UNIVERSITY EXAMINATIONS

UNIVERSITEITSEKSAMENS

UNISA university of south africa

ICT2611

May/June 2013

GRAPHICAL USER INTERFACE PROGRAMMING

Duration 2 Hours

100 Marks

EXAMINERS

FIRST MR C DONGMO

SECOND MR DJ BISSCHOFF

Closed book examination

This paper consists of 7 pages

Instructions.

1 Answer all the 4 questions

2 All rough work must be done in your answer book

3 The mark for each question is given in brackets next to the question

4 Please answer the questions in order If you want to do a question later, leave a blank space

GOOD LUCK!

Question 1 [20 marks]

Note: ***Please answer this question on your answer book (e.g. if option 3 is the correct answer for question 1.11, write: 1.11 → 3, or (1.11, 3)).***

1 1 The _____ property determines the graphic to display in a picture box control

1 display image

2. graphic

3 image

4 picture

1 2 You can use a _____ control to process code at regular time intervals

1 watch

2 timer

3 clock

4 register

1 3 Consider the expression 3*2^2<16+5 AndAlso 100/10*2>15-3 Which operation is performed first?

1 *

2 /

3 +

4 ^

1 4 The character ___ is used to assign an access key to a control

1 #

2 @

3 &

4 $

1 5 When designing a user interface, the most important information should be placed in the _____ of the screen

1 lower-left corner

2 lower-right corner

3 upper-left corner

4 upper-right corner

1 6 When placing command buttons on a form, it is a good idea to

1 place them all in a row

2 place them on the diagonal

3 limit the number to eight

4 limit the caption to three characters

1 7 If you do not provides a data type when declaring a variable, Visual Basic automatically assigns a data type to the declared variable, which is _____

1 Integer

2 String

3 Decimal

4 Object

1 8 The _____ event occurs when a form is being read into the computer's internal memory

1 click

2 double-click

3 load

4 close

1 9 Which of the following is the most appropriate data type to use for a variable that will always contain a whole number less than 70 000?

1 Integer

2 Long

3 Decimal

4 Single

1 10 A _____ variable is known only to the procedure in which it is declared

1 form-level

2 constant

3 local

4 public

Question 2 {30 marks}

2 1 Briefly and clearly describe each of the following types of VB Net errors syntax error, run time error and logic error [6]

2 2 Analyse the following sets of VB NET instructions and explain for each of them, the purpose, and the type of error(s) that may occur during their execution [12]

(a) (4)

```
Dim intFirstNum, intSecondNum As Integer
intFirstNum = Val(InputBox("Enter the first number"))
intSecondNum = Val(InputBox("Enter the second number"))
MessageBox.Show ("The average of the two numbers is " & intFirstNum/2 +intSecondNum)
```

(b) (4)

```
Const conPi As Single = 3 141593
Private Sub CalcButton_Click ( )
Dim sngRadius, sngArea As Single
    sngRadius = Val(Me RadiusTexBox Text)
End sub
intArea = conPi * sngRadius^2
```

(c) (4)

```
Dim intValue As Integer
Private Function IntStringConvert (ByVal stringInput As String) As Integer
    Return Integer Parse(stringInput)
End Function
intValue = IntStringConvert("0 1")
```

2 3 Consider the following project statement

One of your clients wants to conduct a survey, for which each participant will complete four (4) questions For each question, the participant selects only one of the options Always, Usually, Sometimes, Seldom, or Never Labels are used to describe the questions and the options of each question are grouped in a group box placed next to the question One button is used to submit the respondent responses and close the form, another button to clear the selections without submitting, and the last button to close the user interface

(a) Propose a TOE (Task, Object, Event) chart for the project [6]

(b) Sketch a well-designed user interface for this project [6]

Hint: *since each question has the same set of options, for the TOE chart, you may consider only one question and the associated responses options*

Question 3 {30 marks}

3 1 Write a pseudo-code for a program that calculates the sum of **n** consecutive Integer numbers starting from the number **i** that is, sum = i + (i+1) + (i+2) + + (i+ (n-1)) [5]

For example, if **n**=4 and **i**=3, then the sum is 3+4+5+6 = 18

3 2 Draw a flowchart, using case selection statement, for a program that receives an Integer number as input and returns the corresponding color based on the mappings in table 1 [5]

0	1	2	3	4	5
Black	Blue	Orange	Green	Brown	White

Table 1

3 3 Complete the following Visual Basic function procedure to compute the percentage of vowels in an input string [6]

```
Private Function vowels%(ByVal stringInput As String) As Single

    Return
End Function
```

