



“Investing in Africa’s future”

COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE (CBPLG)

PROGRAMMING I –CIS 202

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2019

LECTURER: Mr.Timothy Makambwa

DURATION: 3 HOURS

INSTRUCTIONS

Answer **ALL** the questions in **Section A** and any **Three** questions from **Section B** and each question has **20** marks. Total possible mark is **100**.

Start **each** question on a new page on your answer sheet.

The marks allocated to **each** question are shown at the end of the section.

All codes should be in **VB.Net**

Section A (40 Marks)

Question One

Section B (60 Marks)

Question

- a) Develop Visual Basic applications that will create a Dental Payment form

Application Requirements

A dentist's office administrator wishes to create an application that employees can use to bill patients. The application must allow users to enter the patient's name and specify which services were performed during the visit.

The application will then calculate the total charges. If a user attempts to calculate

a bill before any services are specified, or before the patient's name is entered, an error message informing the user that necessary input is missing will be displayed

The screenshot shows a Windows-style application window titled "Dental Payment". Inside the window is a form titled "Dental Payment Form". The form contains the following elements:

- A text box labeled "Patient name:".
- Three checkboxes, each followed by a service name and a cost:
 - ☐ Cleaning 35
 - ☐ Cavity Filling 150
 - ☐ X-Ray 85
- A "Total:" label followed by a text box for the total amount.
- A "Calculate" button at the bottom right.

[10]

- b) Many people are obese now and it could affect their health seriously. If your BMI is more than 30, you are obese. You can refer to the following range of BMI values for your weight status.

