**University of Prince Mugrin**

College of Computer and Cyber Sciences

CS 111

Fall 2020

Project Report

# GPA Calculator

## Group Members:

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## Date of Submission:

9/12/2020

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# Abstract

During our university life, we faced some problems, one of them was that we could not calculate or predict our GPA. Therefore, we decided to create an application that calculates GPA, which is one of the most important tools for the student. The purpose of this application is to calculate the user's GPA based on his inputs.

The program works by taking the credit hours for each grade point (A+,A,B+,…), and then it evaluates GPA by calculating the weight of each grade point, adding them together, and dividing it by the total hours.

Many universities create such apps to help their students anticipate their marks and figure out ways to improve them.


# Introduction

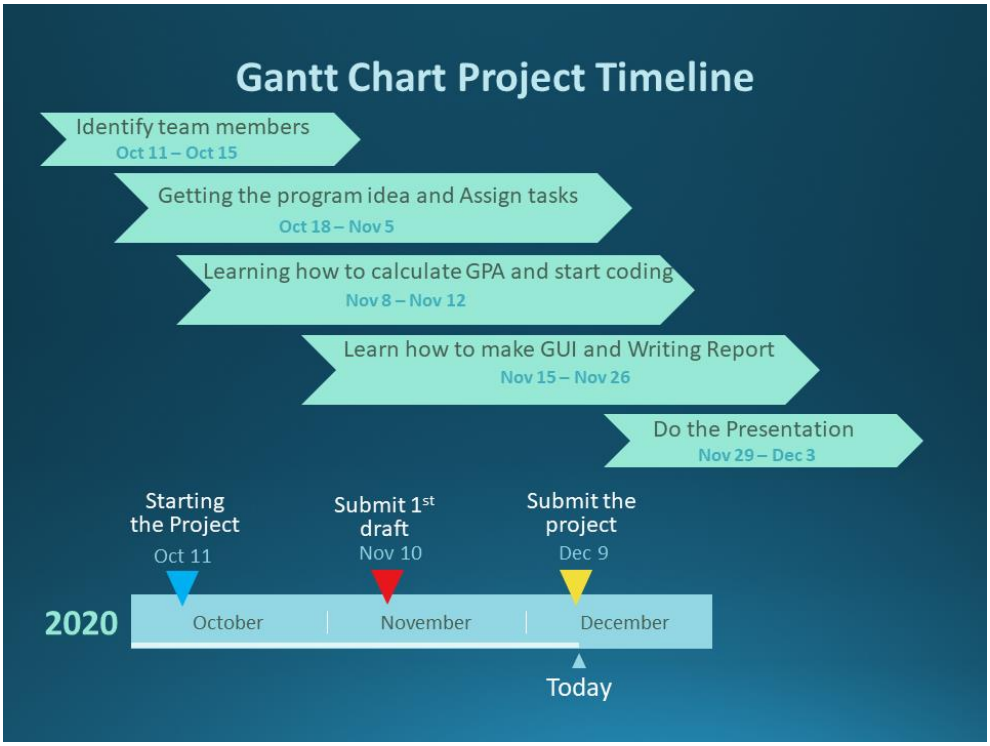
GPA affects all academic life. For a student, it is important to keep on updating about GPA.  It helps them to have a clear vision and make the right decision in various situations. The students need to calculate their real GPA, but not only that, they also need to predict their GPA, which not giving by official website. Our program helps student to make plans and balance effort between subjects, and decide to drop a course. GPA has a little difference from university to university. we make sure our calculator is suitable for UPM students. we have a good feedback from our university students.

# Project Management

We put a timeline to finish our program on time, after our first meeting, we broke-down the mission into smaller tasks. Each one of us has a specific task to manage, for example, Ehssan met with Director of Admission and Registration to know how to calculate GPA and write a pseudocode and draw a flow chart and then he explained that to the others. After that, all team members start coding together. Moayed, Ala,

Ammar, and Aws started learning how to create GUI. And we cooperated to do all tasks together.

We created a group in Microsoft Teams and another group in WhatsApp. And also, we were meeting online every three days due to Corona virus, which prevented us to meeting face to face.




# Technical Sections

"GPA, grade point average, is a number that shows what you typically scored in your classes throughout the semester, term, and year."(1)
To calculate GPA we need to know student's grade, student's credit hours, and weight of each grade point.

| ***Grade*** | A+ | A | B+ | B | C+ | C | C+ | D | F | DN | W |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***Weight*** | 4 | 3.75 | 3.5 | 3 | 2.5 | 2 | 1.5 | 1 | 0 | 0 | -- |

This table shows the weight for each grade point.

