

King Saud University
College of Computer & Information Science
CSC113 - Lab01
Array of Objects

Submission rules:

- The project name must be: Lab01_ID_FirstName_LastName.zip. For example: Lab01_123456789_Marwan_Almaymoni.zip
- Use the default package.
- The due date is Wednesday 23/09/2020 11:59 PM via lms.ksu.edu.sa
- Email submissions will not be accepted.

Lab Exercise 1

Student
<pre>- id : int - name : String - age : int</pre>
<pre>+ Student() + Student(int, String, int) + setId(id : int) : void + setName(name : String) : void + setAge(age : int) : void + getId() : int + getName() : String + getAge() : int + toString() : String</pre>

Section
<pre>- course : String - studentList : Student[] - nStudents : int</pre>
<pre>+ Section(name : String, size : int) - searchStudent(id : int) : int + addStudent(id : int, name : String, age : int) : void + deleteStudents(id : int) : void + printList() : void + findYoungest() : Student + main(args: String[]) : void</pre>

Write the classes **Student** and **Section**. Here is a description of some of their methods:

- **Student()**: set id and age to -1, and name to null.
- **toString**: This method should put the student information in a single String and return it. The String should look as follows:
ID: 123456789, Name: Ahmad, Age: 18.
- **searchStudent**: This method should search the list for a student using his ID. If found, returns the index. Otherwise, returns -1.
- **addStudent**: This method should add the student to the section only if there is space and the student isn't already on the list (No similar IDs).*
- **deleteStudent**: This method should delete the student from the section using his ID if he's on the list and shifts the list's elements to maintain its order.*
- **printList**: This method should display the section name and the list of students in the section. You can use the student's toString.
- **findYoungest**: This method should return the object of the youngest student. If there are more than one student, return the first one found. If there are no students, return null;

* **addStudent** and **deleteStudent** methods should print out messages whether the operation was successful or not.

In the main method:

- Create a section for course CSC113 with a list of 6 students.
- Add 6 students.
- Display the list.
- Display the youngest student.
- Remove the youngest student.
- Display the new youngest student.
- Display the list.

Here is a sample run:

```
ADD successful: ID: 123, Name: Ahmad, Age: 16
ADD successful: ID: 234, Name: Hesham, Age: 18
ADD successful: ID: 345, Name: Khaled, Age: 20
ADD successful: ID: 456, Name: Marwan, Age: 21
ADD failed, ID (234) already exists.
ADD successful: ID: 567, Name: Ali, Age: 17
ADD successful: ID: 678, Name: Fahad, Age: 19
ADD failed, section is full.
```

Section CSC113

```
ID: 123, Name: Ahmad, Age: 16
ID: 234, Name: Hesham, Age: 18
ID: 345, Name: Khaled, Age: 20
ID: 456, Name: Marwan, Age: 21
ID: 567, Name: Ali, Age: 17
ID: 678, Name: Fahad, Age: 19
```

Youngest is ID: 123, Name: Ahmad, Age: 16

```
DELETE successful: ID: 123
```

Youngest is ID: 567, Name: Ali, Age: 17

Section 113

```
ID: 234, Name: Hesham, Age: 18
ID: 345, Name: Khaled, Age: 20
ID: 456, Name: Marwan, Age: 21
ID: 567, Name: Ali, Age: 17
ID: 678, Name: Fahad, Age: 19
```