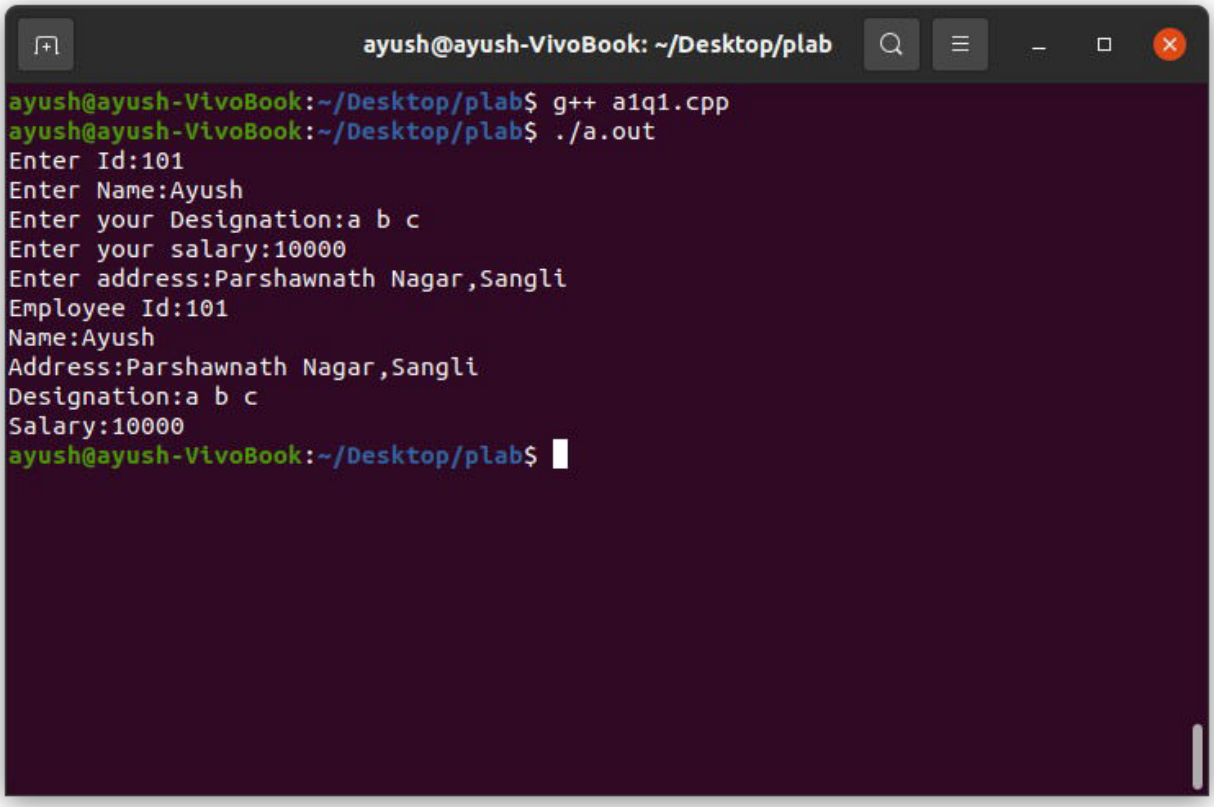
Programming Lab-1
Assignment 1

Prn number:-21510120
Batch:-S7
Roll number:-113

Q1.
Program:-

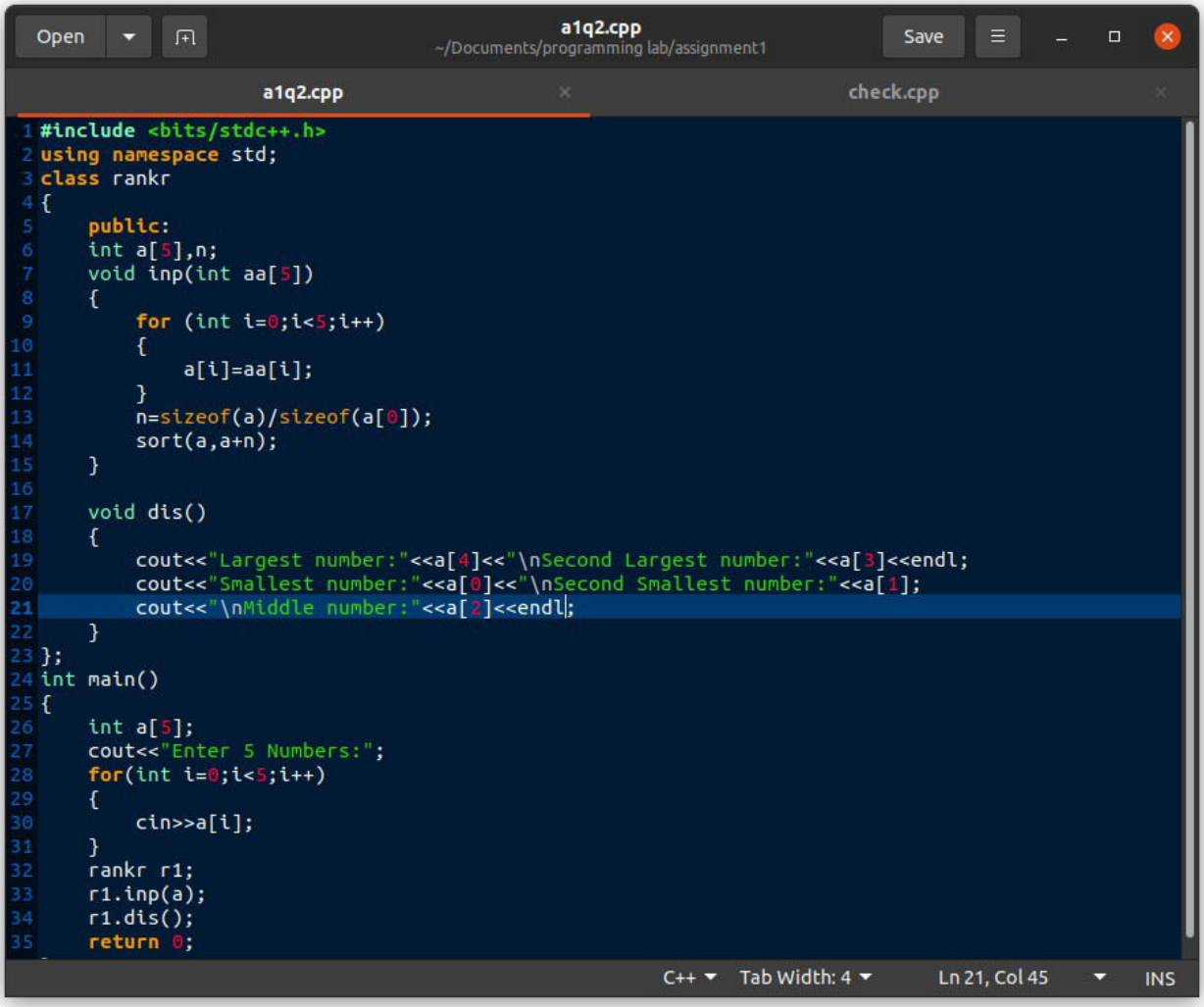
```cpp
#include<iostream>
using namespace std;
class employee
{
    public:
    string name,address,des;
    int id,salary;
    void inp(int i,string n,string a,string d,int s)
    {
        name=n;
        id=i;
        address=a;
        des=d;
        salary=s;
    }
    void out()
    {
        cout<<"Employee Id:"<<id<<"\nName:"<<name<<"\nAddress:"<<address<<endl;
        cout<<"Designation:"<<des<<"\nSalary:"<<salary<<endl;
    }
};
int main()
{
    employee e1;
    string name,address,des;
    int id,salary;
    cout<<"Enter Id:";
    cin>>id;
    cout<<"Enter Name:";
    cin>>name;
    cout<<"Enter your Designation:";
    getline(cin>>ws,des);
    cout<<"Enter your salary:";
    cin>>salary;
    cout<<"Enter address:";
    getline(cin>>ws,address);
    e1.inp(id,name,address,des,salary);
    e1.out();
    return 0;
}
```

