

CORK INSTITUTE OF TECHNOLOGY
INSTITIÚID TEICNEOLAÍOCHTA CHORCAÍ

Semester 2 Examinations 20113/14

Module Title: Object-Oriented Programming 2

Module Code: COMP7013

School: Computing

Programme Title: Bachelor of Science in Computing
Bachelor of Science (Hons) in Software Development
Bachelor of Science (Hons) in Software Development & Computer
Networking

Programme Code: KCOME_7_Y3
CR_KCOMP_7_Y3
CR_KSDEV_8_Y2
CR_KDNET_8_Y2

External Examiner(s): Mr. Joseph Lynam

Internal Examiner(s): Ms. D. M. Dunlea
Mr. Denis Long
Ms. Oonagh O'Brien

Instructions: Answer three Questions.
Question 1 is mandatory.

Duration: 2 Hours

Sitting: Summer 2014

Requirements for this examination:

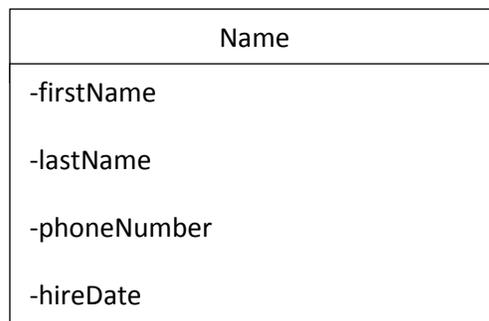
Note to Candidates: Please check the Programme Title and the Module Title to ensure that you have received the correct examination paper.
If in doubt please contact an Invigilator.

Q1 a) Write a class called Name with attributes firstName, lastName phoneNumber hireDate. This class is to be ordered By lastName and if there is a clash on last name the firstName is taken into consideration for the ordering. Make sure you include the method that dictates the ordering. e.g.

Mark Long

Denis Murphy

Paddy Murphy



(12 Marks)

b) Write a driver program and any additional code necessary to create a list of 4 Name objects, sort them and output them.

(8 Marks)

c) What additional code would be required, if instead of being ordered only on first and last name we wanted the additional ability to order the Name objects on hireDate. Write this code.

(12 Marks)

d) Use the extra functionality from part c in a driver program which creates a list of 4 Name objects, sorts them on hireDate and outputs them.

(8 Marks)

Q2. a) Given the following code:

```
public static void main(String[] args) {  
    EnumTest firstDay = new EnumTest(Day.MONDAY);  
    firstDay.tellItLikeItIs();  
    EnumTest thirdDay = new EnumTest(Day.WEDNESDAY);  
    thirdDay.tellItLikeItIs();  
    EnumTest fifthDay = new EnumTest(Day.FRIDAY);  
    fifthDay.tellItLikeItIs();  
    EnumTest sixthDay = new EnumTest(Day.SATURDAY);  
    sixthDay.tellItLikeItIs();  
    EnumTest seventhDay = new EnumTest(Day.SUNDAY);  
    seventhDay.tellItLikeItIs();  
}
```

The output is:

Mondays are bad.

Midweek days are so-so.

Fridays are better.

Weekends are best.

Weekends are best.

Write the definition of the enumerated type Day and the class EnumTest.

(8 Marks)

b) Given the class AccountRecord (appendix 1), what changes must be made to the class in order to make it possible to write objects of this type directly to a file. ?

(4 Marks)

c) Write a class CreateSequentialFile that has the following four methods :

- CreateSequentialfile: Constructor for class
- Openfile: Open the file for Writing objects.
- AddObjects: Write an AccountRecord object to the file
- CloseFile: Close the file.

Use appropriate exception Handling.

AddObjects creates AccountRecord objects and then these objects are written to the file. It is acceptable to hard code the values when creating a new AccountRecord . (14 marks)

d) Write an application program that uses the class CreateSequentialFile and its methods .

