Project Name: CGPA Calculator.

Abstract:

We will try to develop a CGPA Calculator, which can calculate the CGPA of any semester of each student with in a earliest possible time.

Introduction:

Calculator means that can be calculated any kind of mathematical term with in a shortest possible of time. In the meantime, many kinds of calculator are invented in the world. So, we design a exceptional calculator which is made for calculates CGPA only. According to our MBSTU ordinance it can calculate the results of any semester of any students easily.

Gathering Materials:

While writing the project report, the study back ground or literature review we will also need references of various resources such as key books and papers, internet resources and related software etc.

Some C++ standard library we use to develop:

- **iostream:** Standard Input / Output Streams Library, Header that defines the standard input/output stream objects:
  1. **cin:** Standard input stream(object).
  2. **cout:** Standard output stream(object).
- **fstream:** Stream class to both read and write from/ to file.
- **sstream:** String stream (Class template).
- **vector:** Vectors are sequence containers representing arrays that can change in size.
- **string:** Strings are character that represents sequence of characters.
- **iomanip:** IO manipulator, set decimal precision function (setprecision) is a parametric manipulators.
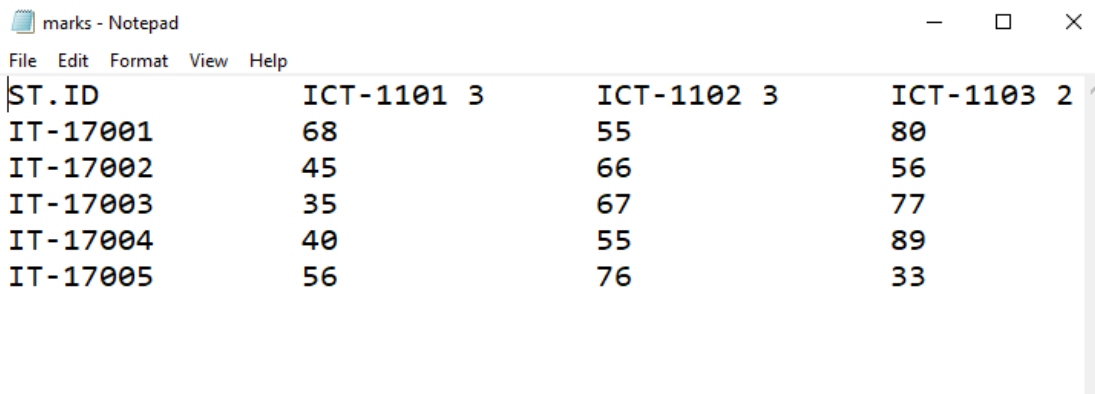
Some user define function we use to develop:

- **double func(double mark):** This function is used for passing marks as a parameter of double datatype and return grade point in this course.
- **double func_pro(string &s):** It is used for passing year as a string datatype and it returns the minimum GPA whether the student is promoted or not promoted to the next semester.
- **string lg(double z):** It is used for passing GPA as a double datatype and it returns the letter grade in the semester.

How int main() works as a main function:

➢ First of all user will be requested to input which year and semester result, he wants to know.

➢ Secondly, the user should input how many courses in the semester.

➢ Thirdly, the user should input the student ID which result he wants to know. And it should bear in mind that the ID is case sensitive.

➢ Fourthly, the file freopen("marks_sheet.txt","r",stdin) is open and using getline function, it will store course credit in a vector and a variable sum also store the summation of all course credits.

➢ Fifthly, a while loop is running to find the given student ID. If it finds the ID and then a vector is started to store marks of individual course.

➢ Sixthly, a for loop is running from 1 to total courses. A variable gp send the marks to function which returns the grade point of the course. And a variable x is store the summation of course credit and grade point product.

