CHAUDHARY HAMDAN

1905387

OOP LAB-8

Date : 16-10-2020

Lab-8

Topic: Operator Overloading

i. WAP to overload following operators for class distance, which stores the distance in feet and inches.

   a) Binary + to

      -add two objects (D3=D1+D2)

      -Add an object to an integer, where the integer should be added to the inches value (D2=4+D1)

   b) Unary -

ii. Create a class to store an integer array. Overload insertion and extraction operator to input and display the array elements.

iii. Create a class which a complex number. Add two objects and display the resultant object. Overload the ++ (post and pre) operator for the class.

iv. Create a class which allocates the memory for a string through dynamic constructor. Overload the binary + to concatenate two strings and display it.

v. WAP to add two objects of time class. Overload the operator '==' to compare two objects and display whether they are equal or not. Overload the assignment operator.

vi. WAP to add two objects of distance class. Overload the operator '>' to compare two objects and return the object with larger time value and display it. Overload the '==' operator to compare and display whether two given objects contain same distance value.

1.

```
#include <iostream>

using namespace std;


class Distance {

    private:

        int feet;

        int inches;


    public:


        Distance() {

            feet = 0;

            inches = 0;

        }

        Distance(int f, int i) {

            feet = f;

            inches = i;

        }

        friend ostream &operator<<( ostream &output, const Distance &D ) {

            output << "F : " << D.feet << " I : " << D.inches;

            return output;

        }


        friend istream &operator>>( istream    &input, Distance &D ) {

            input >> D.feet >> D.inches;

            return input;

        }


          //operator overlaoading
```

```
    Distance operator +(Distance d){
        Distance temp;
        temp.feet = feet+d.feet;
        temp.inches = inches+d.inches;
        return temp;
    }
};


int main() {
    Distance D1(11, 10), D2(5, 11), D3, D4;


    cout << "Enter the value of object : " << endl;
    cin >> D3;
    cout << "First Distance : " << D1 << endl;
    cout << "Second Distance :" << D2 << endl;
    cout << "Third Distance :" << D3 << endl;
     cout<<"Add : d1 and d2 -"<<endl;
     D4 = D1 + D2;
     cout<<D4<<endl;
    return 0;
}
```

OUTPUT :

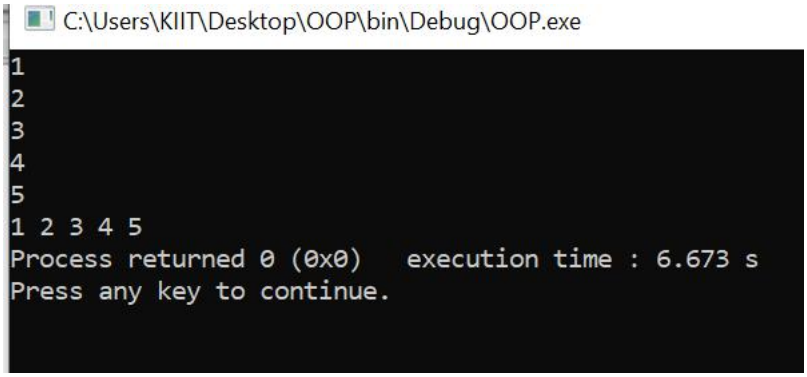
```
C:\Users\KIIT\Desktop\OOP\bin\Debug\OOP.exe
Enter the value of object :
5
6
First Distance : F : 11 I : 10
Second Distance :F : 5 I : 11
Third Distance :F : 5 I : 6
Add : d1 and d2 -
F : 16 I : 21

Process returned 0 (0x0)   execution time : 5.785 s
Press any key to continue.
```

2.

```
#include<iostream>

using namespace std;

class A

{       public:

            int a[5];

              friend istream& operator>>(istream &din,A &ob);

              friend ostream& operator<<(ostream &dout,A &ob);

            };

            istream& operator>>(istream &din,A &ob)

            {

              for(int i=0;i<5;i++)

              {

              din>>ob.a[i];

            }

              return din;


            }

            ostream& operator<<(ostream &dout,A &ob)

            {

                    for(int i=0;i<5;i++)

              {

                    dout<<ob.a[i]<<" ";

              }

              return dout;



}
```

```
int main()
{
    A obj;
    cin>>obj;
    cout<<obj;
    return 0;
}
```

OUTPUT :

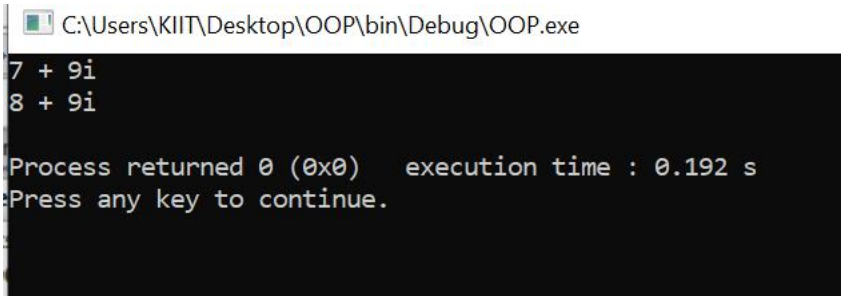


3.

```
#include<bits/stdc++.h>

using namespace std;


class Complex{

  private:

        int real, img;


  public:

  Complex(){}

        Complex(int r, int i){

                real = r; img = i;

        }


        void print(){

                cout<<real<<" + "<<img<<"i"<<endl;

        }


        void operator ++(){

                ++real;

        }


        //operator overlaoading

        Complex operator +(Complex c){

                Complex temp;

                temp.real = real+c.real;

                temp.img = img+c.img;

                return temp;

        }

};
```

```
int main(){

    Complex c1(5, 4);

    Complex c2(2, 5);

    Complex c3;

    c3 = c1 + c2;//c3 = c1.add(c2);

    //cout<<c3<<endl;

    c3.print();

    ++c3;

    c3.print();

}
```

