



International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: www.ijareeie.com

Vol. 9, Issue 1, January 2020

Implementation of Grade Point Average Calculator in Labview Software

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ABSTRACT: This paper is going to be about Implementation of GPA calculator in Laboratory Virtual Instrument Engineering Workbench (LabVIEW). It is a system-design platform and development environment for a visual programming language from National Instruments (NI). LabVIEW offers the user to do graphical programming which helps the user to visualize what he/she is expecting to do. Thus Implementing the GPA Calculator for ANNA UNIVERSITY Subjects from 1st till 8th semester for all the engineering streams is implemented in this work using LabVIEW software platform.

KEYWORDS: Grade Point Average, LabVIEW and Virtual Instrumentation.

I. INTRODUCTION

Students, pursuing under graduate degree and post graduate degree, is longing for good GPA and CGPA (Cumulative grade point average). They do lots and lots of hard and smart work to get high score and thus GPA. Hence GPA calculator is very most important thing which helps to calculate the GPA for each subject. LabVIEW is a Programming language in which the user can create their own programs using graphical notations (having blocks of notations which do different kinds of work and wires which is used to connect those blocks). It is different from the programming languages like C, C++, Java, and Python which are procedural and object oriented programming language where LabVIEW is an inherently concurrent language. This programming language especially designed for scientists and Engineers. The LabVIEW development environment works operating systems like Windows, Mac OS, Linux, etc. Thus LabVIEW files are platform independent. I developed a GPA calculator using LabVIEW for the entire engineering department in engineering colleges.

II. OBJECTIVES OF THE STUDY

The main objectives of this study include the following:

- a. To create a program in LabVIEW that makes the computation of GPA faster and easier.
- b. Fastest approach
- c. To provide a user friendly GPA calculator from LabVIEW.



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III. CALCULATING METHODS

$$gpa = \frac{grades * credits}{credits}$$

Anyone with a positive number for an iq could calculate their gpa quickly in their head. the user is asked to enter their marks as follows.

if the user mark is 100, enter the marks as 100 or, if the mark is 90 and above, enter the mark as 90 or, if the mark is 80 and above, enter the mark as 80, if the mark is 70 and above, enter the mark as 70, or if the mark is 60 and above, enter the mark as 60, or if the mark is 50 and below, enter the mark as 50 and that particular subject mark is considered as fail mark and the user has to reappear for that exam.

IV. LABVIEW

Front panel, Block diagram, and an Icon and Connector pane are the three main parts of a VI in LabVIEW.

The *front panel* window is the interactive user interface of a VI, thus named because it simulates the physical instrument's front panel. The front panel contains user inputs like knobs, push buttons, graphs, and many other controls and program outputs program outputs indicators. You can give inputs using mouse or keyboard, and also you can view the results produced by your program on the screen.

The *block diagram* is the source code for any VI. The block diagram is the actual executable program. The block diagram contains lower-level VIs, built-in functions, constants, and program execution control structures. We can draw wires to connect the appropriate objects together to define the flow of data between them. The corresponding terminals of the Front panel objects allows the user to enter the inputs and passes the values from one node to another in block diagram.

The Icon and Connector pane allows to user to work in different VIs. A VI which is used within another VI is called *sub VI*. The icon is a pictorial representation of that particular VI and is used as an object in the block diagram of another VI. When the VI is used as a subVI, the VI's connector pane is used to wire data into a new VI from other block diagrams. Much like parameters of a subroutine, the connector defines the inputs and outputs of the VI.

V. LAYOUT FORMATION

LabVIEW has 2 panels. They are Front panel and Block Diagram. Layout is framed in Block diagram sections. There are various blocks (For loop, case structure, Integer inputs, etc.) used here to frame the layout of GPA calculator for Anna University subjects from 1st semester to 8th semester for the above mentioned departments for Regulation 2017. The figure 1 shows the layout section of GPA calculator.

