USER GUIDE

Grade Point Average (GPA) and Cumulative Grade Point Average (CGPA)
A simple calculation to calculate GPA and CGPA

Updated on: November 25, 2013

About this User Guide

The User Guide is authored to help the end-user[1] *and the reader community to use the piece of the GPA-CGPA calculator. The user guide is simple to read with the help of the table of contents or even with the index in the guide. The preliminary research shows that one of thousand students is using the calculator to measure the GPA and CGPA.*

The User Guide is being detailed with appropriate images. This includes the necessary layout, and the actual content. The first chapter is based on the brief of the GPA and CGPA literature. The readers will enjoy while they are going through the chapter. That chapter not only helps the user of the application to know about their WH but also use the content while they are talking about the program. The Second Chapter will help the user to familiar with the actual process to use the software[2]*. This chapter will help the user to know how to use the program. The last but the least chapter is the source of the author and the debug*[3] *information.*

User feedback[4] *will help the author of the program to update the program. Though the feedback is not an essential part but it always helps to the program to learn and fix the mistake. Simply, the chapter is a provision for future expansion and maintenance.*

Please enjoy the reading, and hopefully there will be a committed relationship when you choose to read the User Guide[6]*.*

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[1] An end user of a computer system or software is someone who uses it.

[2] Computer software, or just software, is any set of machine-readable instructions that directs a computer's processor to perform specific operations. The term is used to contrast with computer hardware, the physical objects (processor and related devices) that carry out the instructions. Computer hardware and software require each other and neither can be realistically used without the other.

[3] Debugging is a methodical process of finding and reducing the number of bugs, or defects, in a computer program or a piece of electronic hardware, thus making it behave as expected. Debugging tends to be harder when various subsystems are tightly coupled, as changes in one may cause bugs to emerge in another.

[4] Feedback is a process in which information about the past or the present influences the same phenomenon in the present or future. As part of a chain of cause-and-effect [5] that forms a circuit or loop, the event is said to "feed back" into itself.

[6] A user guide or user's guide, also commonly known as a manual, is a technical communication document intended to give assistance to people using a particular system. It is usually written by a technical writer, although user guides are written by programmers, product or project managers, or other technical staff, particularly in smaller companies

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Chapter 1

About GPA and CGPA

Grading in education is the process of applying standardized measurements of varying levels of achievement in a course.

Grades[1] can be assigned in letters (for example A, B, C, D, E or F), as a range (for example 1 to 6), as a percentage of a total number correct, as a number out of a possible total (for example out of 20 or 100), or as descriptors (excellent, great, satisfactory, needs improvement).

In some countries, all grades from all current classes are averaged to create a grade point average (GPA) for the marking period. The GPA is calculated by taking the number of grade points a student earned in a given period of time divided by the total number of credits taken.[2] The GPA can be used by potential employers or educational institutions to assess and compare applicants. A Cumulative Grade Point Average is a calculation of the average of all of a student's grades for all courses completed so far.

Grades in courses are based on an instructor's judgment[3] of a student's achievement. Students who dispute a grade should follow grade mediation and adjudication procedures.

Semester/session grade-point average and cumulative grade-point average are calculated to represent numerically a student's quality of performance. These averages are used to determine if a student qualifies for certain academic actions (e.g., Dean's List, academic warning/drop, entrance to and changes in college/major, and graduation) and programs (e.g., student aid and study abroad).

[1] http://en.wikipedia.org/wiki/Grade

[2] Grade Point Average, (n) Retrieved November 25, 2013, from Dictionary.com website: http://dictionary.reference.com/browse/grade

[3] Judgment is the cognitive process of reaching a decision or drawing conclusions

1.1 Etymology

The etymology[4] of the Grade is: French grade ("a grade, degree"), from Latin gradus ("a step, pace, a step in a ladder or stair, a station, position, degree"), from gradi ("to walk, step"), from Proto-Indo-European $*g^h$ radd^h-, g^hredd^h- ("to walk, go"). Cognate with Gothic ($gri\rho$s, "step, grade"), Bavarian Gritt ("step, stride"), Lithuanian grìdiju ("to go, wander").

