

UNIVERSITY OF RUHUNA
BACHELOR OF SCIENCE (GENERAL) DEGREE
LEVEL III (SEMESTER II) EXAMINATION – JANUARY 2018

COURSE UNIT: COM 323α – Visual Programming

Duration: 2 hours

Answer **four** questions **only**

- 1) Write Visual Basic code segments to perform following tasks.
 - a) Suppose that there are two text boxes on a form with names *TextBox1* and *TextBox2*. Display a message box concatenating the texts in each text box separated by a comma.
 - b) There is a text box on a form with name *TextiBox1*. The user may enter an integer into the text box. Increment the value of integer by one and display in the text box replacing the original value.
 - c) There are two check boxes on a form with names *CheckBox1* and *CheckBox2*. The user may check any number of check boxes out of these two. There is a label on the form with name *Label1*. Display the number of checked check boxes on the label.
 - d) There are three radio buttons on a form with names: *RadioButton1*, *RadioButton2*, and *RadioButton3*. The user may select not more than one of these radio buttons at a time. Disable the radio button once the user selects that button.
 - e) There is a form with name *Form1*. Display the title of the form in a message box just before loading the form. Write entire subroutine.
 - f) There is a text box with name *TextBox1* on a form. Append an exclamation mark to the end of text of the text box when user leaves the text box. Write entire subroutine.

2)

- a) Convert following *for* loop into *do until* loop using a Visual Basic code segment.

```
For x = 5 To 11
    MsgBox.Show (x.ToString ())
Next
```

- b) **Table 1** is related to trigonometry which is a branch of mathematics. Write a Visual Basic code segment to decide relevant quadrant based on value of angle θ . The output should be displayed in a message box.

Table 1

<i>Angle range</i>	<i>Quadrant</i>
$0 < \theta < 90$	First
$90 < \theta < 180$	Second
$180 < \theta < 270$	Third
$270 < \theta < 360$	Fourth

- c) Write a Visual Basic code segment to count and display number of lower case vowels {"a", "e", "i", "o", "u"} in a given sentence.
- d) Write the final values of variables x and y after executing the following Visual Basic code.

```
Dim x As Integer = 6
Dim y As Integer = -4

For i = 5 To 7
    For j = 3 To 6
        x = x + 2 * i - 3 * j
        If x < 7 Then
            y = y + i - j
        End If
    Next
Next
```

3)

- a) There is a picture box on a form with name *PictureBox1*. Write a Visual Basic code segment to open the image *me.jpg* into the picture box. Exception handling is required.
Note: The image is saved in the location *D:\LG* in the computer.
- b) Assume that there is a text box named *TextBox1* on a form. The text in the text box should convert into uppercase as mouse pointer enters the text box. The text in the text box should convert into lowercase as mouse pointer leaves the text box. Write a Visual Basic code segment to fulfill above functionality showing all subroutines.
- c) Assume that there is a combo box named *ComboBox1* on a form. The combo box is initially empty. Each left click on the form should add the number of left clicked times as an element to the combo box. Each right click on the form should remove the last element from the combo box. Write a Visual Basic code segment to perform above tasks showing all subroutines.
Note: You have to consider the situation where the combo box is empty.
- d) Suppose that *arr* is name of an integer array which has *n* elements where *n* is an even number. Write a Visual Basic code segment to swap consecutive pairs of elements.
- e) There is a panel on a form with name *Panel1*. The user may click any point on the panel. It is required to display the area of a rectangle on the title bar of the form. The rectangle is formed by two vertices: the clicked point and bottom right corner of the panel. Write a suitable Visual Basic code segment to fulfill the above requirement showing the subroutine.

4)

- a) Suppose that there is a text box with name *TextBox1*. The user may enter 1, 2 or 3 (one value at a time) in the text box.
- The number should be converted into an uppercase letter when left clicked on the text box. i.e. "1" to "A", "2" to "B", and "3" to "C".
 - The number should be converted into a lowercase letter when right clicked on the text box. i.e. "1" to "a", "2" to "b", and "3" to "c".
 - The text box should be cleared upon clicking on it if the text box contains a value other than 1, 2 or 3.

Write entire subroutine in Visual Basic. You must use *Select Case* statements for character selection.

- b) The Fibonacci numbers are the numbers in the integer sequence as given below.

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144 ...

Definition of Fibonacci sequence: The first two numbers in the sequence are 0 and 1 by definition. Each number is sum of previous two numbers.

There are a text box, a list box, and a button on a form with names *TextBox1*, *ListBox1*, and *Button1* respectively.

The user may provide a number in the text box to specify index of the Fibonacci number. For an example, if user inputs 5, it indicates 5th value of above sequence that is 3. Write a Visual Basic code segment to perform followings when the button is clicked.

- The list of the Fibonacci numbers up to the index provided by the user should be displayed in the list box.
- The sum of these Fibonacci numbers should be displayed on text of the button.

5)

- a) Briefly explain the array data structure in computer programming.
- b) Briefly explain the three types of errors in computer programming by using a suitable Visual Basic example per each.
- c) Write Visual Basic code segments to perform following tasks.
- Declare a two dimensional integer array with the size $m \times n$ and initialize its elements with random numbers from 0 to 255 using inbuilt random number generator.
 - Create an array by removing r^{th} row and c^{th} column of the matrix created in (5) (c) (i).
 - Compute the summation of all elements in the array created in (5) (c) (ii).