Assignment 8 for Week 12

✧ Note: Write the answer and submit with the name of "***StudentID_Name_8.pdf***".

1. Describe the output and at the same time determine the error in the following program.

```
#include<iostream>
class Number{
    int n;
public:
    Number(int x):n(x){}
    Number& operator++(){ ++n; return *this;}
    Number& operator++(int){n++;return *this;}
    friend Number &operator--(Number &o);
    friend Number &operator--(Number o,int);
    void display(){cout<<"This Number is:    "<<n<<endl;}
};
Number &operator--(Number &o){--o.n;  return o;}
Number &operator--(Number o,int){o.n--;return o;}
int main(){
    Number N1(10);
    ++ ++ ++N1;
    N1.display();
    N1++;
    N1.display();
    --N1;
    N1.display();
    N1-- -- --;
    N1.display();
    return 0;
}
```

2. Describe the output.

1)

```
#include<iostream>
class ABC{
    int a,b,c;
public:
    ABC(int x,int y,int z):a(x),b(y),c(z){}
    friend ostream &operator<<(ostream &out, ABC& f);
};
```

```
ostream &operator<<(ostream &out,ABC& f){
	out<<"a="<<f.a<<endl<<"b="<<f.b<<endl<<"c="<<f.c<<endl;
	return out;
}
int main(){
	ABC obj(10,20,30);
	cout<<obj;
	return 0;
}
```

2)

```
#include<iostream>
#include<cstring>
class X{
private:
	char *s;
public:
	X(char *b){
		s=new char[sizeof(b)+1];
		strcpy(s,b);
	}
	~X(){delete s;}
	void display(){cout<<"s="<<s<<endl;}
};
int main(){
	X x1("ok");
	X x2(x1);
	X x3=x1;
	x2.display();
	x3.display();
	return 0;
}
```

3)

```
#include<iostream>
using namespace std;
class Student{
private:
	char *name;
	int age;
	double Money;
public:
	Student(char *n="NoKnow",int Age=17,
					double Mey=1000.998):age(Age),Money(Mey)
```

```
    {
        name=new char[sizeof(n)+1];
        strcpy(name,n);
    }
    operator char*(){return name;}
    operator int(){return age;}
    operator double(){return Money;}
};
int main(){
    Student s1("William",19,280000.998);
    char *Name=s1;
    int    Age=s1;
    double Money=s1;
    cout<<Name<<"\t"<<Age<<"\t"<<Money<<endl;
    Student s2("Bob");
    Name=s2;Age=s2;Money=s2;
    cout<<Name<<"\t"<<Age<<"\t"<<Money<<endl;
    return 0;
}
```

4)

```
#include <iostream>
using namespace std;
class Complex{
    double real;
    double imag;
public:
    Complex(){real=0;imag=0;}
    Complex(double r){real=r;imag=0;}
    Complex(double r,double i){real=r;imag=i;}
    operator double(){return real;}
    void display();
};
void Complex::display(){cout<<"("<<real<<", "<<imag<<")"<<endl;}
int main(){
    Complex c1(3,4),c2;
    double d1;
    d1=2.5+c1;
    cout<<"d1="<<d1<<endl;
    c2=Complex(d1);
    cout<<"c2=";
    c2.display();
    return 0;
}
```

3. Assume there is a ***Calculator*** class which contains only one data member ***count***. And the valid range of the calculator is 0~65535. Design a program to realize the operation such as pre-increment, post-increment, pre-decrement, post-decrement of the calculator, and addition and subtraction between two calculators.
4. Create a class ***TwoCoor*** for two-dimensional coordinate system, which ***x*** and ***y*** is used to represent the value of the coordinate. Design a program to realize the addition and subtraction between two coordinate points, calculate the distance between the two points and overload the input/output operator that can realize the input/output of the value of the coordinate point directly.

✧ Note: Submit the above two programs with the file name of "***StudentId_Name_8_1.rar***", "***StudentId_Name_8_2.rar***".

✧ Note:
Submit your assignment with three attachments (***StudentID_Name_8.pdf***, "***StudentId_Name_8_1.rar***", "***StudentId_Name_8_2.rar***") before the end of next Tuesday(May 21) to the Superstar platform!