Output:-

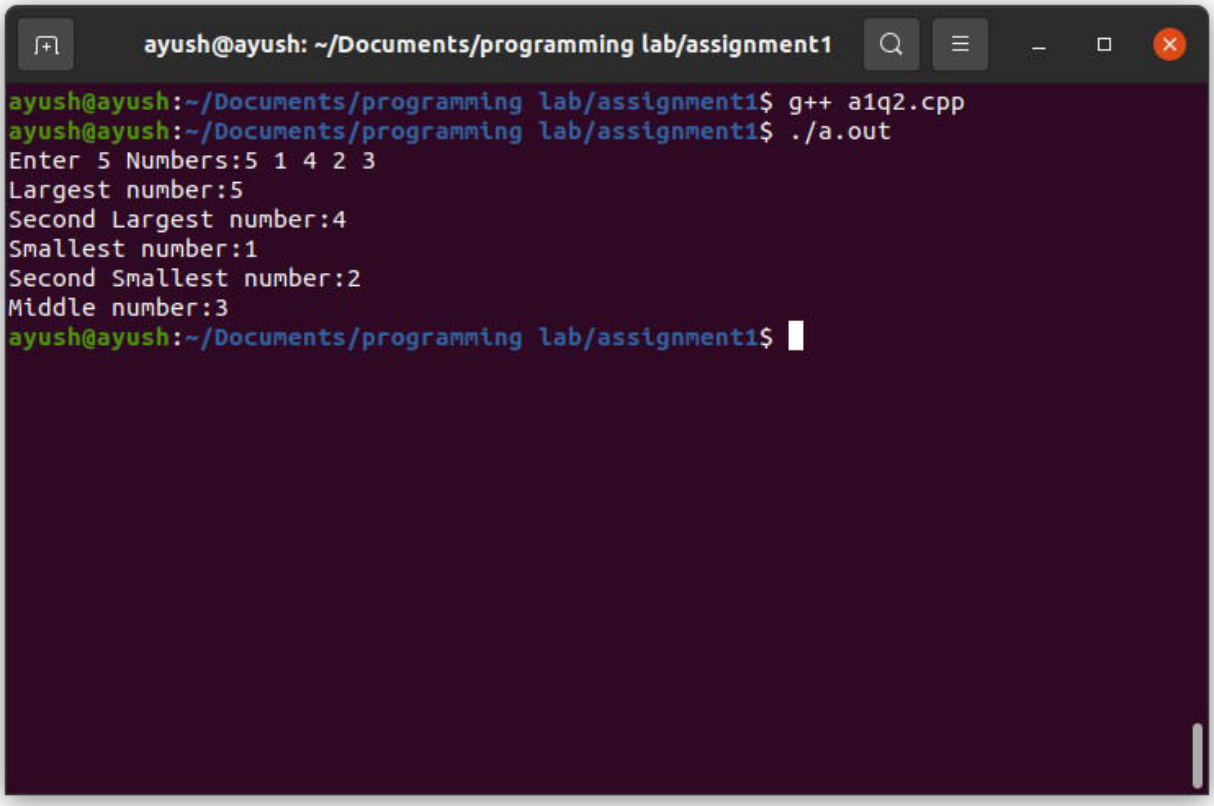

ayush@ayush-VivoBook: ~/Desktop/plab
ayush@ayush-VivoBook:~/Desktop/plab$ g++ a1q1.cpp
ayush@ayush-VivoBook:~/Desktop/plab$ ./a.out
Enter Id:101
Enter Name:Ayush
Enter your Designation:a b c
Enter your salary:10000
Enter address:Parshawnath Nagar,Sangli
Employee Id:101
Name:Ayush
Address:Parshawnath Nagar,Sangli
Designation:a b c
Salary:10000
ayush@ayush-VivoBook:~/Desktop/plab$

Q2.

