# Exercise - Generic classes

You are asked to write a console application that includes public **Student** and **Course** classes.

The **Student** class contains **(1 point)**:

- Two **public properties** (not public fields): StudentID (int) and StudentName (string).
- Necessary constructors (The code on line 13, 16, 17, 25 of function Main below must work).
- And other methods if you need.

The **Course** class contains:

- (**0.5 point**) Two **public properties** (not public fields): **CourseID**(int), **CourseTitle**(string), the **private field** (not public) has type **Dictionary<Student, double>**.

  The Dictionary<Student, double> cover the list of students participating in the course and their GPA in this course.
- (**0.5 point**) Necessary constructors (The code on line 14 of function Main below must work).
- (**1 point**) Two public method:
  - void **AddStudent**(Student p, double g) to add student *[p]* with GPA as *[g]* to the course.
  - Void **RemoveStudent**(int StudentID) to remove student has id that equal [StudentID] from the course.
- **(0.5 point)** The public override function **ToString**() to return string that present all information about the course: id, title, list of students and their GPA. (The code on line 18, 21, 27 of function Main below must work).
- **(0.5 point)** The public event **OnNumberOfStudentChange** that is raised when the number of students of the course changes (it means when adding or removing student).

With the main function given in Figure 1 below, your code must have the same result as the Figure 2.

*(You can find this code in the Given Materials.)*

```
7       static void Notify(int oldNumber, int newNumber)
8       {
9           Console.WriteLine($"Number of student has changed from {oldNumber} to {newNumber}.");
10      }
        0 references
11      static void Main(string[] args)
12      {
13          Student s = new Student(1, "Trung");
14          Course c = new Course(1, "PRN211_Sum21");
15          c.AddStudent(s, 7.5);
16          c.AddStudent(new Student(2, "Hoa"), 7.8);
17          c.AddStudent(new Student(3, "Vinh"), 7.4);
18          Console.WriteLine(c);
19          c.RemoveStudent(2);
20          Console.WriteLine("\n---------After remove:");
21          Console.WriteLine(c);
22
23          Console.WriteLine("\n---------After add event handler:");
24          c.OnNumberOfStudentChange += Notify;
25          c.AddStudent(new Student(4, "Hoang Anh"), 8);
26          c.RemoveStudent(1);
27          Console.WriteLine(c);
28          Console.ReadLine();
29      }
```

*Figure 1: Main function*

The output should be the same as below:

```
Course: 1 - PRN211_Sum21
Student: 1 - Trung - Mark: 7,5
Student: 2 - Hoa - Mark: 7,8
Student: 3 - Vinh - Mark: 7,4


---------After remove:
Course: 1 - PRN211_Sum21
Student: 1 - Trung - Mark: 7,5
Student: 3 - Vinh - Mark: 7,4


---------After add event handler:
Number of student has changed from 2 to 3.
Number of student has changed from 3 to 2.
Course: 1 - PRN211_Sum21
Student: 4 - Hoang Anh - Mark: 8
Student: 3 - Vinh - Mark: 7,4
```

*Figure 2: Output screen*