**Practical no -5 Roll no -05,46**

import java.util.\*;

import java.math.\*;

class RSA8

{

public static void main(String [] args)

{

BigInteger one,p,q,E,D,n,P,Q;

Scanner sc=new Scanner(System.in);

Scanner t=new Scanner(System.in);

System.out.println("Enter A's Prime number ");

p=sc.nextBigInteger();

System.out.println("Enter B's Prime number ");

q=sc.nextBigInteger();

n=p.multiply(q);

P=p.subtract(BigInteger.ONE);

Q=q.subtract(BigInteger.ONE);

int x=0;

do

{

System.out.println("Enter public key");

E=sc.nextBigInteger();

if(((P.gcd(E)).equals(BigInteger.ONE))&&((Q.gcd(E)).equals(BigInteger.ONE)))

{

x++;

}

}

while(x==0);

for(int i=1;;i++)

{

D=new BigInteger(String.valueOf(i));

if(((D.multiply(E)).mod(P.multiply(Q))).equals(BigInteger.ONE))

break;

}

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

String in=" ",out=" ",text=t.nextLine();

for(int i=0;i<text.length();i++)

{

BigInteger T=new BigInteger(String.valueOf((int)(text.charAt(i))));

BigInteger O,TF;

O=T.modPow(E,n);

out+=(char)O.intValue();

TF=O.modPow(D,n);

in+=(char)(TF.intValue());

}

System.out.println("Encrypted text:"+out);

System.out.println("Decrypted text:"+in);

}

}

**Output :**

**D:\TYCS\INS>java RSA8**

**Enter A's Prime number**

**23**

**Enter B's Prime number**

**29**

**Enter public key**

**5**

**Enter Plain Text:**

**ashish**

**d:493**

**DDE97**

**DDE115**

**DDE104**

**DDE105**

**DDE115**

**DDE104**

**Encrypted text: Bs?Is?**

**Decrypted text: ashish**