Program:-

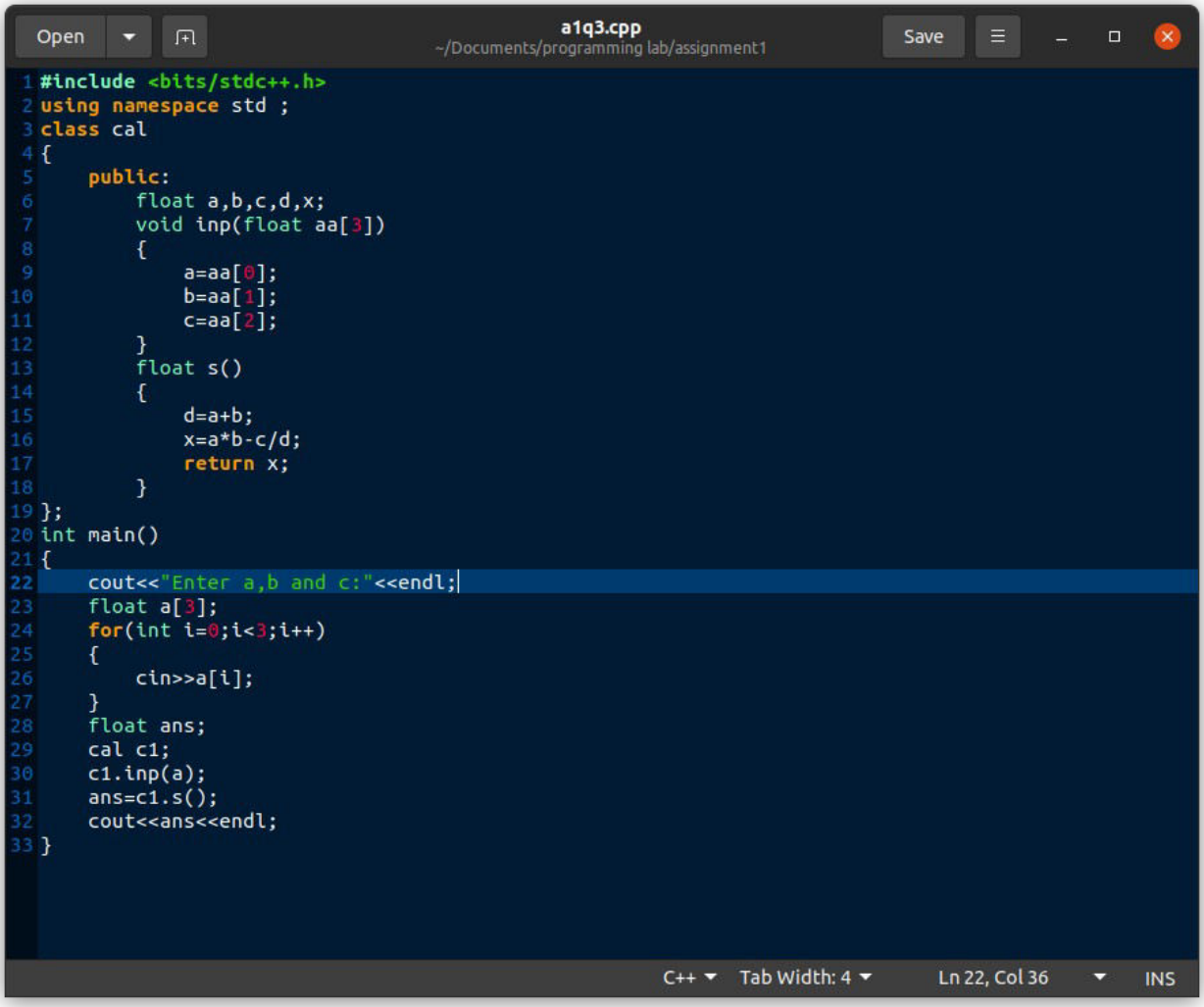

Open
a1q2.cpp
~/Documents/programming lab/assignment1
Save
a1q2.cpp
check.cpp
#include <bits/stdc++.h>
using namespace std;
class rankr
{
public:
int a[5],n;
void inp(int aa[5])
{
for (int i=0;i<5;i++)
{
a[i]=aa[i];
}
n=sizeof(a)/sizeof(a[0]);
sort(a,a+n);
}
void dis()
{
cout<<"Largest number:"<<a[4]<<"\nSecond Largest number:"<<a[3]<<endl;
cout<<"Smallest number:"<<a[0]<<"\nSecond Smallest number:"<<a[1];
cout<<"\nMiddle number:"<<a[2]<<endl;
}
};
int main()
{
int a[5];
cout<<"Enter 5 Numbers:";
for(int i=0;i<5;i++)
{
cin>>a[i];
}
rankr r1;
r1.inp(a);
r1.dis();
return 0;
C++
Tab Width: 4
Ln 21, Col 45
INS