1.2 History of Grading

Yale University historian George W. Pierson writes "According to tradition the first grades issued at Yale (and possibly the first in the country) were given out in the year 1785, when President Ezra Stiles, after examining 58 Seniors, recorded in his diary that there were 'Twenty Optimi, sixteen second Optimi, twelve Inferiores (Boni), ten Pejores.'"[5] Keith Hoskin argues that the concept of grading students' work quantitatively was developed by a tutor named William Farish and first implemented by the University of Cambridge in 1792.[6] Hoskin's assertion has been questioned by Christopher Stray, who finds the evidence for Farish as the inventor of the numerical mark to be unpersuasive.[7] Stray's article elucidates the complex relationship between the mode of examination (testing), in this case oral or written, and the varying philosophies of education these modes imply, both to teacher and student. As a technology, grading both shapes and reflects many fundamental areas of educational theory and practice.

1.3 Grade and Grade Point

Grades in courses are based on an instructor's judgment of a student's achievement.

Semester/session grade-point average and cumulative grade-point average are calculated to represent numerically a student's quality of performance. These averages are used to determine if a student qualifies for certain academic actions (e.g., Dean's List, academic warning/drop, entrance to and changes in college/major, and graduation) and programs (e.g., student aid and study abroad).

[4]The origin and historical development of a linguistic form as shown by determining its basic elements, earliest known use, and changes in form and meaning, tracing its transmission from one language to another, identifying its cognates in other languages, and reconstructing its ancestral form where possible. http://www.thefreedictionary.com/etymology

[5]Pierson, George (1983). New Haven: Yale Office of Institutional Research A Yale Book of Numbers. p. 310.

[6]Postman, Neil (1992). New York: Alfred A. Knopf. p. 13.

[7]Christopher Stray, "From Oral to Written Examinations: Cambridge, Oxford and Dublin 1700 to 1914", History of Universities 20:2 (2005), 94,95.

1.3.1 Grade Point Average (GPA)

Grades and numerical grade-point equivalents have been established for varying levels of students' academic performance. These grade-point equivalents are used to determine a student's grade-point average.

Grading Performance and Point

Quality of Performance	**Description**	**Grade**	**Grade Point**
Outstanding	Exceptional achievement	A+ A A- B+	3.25 to 4.00
Good	Extensive achievement	B B- C+	2.50 to 3.00
Satisfactory	Acceptable achievement	C	2.25
Poor	Minimal achievement (The student may be seriously handicapped if he/she enrolls in a more advanced course for which this course was a prerequisite. The course may be repeated.)	D	2.00
Failure	Inadequate achievement (Credit is not earned. Student aid may be adjusted; to learn more contact the Office of Student Aid. The course may be repeated.)	F	Less than 2.00

Semester or Session Grade-Point Average

A student's grade-point average is the weighted mean value of all grade points he/she earned by enrollment, or through credit by examination, in a semester/session of attendance at university.

Grade Point Average Calculation

To calculate a grade point average,

1. Determine the grade points earned in each course by multiplying course credits by the appropriate grade-point equivalent
2. Add the grade points earned in each course to calculate a semester total, and
3. Divide this sum by the number of credits taken to determine the semester/session grade-point average.

$$\text{GPA}=\frac{\sum(CourseCreditsXGradePoint)}{\sum CreditsAttempted}$$

In the example below:

Course	Grade Achieved	Credit Value		Grade Points	Total Grade Points
1	D	3.00	X	2.00	= 6.00
2	C+	3.00	X	2.50	= 7.50
3	B	1.00	X	3.00	=3.00
4	A-	3.00	X	3.50	= 10.50
5	F	1.00	X	0.00	= 0.00
	Total Credits Attempted	11		Total Grade Point	= 27.00

$$\text{GPA}=\frac{27.00}{11} =2.45 =\text{Status "Satisfactory"}$$

1.3.2 Cumulative Grade Point Average (CGPA)

Cumulative Grade Point Average (CGPA) is based on the whole academic year evaluation or performance grade point. Usually, the CGPA is being calculate at the end of the entire academic year.

