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**Is 1st)**

Input :

**void main(){**

**char str[]="Hello World";**

**int i,len;**

**len = strlen(str);**

**for(i=0;i<len;i++){**

**printf("%c",str[i]&127);**

**}**

**printf("\n");**

**for(int i=0;i<len;i++){**

**printf("%c",str[i]^127);**

**}**

**printf("\n");**

**for(int i=0;i<len;i++){**

**printf("%c",str[i]|127);**

**}**

**printf("\n");**

**}**

OUTPUT

**Hello World**

**2nd**

**Is 2nd ) transposition technique**

**Input :**

**import java.io.\*;**

**import java.util.\*;**

**public class IS**

**{**

**public static String selectedKey;**

**public static char sortedKey[];**

**public static int sortedKeyPos[];**

**public IS()**

**{**

**selectedKey = "BSIOTR";**

**sortedKeyPos = new int[selectedKey.length()];**

**sortedKey = selectedKey.toCharArray();**

**}**

**public IS(String Informationsecurity)**

**{**

**selectedKey = Informationsecurity;**

**sortedKeyPos = new int[selectedKey.length()];**

**sortedKey = selectedKey.toCharArray();**

**}**

**public static void doProcessOnKey()**

**{**

**int min, i, j;**

**char orginalKey[] = selectedKey.toCharArray();**

**char temp;**

**for (i = 0; i < selectedKey.length(); i++) {**

**min = i;**

**for (j = i; j < selectedKey.length(); j++) {**

**if (sortedKey[min] > sortedKey[j]) {**

**min = j;**

**}**

**}**

**if (min != i) {**

**temp = sortedKey[i];**

**sortedKey[i] = sortedKey[min];**

**sortedKey[min] = temp;**

**}**

**}**

**for (i = 0; i < selectedKey.length(); i++) {**

**for (j = 0; j < selectedKey.length(); j++) {**

**if (orginalKey[i] == sortedKey[j])**

**sortedKeyPos[i] = j;**

**}**

**}**

**}**

**public static String doEncryption(String plainText)**

**{**

**int min, i, j;**

**char orginalKey[] = selectedKey.toCharArray();**

**char temp;**

**doProcessOnKey();**

**int row = plainText.length() / selectedKey.length();**

**int extrabit**

**= plainText.length() % selectedKey.length();**

**int exrow = (extrabit == 0) ? 0 : 1;**

**int rowtemp = -1, coltemp = -1;**

**int totallen = (row + exrow) \* selectedKey.length();**

**char pmat[][] = new char[(row + exrow)]**

**[(selectedKey.length())];**

**char encry[] = new char[totallen];**

**int tempcnt = -1;**

**row = 0;**

**for (i = 0; i < totallen; i++) {**

**coltemp++;**

**if (i < plainText.length()) {**

**if (coltemp == (selectedKey.length())) {**

**row++;**

**coltemp = 0;**

**}**

**pmat[row][coltemp] = plainText.charAt(i);**

**}**

**else {**

**pmat[row][coltemp] = '-';**

**}**

**}**

**int len = -1, k;**

**for (i = 0; i < selectedKey.length(); i++) {**

**for (k = 0; k < selectedKey.length(); k++) {**

**if (i == sortedKeyPos[k]) {**

**break;**

**}**

**}**

**for (j = 0; j <= row; j++) {**

**len++;**

**encry[len] = pmat[j][k];**

**}**

**}**

**String p1 = new String(encry);**

**return (new String(p1));**

**}**

**public static String doDecryption(String s)**

**{**

**int min, i, j, k;**

**char key[] = selectedKey.toCharArray();**

**char encry[] = s.toCharArray();**

**char temp;**

**doProcessOnKey();**

**int row = s.length();**

**selectedKey.length();**

**char pmat[][]**

**= new char[row][(selectedKey.length())];**

**int tempcnt = -1;**

**for (i = 0; i < selectedKey.length(); i++) {**

**for (k = 0; k < selectedKey.length(); k++) {**

**if (i == sortedKeyPos[k]) {**

**break;**

**}**

**}**

**for (j = 0; j < row; j++) {**

**tempcnt++;**

**pmat[j][k] = encry[tempcnt];**

**}**

**}**

**char p1[] = new char[row \* selectedKey.length()];**

**k = 0;**

**for (i = 0; i < row; i++) {**

**for (j = 0; j < selectedKey.length(); j++) {**

**if (pmat[i][j] != '\*') {**

**p1[k++] = pmat[i][j];**

**}**

**}**

**}**

**p1[k++] = '\0';**

**return (new String(p1));**

**}**

**@SuppressWarnings("static-access")**

**public static void main(String[] args)**

**{**

**IS tc = new IS();**

**System.out.println("Cipher Text : "**

**+ tc.doEncryption("Hello Students"));**

**}**

**}**

**OUTPUT**

**Cipher Text : HStlu-ld- n-etsoe-**

**IS 5th ) RSA algorithm**

**Problem Statement : Write a Java/C/C++/Python program to implement RSA algorithm**

**Input :**

// Java Program to Implement the RSA Algorithm

import java.math.\*;

import java.util.\*;

class Main {

public static void main(String args[])

{

int p, q, n, z, d = 0, e, i;

int msg = 12;

double c;

BigInteger msgback;

p = 3;

q = 11;

n = p \* q;

z = (p - 1) \* (q - 1);

System.out.println("the value of z = " + z);

for (e = 2; e < z; e++) {

if (gcd(e, z) == 1) {

break;

}

}

System.out.println("the value of e = " + e);

for (i = 0; i <= 9; i++) {

int x = 1 + (i \* z);

if (x % e == 0) {

d = x / e;

break;

}

}

System.out.println("the value of d = " + d);

c = (Math.pow(msg, e)) % n;

System.out.println("Encrypted message is : " + c);

BigInteger N = BigInteger.valueOf(n);

BigInteger C = BigDecimal.valueOf(c).toBigInteger();

msgback = (C.pow(d)).mod(N);

System.out.println("Decrypted message is : "

+ msgback);

}

static int gcd(int e, int z)

{

if (e == 0)

return z;

else

return gcd(z % e, e);

}

}

**OUTPUT**