Output:-

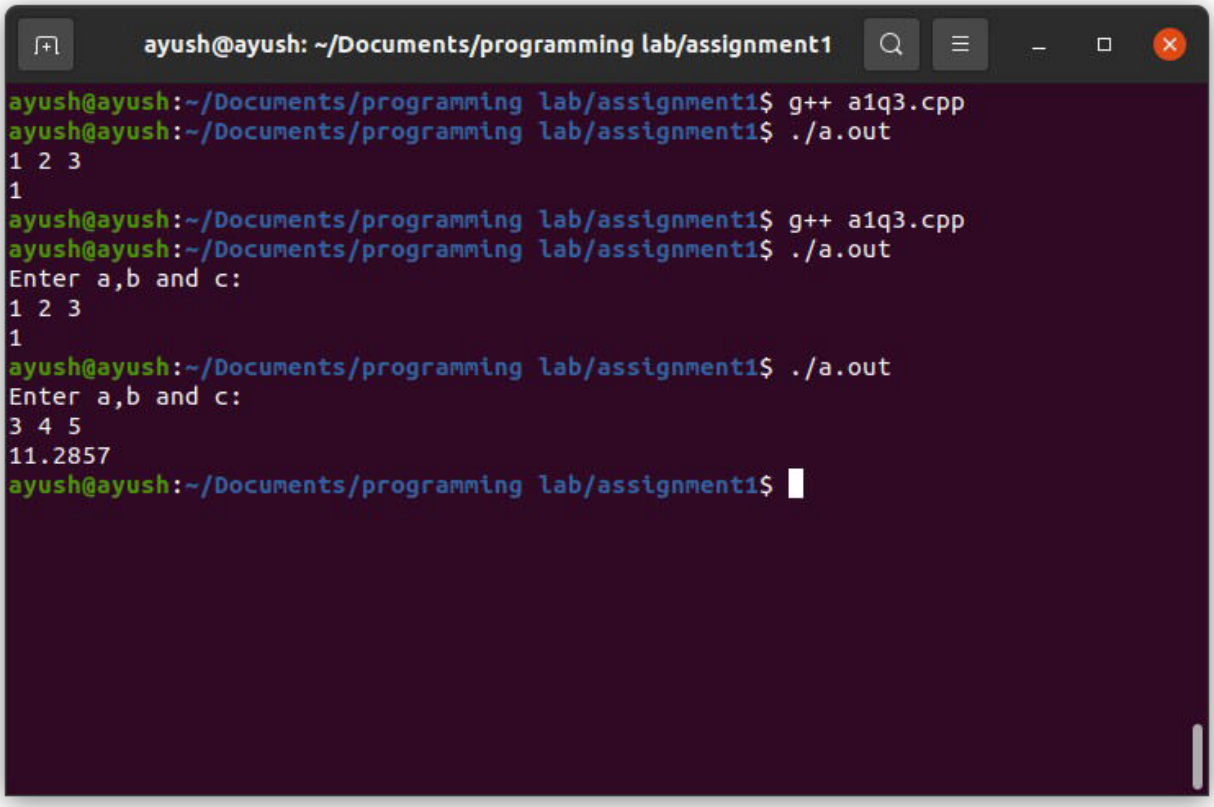

ayush@ayush: ~/Documents/programming lab/assignment1
ayush@ayush:~/Documents/programming lab/assignment1$ g++ a1q2.cpp
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter 5 Numbers:5 1 4 2 3
Largest number:5
Second Largest number:4
Smallest number:1
Second Smallest number:2
Middle number:3
ayush@ayush:~/Documents/programming lab/assignment1$

Q3.

Program:-


Open
a1q3.cpp
~/Documents/programming lab/assignment1
Save
#include <bits/stdc++.h>
using namespace std ;
class cal
{
public:
float a,b,c,d,x;
void inp(float aa[3])
{
a=aa[0];
b=aa[1];
c=aa[2];
}
float s()
{
d=a+b;
x=a*b-c/d;
return x;
}
};
int main()
{
cout<<"Enter a,b and c:"<<endl;
float a[3];
for(int i=0;i<3;i++)
{
cin>>a[i];
}
float ans;
cal c1;
c1.inp(a);
ans=c1.s();
cout<<ans<<endl;
}
C++
Tab Width: 4
Ln 22, Col 36
INS

Output:-


ayush@ayush: ~/Documents/programming lab/assignment1
ayush@ayush:~/Documents/programming lab/assignment1$ g++ a1q3.cpp
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
1 2 3
1
ayush@ayush:~/Documents/programming lab/assignment1$ g++ a1q3.cpp
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter a,b and c:
1 2 3
1
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter a,b and c:
3 4 5
11.2857
ayush@ayush:~/Documents/programming lab/assignment1$

Q4.

Program:-

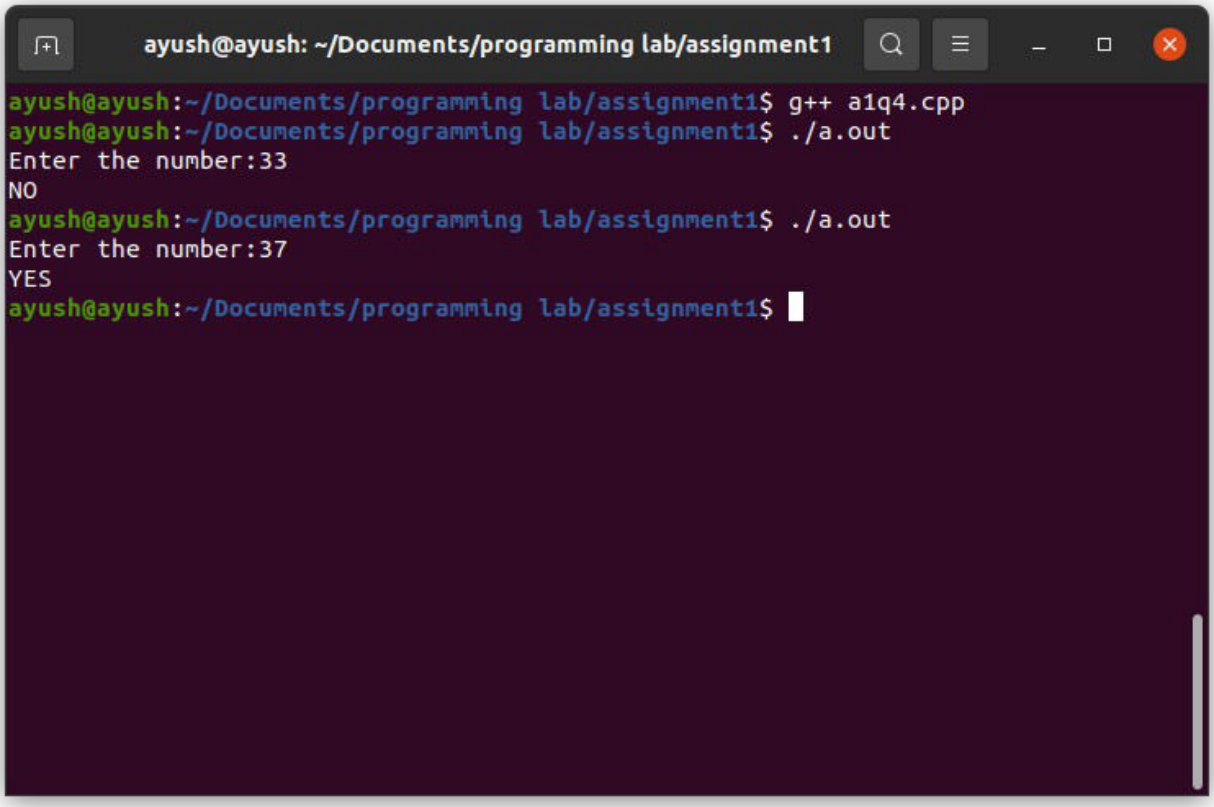
Open — a1q4.cpp — ~/Documents/programming lab/assignment1 — Save

```cpp
#include<bits/stdc++.h>
using namespace std;
int isprime(int a){
    int count=0;
    for (int i=1;i<a+1;i++){
        if (a%i==0){
            count++;
        }
    }
    if (count==2){
        return 1;
    }
    else{
        return 0;
    }
}
class sprime
{
    public:
    int a;
    void inp(int aa){
        a=aa;
    }
    int out()
    {
        if (isprime(a)==1){
            while (a>0){
                if(isprime(a%10)==0){
                    return 0;
                }
                a=a/10;
            }
            return 1;
        }
        else{
            return 0;
        }
    }
};

int main(){
    int a;
    sprime s1;
    cout<<"Enter the number:";
    cin>>a;
    s1.inp(a);
    if (s1.out()){
        cout<<"YES"<<endl;
    }
    else{
        cout<<"NO"<<endl;
    }
    return 0;
}
```

