Name_____ Index No._____/_____

2920/205   Candidate's Signature _____
VISUAL PROGRAMMING
July 2013   Date_____
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY

MODULE II

VISUAL PROGRAMMING

3 hours

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INSTRUCTIONS TO CANDIDATES

*Write your **name** and **index number** in the spaces provided above.*
*Sign and write the **date of examination** in the spaces provided above*
*Answer any **FIVE** of the following **EIGHT** questions.*

For Examiner's Use Only.

Question	1	2	3	4	5	6	7	8	Total
Mark									

This paper consists of 18 printed pages.

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

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1. (a) Explain the effect of setting MDIchild property to *true* in Visual programming. (2 marks)

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(b) Assuming that the company you work for has asked you to identify a programming software to develop a payroll system. State **three** likely reasons that would lead you to chose Visual Programming language. (3 marks)

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(c) Under what circumstance would each of the following errors occur in Visual Basic programming:

(i) syntax errors; (2 marks)

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(ii) run-time errors; (2 marks)

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(iii) logic errors. (2 marks)

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(d) The three sides of a triangle having the dimensions a, b and c, must satisfy the following two conditions:
- All the three side lengths must be positive;
- the sum of any two side lengths must be greater than the third side length i.e. $(a+b) > c$, $(a+c) > b$ and $(b+c) > a$

Write a visual basic program that captures the three sides of a triangle by way of three text boxes, test the two conditions and return an appropriate message if any of the conditions is invalid. The program should then use a function and the dimensions to calculate the area of the triangle and then display on a form. Attach the code to a command button click event.

Hint: The area of the triangle is given by the formula:

$$area = \sqrt{s(s-a)(s-b)(s-c)} \text{ where } s = \frac{a+b+c}{2}$$
(9 marks)

2. (a) (i) Outline **three** hardware considerations to make when installing visual programming software. (3 marks)

(ii)   Distinguish between *single document interface* (SDI) application and *multiple document interfaces* (MDI) application as used in Visual programming.   (4 marks)

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(b)   (i)   Outline **two** properties that must be set on a *text box* in order to manipulate data in a database when programming in Visual Basic.   (2 marks)

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(ii)   Explain **two** disadvantages of using Data control bounds in Visual Basic programming.   (4 marks)

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(c) The following is a Visual Basic program. Use it to answer the question that follows.

```
Private Sub Command1_Click()
Dim X As Integer, Y As String
X = 0
Do
    Print X,
    Y = Fcn(X)
    Print Y
    X = X + 1
Loop While X <= 10
End Sub

Function Fcn(X As Integer) As String
    Dim remaind
    remaind = X Mod 2
    If remaind = 0 Then
        Fcn = "odd"
    Else
        Fcn = "even"
    End If
End Function
```

Determine the output from the program.   (3 marks)

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(d) Distinguish between *Do...while* and *Do...until* loop as used in Visual Basic programming.   (4 marks)

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3. (a) John an ICT student developed an application using Visual Basic and while connecting it to a database file created using Microsoft Access he got the following error message.

Unrecognized database format
'C:\Users\Administrator\Desktop\vb\newdb.accdb'.

Explain the possible cause of this error. (2 marks)

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(b) (i) Define each of the following terms as used in Visual Basic programming.

I. compiling; (1 mark)

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II. debugging; (1 mark)

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III. execution. (1 mark)

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(ii) Distinguish between a *ListBox* control and *DriveListBox* control as used in Visual programming. (4 marks)

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(c)   Figure 1 shows a visual basic menu editor dialog box for creating pull down
       menus in an application. Use it to answer the question that follows.

Figure 1

Outline the procedure of creating the following menu using the menu editor.

