



SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

**Higher National Diploma in Information Technology
Second Year, First Semester Examination – 2015
HNDIT23073- Rapid Application Development**

Instructions for Candidates:
Answer 5 Questions.

No. of questions : 06
No. of pages : 05
Time : Three (3) hours

Answer

- 1) a) State the common programming task allow to perform in Visual Studio DotNet IDE

[3 Marks]

Writing the code
Checking the syntax errors
Compiling and interpreting
Debugging
Running the application

- b) Name three VB project types that can found in common VS.NET installation

[3 Marks]

Windows Form Application
Class Libraries
Console Application
Silverlight Application
WPF Application

- c) We can pass data to both sub procedure and function either by value or by reference: TRUE or FALSE

[3 Marks]

- d) Contrast the following two VB statements

```
Dim iNum As Integer  
Static fNum As Integer
```

[3 Marks]

Static variable initialized once and add every time when execute the code

- e) List eight(8) common control that can found in VB Toolbox

[8 Marks]

Button
Label
Text Box
Combo Box
List Box
Rich Text Box
List view
Picture box

- 2) i) what are the typical reason to software project failure [4 Marks]
- b) What are the problems in conventional methods addressed by Rapid application development [4 Marks]
- c) What are the advantages and disadvantages of rapid application development [4 Marks]
- d) Briefly explain classic mistakes. [4 Marks]
- e) Briefly explain how can you success your software project using rapid application development method. [4 Marks]
-
- (a) What are the typical reason to software project failure [4 marks]

- Risks associated with **teams**.

If a team of developers, end users, and systems maintainers have not worked together before and do not learn to communicate effectively, they are not likely to develop a successful system without schedule delays or cost overruns. Other risks are associated with the lack of well-defined or well-understood processes.

- Risks associated with **technology**.

Teams that pursue a new technical approach (for example, the first venture into client-server computing) find that the lack of experience with a new technology, architecture, or development approach contributes to failure.

- Risk associated with **requirements**.

Most often-cited reason for failure is poor management of requirements characterized by:

- frequently changing requirements,
- requirements that are not well understood, and
- requirements explosion

Give marks to any related answer

(b) What are the problems in conventional methods addressed by Rapid application development

[4 Marks]

There is a long delay before the customer sees any results

Developments can take a long time and sometimes a business may change during that period

There is nothing until 100% of the process is finished.

(c) What are advantages and disadvantages of rapid application development

[4 Marks]

Advantages of the RAD :

- Reduced development time.
- Increases reusability of components
- Quick initial reviews occur
- Encourages customer feedback
- Integration from very beginning solves a lot of integration issues.

Disadvantages of RAD :

- Depends on strong team and individual performances for identifying business requirements.
- Only system that can be modularized can be built using RAD
- Requires highly skilled developers/designers.
- High dependency on modeling skills
- Inapplicable to cheaper projects as cost of modeling and automated code generation is very high.

Give marks for any reasonable answer

(d) Briefly explain classic mistakes.

[4 Marks]

To achieve rapid development you need to avoid making any big mistakes.

Some inefficient development practices have been chosen so often with such predictable bad results that they deserve to be called “classic mistakes”.

They have been made so often and their consequences have become easy to predict.

The classic mistakes rarely produce the results that people hope for.

4 types of classic mistakes

- **People** related classic mistakes

- **Product** related classic mistakes
- **Technology** related classic mistakes
- **Process** related classic mistakes

(e) Briefly explain how can you success your software project using rapid application development method.
[4 Marks]

- Using the right mix of methodologies, tools, personnel and management and the correct use of best practices.
- The optimal is a team of users and developers who can communicate effectively and successfully develop their products without schedule delays or cost over runs.
- Experience counts. An experienced team, developing a similar system to one that it has previously developed, with a customer and end user with whom it can communicate well, is much more likely to produce high-quality software intensive systems on time and at cost.
- Having a well-trained, fully collaborative team is an essential ingredient for success in a RAD project.
- The core of the team
 - should be full participants in project planning.
 - should stay together from start to finish.
 - Support tools should be provided to those who have skills in using them

Give marks for any reasonable answer

Total [20 Marks]

3) i) Write a statement or a set of statements to accomplish each of the following:

- a) Sum the squares of even numbers between **1** and **15** using a **Do While/Loop** repetition structure. Assume that the **Integer** variables **sum** and **count** have been declared and initialized to **0** and **2**, respectively.