C++ — Tab Width: 4 — Ln 41, Col 11 — INS

Output:-


ayush@ayush: ~/Documents/programming lab/assignment1
ayush@ayush:~/Documents/programming lab/assignment1$ g++ a1q4.cpp
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter the number:33
NO
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter the number:37
YES
ayush@ayush:~/Documents/programming lab/assignment1$

Q5.

Program:-

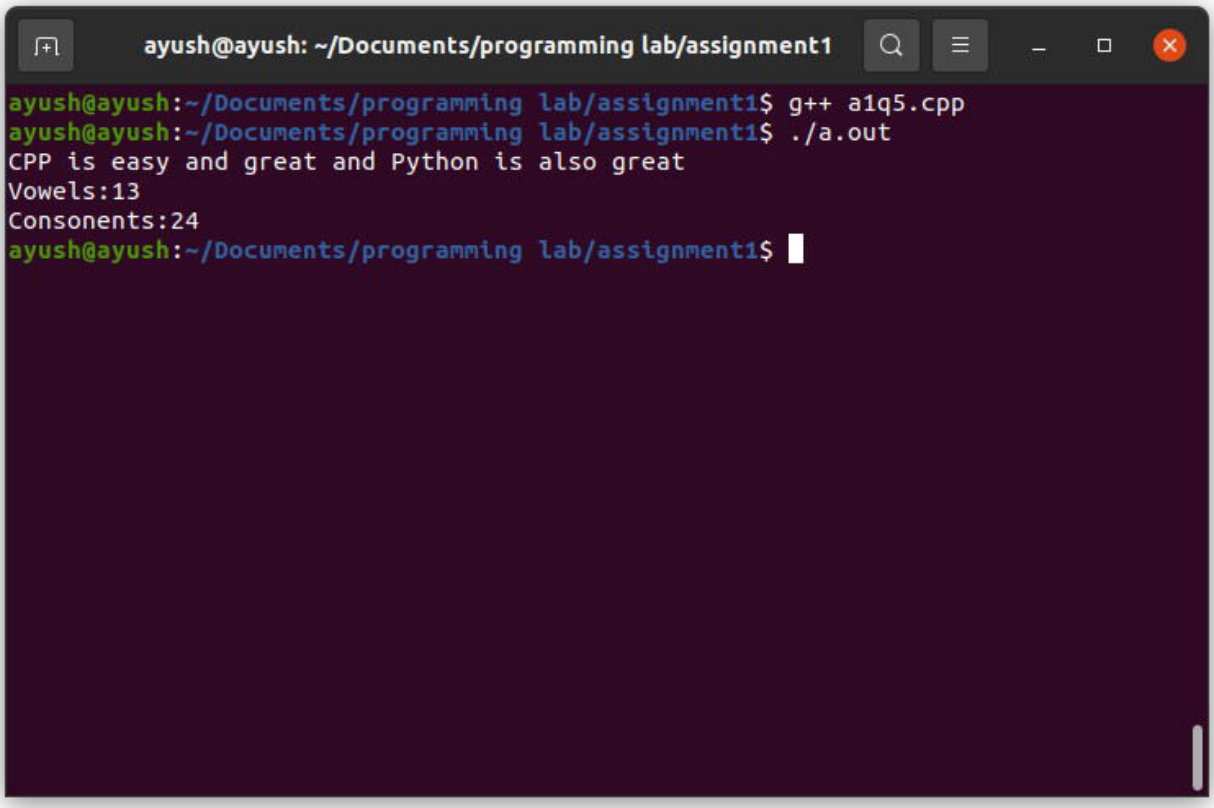
Open — a1q5.cpp — ~/Documents/programming lab/assignment1 — Save

```
#include <bits/stdc++.h>
#define r a[i]
using namespace std;
class str
{
    public:
    string a;
    int v=0,c=0,s=0;
    void inp(string aa)
    {
        a=aa;
    }
    void calculate()
    {
        for (int i=0;i<a.size();i++)
        {
            if((r>='a' && r<='z')||(r>='A' && r<='Z'))
            {
                if (r=='a'||r=='A'||r=='e'||r=='E'||r=='i'||r=='I'||r=='o'||r=='O'||r=='u'||r=='U')
                    {
                        v++;
                    }
            }
            else if(r==' ')
            {
            s++;
            }
            else
            {
                c--;
            }
        }

        c+=a.size()-v-s;
    }
    void out()
    {
        cout<<"Vowels:"<<v<<endl;
        cout<<"Consonents:"<<c<<endl;
    }
};
int main()
{
    string a;
    getline (cin>>ws,a);
    str s1;
    s1.inp(a);
    s1.calculate();
    s1.out();
    return 0;
}
```

C++ — Tab Width: 4 — Ln 34, Col 11 — INS

Output:-


ayush@ayush: ~/Documents/programming lab/assignment1
ayush@ayush:~/Documents/programming lab/assignment1$ g++ a1q5.cpp
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
CPP is easy and great and Python is also great
Vowels:13
Consonents:24
ayush@ayush:~/Documents/programming lab/assignment1$

