Vavuniya Campus of the University of Jaffna

First Examination in Information and Communication Technology - 2015

First Semester - August/September 2016

ICT1162 Practical for Introduction to Program Design and Programming

Answer All Questions

Time Allowed : **Three** hours

---

1. Write a C++ program to analyze students' population at the Faculty of Applied Science. The Faculty offers three courses such as AMC, ICT, and ENS and the students' population in every year of study (level) is in the Table given below for the academic year 2014/2015.

	AMC	ICT	ENS
Level- I	29	60	22
Level- II	31	54	24
Level- III	20	57	16
Level- IV	3	18	9

[This question is continued on the next page]

The program should have facilities to do each of the following requirements:

- List the number of students for each Course.
- List the number of students in each level.
- List the number of students following a specific course in a particular level.
- Display the total number of students in the Faculty for the academic year 2014/2015.
- Exit the program

The program should provide a menu to select one of the above mentioned facilities. The format of the menu is given below:

1 - List the number of students in each course.
2 - List the number of students in each level.
3 - List the number of Students in a Specific course in a Particular level.
4 - Display the total number of students in the academic year 2014/2015.
5 - Exit the program.

The user should enter the correct integer number to execute the corresponding facility. If the given number is other than 1, 2, 3, 4, or 5 then prompt error message and ask the user to re-enter the number from 1 to 5.

For example, when executing the third facility "List the number of Students in a Specific course in a Particular level", the program should prompt the following information:

- Enter Course Name:
- Enter level:

The following figure shows the sample output:

[This question is continued on the next page]

```
        Students' Analyze System for Faculty Of Applied Science in Acadamic Year 2014/2015
-------------------------------------------------------------------------------------------------
                1 - List the number of students for each Course.
                2 - List the number of Students in each level.
                3 - List the number of students following a specific course in a perticular level.
                4 - Display the total number of students in the Faculty for the academic year 2014/2015.
                5 - Exit the Program.

 Enter Your Selection :   1

                --------Number Of Students in Each Course---------

                        AMC : 83

                        ICT : 189

                        ENS : 71

                Do you want to access another facilities? (Yes-Y / No-N) :y

        Students' Analyze System for Faculty Of Applied Science in Acadamic Year 2014/2015
-------------------------------------------------------------------------------------------------
                1 - List the number of students for each Course.
                2 - List the number of Students in each level.
                3 - List the number of students following a specific course in a perticular level.
                4 - Display the total number of students in the Faculty for the academic year 2014/2015.
                5 - Exit the Program.

 Enter Your Selection :   6

                Your choice is wrong. Please enter 1 or 2 or 3 or 4 or 5

        Students' Analyze System for Faculty Of Applied Science in Acadamic Year 2014/2015
-------------------------------------------------------------------------------------------------
                1 - List the number of students for each Course.
                2 - List the number of Students in each level.
                3 - List the number of students following a specific course in a perticular level.
                4 - Display the total number of students in the Faculty for the academic year 2014/2015.
                5 - Exit the Program.

 Enter Your Selection :   4

----------Total Number of Students in the academic year 2014/2015---------

 Total Number Of Students : 343

                Do you want to access another facilities? (Yes-Y / No-N) :_
```

[60%]

2. Write a C++ program to develop an FGPA Calculator (Final Grade Point Average Calculator) Console Application for the Vavuniya Campus. To do this task, follow the instructions as given below:

   (a) Write a function that takes *three* arguments of type `double`, and returns the summation of the *three* arguments. [05%]

   (b) Write a function that takes *four* arguments of type `double`, and returns the summation of the *four* arguments. [05%]

   (c) Write a function that takes *two* arguments; first argument of type `double` and second argument of type `int`, and returns division of the first argument by the second argument. [05%]

   (d) Write a main function to get user's (student) basic information about *Name*, *Registration number* and *degree criteria* (`General/ Special`). If the user input is `General` then the code should get *three* year's GPA from the user for FGPA calculation; otherwise get *four* year's GPA from the user.

   Finally the program should display the Final GPA (FGPA) using the above three functions. [25%]

   Hint:

   General degree students $FGPA = \frac{(level1GPA + level2GPA + level3GPA)}{3}$

   Special degree students $FGPA = \frac{(level1GPA + level2GPA + level3GPA + level4GPA)}{4}$