



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2005/2006 – 2nd Year Examination – Semester 4

IT4302 -Rapid Application Development
PART 2 - Structured Question Paper

19th August, 2007
(ONE HOUR)

To be completed by the candidate

BIT Examination Index No: _____

Important Instructions:

- The duration of the paper is **1 (One) hour**.
- The medium of instruction and questions is English.
- This paper has **3 questions** and **11 pages**.
- **Answer question 1 (50% marks) and any one of the other questions (50% marks) only.**
- **Write your answers** in English using the space provided **in this question paper**.
- Do not tear off any part of this answer book.
- Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.
- Note that questions appear on both sides of the paper.
If a page is not printed, please inform the supervisor immediately.

Questions Answered

Indicate by a cross (×), (e.g.

×

) the numbers of the questions answered.

To be completed by the candidate by marking a cross (×).	1	2	3	
To be completed by the examiners:				

Based on the following case study answer question 1.

Case Study

1)

Exclusive Corporation

Exclusive Corporation is a company that manufactures household electrical appliances. Information extracted by Systems Analyst and his team is as given below. The sales catalogue contains 458 items of which more than half are produced by the company.

The following operations were identified.
Order Processing, Inventory Control, Production Scheduling, Manufacturing, Purchasing and Sales
Due to lack of funds, systems analyst was instructed only to conduct the analysis and design activities for Order processing and Inventory Control operations.
The operations are described in detail below.

Order processing

Each order is accompanied by a 10% deposit. The order processing clerk is responsible for handling the order through the following procedure.

- i. First he determines whether the customer is new or old.
- ii. If the customer is new, the address, contact number and 2 credit references are taken. Otherwise (if he is an old customer) the credit references are still taken to ensure that the customer is still financially sound.
- iii. Each item number, description and price is verified with the catalogue.
- iv. The manufactured and purchased items are grouped separately and sent to the Inventory Control Department.
- v. When the order-*can be fulfilled* notice is received from Inventory control, a copy of the notice is sent to the Sales Department.

Inventory Control

Inventory includes all raw materials, purchased items and manufactured items. Every item regardless of whether it is purchased or manufactured by the company itself has a maximum and minimum quantity level.

These two quantity levels are adjusted based on the popularity of the item and is determined by the management. Every time the inventory control clerk updates the inventory after dispatching the consignment of items to the customer, he checks whether the remaining quantity falls below the minimum level.

If it does fall below the minimum, the following action is taken.

- If the item is manufactured by the company itself, it sends a product inventory notice to the Product Scheduling Department.
- If it is a purchased item (including raw materials), it sends a purchase order to the Purchasing Department.

When a consignment of raw materials or purchased items is received, the inventory is updated. If the quantity exceeds the maximum quantity, the following action is taken depending on the type of item.

- If it is a manufactured item, an overstock notice is made to management and product scheduling.
- If it is a purchased item, an overstock notice is sent to purchasing.

When customer order reaches inventory control, the following procedure is carried out.

- i. The order is broken down into sub-orders for each item.
- ii. The order is classified as order *pending*
- iii. Each sub-order is checked against the inventory to determine if it can be fulfilled under the current quantities in stock.
- iv. If the sub-order can be fulfilled by the inventory the following procedure is carried out.
 - the inventory is adjusted by the given amount
 - the sub-order is filed together with the original pending order
- v. If the sub-order cannot be fulfilled, the following action is taken.
 - If the item is manufactured, the sub-order is filed in the manufacturing suspense file and a produce order is sent to the production scheduling department. After manufacturing the item, Inventory Control Department receives a notice from the Manufacturing Department. Subsequently the Inventory is updated.
 - If the item is a purchased item, the sub-order is filed in the purchasing suspense file and a purchase order is sent to the purchase department. After the item is purchased, Inventory Control Department receives a notice from the Purchasing Department. Subsequently the Inventory is updated.
- vi. When all the sub-orders can be fulfilled, the order is classified as order *can be fulfilled*, and a notice is sent to the Order Processing Department indicating that the order can be fulfilled.

(a) Identify 5 classes in the Case study

(10 marks)

ANSWER IN THIS BOX

(b) Constructors and Destructors are very essential in Object Oriented Programming. Describe what a Constructor and Destructor in VB.net are giving special reference to Class Hierarchy. How would one implement constructors for the above classes?

(25 marks)

ANSWER IN THIS BOX

Continued...

(c) Identify the difference between Dispose () method and Sub Finalize () method.

(20 marks)

ANSWER IN THIS BOX

(d) Define what an abstract class is and specify how it is implemented in VB.net.

(25 marks)

ANSWER IN THIS BOX

- (e) Do a comparison between an Abstract class and an Interface placing emphasis on Visual Basic.net

(20 marks)

ANSWER IN THIS BOX

- 2) (a) Unlike earlier versions of Visual Basic, Visual Basic.net is heavily dependent upon DataSet. Describe DataSet class with its members.

(20 marks)

ANSWER IN THIS BOX

Refer to the following scenario for part (b),(c),(d),(e)

As depicted in Figure 1, there is a form with a Datagrid. Two text boxes have been added. When Button1 is clicked data which is input into textbox1 and textbox2 are added to the Datagrid. Use the following variables for writing the code:

DataSet = myDataSet, myTable = DataTable, Columns: myColumn1, myColumn2 with names myNumber and myLastName, myRow = DataRow and DataSet name and DataTable are "CusOrders" and "Order" respectively.

First column takes only Integer and use Int16 data type and second column accepts string Data type.

	pNumber	LastName
▶	0	data1
	1	data2
*		

Figure-1

(b) Write down the code to create the new DataSet object and DataTable with columns.

(20 marks)

ANSWER IN THIS BOX

Continued...

- (c) One requires the addition of a primary key constraint to the first Column. Write the code to show how it is done.

(10 marks)

<u>ANSWER IN THIS BOX</u>

- (d) Data Row is added to the Datagrid object when one clicks Button1. If one makes object global to form an object,
- Write down the code which will be inserted into button1 click event where two boxes are assigned columns of the row.
 - Write line of code which is needed to assign DataSet object as the source for DataGrid1 object.

(25 marks)

<u>ANSWER IN THIS BOX</u>

Continued...

- ```
strConnectionString, myconnection = SqlConnection, myDataAdapter =
SqlDataAdapter, myCustBuild = SqlCommandBuilder, Database = myData, User ID = sa,
password = ""
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**ANSWER IN THIS BOX**

**ANSWER IN THIS BOX**

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- 3) (a) Explain the words Redim and Preserve in relation to Arrays.

(20 marks)

**ANSWER IN THIS BOX**

- (b) Consider the following code.  
Dim myArray() As String = {"Venus", "Earth"}

Write down the statements to add "Mars" to the end of myArray without deleting the existing entries.

(20 marks)

**ANSWER IN THIS BOX**

- (c) What is meant by the Rank of an array? is there any change in the Rank of myArray after you add "Mars" in (b)?

(20 marks)

**ANSWER IN THIS BOX**

(d) Does myArray belong to the System.Array Class?

(10 marks)

**ANSWER IN THIS BOX**

(e) Describe Polymorphism in Visual Basic .net. Can you create a new instance of the **System.Array** class using the **New** Constructor?

Write down the statement(s) for an alternative way of creating a new instance of a System.Array class of length 2 and of type **String**.

(30 marks)

**ANSWER IN THIS BOX**

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