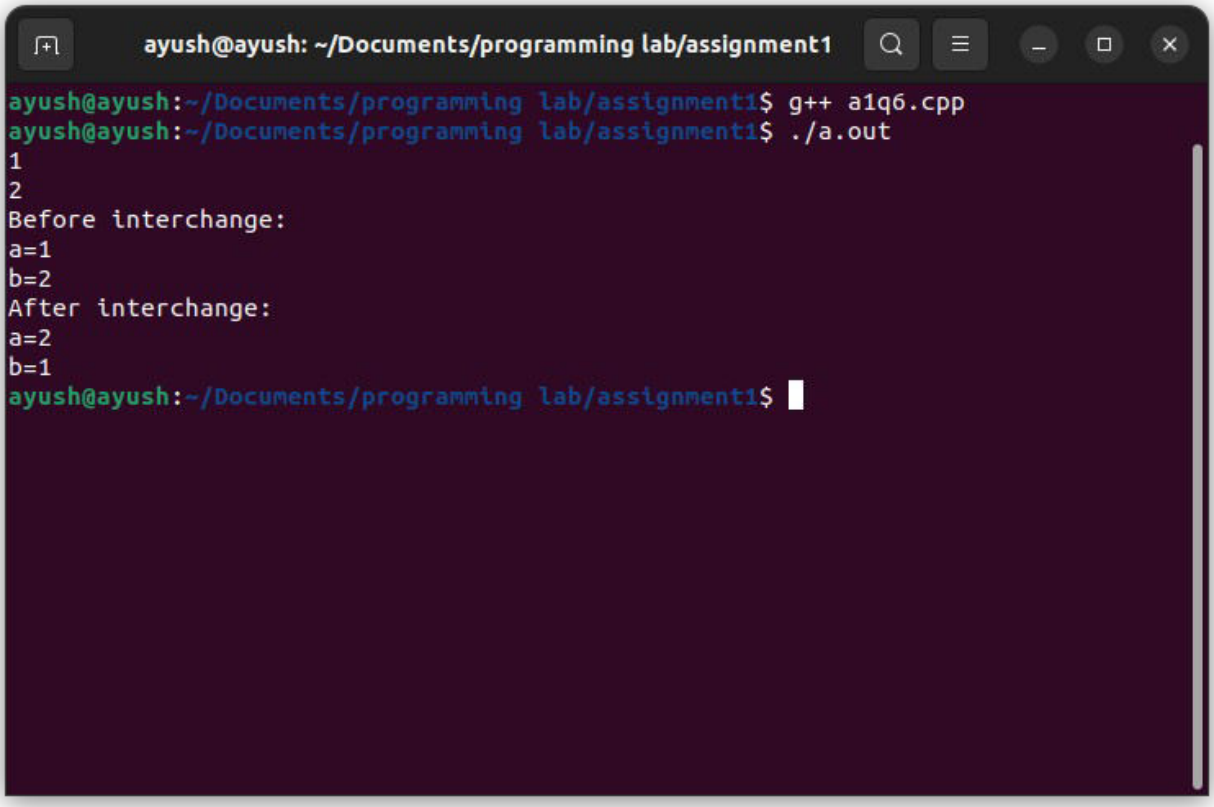
Q6.
Program:-

Open | a1q6.cpp ~/Documents/programming lab/assignment1 | Save

```cpp
#include <bits/stdc++.h>
using namespace std;
class swaper
{
    public:
    int a,b;
    void inp(int aa,int ab)
    {
        a=aa;
        b=ab;
    }
    void s()
    {
        cout<<"Before interchange:"<<endl;
        cout<<"a="<<a<<"\nb="<<b<<endl;
        a=a+b;
        b=a-b;
        a=a-b;
        cout<<"After interchange:"<<endl;
        cout<<"a="<<a<<"\nb="<<b<<endl;
    }
};
int main()
{
    int a,b;
    cin>>a>>b;
    swaper s1;
    s1.inp(a,b);
    s1.s();
    return 0;
}
```

C++ | Tab Width: 4 | Ln 14, Col 22 | INS

Output:-


ayush@ayush: ~/Documents/programming lab/assignment1
ayush@ayush:~/Documents/programming lab/assignment1$ g++ a1q6.cpp
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
1
2
Before interchange:
a=1
b=2
After interchange:
a=2
b=1
ayush@ayush:~/Documents/programming lab/assignment1$

Q7.

Program:-

Open — a1q7.cpp — ~/Documents/programming lab/assignment1 — Save

```cpp
#include<bits/stdc++.h>
#include<string>
using namespace std;


class change
{
    public:
    int a;
    string inp,ans;
    void input(int aa)
    {
        a=aa;
        cout<<"Enter your Input:";
        cin>>inp;
    }

    string binToHex(string a)
    {
        string b,ans;
        int d=4-a.size()%4;
        while(d!=0)
        {
            b+="0";
            d--;
        }
        b+=a;
        for (int i=0;i<a.size();i+=4)
        {

            string c;
            c+=b[i];
            c+=b[i+1];
            c+=b[i+2];
            c+=b[i+3];
                if(c== "0000") ans+="0";
                else if(c=="0001") ans+="1";
                else if(c=="0010") ans+="2";
                else if(c=="0011") ans+="3";
                else if(c=="0100") ans+="4";
                else if(c=="0101") ans+="5";
                else if(c=="0110") ans+="6";
                else if(c=="0111") ans+="7";
                else if(c=="1000") ans+="8";
                else if(c=="1001") ans+="9";
                else if(c=="1010") ans+="A";
                else if(c=="1011") ans+="B";
                else if(c=="1100") ans+="C";
                else if(c=="1101") ans+="D";
                else if(c=="1110") ans+="E";
                else if(c=="1111") ans+="F";
                else ans=" Invalid input";
        }
        return ans;
```