[2 Marks]

- b) Print the numbers from **20** to **1** in a **MessageBox** using a **Do Until/Loop** and **Integer** counter variable **counterIndex**. The **MessageBox** should display one number at a time. Assume that the variable **counterIndex** is initialized to **20**.

[2 Marks]

b) Identify and correct the error(s) in each of the following (you may need to add code):

- a) This segment should read an unspecified number of values from the user and sum them Assume that **number** and **total** are declared as **Integers**.

```

total = 0
Do Until number = -1
    Console.Write("Enter a value ")
    number = Console.ReadLine()
    total += number
Loop
    Console.WriteLine(total)

```

[3 Marks]

- b) The following code should print the squares of 1 to 10 in a **MessageBox**

```

Dim number As Integer = 1
Do While number < 10
    MessageBox.Show(number ^ 2)
While End

```

[3 Marks]

- c) State whether each of the following is *true* or *false*. If *false* explain why
- All objects are passed by reference in VB.net
 - Identifier names for classes, methods and properties used in one namespace cannot be repeated in another namespace
 - Inheritance encourages the reuse of proven high-quality software
 - A module can reference a base-class object's **Protected** members directly
 - Classes declared with the **NotInheritable** keyword cannot be base classes

[10 Marks]

.....

i

- a) **Do While** count <= 15

```

    sum += count ^ 2
    count += 2
Loop

```

- b) **Do Until** counterIndex < 1

```

    MessageBox.Show(counterIndex)
    counterIndex -= 1
Loop

```

ii

- a) Error: The sentinel value (-1) is added to **total** producing an incorrect sum.

```

total = 0
Console.Write("Enter a value")
number = Console.ReadLine()
Do Until number = -1
total += number
Console.WriteLine("Enter a value")
number = Console.ReadLine()
Loop
Console.WriteLine(total)

```

- b) Errors: The counter is never incremented, resulting in an infinite loop. The repetition condition uses the wrong comparison operator. Keywords **While End** are used instead of keyword **Loop**.

```

Dim number As Integer = 1
Do While number <= 10
MessageBox.Show(number ^ 2)
number += 1
Loop

```

- iii a) True. b) False. Different namespaces can have classes, methods and properties with the same names. c) True. d) False. A module cannot access **Protected** members directly, and must use the class's **Public** methods and properties to access the data.

- d) True

- 4) ADO.NET is a modal used by .NET application to communicate with the database for retrieving and updating Data

- a) List out the features of the ADO.NET [4 Marks]
- b) Draw and briefly explain the ADO.NET object model [4 Marks]
- c) *“Dataset is independent of data source”*. Criticize on this statement [4 Marks]
- d) Differentiate between OLEDB data provider and SQL Server data provider [4 Marks]
- e) Explain the importance of the components of **Data Provider** in retrieving data from the database [4 Marks]

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Answers:

Q4.

