Classes and Objects-Hard(2)

Aim:

Write a program to create a Student class with the following attributes: int rollno,

int mark1, int mark2, int mark3.

Create an array of objects for the above class. In the main class, calculate and print the following.

- Total marks obtained by each student.
- The highest mark in each subject with the roll number of the student who scored it.
- The student who obtained the highest total mark

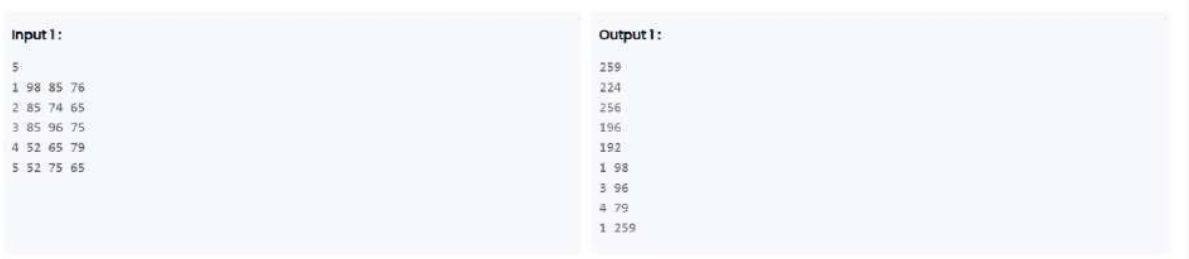
Source Code:

```
#include<iostream> using namespace std;
class Student{
   int rollno;
   int mark1,mark2,mark3;
   public:
   void setRno(int t){
      rollno=t;
   }
   void setMark1(int t){
      mark1 = t;
   }
   void setMark2(int t){
      mark2 = t;
   }
   void setMark3(int t){
      mark3 = t;
   }
   int totalMarks(){
      return mark1+mark2+mark3;
   }
   static void findMaxMarks(Student s[],int n){
```

```
    int maxMark1 = 0,maxMark2=0,maxMark3=0;
    int roll1=0,roll2=0,roll3=0;
    for (int i=0;i<n;i++){
        if (s[i].mark1>maxMark1){
            maxMark1 = s[i].mark1;
            roll1 = s[i].rollno;
        }
        if (s[i].mark2>maxMark2){
            maxMark2 = s[i].mark2;
            roll2 = s[i].rollno;
        }
        if (s[i].mark3>maxMark3){
            maxMark3 = s[i].mark3;
            roll3 = s[i].rollno;
        }
    }

    cout<<roll1<<" "<<maxMark1<<"\n";
    cout<<roll2<<" "<<maxMark2<<"\n";
    cout<<roll3<<" "<<maxMark3<<"\n";

}
static void findMaxTotalMarks(Student s[],int n){
    int maxTotal=0;
    int roll;
    for(int i=0; i<n;i++){
        if(s[i].totalMarks()>maxTotal){
            maxTotal = s[i].totalMarks();
            roll=s[i].rollno;
        }
    }
    cout<<roll<<" "<<maxTotal<<"\n";
}
```

```
};
int main() { int n;
cin >> n;
Student s[n];
for (int i = 0; i < n; i++) { int t;
cin >> t; s[i].setRno(t); cin >> t; s[i].setMark1(t); cin >> t; s[i].setMark2(t); cin >> t;
s[i].setMark3(t);
}
for (int i = 0; i < n; i++) {
cout << s[i].totalMarks() << endl;
}
Student::findMaxMarks(s, n); Student::findMaxTotalMarks(s, n);

return 0;
}
```

Input / Output:



Constructors and Destructors-Easy(1)

Aim:

Manu is a software developer working on a project that involves handling and displaying data. He is designing a class called **"Demo"** to represent data objects. The class has two private integer variables: num1 and num2, a constructor, a display function, and a destructor.

Source Code:

```
#include<iostream>
using namespace std;

class Demo{
   private:
   int num1;
   int num2;

   public:
   Demo(){
      cout<<"Inside Constructor\n";
   }
   void display(int a,int b){
      cout<<a<<"\n"<<b<<"\n";
   }
   ~Demo(){
      cout<<"Inside Destructor";
   }

};

int main(){
   int n1,n2;
   Demo obj;
   cin>>n1>>n2;
   obj.display(n1,n2);
```

```
    return 0;
}
```

Input / Output:

Input 1:

```
4 5
```

Output 1:

```
Inside Constructor
4
5
Inside Destructor
```

Constructors and Destructors-Easy(2)

Aim:

You are tasked with creating a **GradeBook** class to automate grade storage for students. The GradeBook class should have the following features:

1. Private members: courseName and instructorName with corresponding get and set methods.
2. A constructor that allows creating an object without initial values and a setData method to set courseName and instructorName.
3. A displayMessage method to display the course and instructor details.
4. Utilize string data types for data handling.

The program should take input for the course name and instructor name and display them as is.

Source Code:

```
#include<iostream>
using namespace std;
class GradeBook{
   private:
   string courseName,instructorName;

   public:
   GradeBook(){
      getline(cin,courseName);
      getline(cin,instructorName);

   }
   void setData(string *s,string *b){
      *s=courseName;
      *b=instructorName;
   }
```

```
    void displayMessage(){
        cout<<"Welcome to the grade book for "<<courseName<<"!\n";
        cout<<"This course is presented by: "<<instructorName;
    }



};
int main(){
    GradeBook stu;
    string m,n;
    stu.setData(&m,&n);
    stu.displayMessage();

}
```

Input / Output: