CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Semester 2 Examinations 2010/11

Module Title: Object-Oriented Programming 2

Module Code: **COMP 7013**

School: Computing

Programme Title:
Bachelor of Science in Computing – Year 3
Bachelor of Science (Honours) in Software Development & Computer Networking – Year 2
Bachelor of Science (Honours) in Software Development – Year 2

Programme Code: **KCOMP_7_Y3**
KSDEV_8_Y2
KDNET_8_Y2

External Examiner(s): **Mr. Peter Given**
Internal Examiner(s): **Ms. D. M. Dunlea, Mr. Denis Long**

Instructions: **Section A**: Question 1 must be answered.
Section B: Choose 2 questions from this section.

Duration: 2 Hours

Sitting: Summer 2011

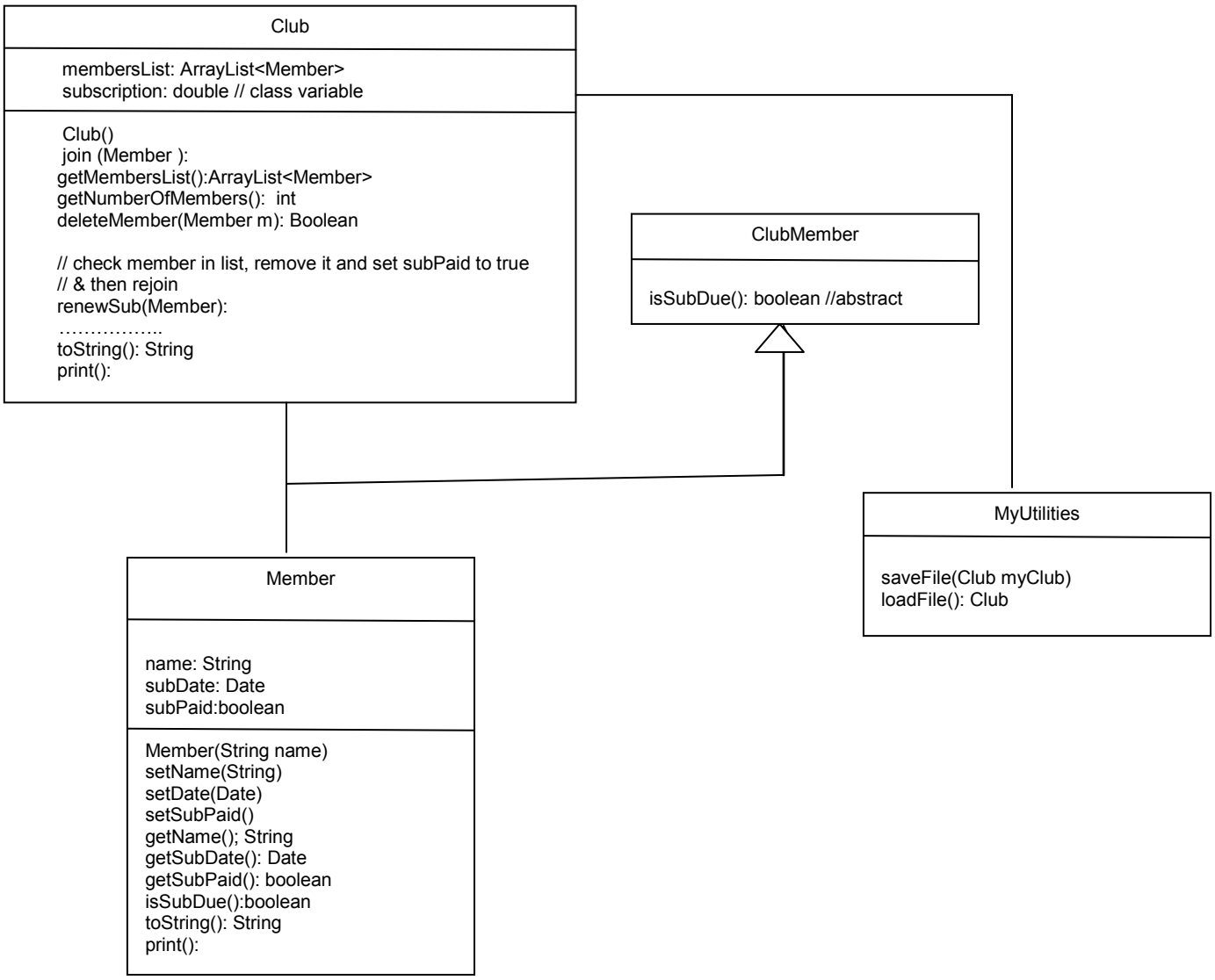
Requirements for this examination:

Note to Candidates: Please check the Programme Title and the Module Title to ensure that you have received the correct examination paper.
If in doubt please contact an Invigilator.

