COLLEGE OF ENGINEERING AND APPLIED SCIENCES (CEAS)

NCSE 204: VISUAL PROGRAMMING

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2023

LECTURER: MR TIMOTHY MAKAMBWA

TIME: 3 HOURS

INSTRUCTIONS

You are required to answer questions as instructed in each section

Answer all questions in Section **A** and any two (2) from Section **B**

Include screenshots and code for each question

Convert the answer document to pdf format.

All codes should be in VB.Net

Credit will be awarded for logical, systematic and neat presentations

SECTION A (40 MARKS)

Answer all questions in this Section

Question One

Africa University is the process creating an app for students to calculate their grades, the user first input his/her mark and the program should display an appropriate grade based on the table below.

PERCENTAGE	GRADE
91-100	A+
81-90	A
75-80	A-
70-74	B+
65-69	B
60-64	B-
56-59	C+
53-55	C
50-52	C-
0-49	F

Required:

(a) Write the algorithm **(5 marks)**

(b) Draw the user interface **(5 marks)**

(c) Write a VB.NET program that prompts the user to enter any mark and display an appropriate grade **(10 marks)**

NB. Your program should validate the input and display an Error message if an invalid grade is entered.

Question Two

Design and code vb.net program to calculate the area of the following shapes the formulas a given below.

(a) Circle **(10 marks)**

$$Area = \pi r^2$$

(b) Triangle **(10 marks)**

Area =0.5 base * height

SECTION B

Answer any two questions from this Section

Question Three

Africa University clinic has requested you to develop a software application to calculate the **body mass index** of its patients. Using vb.net windows application design and code the BMI application to be used in the clinic.

NB. your application should include validation and should reject invalid data.

Body Mass Index is a simple **calculation** using a person's height and weight.

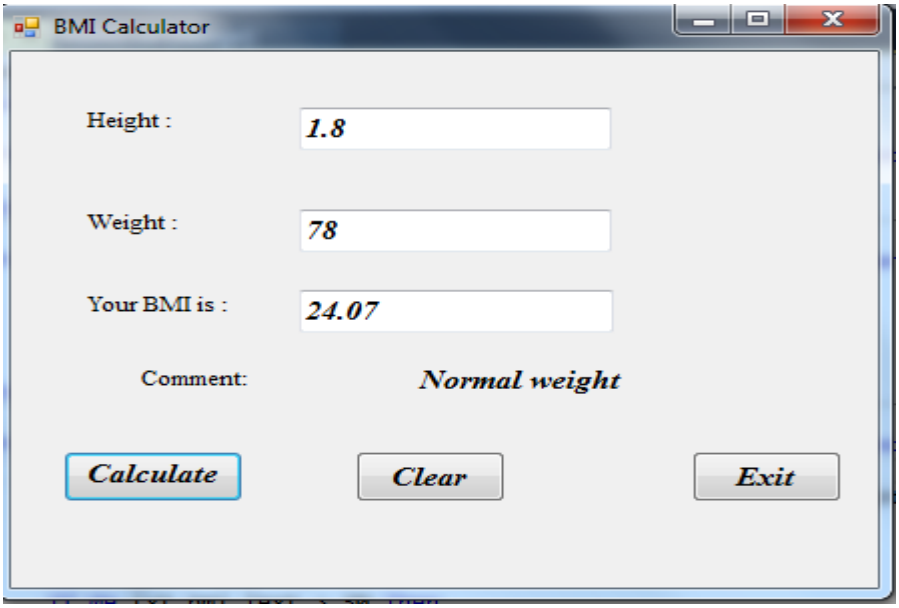
The **formula** is **BMI** = kg/m^2 where kg is a person's weight in kilograms and m^2 is their height in meters squared.

$$BMI = weight(kg)/height^2(m^2) \qquad \text{(Metric Units)}$$

BMI Categories:

Underweight = <18.5
Normal weight = 18.5–24.9
Overweight = 25–29.9
Obesity = BMI of 30 or greater

The following interface will guide you on the interface.