File
    Open Ctr+O
Edit
    Copy Ctr+C

(5 marks)

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(d)   Write a Visual Basic program that would determine the sum of squares of
       numbers from 10 to 30. The program should then display the *numbers*, their
       squares and *cumulative sum* of the squares on a picture box Use Do while loop
       and attach the code to command button click event.   (6 marks)

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4. (a) Identify a data type appropriate to store each of the following data items in Visual Basic program:

    (i)   gender where a true or false values are used;   (1 mark)

    (ii) number of students in each technical training institution in the country;   (1 mark)

    (iii) The distance between two towns in kilometre rounded to 1 decimal place.   (1 mark)

    (b) Explain **two** ways of setting properties of an object in a Visual Basic program.   (4 marks)

    (c) Write a Visual Basic program that prompts a user to enter a string value by way of an inputbox function and searches for a string value in a field named *studnames* in a database table linked by the use an ADO control. The program should display the message "The string exist" or "The string does not exist" depending on the outcome of the search using a message box. Attach the code to a command button click event.   (6 marks)

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(d)   Table 1 shows a grading system used by a primary school to analyse students internal examination results. Use it to answer the question that follows.

Average	Grade
75 - 100	A
65 - 74	B
55 - 64	C
45 - 54	D
Less than 45	F

Table 1

Write a Visual Basic program that accepts five values through the use of inputbox function. The program should then determine the average and its appropriate grade. The average and grade should be displayed on a form. Use *select case*.   (7 marks)

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5.   (a)   Distinguish between a *general procedure* and an *event procedure* as used in Visual programming, giving the syntax in each case.   (6 marks)

(b)   A database has a table with the following fields; *Studnames*, *Studclass*, *StudAdno*. Write a Visual Basic program segment that would be used to access the field values from the database given that it is linked using of data control. The program should assign the values to the variables named; *strNames*, *strClass* and *SngAdno* respectively. The program should then display the three values using a picture box.   (5 marks)

(c)   Figure 2 shows the output from a message box function in a Visual Basic
       program. Identify the arguments responsible for the output of each of the parts
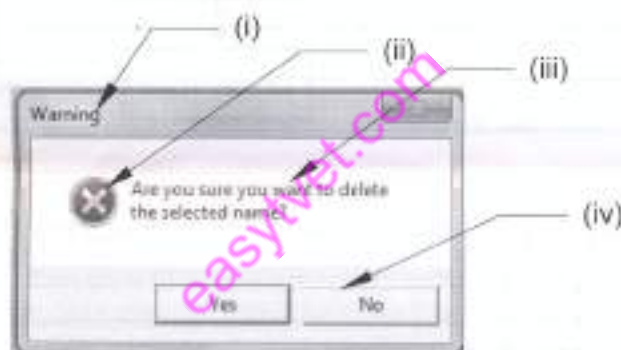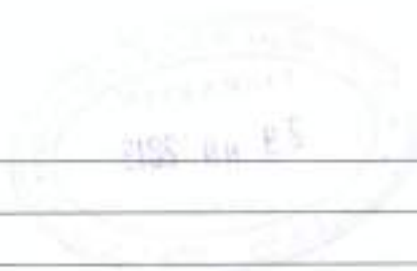   labelled (i) to (iv).   (4 marks)

Figure 2

(d)   Write a Visual Basic program that uses a procedure to accept ten names
       entered sequentially through an InputBox. The program should then transfer
       the values to an array named *studentName* and display the items on a list box.
                                                                         (5 marks)

6. (a) Express each of the following mathematical expression in its Visual Basic statement equivalent.

(i) $\dfrac{4 \times 5 + 14}{8 \div 4}$ (2 marks)

(ii) $\sqrt{4.3 \times 2^5}$ (2 marks)

(b) Identify the errors in each of the following Visual Basic program segments.

