CONFIDENTIAL

UNIVERSITI TEKNOLOGI MALAYSIA
FACULTY OF COMPUTING

SKILL-BASED TEST 2

SEMESTER II 2017/2018

SUBJECT CODE	**: SCSJ1023**
SUBJECT NAME	**: PROGRAMMING TECHNIQUE II**
YEAR/PROGRAME	**: 1 (SCSB/SCSJ /SCSP/SCSR / SCSV) 2(SCSR/SCSV)**
TIME	**: 5 p.m. – 6:15 p.m. (1 Hour 15 Minutes)**
DATE	**: 22 APRIL 2018**
VENUE	**: MPK1-10, CGMTL, CASE, Block N28, FC**

INSTRUCTIONS TO THE STUDENTS:

- This test consists of only **ONE** question.
- This is a **CLOSED-BOOK** test. References to any resources by any means are strictly prohibited.
- You are given **SEVENTY FIVE (75) MINUTES** to answer this test.

MATERIAL FOR THE TEST:

- You are provided with a template source code file named **sbt2.cpp** for coding and two input files , **student_list1.txt** and **student_list2.txt** for testing your program.
- Download the material files (compressed in a RAR file, **sbt2.rar**) from **e-learning**.
- **IMPORTANT:** You **MUST extract** the RAR file into the local hard drive of your computer. **Do not edit the code directly** from the WinRAR.

SUBMISSION PROCEDURE:

- Only the source code is required for the submission, i.e. **sbt2.cpp**.
- Submit the source code file via the **UTM's e-learning system**.

Problem [30 Marks]

Consider the class diagram in Figure 1 which illustrates the data model for supervisions of student projects. Each student can only have a project and is supervised by a lecturer.

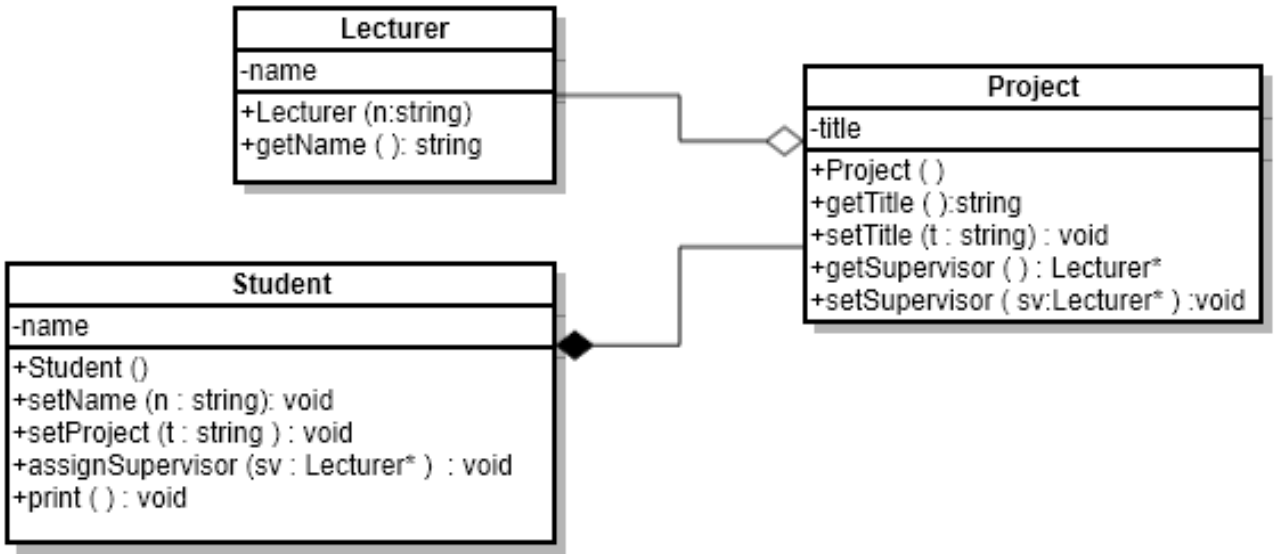

Figure 1: Class diagram for project supervisions

A full implementation of the class `Lecturer` is given in the program **sbt2.cpp**, while other classes are only given partially. Complete the program based on the following tasks:

1. Complete the implementation of the class `Project`, at the method:
    a. the constructor
    b. `getSupervisor`
    c. `setSupervisor`

    (6 marks)
2. Complete the implementation of the class `Student`, at the method:
    a. `setProject`
    b. `assignSupervisor`
    c. `print` : to display the student's name and project's title, and also the supervisor's name (but only if the student has a supervisor).

    (12 marks)
3. Read a list of students consisting of names and project titles, from an input file and store them into an array. (4 marks)

4. Assign supervisors to students as follows:
    a. The first lecturer is assigned to be the supervisor for the first and second students.
    b. The second lecturer is assigned to the last student.

(5 marks)

5. Print all the students. The screen output should look like as in Figure 2 and Figure 3.

(3 marks)

```
Student    : Alina Atan
Project    : Anti-Intrusion System
Supervisor : Dr. Ali Bakar

Student    : Siti Nurdiana Abdullah
Project    : CCTV-Based Fire Alarm System
Supervisor : Dr. Ali Bakar

Student    : Azrul Malik
Project    : Low Energy Drone
Supervisor : Prof. Dr. Abu Samah Abdullah
```

Figure 2: Screen output with the input file, **`student_list1.txt`**

```
Student    : Sit Aminah
Project    : Cost-Effective Green Fuel
Supervisor : Dr. Ali Bakar

Student    : Kamarul Ariffin
Project    : IoT-based Flood Monitoring
Supervisor : Dr. Ali Bakar

Student    : Abdul Jabar
Project    : Energy Saving with IoT

Student    : Kamariah Jalil
Project    : Camera-based Heat Detection

Student    : Seman Abdullah
Project    : Image-based Search Engine

Student    : Rozita Abdul
Project    : Programmer Friendly Metaprogramming
Supervisor : Prof. Dr. Abu Samah Abdullah
```

Figure 3: Screen output with the input file, **`student_list2.txt`**