

```
import java.util.*;

class Exp1
{
    public static void main(String args[]) {
        Scanner sc=new Scanner(System.in);

        int d=0;

        System.out.println("Enter two prime numbers");

        int p=sc.nextInt();
        int q=sc.nextInt();

        int n=p*q;

        System.out.println("n="+n);

        int e=0;

        int pn=(p-1)*(q-1);

        search:
        {
            for(int i=2;i<=pn;i++)
            {
                int r;
                int j=i;
                int k=pn;
                while(k != j)
                {
                    if(k > j)
                        k = k-j;
                    else
                        j = j-k;
                }
            }
        }
    }
}
```

```

}
if(k==1)
{
e=i;
break search;
}
}
}
System.out.println("e="+e);
go: {
for(int i=1;i<=pn;i++)
{
int x=(e*i)%pn;
if(x==1)
{
System.out.println("d="+i);
System.out.println("The private key is (d) "+i);
d=i;
break go;
}
}
}
System.out.println("The public key is (n,e) "+n+", "+e);
String t;
int c;
System.out.println("Enter plaintext");

```

```
t=sc.next();  
int m = 0;  
for (int i = 0; i < t.length(); i++){  
    m+= (int)t.charAt(i);  
}  
c=((m)^e)%n;  
System.out.println("The Encrypted message is "+m);  
m=(c^d)%n;  
System.out.println("The decrypted message is "+t);  
}  
}
```

OUTPUT

```
Enter two prime numbers  
13  
17  
n=221  
e=5  
d=77  
The private key is (d) 77  
The public key is (n,e) 221, 5  
Enter plaintext  
hellobrother  
The Encrypted message is 1290  
The decrypted message is hellobrother
```