(i)
```
x = 2
Y = 3
x+y = z
'display the output of Z using a Picture box.
picOutput.Print "z"
```
(2 marks)

(ii)
```
balance = 200,000
Deposit = ksh.50000
picOutput.Print balance + deposit
```
(2 marks)

(c)   Figure 3 shows a flow chart used to solve a mathematical problem. Use it to answer the questions that follow.
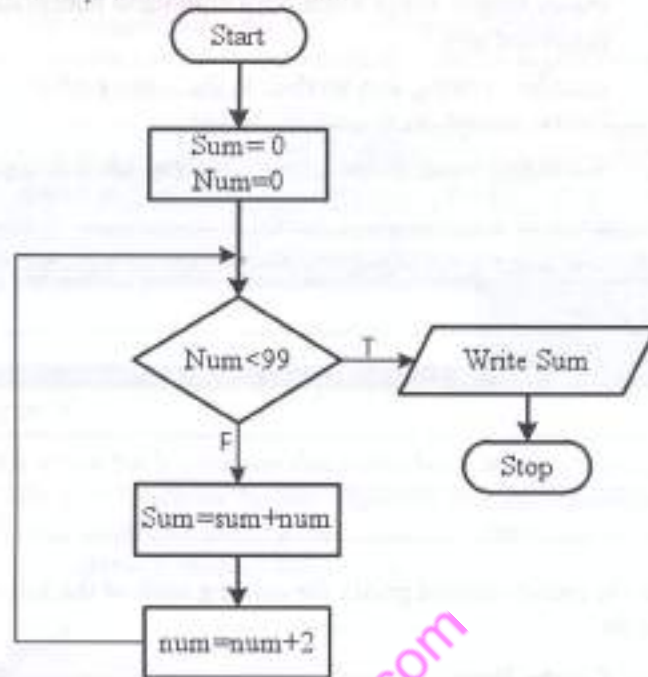

Figure 3

(i)   State a circumstance under which the loop control structure in the flow chart would be used.   (2 marks)

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(ii)   Convert the flow chart to its Visual Basic program equivalent to solve the problem. Use the appropriate controls and attach the code to a command button click event.   (6 marks)

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(d) Mary would like to write a Visual Basic program that:

    (i)   erases listbox items when the a command button named *cmdGoAway* is clicked and

    (ii)   transfers a string in a textbox to the listbox when a second command button named *cmdInsert* is clicked.

    Write **two** event procedures to accomplish this objective.   (4 marks)

7.   (a)   State the recommended prefix for naming each of the following Visual Basic controls.

    (i)   Combo Box;   (1 mark)

    (ii)   Form;   (1 mark)

    (iii)   Picture Box;   (1 mark)

    (b)   Explain each of the following terms as used in a Visual Basic Program.

    (i)   RecordSet;   (2 marks)

    (ii)   DataSource;   (2 marks)

    (iii)   BOFAction.   (2 marks)

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(c) To be eligible to vote in a polling station, an individual should meet the following requirements.
- Be a Kenyan citizen,
- Be above 18 years of age
- Be a registered voter in the station seeking to vote from.

Figure 4 shows a window used to determine the legibility of a voter by the use of the three checkboxes.

Figure 4

Write a visual basic program that uses check boxes to capture the three status of a voter and determine his/her eligibility to vote. Appropriate message should then be displayed on a label. Use If... *Then* construct and attach the code to a command button click event. (4 marks)

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(d) (i) With the aid of an example, distinguish between *dynamic array* and *static array* as used in Visual Programming language. (4 marks)

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(ii) Outline **three** ways in which one can respond to an error using error handler section of a procedure. (3 marks)

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8 (a) (i) Explain the term _event driven programming languages_. (2 marks)

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(ii) List **four** components that constitute Visual Basic Integrated Development Environment (IDE). (2 marks)

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(b) With the aid of an example in each case, explain **two** ways of concatenating two strings in Visual Basic program. (4 marks)

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(c) Write a Visual Basic program that uses a procedure to display the following
     list on a picture box.

                    123456
                    12345
                    1234
                    123
                    12
                    1

                                                                  (6 marks)

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(d) (i) List **two** ways of generating a report in a Visual Basic Program.

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     (ii) Write a Visual basic program that prompts a user to enter *Sirname*, *age*
          and *gender* values from two text boxes and an option button
          respectively. The program then transfers the values into a database
          table having fields named; *Snames*, *age*, *gender* in a database
          connected using ADO control. Attach the code to a command button
          click event.   (4 marks)

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