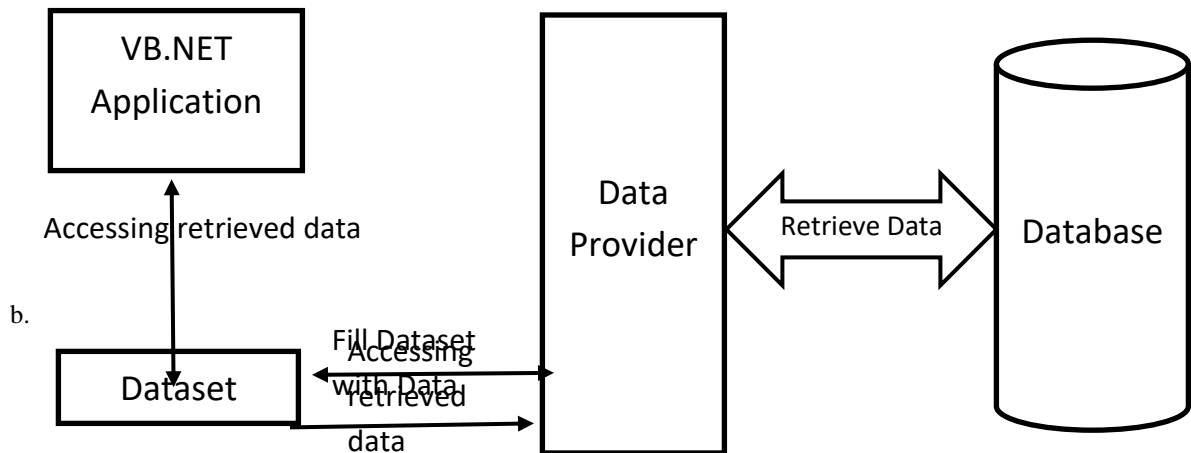
a.

- Disconnected data architecture
- Data cached in Datasets
- Supports scalability by working with Dataset
- Data transfer in XML format
- Interaction with the database is done through data commands

[5 × 4 = 20]

OleDb Data Provider

SQL Server Data Provider



- The data residing in a database is retrieved through **Data Provider**
- An application can access the database either via a **Dataset** or **Data Reader** objects [30]

c.

- Dataset is a cached set of database records.
- Data Adapter resides between the Dataset and the Database
- It is filled by the data from the Data Adapter.
- Modified data directly transfer to the Data Adapter not to the Database.
- Data Adapter transfer the changes made in the Dataset to the Database.

[5 × 2 = 10]

- d.
- Works with all OLEDB providers such as SQL OLEDB, JET OLEDB, Oracle OLEDB
 - OLEDB data provider classes are present in the namespace System, Data, OleDb
 - Works specifically with Microsoft SQL server
 - SQL server data provider classes are present in the namespace System, Data,.SqlClient

[2 × 5 = 10]

e.

- Connection: Used to establish a connection with a data source
- Data Adapter: Retrieves data from a database into a dataset

When changes made to the dataset, then Data Adapter make those changes in the database.

Data adapter first compare the data in the dataset with that in the database and then updates the database

- Data Command: An object representing a SQL statement or a stored procedure that is used to retrieve, insert, delete, and modify data in a data source.
For retrieving data through data commands, a connection object is created first to connect the database from where the data is to be retrieved.
For retrieving data through data commands, a connection object is created first to connect the database from where the data is to be retrieved.
- Data Reader: used to retrieve data from a data source in read only and forward only mode.

A data reader uses connection object to connect the database

The command object to execute SQL statements or procedures on the database and retrieves the data in sequential mode

Using data reader results in faster access to data and less memory usage since at any time

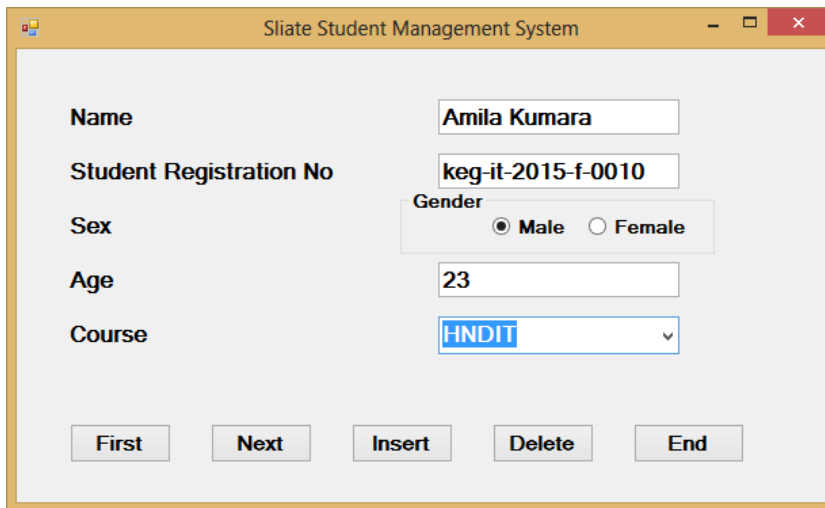
Only a single row is stored in the memory

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$$[2 + 9 + 9 + 10 = 30]$$

.....

- 5) Considering the below interface and given details answer the following questions



Server : SLIATE
Username : <<Your ATI Name>> Eg. Jaffna ATI → Jaffna
Password : <<Your ATI code>> Eg. Jaffna ATI → Jaf
Database : studentdb
Table : student (name, regno, sex, age, course)

- b) Write the code segment for connecting this interface with the SQL Database
(Indicate any relevant libraries/ packages/etc, required to create the connection) [3 Marks]
- c) Write the code segment to create a data adapter and dataset to handle the data in student table [3 Marks]
- d) Write the code segment to preview the first record in the table [3 Marks]
- e) Write the code segment to preview the next record in the table [3 Marks]
- f) Write the code segment to insert a record [3 Marks]
- g) Write the code segment to delete a record

[3 Marks]

h) Write the code segment to end the program

[2 Marks]

6) a) Distinguish the class, object and namespace

[3 Marks]

Class : generic name that describe the set of objects

Object : instance of a class that perform task

Namespace : organization of the system

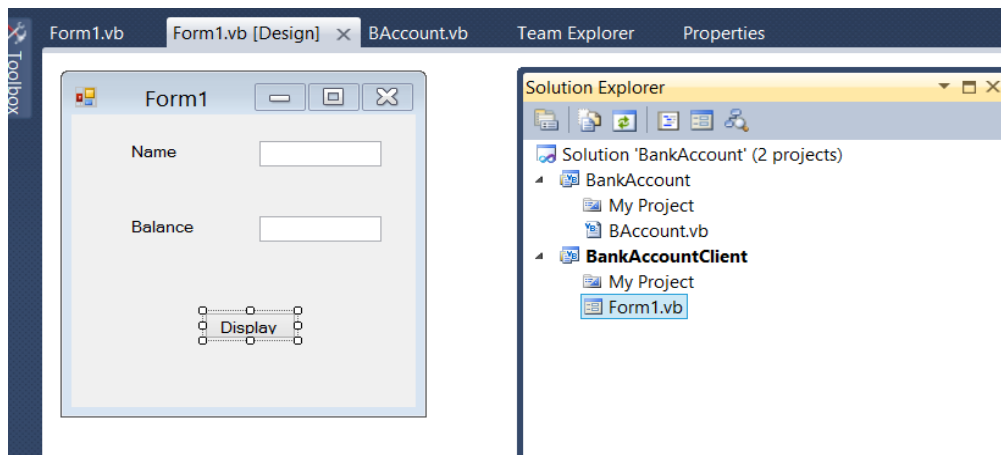
b) A BAccount class define in BankAccount class library as follows and fill the missing element of the code

```
Public Class BAccount
    Private accountHolder As String
    Public balance As Double
    Public Sub Deposit(ByVal amount As Double)
        balance += _____(i)_____
    End Sub
    Public Property Name() As String
        Get
            Return _____(ii)_____
        End Get
        Set(ByVal value As String)
            accountHolder = _____(iii)_____
        End Set
    End Property
End Class
```

[3 Marks]

- i) amount
- ii) accountHolder
- iii) Value

c) The above class included the VB solution in two project as given bellow



- i. State the steps creating this kind of VB solution

[4 Marks]

Create class library name BankAccount
 Create windows Form Application BankAccountClient
 Add Reference class library to windows form application

- ii. Write the code fragment in relevant event procedure to display name of the account holder and his/her balance when click on “Display Button”. Use suitable name for the controls.

[10 Marks]

```
Private Sub btnDisplay_Click(sender As System.Object, e As System.EventArgs) Handles
btnDisplay.Click
    Dim account As New BankAccount.BAccount
    account.Name = "HNDIT"
    account.Deposit(100.0)
    txtName.Text = account.Name()
    txtBalance.Text = account.balance

End Sub
```