

SYSC 2004 C and D: Object-Oriented Software Development **Programming Assignment No 3**
[3 Marks] (Due date: **Feb. 28, 2020**)

The main objective of this programming assignment No 3 is to learn how to use effectively the ArrayList collection in designing and defining classes, and to learn and experiment with control flow structures such as a for-each loop, or a while loop, or an iterator. To this end we will be reusing the club project that has three classes: ClubDemo, Club and Membership from Chapter 4. Source code for the club project is available in cuLearn in the general block (Chapter 4).

Q1: Use the club project to complete this and the following questions. Your task is to complete the Club class, an outline of which has been provided in the project. The Club class is intended to store Membership objects in a collection.

Within Club, define a field for an ArrayList. Use an appropriate import statement for this field, and think carefully about the element type of the list. In the constructor, create the collection object and assign it to the field. Make sure that all the files in the project compile before moving on to the next questions.

Q2: Complete the numberOfMembers method to return the current size of the collection. Until you have a method to add objects to the collection, this will always return zero, of course, but it will be ready for further testing later

Q3: Membership of a club is represented by an instance of the Membership class. A complete version of Membership is already provided for you in the club project, and it should not need any modification. An instance contains details of a person's name and the month and year in which they joined the club. All membership details are filled out when an instance is created. A new Membership object is added to a Club object's collection via the Club object's join method, which has the following description:

```
/** * Add a new member to the club's collection of members.
```

```
 * @param member the member object to be added.
```

```
 */
```

```
public void join (Membership member)
```

Complete the join method.

When you wish to add a new Membership object to the Club object from the object bench, there are two ways you can do this. Either create a new Membership object on the object bench, call the join method on the Club object, and click on the Membership object to supply the parameter or call the join method on the Club object and type into the method's parameter dialog box:

```
new Membership ("member name ...", month, year)
```

Each time you add one, use the numberOfMembers method to check both that the join method is adding to the collection and that the numberOfMembers method is giving the correct result.

Important Notes and Submission Guidelines:

For this programming assignment No3, you have to submit a ZIP file that contains your BlueJ project source code. In addition, you also have to book and pass a demo using BlueJ with your teaching assistant (TA) in the lab room or during her/his office hours. Your TA will lead you and conduct the tests of your programs and evaluate your work. You are also allowed to do your demo using your own laptop.