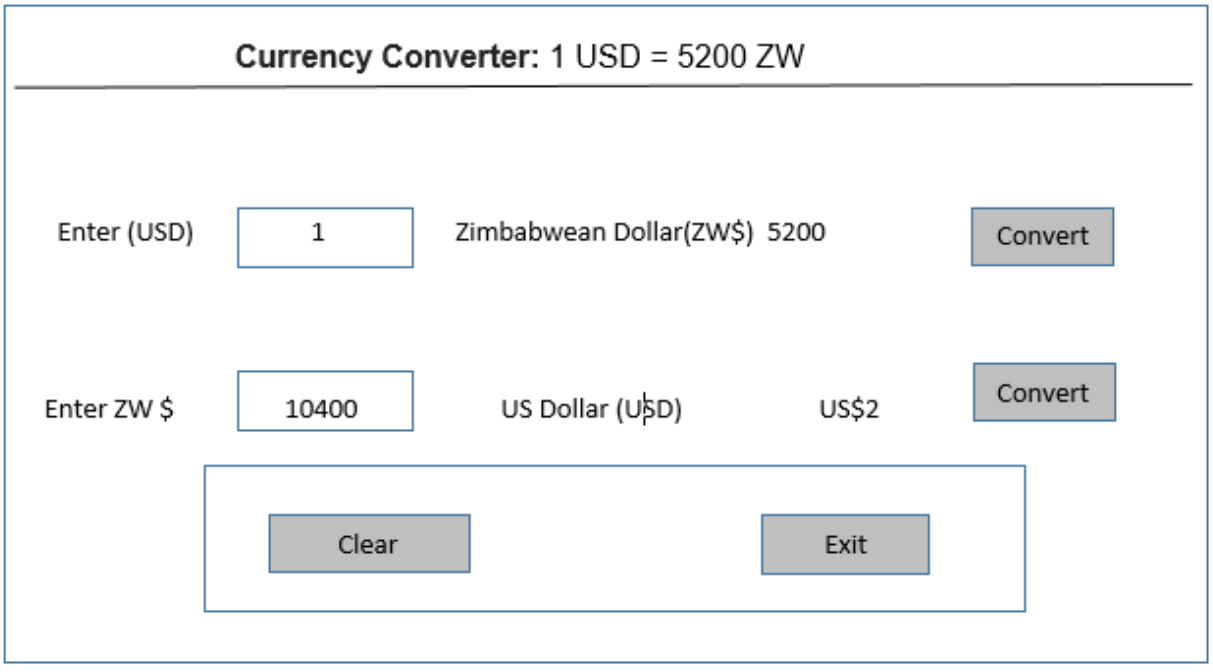


(30 marks)

Question Four

A newly established money transfer company in Mutare needs a currency converter software application. Using visual basic .net design and code the software. The following graphical user interface will guide you.

Your program should include validation and produce an error message if text data is entered.



(a) Write the algorithm for the above program **(5 marks)**

(b) Draw the program flow chart. **(5 marks)**

(c) Design and code a vb.net program for the above program. **(20 marks)**

Question Five

Using Microsoft Access Create a database called **Students** with a table called **DataTable** as shown below

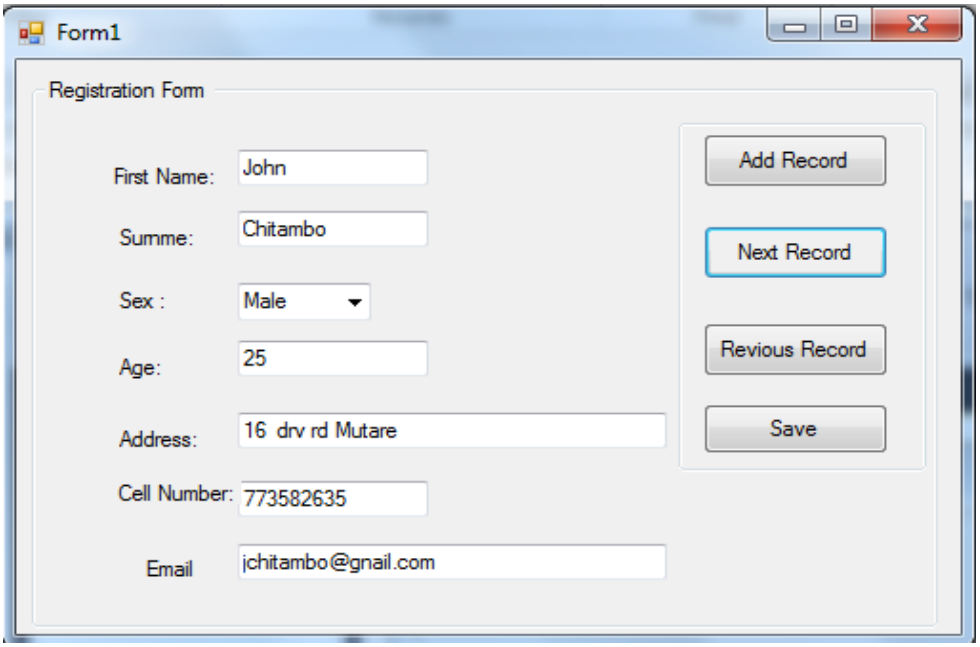
DataTable

Firstname	Surname	Sex	Age	Address	Cell	Email
John	Chitambo	Male	25	16 drv rd Mutare	773582635	jchitambo@gnail.com
Maka	Manjoro	Female	4	4454 Area 3 Dangamvura	786325	maka@gmail.com
John	Chitambo	Male	25	16 drv rd Mutare	773582635	jchitambo@gnail.com
Mary	Goto	Female	40	10 Tafara Harare	778632458	mgoto@yahoo.com
*			0		0	

Create a visual basic interface and link it with the database. Snip of make a screen short of the database table.

Use the interface below and Include the following buttons

(i) Add RECORD
(ii) Next record
(iii) Previous Record
(iv) Save record



(30 marks)

Question Six

(a) Design and code a vb.net program that allows the user to enter 10 student's marks into an array called marks. The program should perform the following processing

(i) Display the highest mark

(ii) Lowest mark

(iii) Average mark

(iv) Sum of all the marks

(30 marks)

End of Examination