

**CORK INSTITUTE OF TECHNOLOGY  
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ**

**Semester 2 Examinations 2011/12**

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

**Module Code:** COMP7013

**School:** Science & Informatics

**Programme Title:** BSc in Computing – Year 3  
BSc (Hons) in Software Development & Computer Networking – Year 2  
BSc (Hons) in Software Development – Year 2  
BSc (Hons) in Web Development – Year 2  
HDip in Science in Software Development

**Programme Code:** KCOMP\_7\_Y3  
KDNET\_8\_Y2  
KSDEV\_8\_Y2  
KWEBD\_8\_Y2  
KSWDE\_8\_Y5

**External Examiner(s):** Mr P. Given

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

**Instructions:** Answer three Questions.  
Question 1 is mandatory. Exact code is usually not required, a good outline will get you most of the marks.

**Duration:** 2 Hours

**Sitting:** Summer 2012

**Requirements for this examination:**

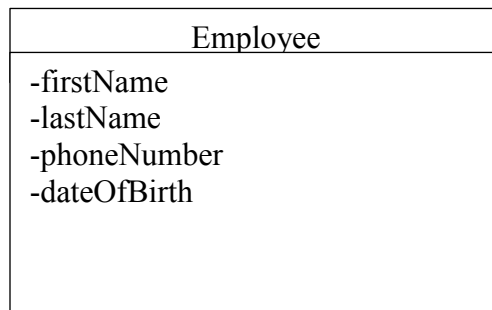
**Note to Candidates:** Please check the Programme Title and the Module Title to ensure that you have received the correct examination paper.  
If in doubt please contact an Invigilator.

Q1 a) Write a note on java interfaces, stating what they are and why they are used.

Include an example in your answer. Also comment on how interfaces provide a sort of Multiple inheritance

(10 marks)

b) A class called employee is required, the class is described as follows:



Write code for this class.

Write the extra code required so that this class can be ordered by last name and if there is a clash on last name order by first name.

e.g.

Mark Langton ....

Denis Murphy .....

Paddy Murphy .....

(14 marks)

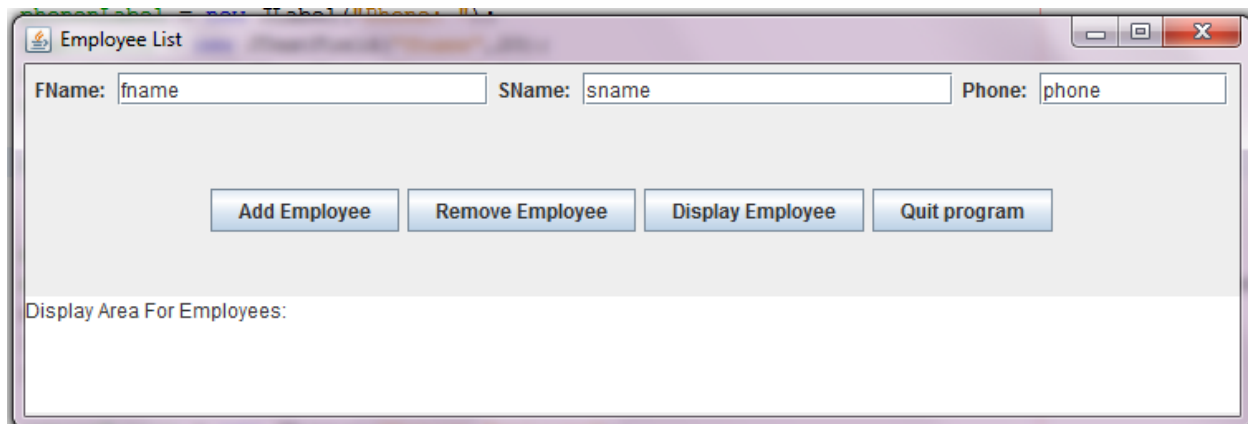
c) Write a driver program and any additional code necessary to create a list of four employee objects, sort them and output them.

(8 marks)

d) What additional code would be required if instead of being ordered on name we wanted the additional ability to order the employees on age. Write this code.

(8 marks)

Q2 a) Write code for a JFrame that looks as follows and stores the Employees details in an ArrayList:



(18 marks)

b) What change is required to the Classes so that the Employee arraylist can be written and read from/to a file.

(6 marks)

c) Write the save and load methods to load and save the arraylist from/to a file. Show how and where these methods should be called in the application.

(6 marks)

Q3 A database exists and stores information on people.

The url of this database is : "jdbc:derby://localhost:1527/AddressBook"

Username is : "USERNAME"

Password is: "PASSWORD"

There is a table called Employees in the database which stores the details on employees.

Employees was created with the following SQL

```
CREATE TABLE Employees
(
    EmployeeID INT NOT NULL GENERATED ALWAYS AS IDENTITY,
    FirstName VARCHAR (15) NOT NULL,
    LastName VARCHAR (30) NOT NULL,
    PhoneNumber VARCHAR (15) NOT NULL
);
```

```
INSERT INTO Employees (FirstName,LastName,PhoneNumber)
VALUES ('Mike','Short','021-5555'),
('Mary','Black','01-1234');
```

- a) You are required to write a class which will implement the following options as methods
- 1) Select all employees from the table
  - 2) Select all employees with a given Lastname.
  - 3) Insert a new person into the table. (You need not check whether or not the Employee is already in the Employees Table).

(22 marks)

- b) Write a driver program which tests this class (you can use hardcoded values for input).

(8 marks)

- Q4 a) Why is readability essential in producing good quality readable programs?

Write a note on readability documentation. Your answer should include reference to Javadoc and show how to include some of its features in a java program.

(7 marks)

- b) Distinguish between a shallow and a deep copy. Why is a deep copy often required by a method. Describe what would be required to make a deep copy of an array of objects.

(8 marks)

- c) What are enumerated types? Why are they used? Give an example (outline code only) of enumerated types being used in a program.

(7 marks)

- d) What is Rtti? What are the two main situations when RTTI is used? Give an example of each case. What is the main limitation of RTTI and what java feature is used to overcome this limitation?

(8 marks)