Hint

- The list of vowels is ***a, e, i, o, u, y***

- The method ***IndexOf (C)*** *of a string variable returns -1 if the character C is not in the string variable otherwise, the position of C within the string is returned E g Dim myString = "Anatole", myString IndexOf("a") = 2*

3 4 Write a sub procedure to order two input numbers and display the greater one in a messagebox [4]

3 5 Figure 1 is the user interface of a program to edit and print the list of chapters for the course code ICT2611 The button Add new is to add a new chapter, Print list to print preview the list of chapters in the list box, and the button Exit to end the program [20]

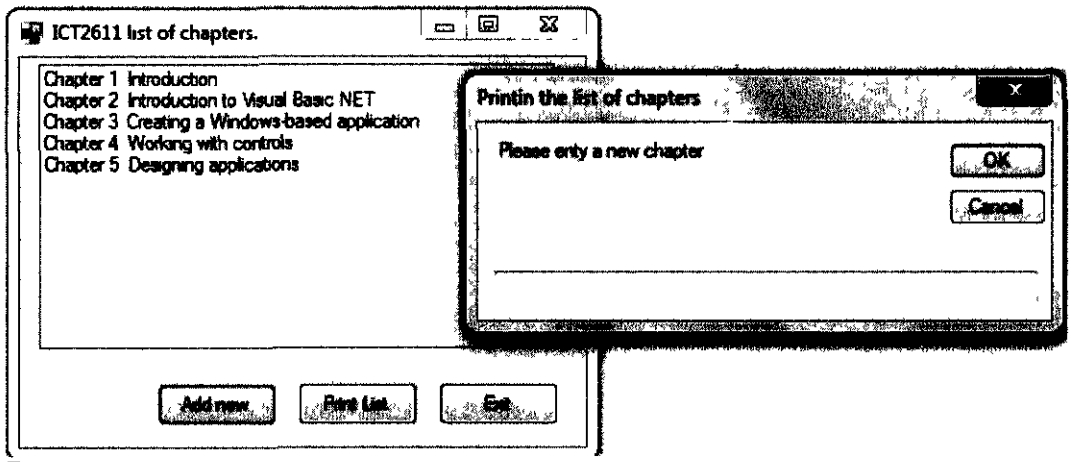

Figure 1

(a) When the user clicks on the button Add new, an input box is displayed on the screen, the user types in a new chapter and clicks on OK to add the chapter to the list box or clicks on cancel to close the input box window without adding Complete the following sub procedure for the Add new button (6)

```
Private Sub BtAdd_Click(ByVal sender As System.Object, ByVal e As _
System.EventArgs) Handles BtAdd.Click

End Sub
```

(b) Write the sub procedure for the Exit button (2)

(c) When the user clicks on the button Print list, the program displays the content of the list box in a print preview window Complete the following sub procedures for the Print preview button

```
Private Sub BtPrintList_Click(ByVal sender As System.Object, _
ByVal e As System.EventArgs) Handles BtPrintList.Click


End Sub                                                          (2)
```

Note two Visual Basic NET objects are added to the form to enable the printing PrintDocument1 and PrintPreviewDialog1

```
Private Sub PrintDocument1_PrintPage(ByVal sender As System.Object, _
ByVal e As System.Drawing Printing.PrintPageEventArgs) Handles _
PrintDocument1.PrintPage
   Dim sngLine As Single = e.MarginBounds.Left 'current line
   Dim sngColumn As Single = e.MarginBounds Top 'currentr column
   Dim printFont As New Font("Arial", 14) 'printing font


End Sub                                                          (10)
```

Hint: `e.Graphics.DrawString(myString, printFont, Brushes.Black, sngLine, sngColumn)`
This method prints the in black the contain of myString, on the line sngLine starting from column sngColumn

Question 4 [20 marks]

4 1 Consider Table 2 below, with 5 lines and 7 columns, in which, each cell is either valid (V) or invalid (I) Assume the values in Table 2 are store in a multi-dimensional array Write a function procedure, using the nested For Next statements, to calculate the percentage of valid cells in the table (10)

The formula to calculate the percentage of valid cells is

(number of valid cells / total number of cells) * 100

	0	1	2	3	4	5	6
0	V	I	V	I	V	V	I
1	I	I	V	I	V	V	V
2	I	V	I	V	I	I	V
3	V	V	I	V	I	V	V
4	I	V	I	I	V	V	I

Table 1

4 2 Write a well-planned essay to explain and discuss the planning of an OOED application You may focus on the creation process of the application, the planning of the TOE chart, and the sketching of the user interface

The essay should be about one to two pages and include an **introduction**, a **body**, and a sensible **conclusion** (10)

Total of marks = 100