DBS
Dublin Business School
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ICT Skills Programme

January 2015 EXAMINATIONS

Module Code: **B8IT052**

Module Description: **Object-Oriented Programming I**

Examiner: **Dr. Shazia A Afzal & Mr Damien Kettle**

Internal Moderator: **Ms. Fiona Redmond**

External Examiner: **Mr Pat Donnelly**

Date: Monday, 19th January 2015
Time: 09:30 – 11:30

INSTRUCTIONS TO CANDIDATES:

Time allowed is 2 hours.

QUESTION 1 IS COMPULSORY (30 marks);
Answer any 2 other questions (35 marks each).

Question 1 – Compulsory – 30 Marks

a) Explain the following by providing appropriate examples for each of them.

i. Sealed Class
ii. Struct
iii. Access Modifiers
iv. Abstract Class

(4 *5 = 20 marks)

b) What is Polymorphism? Explain overriding and overloading by giving C# examples.

(10 marks)

(Total: 30 marks)

Question 2 - 35 Marks

A local hospital called "XYZ Hospital" has requested a software company to develop an information system for the hospital. As a part of the software team, you are required to write the following classes, interfaces etc. in C#.

a) An Address class the with following specification:
- House number (property)
- Street (property)
- City (property)
- A ToString() method which returns the details held in this class. (i.e. the properties of the class).

(5 marks)

b) A Patient class with the following specifications:
- PatientId (property)
- PatientName (property)
- PatientAddress (property) – use already created Address class.
- PatientType (property) – can be public or private
- A constructor that uses all the properties
- A ToString() method which returns the details held in this class. (i.e. the properties of the class).

(5 marks)

c) An OutPatient class extends the Patient class with following properties
- VisitDate
- VisitNo
- A constructor with all properties
- A ToString() method which returns the details held in this class. (i.e. the properties of the class).

(7 marks)

d) A ResidentPatient class that extends the Patient class
   - AdmissionDate
   - DischargeDate
   - RoomNo
   - A constructor with all properties
   - A ToString() method which returns the details held in this class. (i.e. the properties of the class).

(7 marks)

e) Write a test class to create two objects, one of type OutPatient and one of type ResidentPatient and display their details.

(5 marks)

f) Develop a UML class diagram to show the inheritance hierarchy.

(6 marks)

(Total: 35 marks)

Question 3 - 35 Marks

You are required to develop a "Phone book" console application in C#. To develop this application, write the following C# classes:

a) A Contact class with the following properties:
   - ContactId
   - FirstName
   - LastName
   - Phone

   And a method ToString() to return all details of a contact.

(8 marks)

b) A Contacts class that implements ICollection<Contact> interface and holds a property ContactList<Contact> to store a number of contacts. Contacts class should use a method to Sort the Contacts by last name.

(15 marks)

c) A test class with menu for the following functions:
   - Add a Contact
   - Search for a contact using ContactId
     - If contact is in list "Found" should be printed, otherwise "Not Found" should be printed on screen.
   - Show all contacts by their last names.
   - The user must enter "y" to see the menu again.

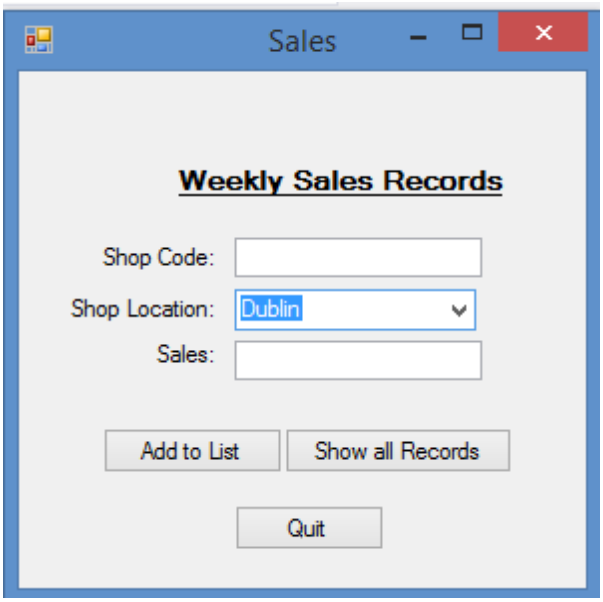
(12 marks)

(Total: 35 marks)

Question 4 - 35 Marks

An Irish company has four clothes shops in different cities of Ireland which are Dublin, Galway, Limerick and Sligo.

a) To maintain the records of sales for these shops, develop a Windows Application in C# that allows the user to enter the records using the following form.



(5 marks)

To develop this application, you have to perform the following task:

b) Develop an enum Location and populate the Combo Box for Shop Location on the form with enum Location.

(8 marks)

c) Develop a C# class Shop with the following specification:

- ShopCode (property)
- ShopLocation (property) – use enum
- Sales (property)
- A ToString() method to return all details of Shop.

d) When the user clicks the button "Add to List" on the form, shop instance should be created from the details given on the form and the shop instance must be added to an object of generic list of type Shop (List<Shop>).

(10 marks)

e) When the user clicks on the "Show All Records" on the form, all records must be shown on a different form.

(10 marks)

f) When the user clicks the "Quit", the form should close.

(2 marks)

(Total: 35 marks)