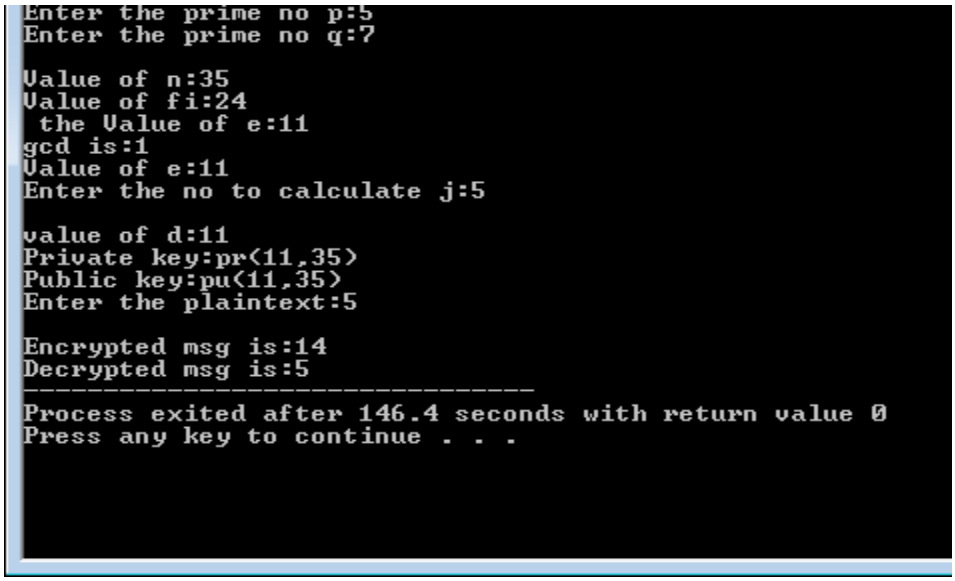
Name: Patil Aditi Vinaykumar

Div : B Batch :T4

```
#include<iostream>
#include<cmath>
using namespace std;
int main()
{
	int p,q,d,e,fi,n,gcd,i;
	cout<<"Enter the prime no p:";
	cin>>p;
	cout<<"Enter the prime no q:";
	cin>>q;
	n=p*q;
	cout<<"\nValue of n:"<<n;
	fi=(p-1)*(q-1);
	cout<<"\nValue of fi:"<<fi;

	cout<<"\n the Value of e:";
	cin>>e;

	for(i=1;i<=fi&&i<=e;i++)
	{
		if(fi%i==0&&e%i==0)
		gcd=i;
	}
	cout<<"gcd is:"<<gcd;

	if(1<e<fi&&gcd==1)
	{
		cout<<"\nValue of e:"<<e;
	}
```

```
        else
        {
                cout<<"\nInvalid Value";
        }
        int j,no;
        cout<<"\nEnter the no to calculate j:";
        cin>>no;
        for(j=1;j<=no;j++)
        {
                d=((fi*j)+1)/e;
                if(d%e==0)
                {
                        cout<<"\nvalue of d:"<<d;
                        break;
                }
                else
                j++;
        }
        cout<<"\nPrivate key:"<<"pr("<<d<<","<<n<<")";
        cout<<"\nPublic key:"<<"pu("<<e<<","<<n<<")";
        int c,m,m1;
        cout<<"\nEnter the plaintext:";
        cin>>m;
        c=m^e%n;
        cout<<"\nEncrypted msg is:"<<c;
        m1=c^d%n;
        cout<<"\nDecrypted msg is:"<<m1;
        return 0;
}
```

Output:


Enter the prime no p:5
Enter the prime no q:7
Value of n:35
Value of fi:24
the Value of e:11
gcd is:1
Value of e:11
Enter the no to calculate j:5
value of d:11
Private key:pr(11,35)
Public key:pu(11,35)
Enter the plaintext:5
Encrypted msg is:14
Decrypted msg is:5
Process exited after 146.4 seconds with return value 0
Press any key to continue . . .