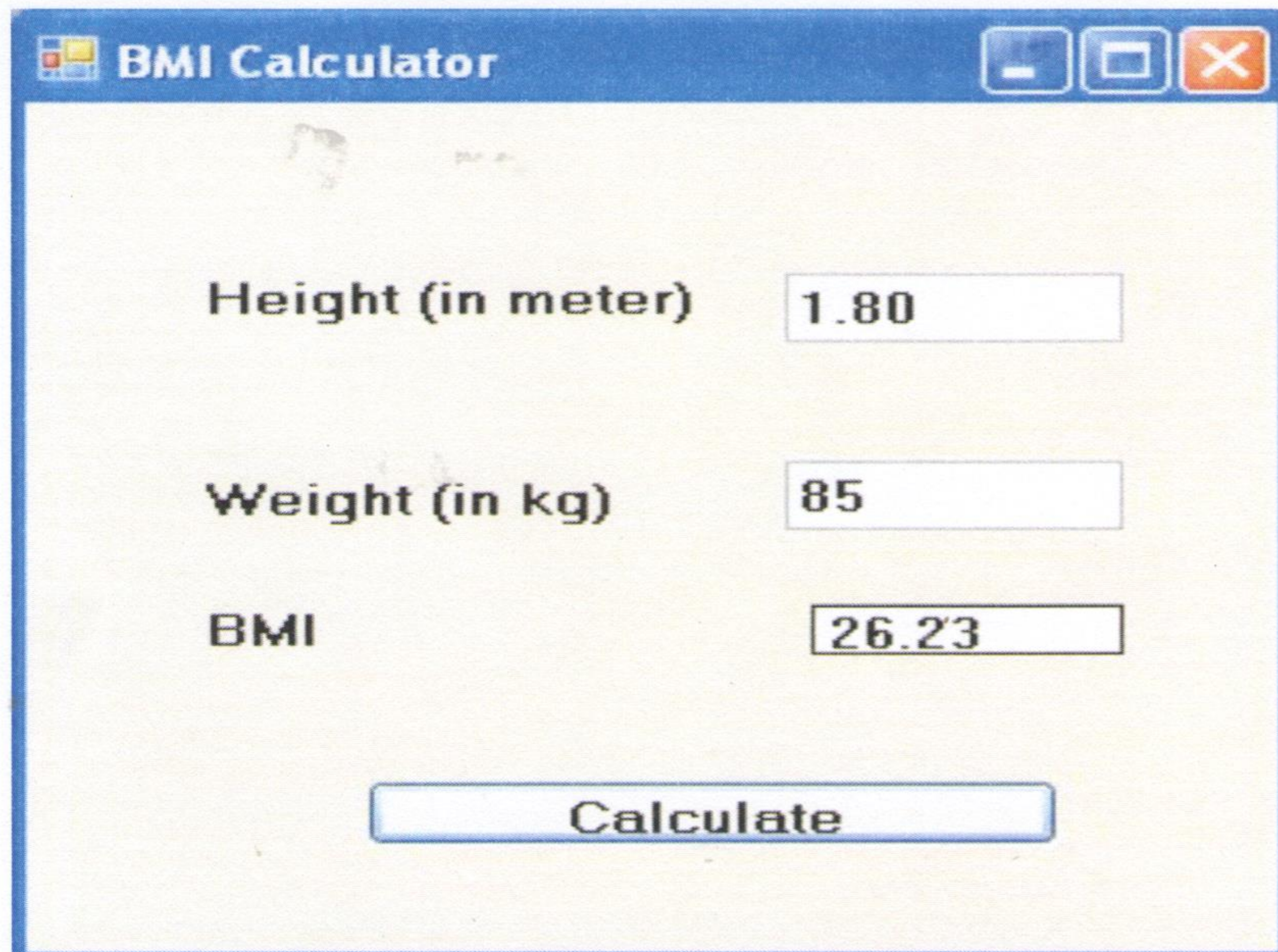
Underweight = <18.5

Normal weight = 18.5-24.9

Overweight = 25-29.9

Obesity = BMI of 30 or greater

Now create a calculator in Visual Basic that can calculate the body mass index, or BMI of a person based on the body weight in kilogram and the body height in meter. BMI can be calculated using the formula $\text{weight} / (\text{height})^2$, where weight is measured in kg and height in metre



[10]

Question

a) Write a VB.net program that classifies people according to their ages:

- Age ≥ 65 : "Old Person "
- Age between 40 and 64:" Middle Age"
- Age between 20 and 39: "Young Adult"
- Age between 13 and 19 : " Teenage "
- Age between 0 and 12 : " Child"
- Less than 0 and more than 150: "Not human"

[10]

b) Write a program that will compute the following:

- i. $1000 - 100 - 95 \dots \dots \dots 5$
- ii. $10 + 20 + 30 + \dots \dots \dots 1000$

[5+5]

Question

a) The Fix function truncates the decimal part of a positive number and returns the largest Integer smaller than the number. However, when the number is negative, it will return smallest integer larger than the number. For example, $\text{Fix}(9.2)=9$ but $\text{Fix}(-9.4)=-9$. Write a Visual Basic application that executes the above stated function.