OUTPUT :

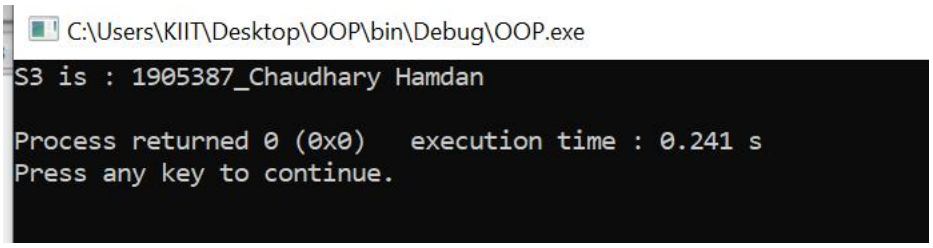


4.

```
#include<iostream>

#include<string.h>


using namespace std;


class String

{

private:

        int length;

        char *str;


public:

        String(){

            length=0;

            str= new char[length+1];

        }


        String(char *s){

            length=strlen(s);

            str=new char[length+1];

            strcpy(str,s);

        }


        friend String operator +(String &s1, String &s2);

        friend void show(String &s);

};
```

```
void show(String &s){
    cout<<s.str<<endl;
}

String operator +(String &s1, String &s2){
    String temp;
    temp.length=s1.length+s2.length;
    delete temp.str;
    temp.str=new char[temp.length+1];
    strcpy(temp.str,s1.str);
    strcat(temp.str,s2.str);
    return temp;
}

int main()
{
    String s1("1905387_Chaudhary "), s2("Hamdan");
    String s3;
    s3=s1+s2;
    cout<<"S3 is : ";
    show(s3);
    return 0;
}
```

OUTPUT :



5.

```
#include <iostream>

using namespace std;

class time{

   int hr,min;

   public:

            time()

            {}


   time(int r, int i){

      hr=r;

      min=i;

   }

 time operator+(time c3)

            {

              time c;

              c.hr=hr+c3.hr;

              c.min=min+c3.min;

              return c;

              }

   int operator==(time c1){

      if(hr == c1.hr && min == c1.min)

         return 1;

      else

      return 0;

   }

   void show()

              {

                     cout<<hr<<","<<min;

              }
```

```
        void operator = (time b)
        {
        hr=b.hr;
        min=b.min;
}


};
int main() {
   time c1(5,5),c2(5,5),c3(5,6),c4;
   cout<<"\nequal to operator over loading\n";
   if((c1==c2)==1)cout<<"True\n";
   else cout<<"False\n";
   if((c1==c3)==1)cout<<"True\n";
   else cout<<"False\n";
   cout<<"\n\nassignment operator overloading\n";
   c1=c3;
   c1.show();
   cout<<"\n\nplus operator overloading to add 2 objects\n";
  c4=c2+c3;
  c4.show();
}
```

OUTPUT :

C:\Users\KIIT\Desktop\OOP\bin\Debug\OOP.exe

```
equal to operator over loading
True
False


assignment operator overloading
5,6

plus operator overloading to add 2 objects
10,11
Process returned 0 (0x0)   execution time : 0.206 s
Press any key to continue.
```

6.

```
#include<iostream>

using namespace std;

class dist

{

float feet, inches;

public:

dist( ){

feet=inches=0.0;

}

dist (float f, float i)

{

feet=f;

inches=i;

}

bool operator > (dist d2);

bool operator==(dist d2);

dist operator + (dist d2);

void display()

{

cout<<feet<<"feet "<<inches<<"inches"<<"\n";

}

};

  dist dist:: operator+(dist d2)

              {

                dist d;

                d.feet= feet + d2.feet;

               d.inches=inches+d2.inches;

                return d;

                }
```

```
bool dist:: operator >(dist d2)

{ float t1, t2;

t1= feet + inches/12.0;

t2= d2.feet + d2.inches/12.0;

return (t1>t2)? true : false;

}

bool dist:: operator==(dist d2){

    if(feet == d2.feet && inches == d2.inches)

        return true;

    else

        return false;

}

int main()

{

dist d1(5,7), d2(7,11), d3(5,7),d4;

cout<<"\ngreater than operator over loading\n";

if (d1 > d2)

    cout<<"dist1 is more \n";

else

    cout<<"dist1 is less than dist2 \n";


    cout<<"\nequal to operator over loading\n";

if (d1 == d3)

    cout<<"equal \n";

else

    cout<<"unequal \n";

    cout<<"\n\nplus operator overloading to add 2 objects\n";

  d4=d2+d3;

  d4.display();


}
```

OUTPUT :

C:\Users\KIIT\Desktop\OOP\bin\Debug\OOP.exe

```
greater than operator over loading
dist1 is less than dist2

equal to operator over loading
equal


plus operator overloading to add 2 objects
12feet 18inches

Process returned 0 (0x0)   execution time : 0.241 s
Press any key to continue.
```