Grading Performance and Point

Quality of Performance	Description	Grade	Grade Point
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Failure	Inadequate achievement (Credit is not earned. Student aid may be adjusted; to learn more contact the Office of Student Aid. The course may be repeated.)	F	Less than 2.00

Cumulative Grade-Point Average

A student's cumulative grade-point average is the weighted mean value of all grade points he/she earned by enrollment in university courses.

Cumulative Grade Point Average (GPA) refers to the overall GPA, which includes dividing the number of quality points earned in all courses attempted by the total degree-credit hours in all attempted courses.

The semester or term GPA is your Grade Point Average for that one term or semester. The Cumulative GPA is you grade point average for all attempted courses in the program.

Cumulative Grade Point Average Calculation

To calculate a cumulative grade point average, total the credit hours and then the grade points from all semesters. Divide the total grade points by the total credit hours.

1. Determine total the credit hours from all semesters
2. Determine the grade points from all semesters
3. Divide the total grade points by the total credit hours

$$\text{GPA}=\frac{\sum GradePoint}{\sum CreditsAttempted}$$

In the example below:

Course	Grade Achieved	Credit Value		Grade Points	Total Grade Points
1	D	3.00	X	2.00	= 6.00
2	C+	3.00	X	2.50	= 7.50
3	B	1.00	X	3.00	=3.00
4	A-	3.00	X	3.50	= 10.50
5	F	1.00	X	0.00	= 0.00
	Total Credits Attempted	11		Total Grade Point	= 27.00

$$\text{GPA}=\frac{27.00}{11}=2.45=\text{Status "Satisfactory"}$$

1.4 Aim of the GPA-CGPA Calculator

The GPA and CGPA calculator is an academic tool to calculate the student performance either at university or at the official usage. Therefore, the following aim has been estimated based on the usage of the calculator:

- To calculate the semester grade point
- To calculate the performance of total academic year
- The student can know how hard s/he has to work hard by calculating the possible grade
- To provide the desktop based personal program
- To use in the corporate environment

1.5 Grading System in Bangladesh

The grading system in Bangladesh[8] is controlled by the University Grant Commission(UGC). The grading point measurement is universal for all the public and private universities[9] in Bangladesh. The following table is the grade point measurement with the minor modification (the user of the program can avoid the modification portion if s/he dislikes the fragment of the program):

Marks Scored	**Letter Grade**	**Grade Point**	**Performance**
80 - 100	A+	4.00	
75 - <80	A	3.75	Outstanding
70 - <75	A-	3.50	
65 - <70	B+	3.25	
60 - <65	B	3.00	Good
55 - <60	B-	2.75	
50 - <55	C+	2.50	
45 - <50	C	2.25	Satisfactory
40 - <45	D	2.00	Poor
00 - <40	F	0.00	Failure

[8] http://www.ugc.gov.bd

[9] http://en.wikipedia.org/wiki/List_of_universities_in_Bangladesh

Chapter 2
User guide of GPA-CGPA

Chapter 2

User guide of GPA-CGPA

2.1 Install the GpaCgpa Program

To measure the Grade Point Average or Cumulative Grade Point Average program, the end user need to download the program[1] from the web link. The process to download the use the program is simple and the user require few knowledge how to use the website using web browser. It is recommended to follow the procedure given:

Step 1: Open any web browser of your choice (Firefox, Chrome, Safari, Internet Explorer)

Step 2: Go to the address bar and type "http://sourceforge.net/projects/cgpagpa/"

