* **Program Code:**

import java.util.\*;

public class simpleColumnar{

public static void main(String sap[]){

Scanner sc = new Scanner(System.in);

System.out.println("BCOB131 Pratik Bangal");

System.out.println("\nEnter plaintext(enter in lower case): ");

String message = sc.next();

System.out.print("\nEnter key in numbers: ");

String key = sc.next();

int columnCount = key.length();

int rowCount = (message.length()+columnCount)/columnCount;

int plainText[][] = new int[rowCount][columnCount];

int cipherText[][] = new int[rowCount][columnCount];

System.out.print("\n-----Encryption-----\n");

cipherText = encrypt(plainText, cipherText, message, rowCount, columnCount, key);

String ct = "";

for(int i=0; i<columnCount; i++)

{

for(int j=0; j<rowCount; j++)

{

if(cipherText[j][i] == 0)

ct = ct + 'x';

else{

ct = ct + (char)cipherText[j][i];

}

}

}

System.out.print("\nCipher Text: " + ct);

System.out.print("\n\n\n-----Decryption-----\n");

plainText = decrypt(plainText, cipherText, ct, rowCount, columnCount, key);

String pt = "";

for(int i=0; i<rowCount; i++)

{

for(int j=0; j<columnCount; j++)

{

if(plainText[i][j] == 0)

pt = pt + "";

else{

pt = pt + (char)plainText[i][j];

}

}

}

System.out.print("\nPlain Text: " + pt);

System.out.println();

}

static int[][] encrypt(int plainText[][], int cipherText[][], String message, int rowCount,

int columnCount, String key){

int i,j;

int k=0;

for(i=0; i<rowCount; i++)

{

for(j=0; j<columnCount; j++)

{

if(k < message.length())

{

plainText[i][j] = (int)message.charAt(k);

k++;

}

else

{

break;

}

}

}

for(i=0; i<columnCount; i++)

{

int currentCol= ( (int)key.charAt(i) - 48 ) -1;

for(j=0; j<rowCount; j++)

{

cipherText[j][i] = plainText[j][currentCol];

}

}

System.out.print("Cipher Array(read column by column): \n");

for(i=0;i<rowCount;i++){

for(j=0;j<columnCount;j++){

System.out.print((char)cipherText[i][j]+"\t");

}

System.out.println();

}

return cipherText;

}

static int[][] decrypt(int plainText[][], int cipherText[][], String message, int rowCount,

int columnCount, String key){

int i,j;

int k=0;

for(i=0; i<columnCount; i++)

{

int currentCol= ( (int)key.charAt(i) - 48 ) -1;

for(j=0; j<rowCount; j++)

{

plainText[j][currentCol] = cipherText[j][i];

}

}

System.out.print("Plain Array(read row by row): \n");

for(i=0;i<rowCount;i++){

for(j=0;j<columnCount;j++){

System.out.print((char)plainText[i][j]+"\t");

}

System.out.println();

}

return plainText;

}

}

* **Output:**