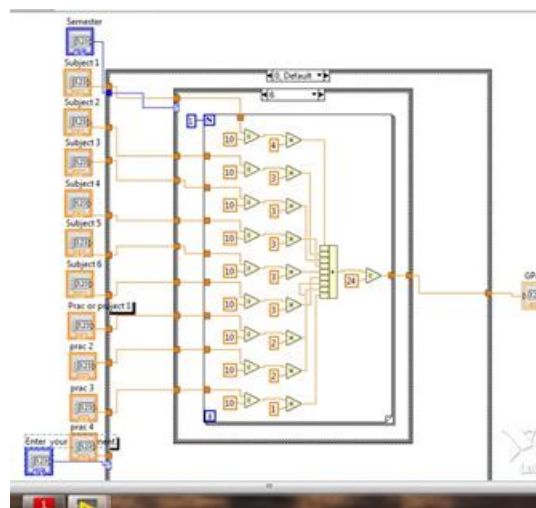


Fig 1. Layout of GPA calculator in LabVIEW



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VI. METHODOLOGY

- In the front panel, the user is asked to enter their marks respective to their syllabus order in the subject's column.
- In the block diagram we have taken two case structures.
- The outer case structure consists of six cases for the engineering departments
- The inner case structure consists of eight cases for semesters 1 to 8.
- Inside the inner case structure we have a for loop which runs only one time.
- We have taken the inputs like subjects as numeric DBL and the semester and register number as numeric integer.
- They are connected to the respective case structures through tunneling.
- The loop contains the heart of the program that is the formula of the GPA calculator.
- We are dividing all the subject's marks by ten and then multiplied each subject's marks with its respective credits.
- Then we are adding all the calculated marks using compound arithmetic addition and we are dividing the obtained mark by that particular semester's credit.
- Thus we can obtain the GPA results in the output which is a numeric DBL.

VII. RESULT AND DISCUSSION

The output of the programmed VI is displayed in the front panel section. Here the user is asked to enter department, semester and mark details for each subject. Since the input is case sensitive, the user has to enter the exact and accurate details. After entering the details, when the user clicks the Run button, the program starts to run and shows the result. The user can look at their result in Front Panel and can look frequently by changing the values in the subjects after clicking on the continuous run button.

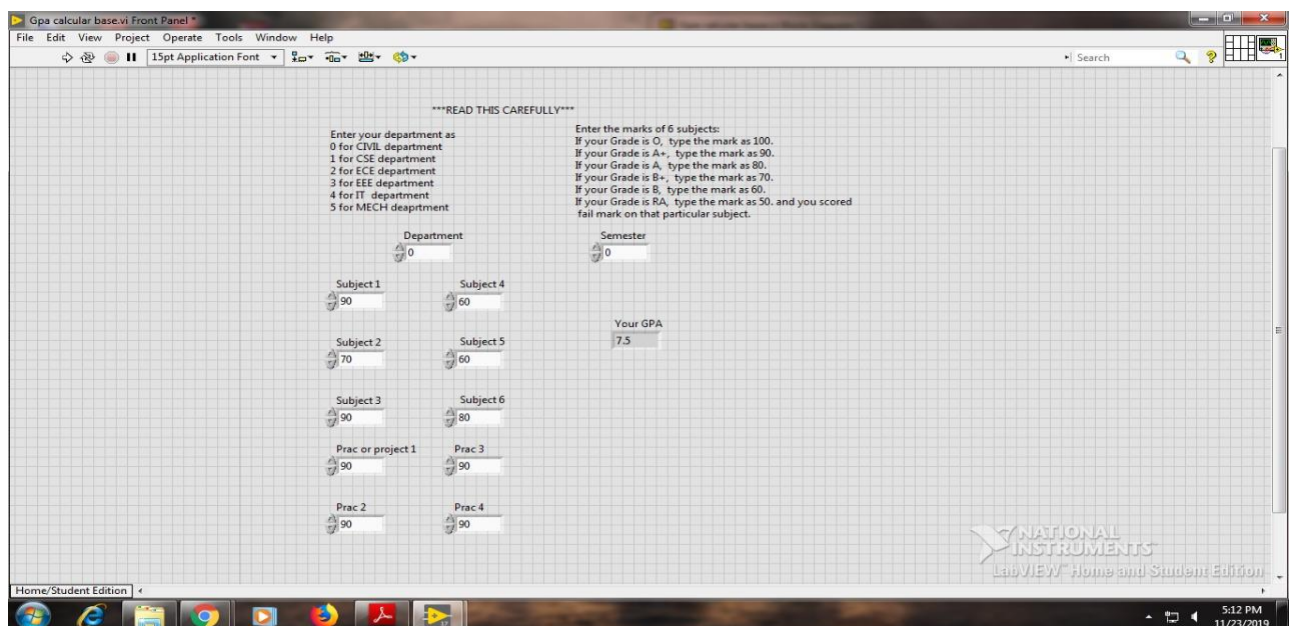


Fig 2. Output of programmed GPA Calculator in Front Panel



ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

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VIII. CONCLUSION

Grade Point Average (GPA) is becoming a prime importance due to the need for ensuring academic performance of students who are all pursuing undergraduate degree in all over the world. Hence the above program will also help the students with the help of LabVIEW.

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