

**CORK INSTITUTE OF TECHNOLOGY**  
**INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

**Semester 2 Examinations 2012/13**

**Module Title: Object-Oriented Programming 2**

**Module Code:** COMP7013

**School:** Science & Informatics

**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

Bachelor of Science (Honours) in Web Development – Year 2

Higher Diploma in Science in Software Development – Year 5

**Programme Code:** KCOMP\_7\_Y2  
KDNET\_8\_Y2  
KSDEV\_8\_Y2  
KWEBD\_8\_Y2  
KSWDE\_8\_Y5

**External Examiner(s):** Mr Joseph Lynam

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

**Instructions:** Answer three Questions. Question 1 is mandatory.

**Duration:** 2 Hours

**Sitting:** Summer 2013

**Requirements for this examination:**

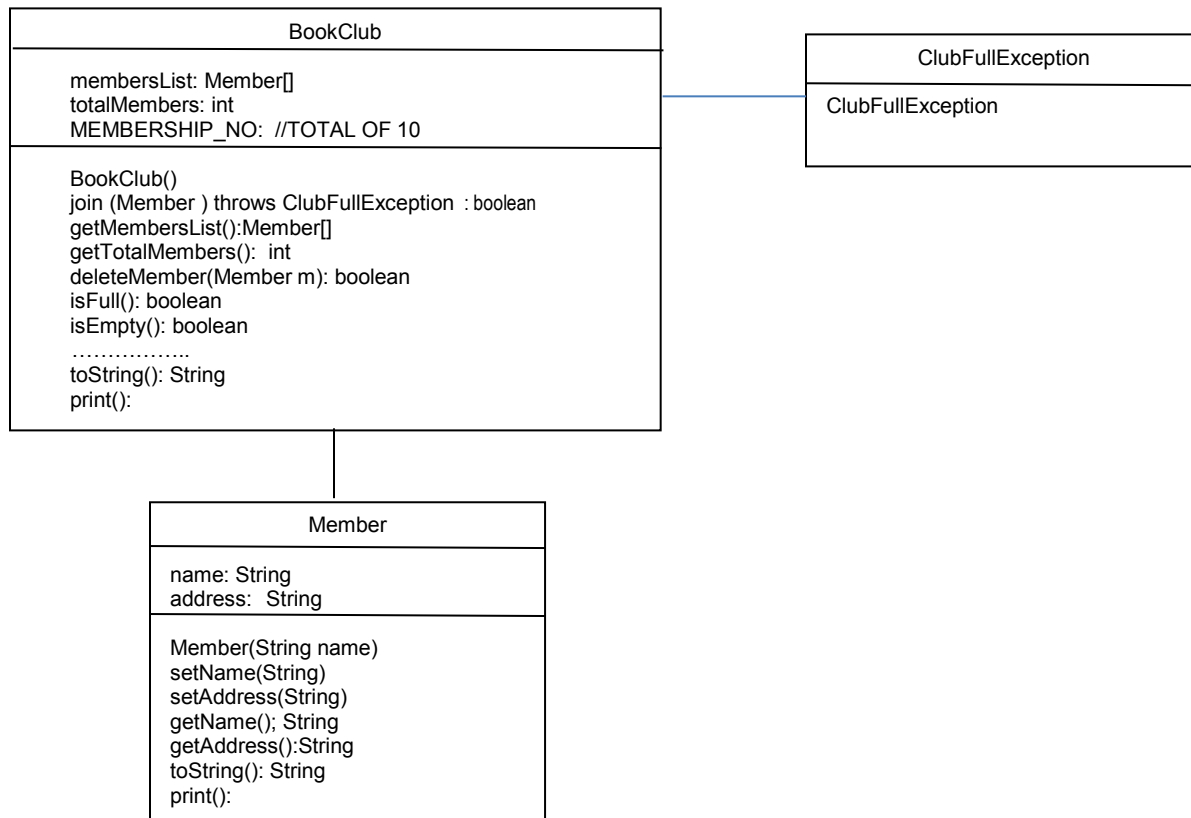
**Note to Candidates:** Please check the Programme Title and the Module Title to ensure that you have received the correct examination paper.  
If in doubt please contact an Invigilator.

