



Al Maaref University
Faculty of Sciences
Department of Computer Science

CSC 320 – Data Structures: Lab2 Application on Java ArrayList Class

Guidelines:

- **Make sure to submit your files to Google Classroom before the deadline.** Otherwise your work won't be considered for grading.
- **Submit only the java files on Google classroom.**

Q1. Develop a program to maintain a list of homework assignments. First, you have to create the Assignment class.

The class should have three data fields:

- **id (int)**
- **dueDate (LocalDate)**
- **description (String)**

It should also have the following methods:

- **getters and setters**
- **constructors**
- **equals (Override):** returns true if the assignments have the same id
- **toString (Override)**
- **isEarlier (Assignment):** returns true if the calling assignment due date

is earlier than the due date of the assignment passed as a parameter. It returns false otherwise.

Note 1: Open the Java Doc to explore the LocalDate class available in java.time package

Note 2: Refer to the main method below to test the methods you just implemented.

```

    public static void main(String[] args) {
        Assignment a1 = new Assignment(1, "C++ Basics", LocalDate.parse(
("2021-10-30")));
        Assignment a2 = new Assignment(2, "C++ Decision Statements",
LocalDate.parse("2021-11-30"));

        //test toString
        System.out.println(a1);
        System.out.println(a2);

        //test isEarlier
        System.out.println(a1.isEarlier(a2));

        //test equals
        System.out.println(a1.equals(a2));
        System.out.println(a1.equals(new Assignment(1,"",null)));
    }
}

```

```

run:
Assignment 1:
Description: C++ Basics
Due Date: 2021-10-30

Assignment 2:
Description: C++ Decision Statements
Due Date: 2021-11-30

true
false
true

```

Q2. Second, you should create the AssignmentManager class. The class contains one data field called assignmentList which is an ArrayList<Assignment> object. It also contains the following methods:

- **Add a new assignment which add an assignment to the assignmentList. (public void addNewAssignment(int id, String desc, LocalDate date))**
- **Remove an assignment given its id and returns the removed assignment. Returns null if the assignment does not exist. (public Assignment removeAssignment(int id))**
- **Print a list of the assignments (public void listAssignments())**
- **Find the assignment(s) with the earliest due date (public Assignment findEarliest())**

The output of the main method to test assignment manager class methods should look similar to the below output:

```

Assignments List:
Assignment 1:
Description: C++ Decision Statements
Due Date: 2021-11-10

Assignment 2:
Description: C++ Basics
Due Date: 2021-10-31

Assignment 3:
Description: English Essay 1
Due Date: 2021-09-06

The earliest assignment is
Assignment 3:
Description: English Essay 1
Due Date: 2021-09-06

After removing the earliest if its due date has passed ==>
Assignments List:
Assignment 1:
Description: C++ Decision Statements
Due Date: 2021-11-10

Assignment 2:
Description: C++ Basics
Due Date: 2021-10-31

```