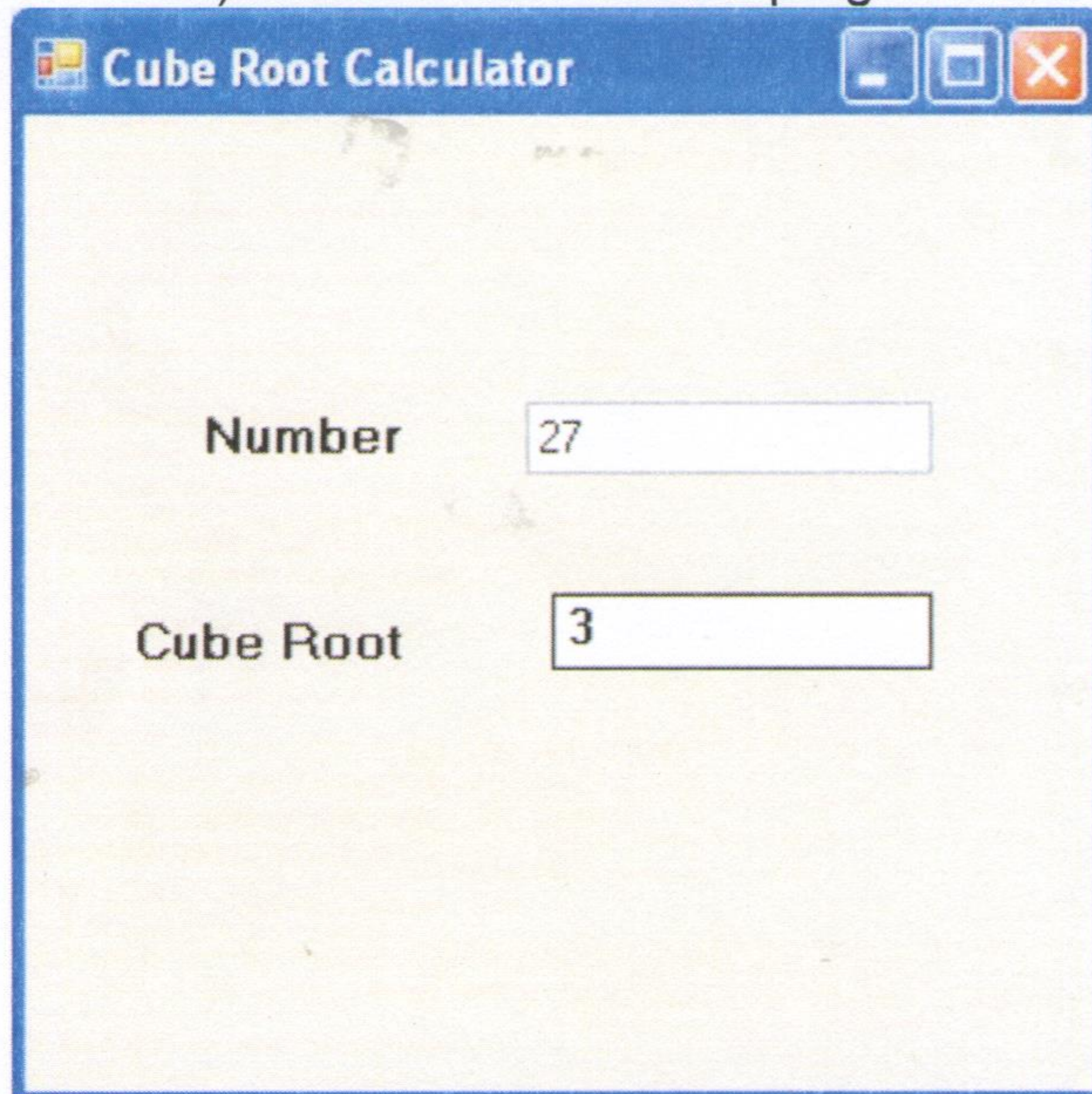
[5]

b) The Log function is the function that returns the natural logarithm of a number. For example, $\text{Log}(10)=2.302585$. Write Visual Basic application that computes the log function.

[5]

- c) The Exp of a number x is the exponential value of x , i.e. e^x . For example, $\text{Exp}(1)=e=2.71828182$. The syntax is `:Math.Exp (number)`. Find the exponential of a given Real Number. [5]