Step 3: Click on the Download Button

Step 4: Soon after downloading the CgpaGpa.zip, extract the file

Step 5: Check that you have Java Virtual Machine(JVM) installed on your computer

Step 6: If you have JVM installed on your computer, then do the following:

- Open Command Prompt (CMD)
  Start Menu $\rightarrow All Programs \rightarrow Accessories \rightarrow Command Prompt$
- Type in the CMD
  java -jar GpaCgpa.jar
- The program will launch soon after providing the above command in CMD

Step 7: If there is no JVM installed in the computer, please visit the website to know more about how to install the necessary Java Virtual Machine and other programs:

- **Know about JVM:** http://docs.oracle.com/javase/specs/jvms/se7/html/
- **Download the JVM:** https://java.com/en/download/index.jsp

[1] A computer program, or just a program, is a sequence of instructions, written to perform a specified task with a computer.

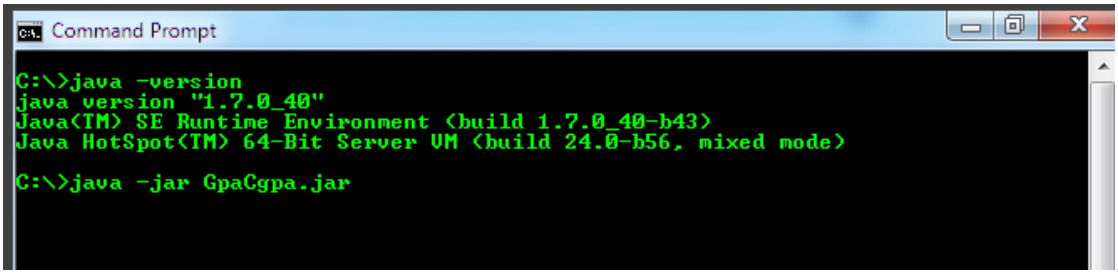

Figure 2.1: How to run the GpaCgpa.jar program

- Double click on the downloaded file and wait few minutes to install Java Virtual Machine on your computer
- Now, open Command Prompt (CMD)
  Start Menu $\rightarrow$ $All Programs \rightarrow Accessories \rightarrow Command Prompt$
- Type in the CMD
  java -jar GpaCgpa.jar
- The program will launch soon after providing the above command in CMD

2.2 Landing Interface

2.2.1 Description

The Landing Interface is displays the welcoming information of the GPA and CGPA calculation. There are two options is the interface:

1. **Calculator:** To calculate the GPA or CGPA
2. **Exit:** To end the program fragment

2.2.2 How to use the Landing Interface

Step 1: **To Start the Calculation-**Click on the *Calculator* button to start calculation the Grade Point Average (GPA) or Cumulative Grade Point Average (CGPA)