➢ Finally, a variable z store the final GPA. A function also verify the GPA according to the ordinance whether the student is promoted or not promoted to the next semester.
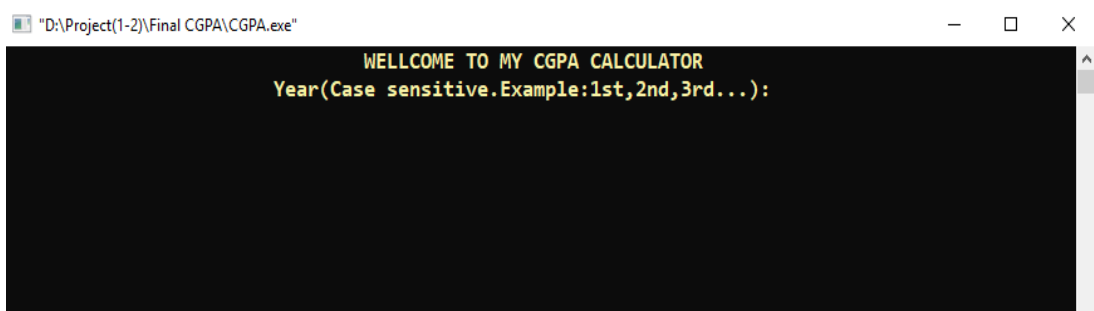
How it works as a CGPA calculator:

1. First of all, we must gathering the student ID, course code, course credit and marks obtain in individual subject of each students in a file. Example: file name is "marks_sheet.txt".
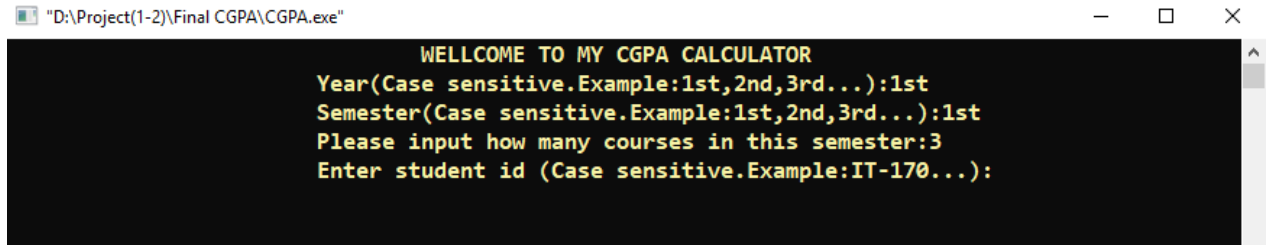

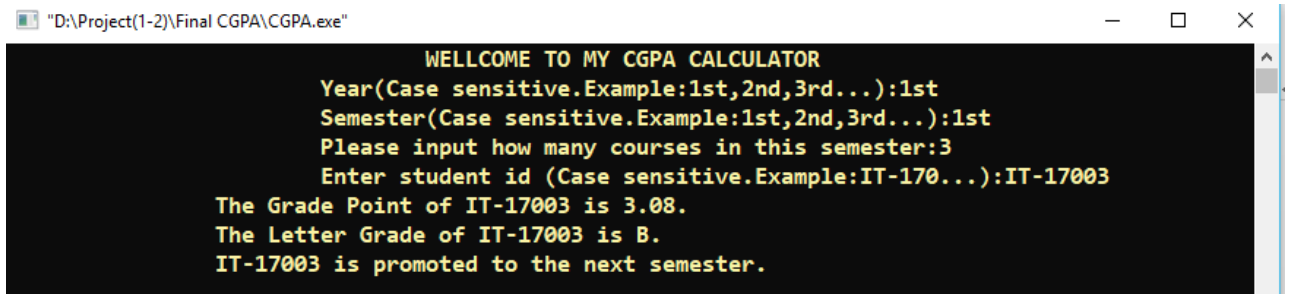2. When we run the program which is built with C and C++ programming language. The Console will be shown like this:

3. Then the console is waiting for year and semester input. And the user should remember in mind that input is case sensitive. After giving year and semester the should input how many courses in this semester.

4. Finally, the user should input student ID which exist in the marks sheet and remember that it is case sensitive. Then it will give the result of student which ID is inputted before.

Future Plan: We will try upgrade this software and try to add some new feature. Like calculate the whole CGPA , shows the lost credits and course code.

Conclusion: Specially thanks to our honourable sir Professor Dr. Muhammad Shahin Uddin, he gives us many helpful direction to develop this software. After finishing this project we come to learn many unknown things which helps us go ahead in the future.