(1) Kevin Potter (Aug 2020) what is GPA and why is it so important?

Example for how to calculate GPA:

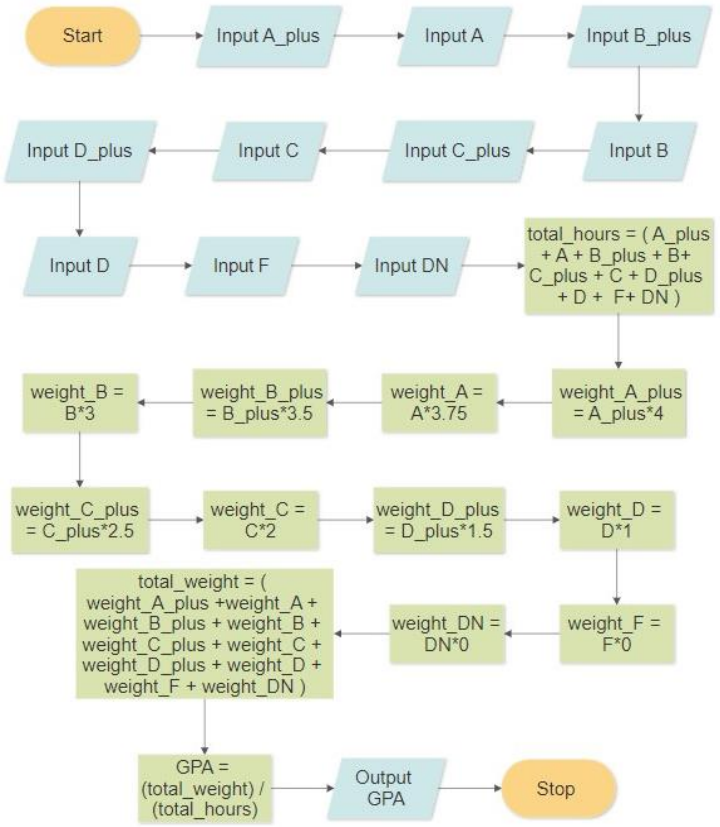
| Student 1 | | |
|---|---|---|
| Subject | Grade | Credit |
| MATH | A | 4 |
| PHYS | A+ | 4 |
| ENGL | B+ | 3 |
| GIAS | A+ | 3 |

GPA = (Credit*Weight)/Credit

GPA (MATH) = (4*3.75)/4 = 3.75
GPA (PHYS) = (4*4)/4 = 4
GPA (ENGL) = (3*3.5)/3 = 3.5
GPA (GIAS) = (3*4)/3 = 4

TOTAL GPA = Total (Credit*Weight)/ Total Credit
Total GPA = (4*3.75)+(4*4)+(3*3.5)+(3*4) / (4+4+3+3)
= 3.821 out of 4

| Grade | weight |
|---|---|
| A+ | 4 |
| A | 3.75 |
| B+ | 3.5 |
| B | 3 |
| C+ | 2.5 |
| C | 2 |
| D+ | 1.5 |
| D | 1 |
| F | 0 |
| DN | 0 |
| W | ----- |




This is a flowchart for our program as you can above.

```
In [1]: A_plus = int(input("How many credit hours have you done and got A+ ?"))
        A = int(input("How many credit hours have you done and got A ?"))
        B_plus = int(input("How many credit hours have you done and got B+ ?"))
        B = int(input("How many credit hours have you done and got B ?"))
        C_plus = int(input("How many credit hours have you done and got C+ ?"))
        C = int(input("How many credit hours have you done and got C ?"))
        D_plus = int(input("How many credit hours have you done and got D+ ?"))
        D = int(input("How many credit hours have you done and got D ?"))
        F = int(input("How many credit hours have you done and got F ?"))
        DN = int(input("How many credit hours have you done and got DN ?"))
```

This block of code is taking the number of credit hours as inputs from the user.

```
In [2]: total_hours=(A_plus+A+B_plus+B+C_plus+C+D_plus+D+F+DN)
```

In this line, we calculate the total hours that entered by the user and assign it to a new variable by add the number of credit hours that entered from the user.

```
In [3]: weight_A_plus = A_plus*4
        weight_A = A*3.75
        weight_B_plus = B_plus*3.5
        weight_B = B*3
        weight_C_plus = C_plus*2.5
        weight_C = C*2
        weight_D_plus = D_plus*1.5
        weight_D = D*1
        weight_F = F*0
        weight_DN = DN*0
```