Section A

Q1. (a) The following classes belong to an application that keeps track of members in a Club:

The Classes Club, Member, ClubMember and the utility class needed to save/load data are partially defined as follows:



Points to Note:
When members join the club they pay their subscription.
You are required to:

(a) Provide a full implementation of the classes above. [32 marks]

(b) Create an Application called ClubHandler that creates a Club object which stores 3 members. Print the members of the club using the Club class. Save the details to a file. Now reload the file with a different object reference and print the members of the club using the new object reference of the Club class. [8 marks]

Section B

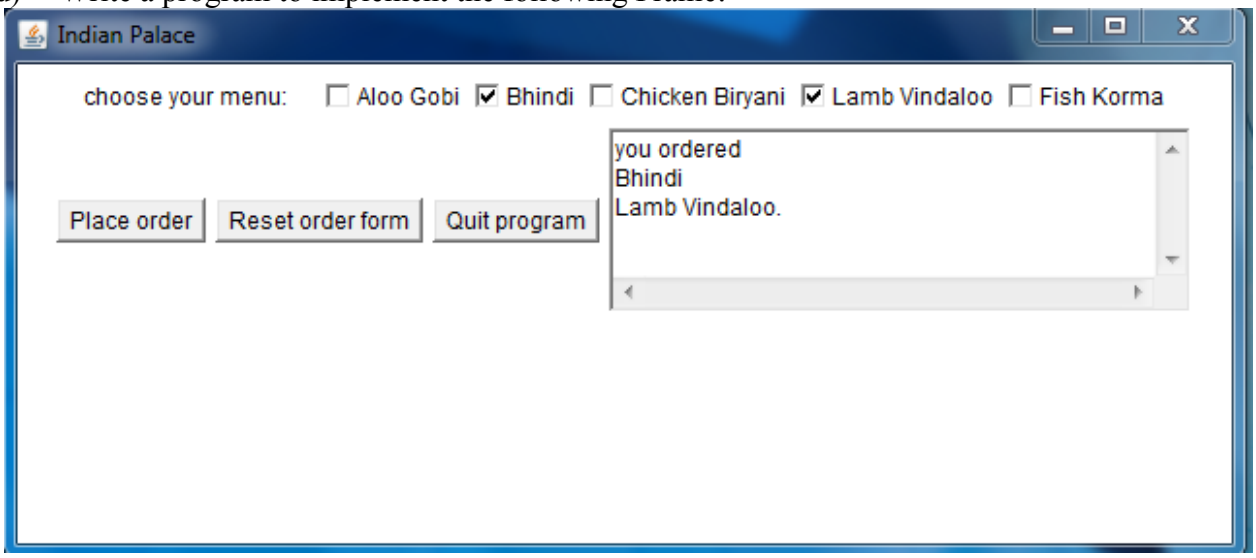
Q2. (a) What is a Layout manager? Describe the characteristics of the following layout managers:

- BorderLayout
- BoxLayout
- FlowLayout [9 marks]

(b) What is an inner class and why are they used? [6 marks]

(c) What do you understand by the term event-driven? Outline how events could be dealt with**?** [5 marks]

(d) Write a program to implement the following Frame:



[10 Marks]

Q3. (a) Using examples explain the main differences between a class, an abstract class and an interface? [9 marks]

(b) How do we know whether to make a class, a subclass, an abstract class, or an interface? [8 marks]

(c) What is meant by the term Polymorphism? [3 marks]

(d) Give the code needed to sort an array of Employee objects for the Employee class which implements the Comparable interface: note this interface has one method compareTo(Object o). The Employee has an id (which is incremental) , a name and salary. You are comparing salaries. You need the code for the Employee class and the application that stores the array. [10 Marks]

Q4. (a) What are the advantages of using databases? [5 marks]

(b) Why would you create a singleton instance of a database access class? [5 marks]

(c) Using code explain how you would you create a singleton instance of a database access class? [10 marks]

(d) Explain the following connect method which is part of the DB Manager class. What errors may occur when executing the code? [10 marks]

```
class DBManager
{
    Connection dbConnection;

    public DBManager()
    {
        dbConnection = null;
    }

    public void connect()
    {
        String username = "dbadmin";
        String password = "test";
        String url = "jdbc:mysql://mc-Admin/users";
        Class.forName("com.mysql.jdbc.Driver");
        dbConnection = DriverManager.getConnection(url, username, password);
    }
}
```