Step 2: **To Exit from the Program-** Hit the *Exit* button

2.2.3 Screen of the interface

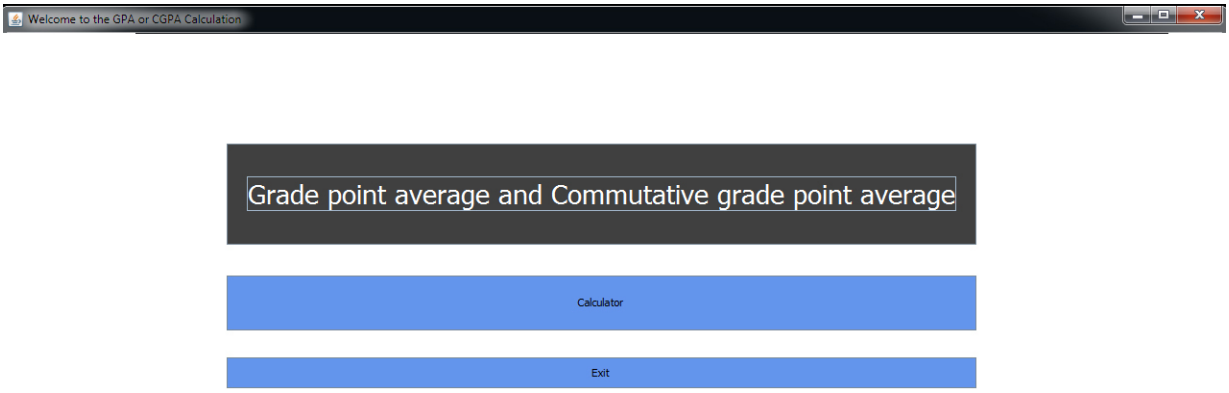

Figure 2.2: Landing interface of GPA-CGPA

2.3 Choice Interface

2.3.1 Description

The Choice interface offers the end-user to choose the following options:

1. To calculate Cumulative Grade Point Average (CGPA)
2. To calculate Grade Point Average(GPA)
3. To back to the landing interface
4. To exit from the program

2.3.2 How to use the Choice Interface

Step 1: **To Calculate CGPA-** Click the *CGPA* button

Step 2: **To Calculate GPA-** Click the *GPA* button

Step 3: **To back to the landing interface-** Click the *QUIT* button

Step 4: **To terminate the program-** Click the *EXIT FROM THE PROGRAM* button

2.3.3 Screen of the interface

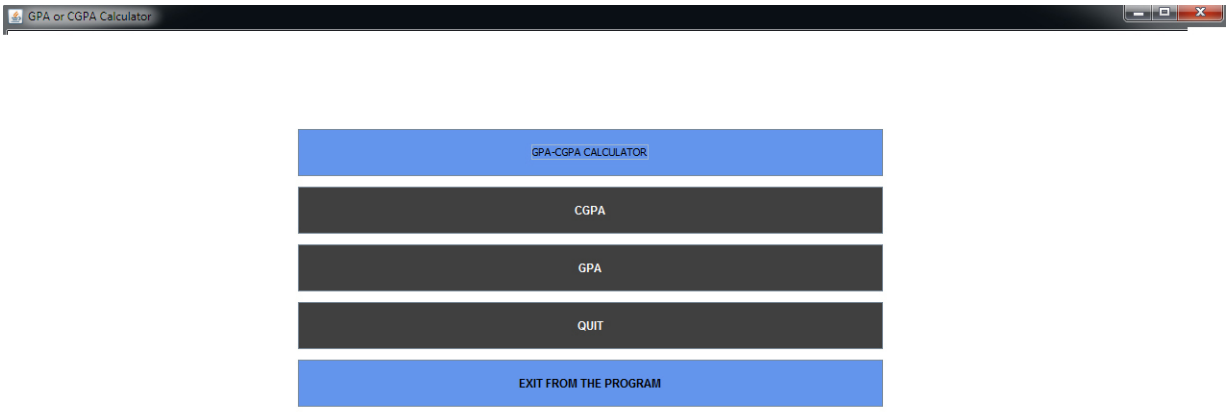

Figure 2.3: End-user choice of GPA-CGPA program

2.4 GPA

2.4.1 Description

Grade Point Average(GPA) is the calculation which is used at the end of a semester. The GPA is the key to calculate the student performance which is evaluated by the teacher or authorized person.

There are two input areas where the end-user or the student requires to enter the data:

- Credit Hours[2]
- Grade Achieved

2.4.2 How to use the GPA Interface

Step 1: Enter the data in the *Credit Hours* and the *Grade Achieved*

> Note:
> Do not leave the *Credit Hours* and the *Grade Achieved* empty; Please enter ZERO (0) in the Credit Hours and enter small or capital alphabet X in the Grade Achieved box

Step 2: Click the *CALCULATE GPA* button to calculate and to view the GPA, total credits, and performance status [Figure 2.5].

Step 3: Click the *Reset Data* button to empty the *Credit Hours* and the *Grade Achieved* to clear the data

Step 4: Click the *Back to main* button to return to the main interface [Figure 2.3]

[2] A course credit (often credit hour, or just credit or unit) is a unit that gives weighting to the value, level or time requirements of an academic course taken at a school or other educational institution.

