

2920/205
VISUAL PROGRAMMING
November 2016
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL
DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

MODULE II

VISUAL PROGRAMMING

3 hours

INSTRUCTION TO CANDIDATES

*You should have an answer booklet for this examination.
Answer any **FIVE** of the following **EIGHT** questions.
All questions carry equal marks.
Candidates should answer the questions in English.*

**This paper consists of 7 printed pages.
Candidates should check the question paper to ascertain that all the
pages are printed as indicated and that no questions are missing.**

1. (a) (i) Explain a reason that make Visual Basic not suitable for developing expert systems. (2 marks)
- (ii) Figure 1 shows two features in a Visual Basic Integrated Development Environment. Use it to answer the question that follows.



Figure 1

Describe the features labelled II and I. (4 marks)

- (b) (i) Explain each of the following terms as used in Visual Basic programming:
 (I) Event;
 (II) Method. (4 marks)
- (ii) Distinguish between *pass by value* and *pass by reference* as used in Visual Basic programming. (4 marks)
- (c) Write a Visual Basic program that would compute the average of odd integers from 61 to 150 and display the output on a form. Use *for..* loop. Attach the code to a command button. (6 marks)

2. (a) (i) State the prefix associated with each of the following Visual Basic program controls:

- (I) Optionbutton; Opt
 (II) Menu; Men
 (III) Listbox; Listboxes
 (IV) Timer; Tim

(2 marks)

- (ii) Table 1 shows Visual Basic controls and their associated properties. Use it to answer the question that follows:

Control Name	Properties
Form	<ul style="list-style-type: none"> • ForeColor • Visible
Textbox	<ul style="list-style-type: none"> • DataSource • MultiLine

Table 1

Outline the function of each of the properties in the controls. (4 marks)

- (b) Distinguish between *DriveListBox* and *DirListBox* controls as used in a Visual Basic program. (4 marks)

- (c) (i) Outline **two** inbuilt Visual Basic functions that may be used to arrange data in database. (2 marks)
- (ii) State the output generated when each of the following Visual Basic program statements is executed.
- (I) `Print Abs(-10/4)`
- (II) `Print Sqr(25)` (2 marks)
- (d) A student created a Visual Basic program and linked it to a database through a data control named Data1. Write Visual Basic program statement that could be used to:
- (i) view the next record in the database;
- (ii) save changes made to a record in the database;
- (iii) delete a record from the database. (6 marks)
3. (a) (i) Outline a reason that makes each of the following visual basic variable name invalid:
- (I) `Number#`
- (II) `Public` (2 marks)
- (ii) Assuming Visual Basic programming language, state the order of execution of the following expression.
- $Y = A^3 - C * D / E$ (2 marks)
- (b) (i) State the output generated when each of the following Visual Basic string functions are executed in a program.
- (I) `len(University of Research)`
- (II) `trim(Myname)` (2 marks)
- (ii) Outline the purpose of each of the following project commands in Visual Basic programming language.
- (I) `Add Data Report;`
- (II) `Add Data Environment.` (4 marks)
- (c) Differentiate between *PictureBox* and *Image* controls as used in Visual Basic program. (4 marks)
- (d) Write a Visual Basic program that would accept length and width of a rectangular football pitch through the use of input boxes. The program then computes the perimeter of the pitch through a function and outputs the perimeter through a message box. Attach the code to a command button. (6 marks)

4. (a) A student connected a Visual Basic application to a database table using data control. Explain **two** limitations the student may face. (4 marks)
- (b) (i) With the aid of a sketch in each case, describe two report layouts that could be generated in Visual Basic programming language. (6 marks)
- (ii) State the function of each of the following formulas in a Visual Basic report.
- (I) now(); — Use to enclosed the program report
- (II) Count. Use to input the Report's program. (2 marks)
- (c) Describe each of the following control structures as used in programming languages.
- (i) Decision;
- (ii) looping. (4 marks)
- (d) Write a Visual Basic program that would generate the following output on a form. Use *do while loop*. Attach the code to a command button. (4 marks)
- The value of a is 1
The value of a is 2
The value of a is 3
The value of a is 4
5. (a) State **two** characteristics of an event driven programming language. (2 marks)
- (b) Write the standard prefix for each of the following Visual Basic programming language data types:
- (i) Boolean;
- (ii) Currency;
- (iii) Byte;
- (iv) Object. (2 marks)
- (c) (i) A student used Textboxes to enter two integers into a Visual Basic program in order to get their sum. When the program was executed the result generated was a concatenation of the two integers. Explain a reason that could have led to this observation. (2 marks)
- (ii) Distinguish between *static* and *module level* variables as used in Visual Basic programming language. (4 marks)

