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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
KIT 2204 – APPLICATION PROGRAMMING I

Date: 05TH December 2024

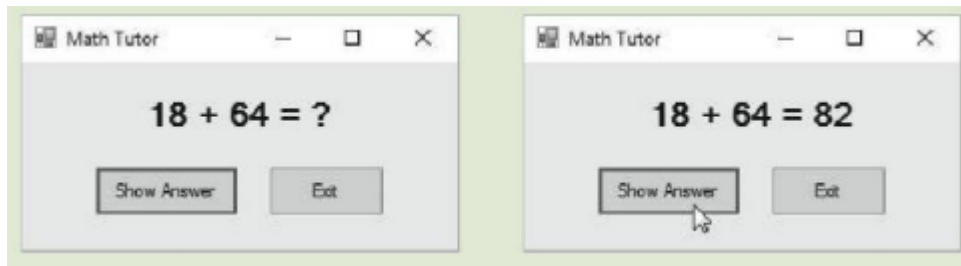
Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES

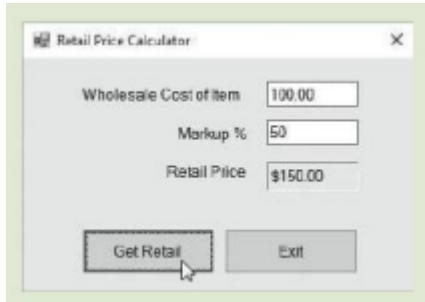
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) You have been asked to create an application for a carpet sales and installation business. The application should allow the user to enter the length and width of a room and calculate the room's area in square feet.
The formula for this calculation is
$$\text{Area} = \text{Length} * \text{Width}$$
- i) Describe the following characteristics of this application: Purpose, Input, Process, Output (2 Marks)
 - ii) Draw a sketch of the application's form and place all the controls that are needed. (2 Marks)
 - iii) Make a list of the controls you included in your sketch. List the control type and the name of each control. (2 Marks)
 - iv) List the value of the Text property for each control, as needed (2 Marks)
 - v) List each method needed. Give the name of each method and describe what each method does. (2 Marks)
 - vi) For each method you listed in (v), draw a flowchart or write pseudocode. (2 Marks)
- b) Visual basic is an object-oriented programming language that can also be used in application programming. Using examples, explain two aspects that a visual basic object possesses (2 Marks)
- c) Write vb code for an application that displays a simple math problem in a Label control. The form should have a button that displays the answer to the math problem. It should also have a button that closes the application. The leftmost screen below shows the application's form before the button is clicked to display the answer. The rightmost screen shows the application's form after the button has been clicked. (5 Marks)



- d) Write vb code for an application that accepts from the user the wholesale cost of an item and its markup percentage. (For example, if an item's wholesale cost is \$5 and its retail price is \$10, then the markup is 100%.) The program should contain a function named CalculateRetail that receives the wholesale cost and markup percentage as arguments, and returns the retail price of the item. The application's form should look something like the one shown below (5 Marks)



- e) Using examples, Summarize the mandatory rules that you must follow when naming a control (3 Marks)
- f) Explain three examples of objects that can be found in a graphical user interface (3 Marks)

QUESTION TWO (20 MARKS)

- a) Write Visual basic code that displays the text “Hello World” on a form (4 Marks)
- b) Under what circumstance would each of following errors occur in visual basic programming
 - i) Syntax errors (2 Marks)
 - ii) Run-time errors (2 Marks)
- c) Explain the term event driven programming (2 Marks)
- d) Identify any THREE variables in the Visual Basic code below:


```
Private Sub cmdCompute_Click ()
    picResults.Cls
    speed = 50
    timeElapsed = 14
    distance = speed * timeElapsed
    picResults.Print distance
    distance = 410
    timeElapsed = distance / speed
    picResults.PrinttimeElapsed
End Sub.
```

(7 Marks)
- e) Name any three events in VB.NET (3 Marks)

QUESTION THREE (20 MARKS)

- a) Explain the function of the following windows that are found in VB.NET
 - i) Solution Explorer. (2 Marks)
 - ii) Properties window (2 Marks)
 - iii) Form Designer window (2 Marks)
- b) Explain the difference between the Dim and Global variable declaration (3 Marks)
- c) The IDE environment consists of many elements. Describe any SIX elements displayed when Visual Basic is started (6 Marks)
- d) A client is curious to know the steps involved in creating a visual basic application. Advise him on the design steps required (3 Marks)
- e) Distinguish between the Name property and the Text property? (2 Marks)

QUESTION FOUR (20 MARKS)

- a) Data Types are classifications of what sort of data is contained inside of a variable. Explain any six data types available in VB (6 Marks)
- b) In a program, statements may be executed sequentially, selectively or iteratively. Explain the meaning of the following constructs (3 Marks)
 - i) Sequential Constructs
 - ii) Selection Constructs
 - iii) Iterative Constructs

- c) Write a program to display the message “Welcome to VB application Programming” in a label lblMessage when a button btnMessage is clicked. (4 Marks)
- d) Explain the functions of each of the following Visual Basic IDE components
 - i) Project Explorer (2 Marks)
 - ii) Properties Window (2 Marks)
- e) Describe an appropriate situation under which each of the following controls may be used
 - i) Checkbox Controls (1 Mark)
 - ii) Radio Button controls (1 Mark)
 - iii) Combobox controls (1 Mark)

QUESTION FIVE (20 MARKS)

- a) A program is required that can accept the radius as input through a textbox (txtRadius) and to calculate the Perimeter and Area of a Circle, and the Volume of a sphere. The perimeter will be displayed in label lblPerimeter, Area in lblArea and Volume in lblVolume. Required: Write three vb functions each for calculating the perimeter, area and volume. Use a button btnCalculate to invoke the three functions and display the results. (8 Marks)
- b) A program is required to calculate the average of the first twenty positive integers, and display the sum in lblSum and average in lblAverage.
Required:
 - i) Write the above program using a Do.....While loop (6 Marks)
 - ii) Rewrite the above program using Do.....Until loop (6 Marks)