C++ — Tab Width: 4 — Ln 101, Col 38 — INS

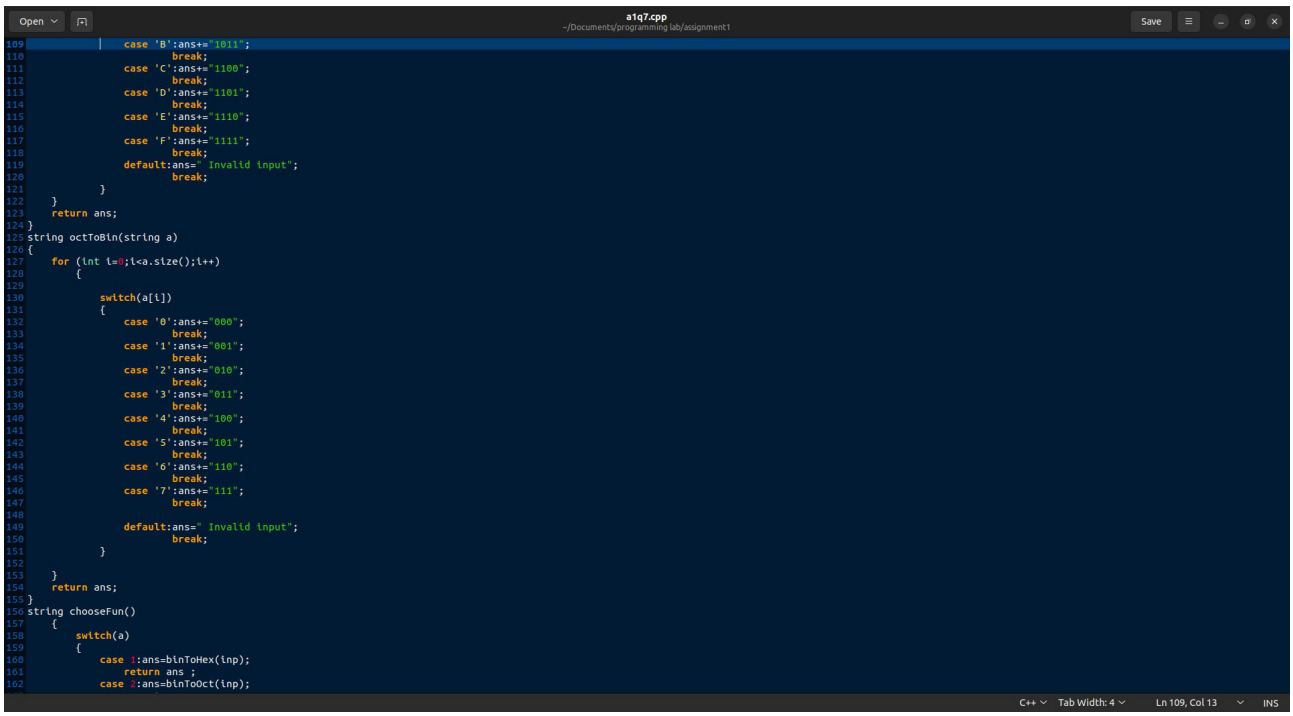
Open — a1q7.cpp — ~/Documents/programming lab/assignment1 — Save

```cpp
    }
string binToOct(string a)
{
    string b,ans;
    int d=3-a.size()%3;
        while(d!=0){
            b+="0";
            d--;
        }
        b+=a;
    for (int i=0;i<a.size();i+=3){
            string c;
            c+=b[i];
            c+=b[i+1];
            c+=b[i+2];
                if(c== "000") ans+="0";
                else if(c=="001") ans+="1";
                else if(c=="010") ans+="2";
                else if(c=="011") ans+="3";
                else if(c=="100") ans+="4";
                else if(c=="101") ans+="5";
                else if(c=="110") ans+="6";
                else if(c=="111") ans+="7";
                else ans=" Invalid input";

        }
    return ans;
}

string hexToBin(string a){
    for (int i=0;i<a.size();i++){
            switch(a[i]){
                case '0':ans+="0000";
                        break;
                case '1':ans+="0001";
                        break;
                case '2':ans+="0010";
                        break;
                case '3':ans+="0011";
                        break;
                case '4':ans+="0100";
                        break;
                case '5':ans+="0101";
                        break;
                case '6':ans+="0110";
                        break;
                case '7':ans+="0111";
                        break;
                case '8':ans+="1000";
                        break;
                case '9':ans+="1001";
                        break;
                case 'A':ans+="1010";
                        break;
```

C++ — Tab Width: 4 — Ln 108, Col 13 — INS

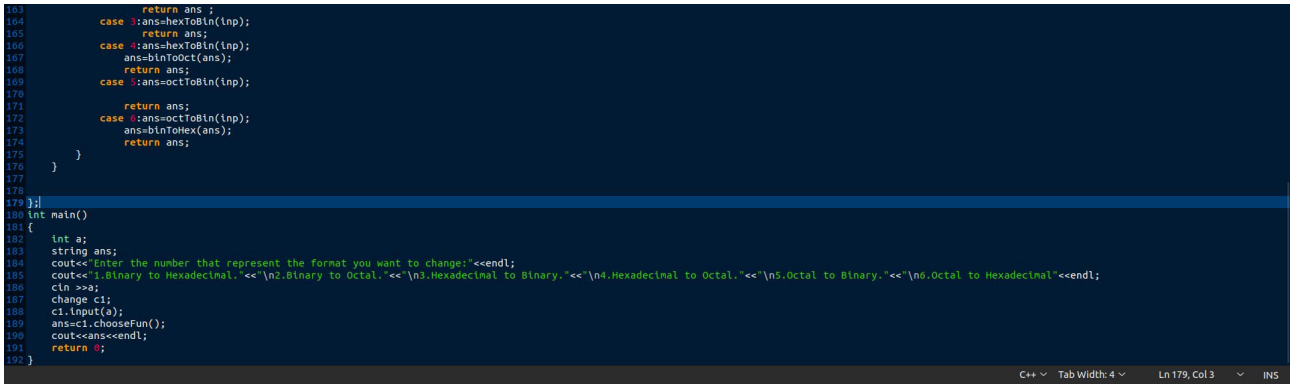



```
            case 'B':ans+="1011";
                    break;
                case 'C':ans+="1100";
                    break;
                case 'D':ans+="1101";
                    break;
                case 'E':ans+="1110";
                    break;
                case 'F':ans+="1111";
                    break;
                default:ans=" Invalid input";
                    break;
            }
    }
    return ans;
}
string octToBin(string a)
{
    for (int i=0;i<a.size();i++)
        {

            switch(a[i])
            {
                case '0':ans+="000";
                    break;
                case '1':ans+="001";
                    break;
                case '2':ans+="010";
                    break;
                case '3':ans+="011";
                    break;
                case '4':ans+="100";
                    break;
                case '5':ans+="101";
                    break;
                case '6':ans+="110";
                    break;
                case '7':ans+="111";
                    break;

                default:ans=" Invalid input";
                    break;
            }

    }
    return ans;
}
string chooseFun()
    {
        switch(a)
        {
            case 1:ans=binToHex(inp);
                return ans ;
            case 2:ans=binToOct(inp);
```