- (d) A programmer designed a Visual Basic interface that would capture details of a student as follows:
- Registration Number and Name through the use text boxes.
 - Age group in years (15 -17, 18- 20, 21- 23) through the use of option buttons
 - Gender (Male or Female) through the use of option buttons

When the fields are entered and a command button is clicked, the program displays the Registration Number, Name, Gender and the statement "You are under age" if the age group is 15 -17 otherwise "You are Mature" through the use of a message box.

- (i) Sketch the interface; (4 marks)
- (ii) Write a Visual Basic program to implement the interface. (6 marks)
6. (a) (i) Write the prefix for each of the following controls in Visual Basic programming.
- (I) Text box; txt box
- (II) Horizontal scroll bar. (2 marks)
- (ii) Explain each of the following methods of variable declaration in Visual Basic programming language.
- (I) Implicit; Dim
- (II) Explicit. Dim ~~Variable~~
- (4 marks)
- (b) Study the following Visual Basic program code and then answer the question that follows:
- ```
Private Sub cmdAdd_Click()
Dim Num As Single
Num = InputBox("Enter an Integer")
Num = Num + 1
Num = (Num + 4) mod 4
picbox. Print Num
End Sub
```
- Interpret the program given that the input value is 22. (4 marks)
- (c) Distinguish between *IsDate()* and *IsNumeric()* functions as used in Visual Basic programming language. (4 marks)

- (d) Table 2 shows the criteria used by a certain college to assign grades for the marks scored in examination. Use it to answer the question that follows.

| Marks   | Grade       |
|---------|-------------|
| 80 -100 | Distinction |
| 60 -79  | Credit 1    |
| 50 -59  | Credit 2    |
| 40 -49  | Pass        |
| 0 - 39  | Fail        |

Table 2

Write a Visual Basic program that would prompt a user to enter the mark scored by a student through an input box. The program then outputs the corresponding grade on a label. Use the *select* control structure and attach the code to a command button.

(6 marks)

7. (a) (i) Explain the term *user defined* data type. (2 marks)
- (ii) Write the syntax of a Visual Basic program user defined data type. (2 marks)
- (b) (i) Define *fixed-sized* array as used in Visual Basic programming language. (2 marks)
- (ii) Write a Visual Basic program that would store six integer values entered through an input box in an array. The program then stores the values in a list. Attach the code to a command button. (6 marks)
- (c) Explain each of the following features as used in Visual Basic programming language.
- (i) Data binding;
- (ii) Split view. (4 marks)
- (d) The following are some icons used in Visual Basic programming language:

(i)



(ii)



Outline the function of each of the icons.

(4 marks)

8. (a) (i) State **two** possible causes of syntax errors in Visual Basic programming. (2 marks)
- Entering the wrong detail in a program.*
- (ii) Outline **three** ways one could make a program to be easily maintainable. (3 marks)
- Show a*

- (b) Table 3 shows the output of two logical expressions 1 and 2. Use it to answer the question that follows.

| Expression1 | Expression2 |
|-------------|-------------|
| True        | True        |
| True        | False       |

Table 3

Write the output when the two expressions are evaluated using each of the following logical operators.

- I. OR - Expression 1 OR 2 are True  
II. AND - Expn 1 is true AND Expn 2 is false (4 marks)

- (c) (i) The following are database features in a Visual Basic program environment.



Explain the function of each of the features. (4 marks)

- (ii) Write a Visual Basic program that would display the string "Welcome" on the status bar control when the form loads. (3 marks)
- (d) Distinguish between single stepping and procedure stepping as used in Visual Basic error handling. (4 marks)

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