UNIVERSITY OF PROFESSIONAL STUDIES, ACCRA (UPSA)

DIPLOMA PROGRAMME

END OF FIRST SEMESTER EXAMINATIONS- 2020/2021 ACADEMIC YEAR

FACULTY OF INFORMATION TECHNOLOGY AND COMMUNICATION STUDIES

DEPARTMENT OF IT STUDIES

LEVEL 100

PDIM 107: PROGRAMMING I

Date/Time: 19th April 2021 8pm GMT - 20th April 2021 8pm GMT

TIME ALLOWED: 24 HOURS

INDEX NUMBER

INSTRUCTION(S):

Please provide solution using an appropriate C++ compiler and a Word Editor

- ***Upload a zip folder, containing your: source file, executable(.exe) file, and word document (for flowchart diagram) to the UPSAVirtual***
- ***Zipped folder should bear your student id number (e.g., 110201345)***
- ***Please follow the guidelines accompanying this document***

Total: (60 Marks)

Attempt All Questions.

Instructions:

Please provide solution to the problem using an appropriate C++ Compiler, and a Word Editor

- ***Upload a zip folder, containing source file, executable(.exe) file, a PDF document (flowchart), and student submission cover page(in PDF) to the UPSAVirtual***
- ***Zipped folder should bear your student ID Number (eg 110201345)***
- ***Please read and take note of the Honour Pledge (Before Submission) for Examinations before submitting your final work.***

QUESTION:

In order to separate patients who are likely infected with the novel Corona Virus (Convid19) from other patients, Fafagh clinic records the temperature of all patients before triaging. According to a new policy of the clinic, the number of patients allowed should not exceed one hundred (100) in a day. The policy also stipulates that a patient should be considered for a malaria test when his/her temperature is between 38 degrees Celsius (°C) and 40 degrees Celsius (°C). Whilst a patient whose temperature is above 40 degrees Celsius should undergo the Convid19 test. Although the thermometer used to record the patient's temperature is calibrated in Fahrenheit, the chart recommended by the policy for determining the test required (Malaria/Convid19) is specified in Celsius.

1. Draw a flowchart for the above problem (16 marks)

2. Write a program in C++ programming language that:

I. records the basic information of a patient (such as Full Name, Sex, Age, body temperature (in Fahrenheit), distance travelled to the clinic (in kilometers)) (6 marks)

II. converts temperature readings in Fahrenheit to Celsius (6 marks)

III. converts distance from Kilometers to Miles (5 marks)

IV. stores the data of a patient in an array (5 marks)

V. loop through patient data stored in an array to display two lists of patients (Malaria, Convid19) based on the clinic's new policy stated above (6 marks)

VI. displays "Limit Reached" after the information of the last patient is displayed. (1 mark)

Note:

1. Validate all input values, and display errors (3 marks)
2. Use at least two programmer-defined functions in your program for metric conversions (3 marks)
3. Use temporary memory for storing values, and not a database (3 marks)
4. Include appropriate comments in your program (6 marks)

HINT:

I. The temperature T in degree Fahrenheit (°F) is equal to the temperature T in degree Celsius (°C) times 9/5 plus 32:

Alternatively:

$T(°F) = T(°C) \times 9/5 + 32$

II. distance in miles is calculated by dividing kilometers by 1.609

(60 Marks)