

## Assignment 7

1. Determine and correct the errors in the following program.

```

1  #include <iostream>
2  class A
3  {
4      int x;
5      A(int a){x=a;}
6  public:
7      setA(int y){x=y;}
8  };
9  class B:private A
10 {
11 public:
12     B(){cout<<"B"<<endl;}
13 };
14 int main()
15 {
16     A a1(2), a2;
17     A a3=a1;
18     B b;
19     b.setA(3);
20     return 0;
21 }
```

2. Programming reading and determine the output.

1)

```

#include<iostream>
using namespace std;
class A{
private:
    int x, y;
public:
    A(int a,int b):x(a),y(b){cout<<"A constructor..."<<endl;}
    void Add(int a,int b){x+=a; y+=b;}
    void display(){cout<<"("<<x<<","<<y<<")";}
    ~A(){cout<<"destructor A..."<<endl;}
};
class B:private A{
private:
    int i,j;
    A Aobj;
public:
    B(int a,int b,int c,int d):A(a,b),i(c),j(d),Aobj(1,1)
```

```

    {cout<<"B constructor..."<<endl;}
    void Add(int x1,int y1,int x2,int y2){
        A::Add(x1,y1);
        i+=x2; j+=y2;
    }
    void display(){
        A::display();
        Aobj.display();
        cout<<"("<<i<<","<<j<<")"<<endl;
    }
    ~B(){cout<<"destructor B..."<<endl;}
};

int main(){
    B b(1,2,3,4);
    b.display();
    b.Add(1,3,5,7);
    b.display();
    return 0;
}

```

2)

```

#include <iostream>
using namespace std;
class B{
protected:
    void f1(int a,int b){cout<<a+b<<endl;}
    void f2(int a){cout<<a<<endl;}
};
class D:public B{
public:
    using B::f1;
    void f1(char *d){cout<<d<<endl;}
};
int main(){
    D d;
    d.f1(3,5);
    d.f1("Hello using!");
    return 0;
}

```

3)

```

#include <iostream>
using namespace std;

```

```

class A{
    int x,y;
public:
    A(int a=0, int b=0):x(a),y(b){cout<<"a="<<a<<"\tb="<<b<<endl;}
};
class B:public A{
public:
    using A::A;
};
int main(){
    B b,b1(10),b2(20),b3(30,30);
    return 0;
}

```

4)

```

#include <iostream>
using namespace std;
class A{
    int x;
public:
    A(int a=0,int b=2):x(a){}
    A &operator=(A& o){
        x=o.x;
        cout << "In A=(A&), x=" << x << endl;
        return *this;
    }
    int getX(){return x;}
    A& operator=(A &&o)=default;
};
class B:public A{
    int y;
public:
    B(int a=0, int b=0):A(a),y(b){}
    B& operator=(B& o){
        A::operator=(o);
        cout << "In B=(B&), x=" << getX() << "\ty=" << y << endl;
        return *this;
    }
    B& operator=(B &&o){
        A::operator=(std::move(o));
        cout << "In B=(B&&), x=" << getX() << "\ty=" << y << endl;
        return *this;
    }
};

```

```
int main(){
    B b,b1(1,2);
    b=b1;
    b1=std::move(b);
    return 0;
}
```

5)

```
#include<iostream>
using namespace std;
class A{
private:
    int x;
public:
    A(int a):x(a){cout<<"A constructor..."<<x<<endl;}
    int f(){return ++x;}
    ~A(){cout<<"destructor A..."<<endl;}
};
class B:public virtual A{
private:
    int y;
    A Aobj;
public:
    B(int a,int b,int c):A(a),y(c),Aobj(c){cout<<"B constructor..."<<y<<endl;}
    int f(){
        A::f();
        Aobj.f();
        return ++y;
    }
    void display(){cout<<A::f()<<"\t"<<Aobj.f()<<"\t"<<f()<<endl;}
    ~B(){cout<<"destructor B..."<<endl;}
};
class C:public B{
public:
    C(int a,int b,int c):B(a,b,c),A(0){cout<<"C constructor..."<<endl;}
};
class D:public C,public virtual A{
public:
    D(int a,int b,int c):C(a,b,c),A(c){cout<<"D constructor..."<<endl;}
    ~D(){cout<<"destructor D...."<<endl;}
};

int main(){
    D d(7,8,9);
```

```

d.f();
d.display();
return 0;
}

```

✧ **Note:** Write all your answer above in the word document and save it with the name of “**StudentID\_Name\_7.pdf**”. (The StudentID should be your full student ID).

3. Program design(Note: Submit the following source codes with the name of “**StudentID\_Name\_7\_1 Publication.rar**”, “**StudentID\_Name\_7\_2 Square.rar**” and “**StudentID\_Name\_7\_3 CourseSelection.rar**”)

- 1) Create a base class **Publication** to save the **title**, **name**, **price** and **date** of some publications.
  - a) **Book** class and **Tape** class are all inherited from **Publication** class.
  - b) **Book** class has the data member **page** to save the page of the book.
  - c) **Tape** class has the data member **playtime** to save the playtime.
  - d) Each of this three classes has its constructor and destructor, member function **inputData()** to get input from the keyboard and member function **display()** to display its data members.
  - e) Design a **main()** program to testify your class design.
- 2) Design a **Square** class based on the already existed **Rectangle** class. And the **Rectangle** class is defined as followed:

```

class Rectangle{
protected:
    double width, height;
public:
    Rectangle(int wid=1, int hei=1):width(wid),height(hei){}
    int getWidth(){return width;}
    void setWidth(int newWid){width = newWid;}
    int getHeight(){return height;}
    void setHeight(int newHei){height = newHei;}
    int area(){return width*height;}           //Area
    int perimeter(){return (width+height)*2;}   //Perimeter
    void scale(double fw, double fh) {width*=fw; height*=fh;} //Scale
};

```

- 3) Design two classes **Student** and **Course** to modal the process of student's selection of the courses and meet the following requirements:
  - a) For the student, it has the properties name and ID;
  - b) For the course, it has the properties name, ID and credit hour;
  - c) And for the courses, it should can determine all the students who select the course;

- d) And for the students, they should know about what course have already been selected by them;
  - e) Write a test program to simulate the selection of course by the student and after the course selection, it can print the name list for some specific course and determine the total credit hours of the course they selected.
- ✧ Submit your assignments with four attachments before the end of **May 6** to the Superstar platform!