

## CS2312 Problem Solving and Programming [2016-17 Semester A]

### Quiz 1

Pay attention to **code design, naming and code formatting**.  
**Program execution speed is not a major concern.**

**You do not need to do sorting at all. You do not need to take care of ordering of data as well.**  
The examples given in the questions contain sorted contents just because that will be easier to read.

**You do not need to handle input errors or exceptions.**

**Do NOT** use additional data structures like *ArrayList* in your solution.

Duration: 40 minutes. Total mark: 40 marks

#### Question 1(a) [10 marks]

The lab venue MMW2345 has 20 seats. A full class list contains the student IDs of 20 students.

An attendance log has 20 numbers, each one is an ID number of a student who is present, or is zero which represents nobody.

For example, the files on the right contain the class list (20 students) and the attendance log (18 students were present).

Note: In the Attendance Log, some attendees are “walk-in”, i.e., their IDs are not listed in the Student List.

You are to complete the following program which reads the file contents and provides searching for a student.

The sample rundowns below show how it runs.

StudentList.txt	AttendanceLog.txt
50555844	50555844
52115014	52115014
52608757	52980948
52980948	54054879
53389404	54282649
54054879	54414356
54282649	54504167
54414356	54756947
54504167	54771482
54609916	55456701
54771482	55584251
54803833	56040163
55456701	56078331
55584251	56078331
56040163	58408892
56078331	58532280
56833640	58861586
58408892	58883679
58861586	59478681
58883679	0
	0

Note: You should avoid hardcoding, except that you can write 20 for the size of both the class list and the log.

#### Main.java

```
public static void main(String[] args)
{
    Scanner s = new Scanner(System.in);
    Attendance at = new Attendance();

    System.out.print("Type the student ID to search: ");
    int id = s.nextInt();

    if (at.belongsToClass(id)==false)
        System.out.println("Result: Not belong to the class.\n");
    else {
        if (at.isPresent(id))
            System.out.println("Result: The student is present.\n");
        else
            System.out.println("Result: No show!\n");
    }

    s.close();
}
```

#### Sample rundowns:

(Underlined content is input by the user)

- I. Type the student ID to search: 50123456  
Result: Not belong to the class.
- II. Type the student ID to search: 52608757  
Result: No show!
- III. Type the student ID to search: 55456701  
Result: The student is present.

#### Attendance.java

```
public class Attendance {

}
```

Complete the code in the answer sheet.  
For marking, see page 2.

Your tasks:

Design and complete the required methods in **Attendance.java**, namely:

- (i) [5 marks] **constructor** - Read file contents into two integer arrays of the **Attendance** object.
- (ii) [5 marks] **isPresent** - see how it is used by **main()** to give the output.
- (iii) [0 marks] **belongsToClass** - see how it is used by **main()** to give the output.

Question 1(b) [15 marks]

The program in Question 1(a) is rewritten to show the list of absentees and walk-in students (See the program and sample rundown below).

```
public static void main(String[] args)
{
    Attendance at = new Attendance();
    at.listAbsentees();
    at.listWalkIn();
}
```

**Sample rundown** (No user input) :

List of absentees:

52608757  
53389404  
54609916  
54803833  
56833640  
Total count: 5

List of walk-in students:

54756947  
58532280  
59478681

Your tasks:

Write the required methods in **Attendance.java**, according to how **main()** uses them to give the output.

- (iv) [9 marks] **listAbsentees**
- (v) [6 marks] **listWalkIn**

Note: You should avoid hardcoding, except that you can write 20 for the size of both the class list and the log.

```
import java.io.*;
import java.util.Scanner;

public class Attendance {

    private int[] students;
    private int[] attendees;

    public Attendance(){
        students = new int[20];
        attendees = new int[20];
        Scanner sStudents = new Scanner(new File("StudentList.txt"));
        Scanner sAttendees = new Scanner(new File("AttendanceLog.txt"));

        //Read file contents and fill in the arrays (5 marks)


        sStudents.close();
        sAttendees.close();
    }

    //Write the isPresent method (5 marks)
    public boolean isPresent(int id) {


    }

    //Write the belongToClass method (0 marks ONLY - do this part only if you are really too boring)
    public boolean belongToClass(int id) {


    }

}
```

```
//Write the listAbsentees method (9 marks)
public void listAbsentees() {
    System.out.println("List of absentees:");
```

```
}
```

```
//Write the listWalkIn method (6 marks)
public void listWalkIn() {
    System.out.println("List of walk-in students:");
```

```
}
```