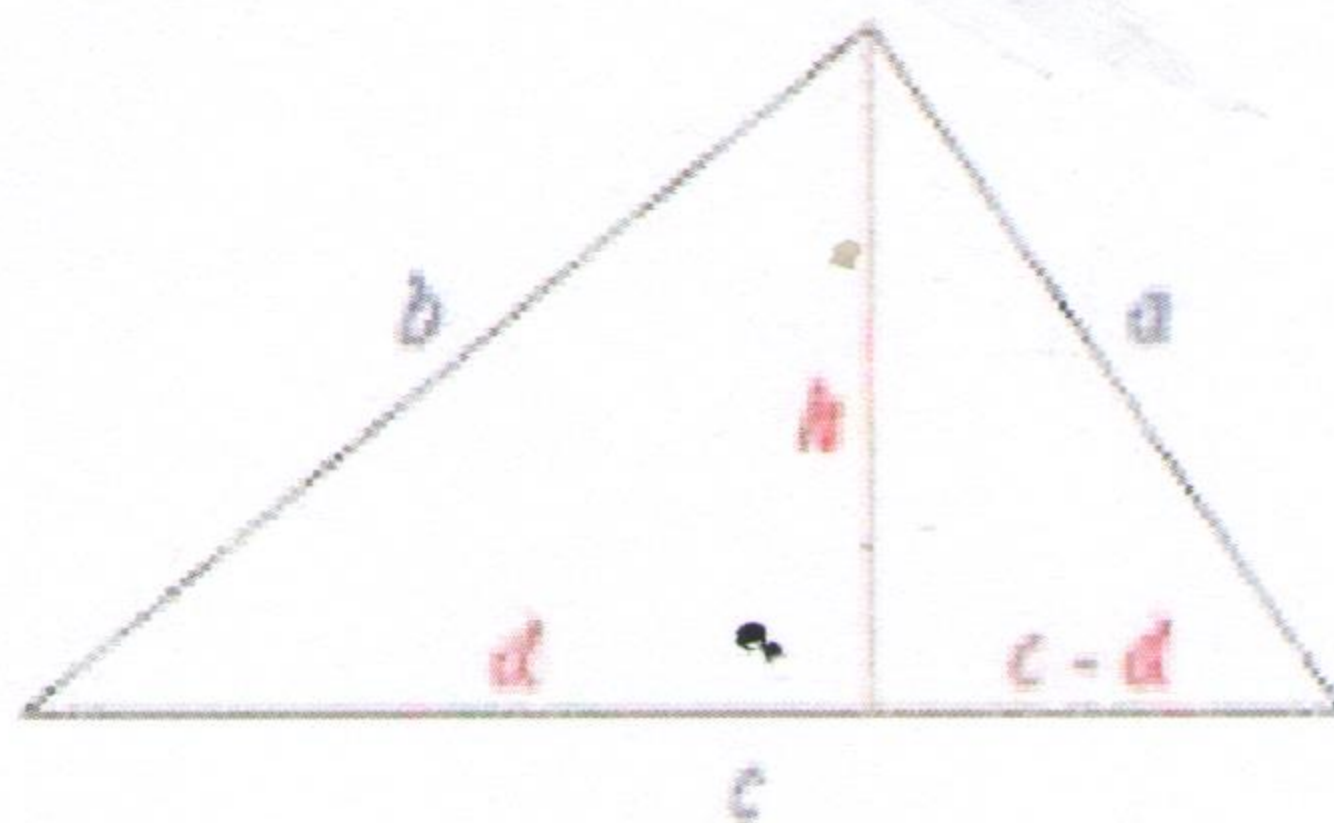
- d) Write a Visual Basic program that calculates the cube root of a given number



[5]

Question

- a) Write a Visual Basic program that calculates the roots of a quadratic equation expressed in the form $f(x): ax^2+bx+c=0$
- b) Write a Visual Basic program that calculates the area of triangle with sides a, b, c as integers.



Hint use Heron's formula

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

where $s = \frac{1}{2}(a+b+c)$

[10+10]

Question

Write a Visual Basic program that calculates the following

- i) Area of a right-angled triangle
- ii) Area of a square
- iii) Volume of a cylinder
- iv) Volume of a cube
- v) Area of Rhombus

[5x4]

Question

- a) Write a program that classifies the results after calculating the average of three subjects Mathematics, English and Science.

- Result ≥ 75 : "Distinction"
- Result between 60 and 74 : "Second Class"
- Result between 50 and 59 : "Pass"
- Result < 50 : "Fail"

[11]

- b) Explain the difference between looping structures below. Use code snippets to explain your answer.

- i. For loop
- ii. Do While loop
- iii. Do Until loop

[9]

Question

Write VB.net programs using Windows Console Application to perform the following

- a) Calculate the factorial of a given number
- b) Check whether a number is a palindrome or not
- c) Calculate the sum of digits of a given number
- d) Check whether a given number is Armstrong or not

[5x4]