

ICT2611

May/June 2018

Graphical user Interface Programming

Duration 2 Hours

70 Marks

EXAMINERS

FIRST

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SECOND

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Closed book examination

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Instructions

- The question paper consists of five pages including the cover page
- Answer all questions in the answer book
- Answer all multiple choice questions in the answer book
- Marks are given in brackets next to the question
- Good Luck!

[PLEASE TURN OVER]

Question 1 [10 marks]

1.1 What will be the content of the variable x after the following Visual Basic statement is executed:

$$x = 32 + 16 / (3 * 2) + 2)$$

- A 30
- B. 34
- C. 10
- D None of the above

1.2 The for-loop programming construct is used for the following purposes

- A. It is a decision construct
- B. It is a construct for repetition and decision.
- C It is a construct for repetition
- D. It is used for exception handling.

1.3 Which procedure returns a value

- A. Procedure
- B. Function.
- C. Subprocedure
- D ByRef.

1.4 Which of the following provides the tools required to design a user interface in Visual Basic?

- A Solution explorer
- B. Form design window
- C Toolbox window
- D Properties window

1.5 An [...] of a class represents an object in the real world

- A. event
- B. method
- C. property
- D. instance

1 6 Inheritance makes the following possible

- A Reuse of existing code.
- B Exception handling.
- C Hide internal details of a class
- D All of the above

1 7 In the context of OOP, a [] is a pattern used to create an object

- A blue print
- B class
- C behavior
- D All of the above

1 8 Passing a parameter to a program ByVal means the following

- A A copy of the variable is made for the procedure
- B A reference to the variable is made for the procedure
- C Only numeric parameters are allowed
- D None of the above

1 9 A [] variable can be used to share data between user forms in the project since all forms have access to it.

- A global
- B static
- C form-level
- D public

1 10 If you do not provide a data type when declaring a variable, which data type is automatically assigned by Visual Basic

- A String
- B Integer
- C Object
- D None of the above

Question 2 [30 marks]

You are required to write a water billing program. Two readings in kiloliters are entered into textboxes called `old_reading` and `new_reading`. A button `calculate_bill` is used for calculating the bill, and a label called `your_bill` must be used to show the billing for the month. The monthly water bill is calculated as follows: Consumption of up to and including 6 kiloliters costs R50 per kiloliter. Consumption over 6 kiloliters to and including 11 kiloliters costs R30 per kiloliter. Consumption over 11 kiloliters costs R20 per kiloliter. Here is an example: a person who used 8 kiloliters will pay R50 per kiloliter for the first 6 kiloliters and an additional R30 per kiloliter for the other 2 kiloliters consumed.

2.1 Draw a suitable layout for the interface of this program. [5 marks]

2.2 Write a flow chart for the algorithm for calculating the water bill [10 marks]

2.3 Write the Visual Basic code for a procedure that implements this flow chart.
[15 marks]

Question 3 [10 marks]

3.1 Write the pseudocode for calculating the percentage for the appearance of the characters "d", "e" and "c" in an input string. For example if the input string is "College of Science Engineering and Technology", then the number of times the above characters appear in the input string is 12, and the length of the string is 40 characters. Therefore the percentage appearance of the above characters in the input string is $12/40 * 100$.
[10 marks]

[PLEASE TURN OVER]

Question 4 [10 marks]

Consider the following table containing the heights of a specie of a tree type recorded during a research project.

	Height in meters
1	10 58
2	11 70
3	11 74
4	14 81
5	15 92

4.1 Declare a global variable to hold the data from the table. The variable must be initialised with the values from the table. [3 marks]

4.2 Write a Visual Basic.Net function that calculates the average height for this specie of trees [7 marks]

Question 5 [5 marks]

Dim SampleTable (3,4) As Integer

5.1 For the array declaration given above write a procedure in Visual Basic using nested for-loops which initializes the elements of this array with values 0. [5 marks]

Question 6 [5 marks]

6.1 Give a brief overview of the importance of error handling in Visual Basic Net. Give examples in your answer [5 marks]