base64.getEncoder().encodeToString(encryptedBytes);

System.out.println("AES Encrypted: " + encryptedText);

// Decrypt

cipher.init(Cipher.DECRYPT\_MODE, secretKey);

byte[] decryptedBytes = cipher.doFinal(Base64.getDecoder().decode(encryptedText));

System.out.println("AES Decrypted: " + new String(decryptedBytes));

}

}

**DES**

import javax.crypto.Cipher;

import javax.crypto.KeyGenerator;

import javax.crypto.SecretKey;

import java.util.Base64;

public class DES {

public static void main(String[] args) throws Exception {

KeyGenerator keyGen = KeyGenerator.getInstance("DES");

keyGen.init(56); // DES key size

SecretKey secretKey = keyGen.generateKey();

Cipher cipher = Cipher.getInstance("DES");

// Encrypt

String plainText = "Hello, DES!";

cipher.init(Cipher.ENCRYPT\_MODE, secretKey);

byte[] encryptedBytes = cipher.doFinal(plainText.getBytes());

String encryptedText = Base64.getEncoder().encodeToString(encryptedBytes);

System.out.println("DES Encrypted: " + encryptedText);

// Decrypt

cipher.init(Cipher.DECRYPT\_MODE, secretKey);

byte[] decryptedBytes = cipher.doFinal(Base64.getDecoder().decode(encryptedText));

System.out.println("DES Decrypted: " + new String(decryptedBytes));

}

}

**RSA**

import java.security.KeyPair;

import java.security.KeyPairGenerator;

import java.security.PrivateKey;

import java.security.PublicKey;

import javax.crypto.Cipher;

import java.util.Base64;

public class RSA {

public static void main(String[] args) throws Exception {

// Generate Key Pair

KeyPairGenerator keyGen = KeyPairGenerator.getInstance("RSA");

keyGen.initialize(2048); // RSA key size

KeyPair keyPair = keyGen.generateKeyPair();

PublicKey publicKey = keyPair.getPublic();

PrivateKey privateKey = keyPair.getPrivate();

Cipher cipher = Cipher.getInstance("RSA");

// Encrypt

String plainText = "Hello, RSA!";

cipher.init(Cipher.ENCRYPT\_MODE, publicKey);

byte[] encryptedBytes = cipher.doFinal(plainText.getBytes());

String encryptedText = Base64.getEncoder().encodeToString(encryptedBytes);

System.out.println("RSA Encrypted: " + encryptedText);

// Decrypt

cipher.init(Cipher.DECRYPT\_MODE, privateKey);

byte[] decryptedBytes = cipher.doFinal(Base64.getDecoder().decode(encryptedText));

System.out.println("RSA Decrypted: " + new String(decryptedBytes));

}

}