

Homework 7 : Collections

In this homework, you are to design Student and Course classes. These classes should provide the functionalities described in the test code below. Note that you may create additional classes to provide ordering mechanisms. Below, find a sample test code and its corresponding output for your classes.

Test Code

```
public static void main(String[] args) {
    //Create Course
    Course ceng1004 = new Course("CENG 1004", "Introduction to OOP");

    //Create students and register them to the course
    Student student = new Student("Ali", "Dere", 1001);
    ceng1004.addStudent(student);

    student = new Student("Aysu", "Aral", 1002);
    ceng1004.addStudent(student);

    student = new Student("Ali", "Bora", 1004);
    ceng1004.addStudent(student);

    student = new Student("Demir", "Bora", 1003);
    ceng1004.addStudent(student);

    student = new Student("Ceren", "Aslan", 1005);
    ceng1004.addStudent(student);

    //TEST 1 : Print course
    System.out.println("-----TEST1-----");
    System.out.println(ceng1004);

    //TEST 2 : Print students in ascending order by Id number
    System.out.println();
    System.out.println("-----TEST2-----");
    for (Student stu : ceng1004.listStudentsOrderById()) {
        System.out.println(stu);
    }

    //TEST 3 : Print students in ascending order by name
```

```

System.out.println();
System.out.println("-----TEST3-----");
for (Student stu : ceng1004.listStudentsOrderByName()) {
    System.out.println(stu);
}

//TEST 4 : Print students in ascending order by surname
System.out.println();
System.out.println("-----TEST4-----");
for (Student stu : ceng1004.listStudentsOrderBySurname()) {
    System.out.println(stu);
}

//assign grades to students
student = ceng1004.getStudent(1001);
ceng1004.setGrade(student, 75);

student = ceng1004.getStudent(1002);
ceng1004.setGrade(student, 80);

student = ceng1004.getStudent(1003);
ceng1004.setGrade(student, 85);

student = ceng1004.getStudent(1004);
ceng1004.setGrade(student, 80);

student = ceng1004.getStudent(1005);
ceng1004.setGrade(student, 85);

//TEST 5 : Print students and grades in ascending order by id number
System.out.println();
System.out.println("-----TEST5-----");
Map<Student,Integer> map = ceng1004.listStudentGradesOrderbyId();

for (Student stu : map.keySet()) {
    System.out.println(stu + " has grade " + map.get(stu));
}

//TEST 6 : Print students and grades in ascending order by name
System.out.println();
System.out.println("-----TEST6-----");
map = ceng1004.listStudentGradesOrderbyName();
for (Student stu : map.keySet()) {

```

```

        System.out.println(stu + " has grade " + map.get(stu));
    }

    //TEST 7 : Print students and grades in descending order by grade
    System.out.println();
    System.out.println("-----TEST7-----");
    map = ceng1004.listStudentGradesOrderByGrade();
    for (Student stu : map.keySet()){
        System.out.println(stu + " has grade " + map.get(stu));
    }
}

```

Output:

-----TEST1-----

Course = CENG 1004 Introduction to OOP

-----TEST2-----

```

Student [id=1001, name=Ali, surname=Dere]
Student [id=1002, name=Aysu, surname=Aral]
Student [id=1003, name=Demir, surname=Bora]
Student [id=1004, name=Ali, surname=Bora]
Student [id=1005, name=Ceren, surname=Aslan]

```

-----TEST3-----

```

Student [id=1001, name=Ali, surname=Dere]
Student [id=1004, name=Ali, surname=Bora]
Student [id=1002, name=Aysu, surname=Aral]
Student [id=1005, name=Ceren, surname=Aslan]
Student [id=1003, name=Demir, surname=Bora]

```

-----TEST4-----

```

Student [id=1002, name=Aysu, surname=Aral]
Student [id=1005, name=Ceren, surname=Aslan]
Student [id=1003, name=Demir, surname=Bora]
Student [id=1004, name=Ali, surname=Bora]
Student [id=1001, name=Ali, surname=Dere]

```

-----TEST5-----

```

Student [id=1001, name=Ali, surname=Dere] has grade 75
Student [id=1002, name=Aysu, surname=Aral] has grade 80
Student [id=1003, name=Demir, surname=Bora] has grade 85
Student [id=1004, name=Ali, surname=Bora] has grade 80
Student [id=1005, name=Ceren, surname=Aslan] has grade 85

```

-----TEST6-----

Student [id=1001, name=Ali, surname=Dere] has grade 75
Student [id=1004, name=Ali, surname=Bora] has grade 80
Student [id=1002, name=Aysu, surname=Aral] has grade 80
Student [id=1005, name=Ceren, surname=Aslan] has grade 85
Student [id=1003, name=Demir, surname=Bora] has grade 85

-----TEST7-----

Student [id=1003, name=Demir, surname=Bora] has grade 85
Student [id=1005, name=Ceren, surname=Aslan] has grade 85
Student [id=1002, name=Aysu, surname=Aral] has grade 80
Student [id=1004, name=Ali, surname=Bora] has grade 80
Student [id=1001, name=Ali, surname=Dere] has grade 75

Due date: 04.04.2016 13:30

Submission:

- You will submit your homework to **onurkilincceker@gmail.com**
- Write CENG 1004 HW7 in the subject line of your email.
- To this email, you should attach your compressed deliverable file (zip file) which contains the source files of your application.
- The name of your zip file should be in the following format: StudentID_HW7.zip and you should replace StudentID with your own ID number. Assuming 1007090002 is your ID number, then the name of your zip file should be 1007090002_HW7.zip