In this block of code, we define new variables to calculate the weight of each grade.

```
In [4]: total_weight=(weight_A_plus+weight_A+weight_B_plus+weight_B+weight_C_plus+weight_C+weight_D_plus+weight_D+weight_F+weight_DN)

        GPA=(total_weight)/(total_hours)
```

In the first line of this block of code, we calculate the total weight by define a new variable, and in the second line, we calculate the GPA by divided total weight over total hours.

```
In [5]: print("Your GPA is ", round(GPA,3) , "out of 4")
```

In this line, we print the GPA and round it to three decimal digits.

# Project Result and Analysis

```
How many credit hours have you done and got A+ ?3
How many credit hours have you done and got A ?1
How many credit hours have you done and got B+ ?0
How many credit hours have you done and got B ?2
How many credit hours have you done and got C+ ?0
How many credit hours have you done and got C ?1
How many credit hours have you done and got D+ ?0
How many credit hours have you done and got D ?0
How many credit hours have you done and got F ?0
How many credit hours have you done and got DN ?0
Your GPA is  3.393 out of 4
```

Our main object was to calculate GPA by taking the credit hours from the user and output GPA.

# Challenges Faced

1) Covid-19 (Corona Virus)

We were not able to meet each other face to face because of corona virus, so that made it difficult for us to work, but we pressured ourselves and found time to complete our project.

2) GUI (graphical user interface)

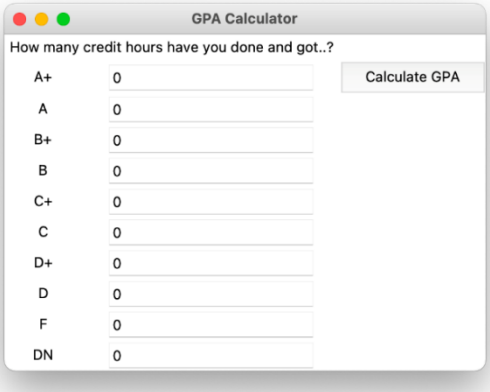
At first, we did not know anything about GUI, so we started searching and learning about it in the internet.

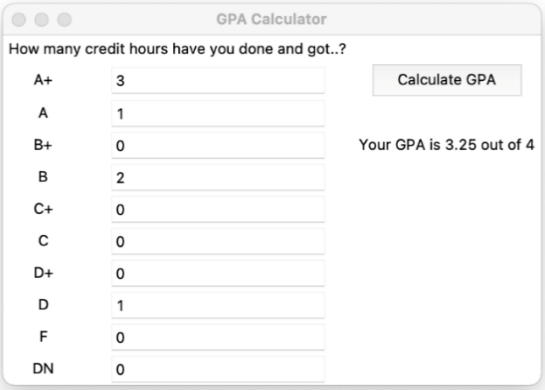
3) Writing Report

It took us some time to finish this report because of the pressure of final exams and this is our first report, but we helped each other to finish it by dividing the work into small tasks, then giving some tasks to everyone in the group.

# Project Deliverables

As shown below, the final result met our expectations. However, improvements can be made.




# Recommendations and future work

At the beginning, we had many ideas to improve our application (GPA Calculator), but we couldn't execute all of them due to the timing and other difficulties. Some of these ideas were:

- Adding courses:

This idea would've made the program compatible with UPM only, but it would save a lot of the users' time. The idea was to include all the names of the courses in UPM and their credit hours so that the students would not need to enter their credit hours manually, instead they would only search for the course name.

- Multiple GPA's:

In this option, the user could be able to choose to enter his previous GPA (if it's known) with the newer result.

- Suitable for different preferences:

Here the user can choose the base of his result. Our default in this application is set to 4 to match UPM's. However, other universities have their GPA out of 5 , 4.2 , or even 100%.

- GUI with colors:

We wanted to have a specific design to our application. We wanted to include UPM's colors, but the time wasn't enough to learn more about GUI (graphical user interface).

# Conclusion

In this project, we achieve our creation GPA calculator, which helps student to make plans and balance effort between subjects, and decide to drop a course.  it was great to work as a team. it was a good opportunity to do our program by learning new things
in programming. we also learnt time management, solving problems, spreading tasks, planning, self-learning, and developing our work.

# References

https://www.mastersportal.com/articles/2126/what-is-a-gpa-and-why-is-it-so-important.html