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Completed Programs

**Define Class ComplexNumber (Id-13912)**

The program must accept a complex number with **real part R** and **imaginary part G** as integer values and then print the complex number in the format **R+Gi** as the output. Please define the class **ComplexNumber** so that the program runs successfully.

**Example Input/Output 1:**

Input:

4 3

Output:

4+3i

**Example Input/Output 2:**

Input:

10 -2

Output:

10-2i

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4-Sep-2023 14:54:36

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CSE

```
#include <iostream>
using namespace std;
class ComplexNumber{
    int r,g;
public:
    ComplexNumber(){

    }
    friend istream &operator >>(istream &in,ComplexNumber &c){
        in>>c.r>>c.g;
        return in;
    }
    friend ostream &operator <<(ostream &out,ComplexNumber &c){
        out<<c.r;
        if(c.g>0){
            out<<"+"<<c.g<<"i";
        }
        else{
            out<<c.g<<"i";
        }
    }
};
int main()
{
    ComplexNumber cm;
    cin >> cm;
    cout << cm;
    return 0;
}
```

**ComplexNumber - Addition & Subtraction (Id-13913)**

The program must accept two complex numbers with **real part R** and **imaginary part G** as integer values. Then the program must print the **sum** of the two complex numbers followed by the **difference** between the two complex numbers. Please define the class **ComplexNumber** so that the program runs successfully.

**Example Input/Output 1:**

Input:

4 3

3 5

Output:

7+8i

1-2i

**Example Input/Output 2:**

Input:

10 -2

5 -6

Output:

15-8i

5+4i

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CSE

```

#include <iostream>
using namespace std;
class ComplexNumber{
    int r,g;
public:
    ComplexNumber(){

    }
    friend istream &operator >>(istream &in,ComplexNumber &c){
        in>>c.r>>c.g;
        return in;
    }
    friend ostream &operator <<(ostream &out,ComplexNumber &c){
        out<<c.r;
        if(c.g>0){
            out<<"+"<<c.g<<"i";
        }else{
            out<<c.g<<"i";
        }return out;
    }friend ComplexNumber operator +(ComplexNumber &c1,ComplexNumber &c2){
        ComplexNumber c;
        c.r=c1.r+c2.r;
        c.g=c1.g+c2.g;
        return c;
    }friend ComplexNumber operator -(ComplexNumber &c1,ComplexNumber &c2){
        ComplexNumber c;
        c.r=c1.r-c2.r;
        c.g=c1.g-c2.g;
        return c;
    }
};
int main()
{
    ComplexNumber cm1,cm2;
    cin >> cm1;
    cin >> cm2;
    ComplexNumber sum = cm1+cm2;
    ComplexNumber diff = cm1-cm2;
    cout << sum << endl << diff;
    return 0;
}

```

**Integer to ComplexNumber Conversion (Id-13914)**

The program must accept two integer values **R** and **G**. Then the program must create a complex number C and print the representation of C as shown in the Example Input/Output section. Please define the class **ComplexNumber** so that the program runs successfully.

**Example Input/Output 1:**

Input:

4 3

Output:

4+3i

**Example Input/Output 2:**

Input:

10 -2

Output:

10-2i

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7-Sep-2023 15:06:41

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CSE

```

#include <iostream>
using namespace std;

class ComplexNumber{
public:
    int r,i;
    ComplexNumber(int x,int y){
        r=x;
        i=y;
    }
    friend ostream &operator <<(ostream &out,ComplexNumber &c){
        //ComplexNumber &f;
        out<<c.r;
        if(c.i>0){
            out<<"+"<<c.i<<'i';
        }
        else{
            out<<c.i<<"i";
        }
        return out;
    }
};

int main()
{
    int real,imaginary;
    cin >> real >> imaginary;
    ComplexNumber cm(real,imaginary);
    cout << cm;
    return 0;
}

```

### Double to ComplexNumber Conversion (Id-13915)

The program must accept a complex number with the real part as **R** and the imaginary part as **G**. Both R and G are floating point values. Then the program must create a double value D which represents the complex number (D is the sum of R and G) and print the value of D as the output. Please define the class **ComplexNumber** so that the program runs successfully.

#### Example Input/Output 1:

Input:

4.22 3.11

Output:

7.33

#### Example Input/Output 2:

Input:

10.55 -1.55

Output:

9.00

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4-Sep-2023 15:17:46

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CSE

```

#include <iostream>
#include <iomanip>
using namespace std;
class ComplexNumber{
    float r,g;
public:
    ComplexNumber(){

    }
    friend istream &operator >>(istream &in,ComplexNumber &c){
        in>>c.r>>c.g;
        return in;
    }
    friend float convert(ComplexNumber &c){
        {
            return c.r+c.g;
        }
    }
};

```

```
int main()
{
    ComplexNumber cm;
    cin >> cm;
    double D = convert(cm);
    cout << fixed << setprecision(2) << D;
    return 0;
}
```