2.4.3 Screen of the interface

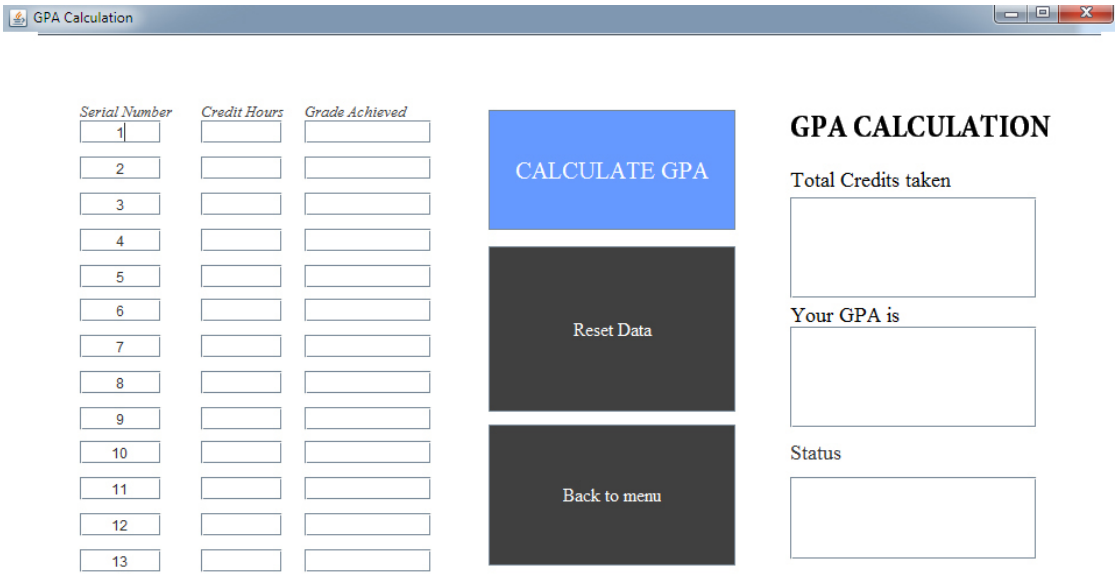

Figure 2.4: Grade Point Average(GPA) calculation interface

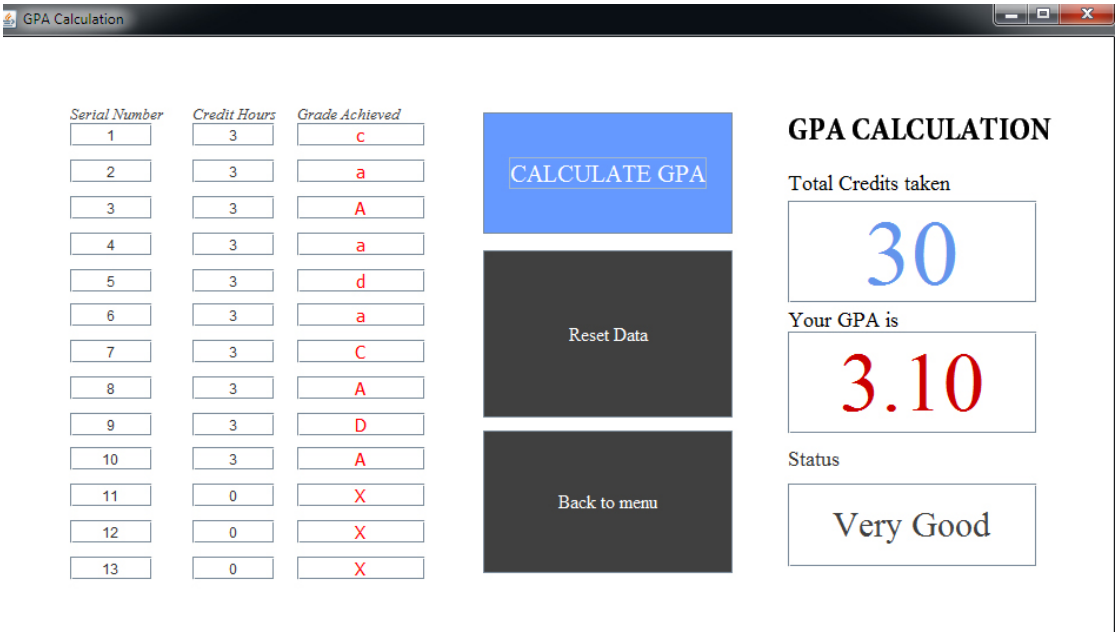

Figure 2.5: Grade Point Average(GPA) calculation interface with sample input

2.5 CGPA

2.5.1 Description

The Cumulative Grade Point Average (CGPA) is the overall GPA of the entire academic year[3] at the university. The CGPA is considered as the final performance report for a student.

There are four input areas where the end-user or the student requires to enter the data:

1. Previous total credits completed
2. Previous CGPA, not GPA
3. Total credits taken in this semester
4. GPA achieved (Current Semester)

2.5.2 How to use the CGPA Interface

Step 1: Enter the data [Figure 2.6]

