

# ICT 2014 OOP1 EXAMINATION

Module Code: ICT B8IT052

Module Description: Object Oriented Programming 1

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Date: Monday 21 July 2014 Time: 09:30 - 11:30

# **INSTRUCTIONS TO CANDIDATES:**

Time allowed is 2 hours.

## **QUESTION 1 IS COMPULSORY**

Answer any 2 other questions.

#### **Question 1 – Compulsory – 30 Marks**

a. Inheritance, Encapsulation and Polymorphism are referred to as the three pillars of Object Oriented Programming. Discuss any **two** include C# examples?

(10 Marks Each)

b. Explain what is meant by overriding and overloading. Give C# examples for <u>each</u>. (5 Marks Each)

(Total 30 Marks)

## **Question 2 - 35 Marks**

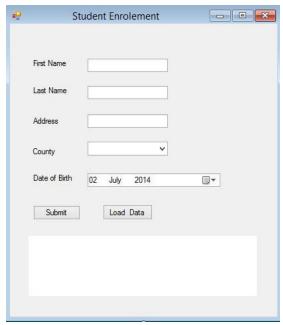
A local college has tasked you with creating a Student Enrolment Form written in C#. The form must contain the following controls;

- ✓ Textbox (First Name)
- ✓ Textbox (last Name)
- ✓ Textbox (Address)
- ✓ ComboBox (County)
- ✓ DateTimePicker (DOB)
- ✓ Submit Button
- ✓ Load Button
- ✓ Label to display data

(6 Marks)

✓ Correct naming convention of controls

(3 Marks)



When the submit button is clicked the data in the field will be saved to this location as a CSV file. C:\test\example.csv

(13 Marks)

When the Load Data Button is clicked the program will load the CSV file and populate the display label.

(13 Marks)

(Total 35 marks)

### **Question 3 - 35 Marks**

Create a C# application which satisfies the following requirements:

- 1. A class named Library which contains the following properties and methods
  - a. A Catalogue property which contains a list of books
    - i. You must create a class Book with the following details
      - 1. ISBN
      - 2. Title
      - 3. Author
      - 4. Description

(10 Marks)

- ii. You must create a class Books which implements ICollection
  - 1. You must implement all methods and properties from the interface
  - 2. You must provide a method to search for a book given its title
  - 3. You must provide a method to search for a book given its ISBN

**(10 Marks)** 

- b. A means by which the user can add a book to the catalogue
- c. A means by which the user can remove a book from the catalogue
- d. A means to sort the books by title alphabetically
- e. A means to sort the books by author, then by title

**(15 Marks)** 

(Total 35 marks)

#### **Question 4 – 35 Marks**

ASTRO ENG requires software to keep track of payments to both full time and part time staff. Full time staff are paid a fixed monthly salary, while part time staff are paid an hourly rate. You are required to develop software to help keep track of company wages. Write a program with the following details

- ✓ A class named Employee. It should have the following:
  - a. Private properties to hold the following information:
  - b. Name
  - c. Id
  - d. Implement a method which accepts a name and id as parameters.

(10 marks)

- ✓ A class named FTStaff which inherits Employee. It should have the following:
  - a. A constructor that allows a name, a staff id and a yearly salary to be passed as parameters
  - b. A private property for setting and retrieving the yearly salary
  - c. A method to CalculateWages which returns the monthly salary.

(7 marks)

- ✓ A class named PTStaff which inherits Employee. It should have the following;
  - a. Properties for the following:
    - i. The hourly rate
    - ii. The amount of hours worked in a month
  - b. A constructor with parameters for specifying the name and the staff id and the hourly rate.
  - c. A constructor with parameters for specifying the name and the staff id, the hourly rate and the number of hours worked in the month.
  - d. An implementation of CalculateWages which will return the amount to be paid to the part time Staff for the amount of hours they have worked

(7 marks)

Note: you must also provide at least one implementation of overriding the ToString method.

(4 marks)

Provide a program which will compile and test your code.

(7 Marks)

(Total 35 marks)