**Experiment No. 7**

**Implementation of AES**

import javax.crypto.Cipher;

import javax.crypto.KeyGenerator;

import javax.crypto.SecretKey;

import javax.crypto.spec.GCMParameterSpec;

import java.util.Base64;

public class AES\_ENCRYPTION {

private SecretKey key;

private final int KEY\_SIZE = 128;

private final int DATA\_LENGTH = 128;

private Cipher encryptionCipher;

public void init() throws Exception {

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

keyGenerator.init(KEY\_SIZE);

key = keyGenerator.generateKey();

}

public String encrypt(String data) throws Exception {

byte[] dataInBytes = data.getBytes();

encryptionCipher = Cipher.getInstance("AES/GCM/NoPadding");

encryptionCipher.init(Cipher.ENCRYPT\_MODE, key);

byte[] encryptedBytes = encryptionCipher.doFinal(dataInBytes);

return encode(encryptedBytes);

}

public String decrypt(String encryptedData) throws Exception {

byte[] dataInBytes = decode(encryptedData);

Cipher decryptionCipher = Cipher.getInstance("AES/GCM/NoPadding");

GCMParameterSpec spec = new GCMParameterSpec(DATA\_LENGTH, encryptionCipher.getIV());

decryptionCipher.init(Cipher.DECRYPT\_MODE, key, spec);

byte[] decryptedBytes = decryptionCipher.doFinal(dataInBytes);

return new String(decryptedBytes);

}

private String encode(byte[] data) {

return Base64.getEncoder().encodeToString(data);

}

private byte[] decode(String data) {

return Base64.getDecoder().decode(data);

}

public static void main(String[] args) {

try {

AES\_ENCRYPTION aes\_encryption = new AES\_ENCRYPTION();

aes\_encryption.init();

String encryptedData = aes\_encryption.encrypt("Hello, welcome to the encryption world");

String decryptedData = aes\_encryption.decrypt(encryptedData);

System.out.println("Encrypted Data : " + encryptedData);

System.out.println("Decrypted Data : " + decryptedData);

} catch (Exception ignored) {

}

}

}

**OUTPUT:**

A screenshot of a computer program

Description automatically generated with medium confidence

A screen shot of a computer program

Description automatically generated with medium confidenceA screenshot of a computer program

Description automatically generated with medium confidence

A screenshot of a computer program

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