**Lab Practical #09:**

1. Implementation of Block Cipher mode of Operation - Cipher Feedback mode (CFB).

**Program:**

import java.util.Scanner;

public class CFB {

    public static void main(String[] args) {

        String encTextString = "";

        String decTextString = "";

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter Plain Text(8 bits) :");

        String plainTextString = sc.nextLine();

        System.out.println("Enter Key (8 bits) :");

        String keyTextString = sc.nextLine();

        String initialvector = "12345678";

        char[] pt = plainTextString.toCharArray();

        for (int i = 0; i < pt.length; i=i+4) {

int encryptedAns = Integer.parseInt(keyTextString) ^ Integer.parseInt(initialvector);

            String encryptedAnsString = Integer.toString(encryptedAns);

String encryptedSubString = encryptedAnsString.substring(i,i+4);

            String plainSubString = plainTextString.substring(i, i+4);

            int xorOfPlainAndEncryptrd = Integer.parseInt(encryptedSubString) ^ Integer.parseInt(plainSubString);

            encTextString += xorOfPlainAndEncryptrd;

            initialvector = encryptedAnsString.substring(i+4,8) + xorOfPlainAndEncryptrd;}

        System.out.println("Encrypted Text :"+encTextString);

        initialvector = "12345678";

        char[] cipherTextArray = encTextString.toCharArray();

        for (int i = 0; i < cipherTextArray.length; i=i+4) {

            int encryptedAns = Integer.parseInt(keyTextString) ^ Integer.parseInt(initialvector);

            String encryptedAnsString = Integer.toString(encryptedAns);

            String encryptedSubString = encryptedAnsString.substring(i,i+4);

            String cipherSubString = encTextString.substring(i, i+4);

            int xorOfCipherAndEncryptrd = Integer.parseInt(encryptedSubString) ^ Integer.parseInt(cipherSubString);

            decTextString += xorOfCipherAndEncryptrd;

            initialvector =encryptedAnsString.substring(i+4,8)+ cipherSubString;

        }

        System.out.println("Decrypted Text :"+decTextString);

    }

}

**Output:**

Enter Plain Text(8 bits) :

12345678

Enter Key (8 bits) :

21321321

Encrypted Text :21081099

Decrypted Text :12345678