## Q.1

- Give the code needed to compare 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. Write the code for the Employee class. [9.5 marks]
- Write an application that creates 2 employees, checks their salaries and outputs the following: “ Toms Salary” is greater than( is not greater than, is equal to) “ Janes” . [6.5 marks]
- Now give the code for creating a student list and sorting this list in alphabetical order. [9.5 marks]

d) The following classes belong to an application that keeps track of members in a BookClub:

The Classes BookClub, Member, ClubFullException are partially defined as follows:



- Provide an implementation for the class ClubFullException and also the method join() in the BookClub class above. [10 marks]
- Create an Application called BookClubTest that creates a BookClub object. Enter 2 BookClub members. [4.5 marks]

## Q.2

a) Please answer true or false to the following questions:

1. A try block must be followed by a catch *and* a finally block. \_\_\_\_\_
2. If you write a method that might cause a compiler-checked exception, you *must* wrap that risky code in a try / catch block. \_\_\_\_\_
3. Catch blocks can be polymorphic. \_\_\_\_\_
4. Only 'compiler checked' exceptions can be caught \_\_\_\_\_
5. If you define a try / catch block, a matching finally block is optional. \_\_\_\_\_
6. If you define a try block, you can pair it with a matching catch or finally block, or both. \_\_\_\_\_
7. If you write a method that declares that it can throw a compiler-checked exception, you must also wrap the exception throwing code in a try / catch block. \_\_\_\_\_
8. The main ( ) method in your program must handle all unhandled exceptions thrown to it. \_\_\_\_\_
9. A single try block can have many different catch blocks. \_\_\_\_\_
10. A method can only throw one kind of exception. \_\_\_\_\_
11. A finally block will run regardless of whether an exception is thrown. \_\_\_\_\_
12. A finally block can exist without a try block. \_\_\_\_\_
13. A try block can exist by itself, without a catch block or a finally block. \_\_\_\_\_
14. The order of catch blocks never matters. \_\_\_\_\_
15. A method with a try block and a finally block, can optionally declare the exception. \_\_\_\_\_
16. Runtime exceptions must be *handled* or *declared*. \_\_\_\_\_

[8 marks]

b) What is a class? What is an interface? What are the main difference between a class and an interface in Java? [7 marks]

c) State at least 5 advantages of using databases? [5 marks]

d) How would you create a singleton instance of a database access class? [10 marks]

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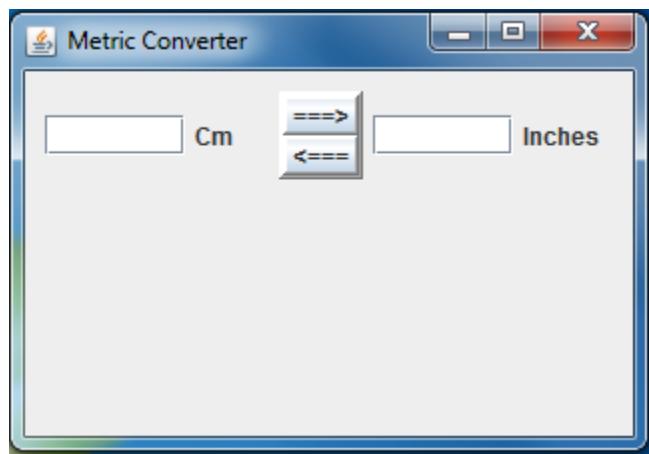
Q3

Person
fName: String lName: String phoneNo: String
Person(String,String, String) getFName(): String getLName(): String getPhoneNo(): String setFName(String) setLName(String) setPhoneNo(String) toString()

- a) Using the class above create an abstract class MyFile that contains two methods, savePerson() and loadPerson(). This saves an ArrayList <Person>.to a file called “PersonList.txt”. The load method will load all the details from the file and returns an ArrayList <Person>. [11 marks]
- b) Now create a main class that creates two people and saves them to a file. Now load this file and output their details to the screen. [7 marks]
- c) Explain what is meant by the term object serialization and describe how a serialized object can be stored in, and loaded from a file (full program not required just the main parts). [12 marks]
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Q4

- a) Using code identify the four basic steps involved in making a GUI? [4 marks]
- b) What do you understand by the term event-driven? Explain what an inner class is. Why are they useful when writing event-handlers? [8 marks]
- c) Using inner classes create the following GUI. This GUI uses a **compound container** for the two button objects below: `==>` and `<==`. A **compound container** is also used for the labels, text and compound button container.



Note: Converting to cm you multiply by 2.54. Converting to inches you divide by 2.54.

[18 marks]