(4 Marks)

Q3 a) Compare the use of

Arraylists, Files and Databases

as a data store for an application.

(6 Marks)

b) Write a short note on the typical errors that can be encountered when writing a java program which accesses a database (Note the errors may not be within the java program).

(6 Marks)

c) What are transactions? Show using an example how these can be achieved in Java.

(10 Marks)

d) Write a note on applying the singleton pattern to the class that access a database. Give an example of code which applies the singleton pattern to a class that accesses a database.

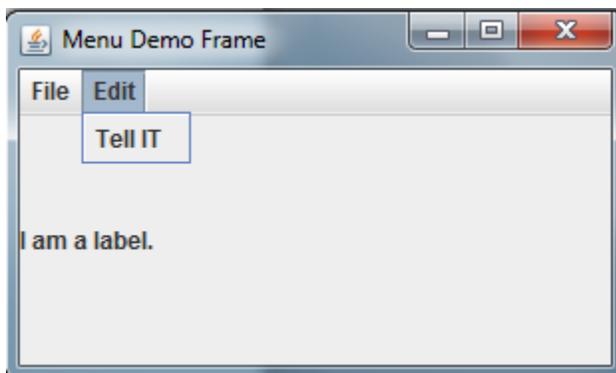
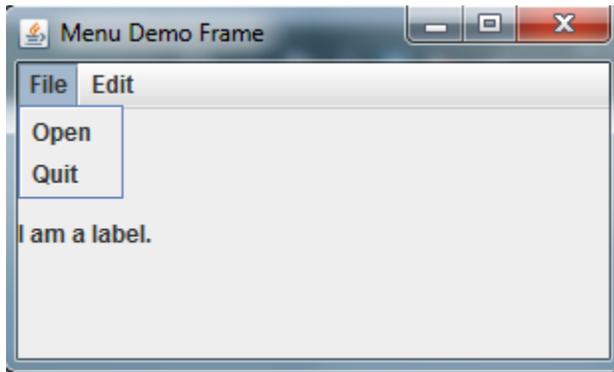
(8 Marks)

Q4 a) What do you understand by the term event driven? (5 Marks)

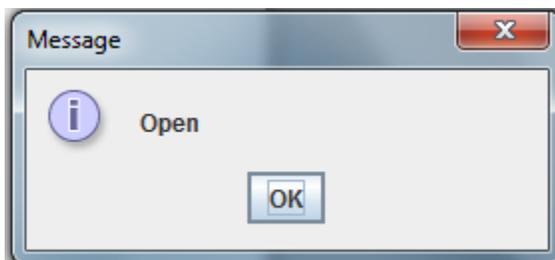
b) What are inner classes and anonymous inner classes when are they used? (5 Marks)

c) What are the advantages/disadvantages of having centralized event listeners? (5 Marks)

d) Create a gui that looks as follows:



When the menu options are selected a JOptionPane pops up and it displays the ActionCommand/MenuItem as follows.



(15 Marks)

Appendix1:

```
Public class AccountRecord {

    public AccountRecord( int acct, String first, String last, double bal )

    {   setAccount( acct );

        setFirstName( first );

        setLastName( last );

        setBalance( bal );

    } // end four-argument AccountRecord constructor

    // set account number

    public void setAccount( int acct )

    {   account = acct;

    } // end method setAccount

    // get account number

    public int getAccount()

    {

        return account;

    } // end method getAccount

    // set first name

    public void setFirstName( String first )

    {

        firstName = first;

    } // end method setFirstName

    // get first name

    public String getFirstName()
```

```
{
    return firstName;
} // end method getFirstName

// set last name
public void setLastName( String last )
{
    lastName = last;
} // end method setLastName

// get last name
public String getLastName()
{
    return lastName;
} // end method getLastName

// set balance
public void setBalance( double bal )
{
    balance = bal;
} // end method setBalance

// get balance
public double getBalance()
{
    return balance;
} // end method getBalance
} // end class AccountRecord
```