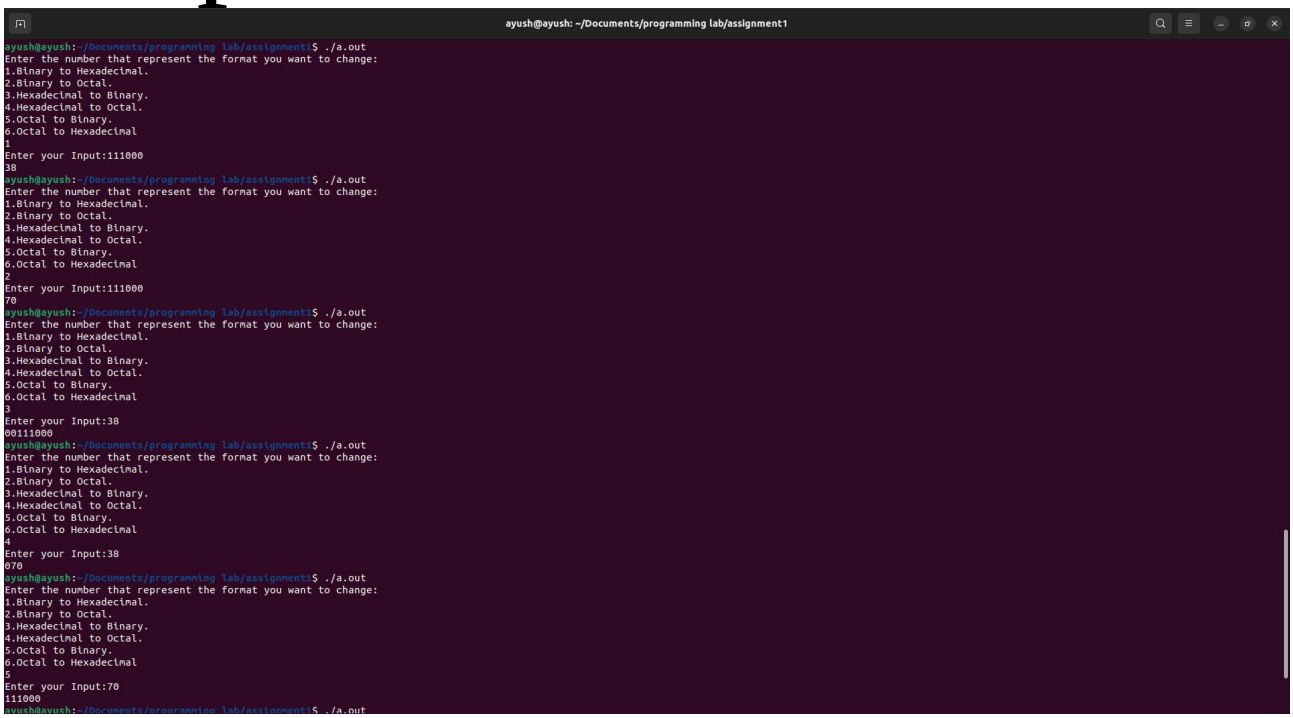



```
                return ans ;
            case 3:ans=hexToBin(inp);
                return ans;
            case 4:ans=hexToBin(inp);
                ans=binToOct(ans);
                return ans;
            case 5:ans=octToBin(inp);

                return ans;
            case 6:ans=octToBin(inp);
                ans=binToHex(ans);
                return ans;
        }
    }


};
int main()
{
    int a;
    string ans;
    cout<<"Enter the number that represent the format you want to change:"<<endl;
    cout<<"1.Binary to Hexadecimal."<<'\n2.Binary to Octal."<<'\n3.Hexadecimal to Binary."<<"\n4.Hexadecimal to Octal."<<"\n5.Octal to Binary."<<"\n6.Octal to Hexadecimal"<<endl;
    cin >>a;
    change c1;
    c1.input(a);
    ans=c1.chooseFun();
    cout<<ans<<endl;
    return 0;
}
```

Output:-


ayush@ayush: ~/Documents/programming lab/assignment1
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter the number that represent the format you want to change:
1.Binary to Hexadecimal.
2.Binary to Octal.
3.Hexadecimal to Binary.
4.Hexadecimal to Octal.
5.Octal to Binary.
6.Octal to Hexadecimal
1
Enter your Input:111000
38
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter the number that represent the format you want to change:
1.Binary to Hexadecimal.
2.Binary to Octal.
3.Hexadecimal to Binary.
4.Hexadecimal to Octal.
5.Octal to Binary.
6.Octal to Hexadecimal
2
Enter your Input:111000
70
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter the number that represent the format you want to change:
1.Binary to Hexadecimal.
2.Binary to Octal.
3.Hexadecimal to Binary.
4.Hexadecimal to Octal.
5.Octal to Binary.
6.Octal to Hexadecimal
3
Enter your Input:38
00111000
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter the number that represent the format you want to change:
1.Binary to Hexadecimal.
2.Binary to Octal.
3.Hexadecimal to Binary.
4.Hexadecimal to Octal.
5.Octal to Binary.
6.Octal to Hexadecimal
4
Enter your Input:38
070
ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter the number that represent the format you want to change:
1.Binary to Hexadecimal.
2.Binary to Octal.
3.Hexadecimal to Binary.
4.Hexadecimal to Octal.
5.Octal to Binary.
6.Octal to Hexadecimal
5
Enter your Input:70
111000


ayush@ayush:~/Documents/programming lab/assignment1$ ./a.out
Enter the number that represent the format you want to change:
1.Binary to Hexadecimal.
2.Binary to Octal.
3.Hexadecimal to Binary.
4.Hexadecimal to Octal.
5.Octal to Binary.
6.Octal to Hexadecimal
6
Enter your Input:70
38
ayush@ayush:~/Documents/programming lab/assignment1$