

OOPS ASSIGNMENT

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BATCH-BCS2B

1. Create a class complex that contains two double datamembers. Overload +, -, and * arithmetic operators, so that they can operate on the object of complex. Then find the expression $a-b*c + d$ (where a, b, c, and d are complex objects).

ANS:

```
#include<iostream>
using namespace std;
class complex{
    static int c;
    double real,img;
public:
    complex(){
        cout<<"Enter real & imaginary part of "<<++c<<" object : ";
        cin>>real>>img;
    }
    void display(){
        if(img<0)
            cout<<real<<img<<"i"<<endl;
        else
            cout<<real<<"+"<<img<<"i"<<endl;
    }
    complex operator *(complex ob){
        double x=real;
```

```

        real=real*ob.real-img*ob.img;
        img=x*ob.img+img*ob.real;
        return *this ;
    }
    complex operator -(complex ob){
        real=real-ob.real;
        img=img-ob.img;
        return *this ;
    }
    complex operator +(complex ob){
        real=real+ob.real;
        img=img+ob.img;
        return *this ;
    }
};

int complex::c=0;

int main(){
    complex a,b,c,d;
    cout<< "Object a values : ";
    a.display();
    cout<< "Object b values : ";
    b.display();
    cout<< "Object c values : ";
    c.display();
    cout<< "Object d values : ";
    d.display();
    b=b*c;
    a=a-b;

```

```

d=d+a;

cout<< "Operation performed : a-b*c+d\nFinal result = ";

d.display();

};

```

OUTPUT

The screenshot shows the Code::Blocks IDE with a C++ project named 'Ass_3-Soln_Q1'. The source code is displayed in the editor, and the output window shows the execution results. The program defines a 'complex' class with static variables 'real' and 'img', and implements methods for input, display, and arithmetic operations. The output window shows the execution results for four objects and the final result of the operation a-b*c+d.

```

//Ass_3 Q1 SOLN
#include<iostream>
using namespace std;
class complex{
static int c;
double real,img;
public:
    complex(){
        cout<<"Enter real & imaginary part\n";
        cin>>real>>img;
    }
    void display(){
        if(img<0)
            cout<<real<<img<<"i"<<endl;
        else
            cout<<real<<"+"<<img<<"i"<<endl;
    }
    complex operator +(complex ob){
        double x=real;
        real=real*ob.real-img*ob.img;
        img=x*ob.img+img*ob.real;
        return *this ;
    }
};

```

```

Enter real & imaginary part of 1 object : 7
5
Enter real & imaginary part of 2 object : -20
6
Enter real & imaginary part of 3 object : 5
-10
Enter real & imaginary part of 4 object : 22
-9
Object a values : 7+5i
Object b values : -20+6i
Object c values : 5-10i
Object d values : 22-9i
Operation performed : a-b*c+d
Final result = 69-234i

Process returned 0 (0x0)   execution time : 45.499 s
Press any key to continue.

```

2. Create a class String then implement the following operation

i. Overload the + operator for string concatenation.

ii. Overload the – operator for subtract the length of twostring.

ANS:

```

#include<iostream>

#include<cstring>

using namespace std;

class String{
    char str[80];

    int len;

    public:

```

```

String(){
cout<<"Enter string for concatenation : ";
cin.getline(str, 80);
len=strlen(str);
    }
    void display(){
cout<<str<<endl;
    }
    void display_len(){
cout<<"\nDifference of string : "<<len<<endl;
    }
    String operator +(String ob){
strcat(str,ob.str);
        return *this;
    }
    String operator -(String ob){
        len=len-ob.len;
        return *this ;
    }
};

//"return *this" is going to return the current class object.
//"return this" will return the object address of the current class.
int main(){
    String ob, ob1;
cout<<"\n1st String is : ";
ob.display();
cout<<"2nd String is : ";
    ob1.display();
ob=ob-ob1;

```

```

ob.display_len();

ob=ob+ob1;

cout<<"Concatenated String : ";

ob.display();

}

```

OUTPUT

The screenshot displays a C++ IDE with the source code for 'Ass_3-Soln_Q2.cpp' and its execution output in a terminal window.

Source Code (Ass_3-Soln_Q2.cpp):

```

1 //Ass3 Q1 SOLN
2 #include<iostream>
3 #include<cstring>
4 using namespace std;
5 class String{
6     char str[80];
7     int len;
8 public:
9     String(){
10         cout<<"Enter string for concatenation : ";
11         cin.getline(str, 80);
12         len=strlen(str);
13     }
14     void display(){
15         cout<<str<<endl;
16     }
17     void display_len(){
18         cout<<"\nDifference of string : -4\n";
19     }
20     String operator +(String ob){
21         strcat(str,ob.str);
22         return *this;
23     }

```

Execution Output (D:\5_c++\TEST\Ass_3\Ass_3-Soln_Q2.exe):

```

Enter string for concatenation : Apple Inc. vs
Enter string for concatenation : OnePlus Technology

1st String is : Apple Inc. vs
2nd String is : OnePlus Technology

Difference of string : -4
Concatenated String : Apple Inc. vs OnePlus Technology

Process returned 0 (0x0)   execution time : 36.180 s
Press any key to continue.

```