Step 2: Hit the *find CGPA* button to calculate and to view the CGPA, total credits, and performance status [Figure 2.7].

Step 3: Click the *Reset Data* button to empty the fields

Step 4: Click the *Back to main* button to return to the main interface [Figure 2.3]

Note:
Please be careful while provide the data in the given field. The End user is completely responsible to provide the data and the receive the output based on the input.

[3] Academic year - the period of time each year when the school is open and people are studying, http://www.thefreedictionary.com/academic+year

2.5.3 Screen of the interface

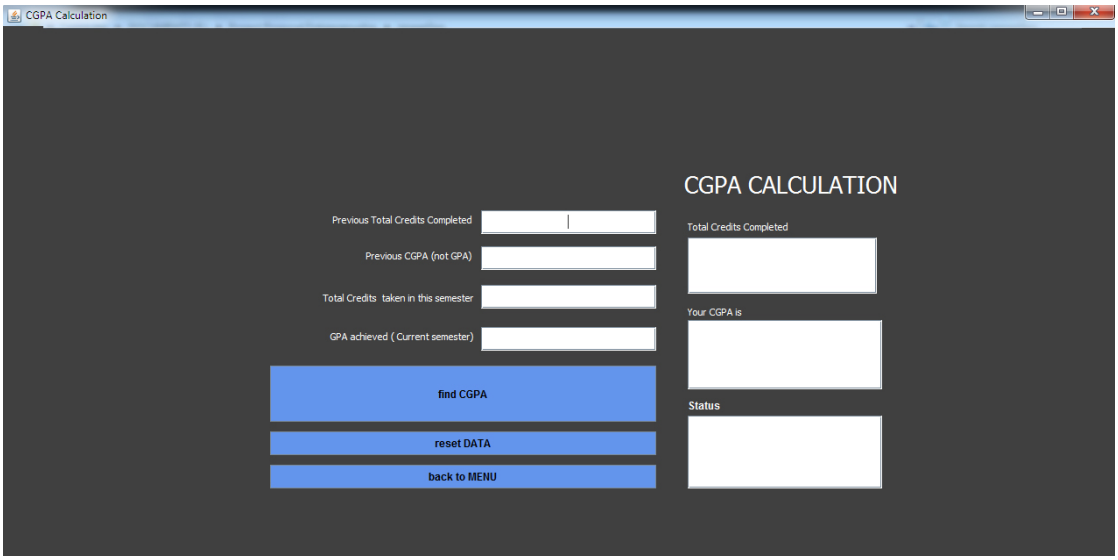

Figure 2.6: Cumulative Grade Point Average(CGPA) calculation interface

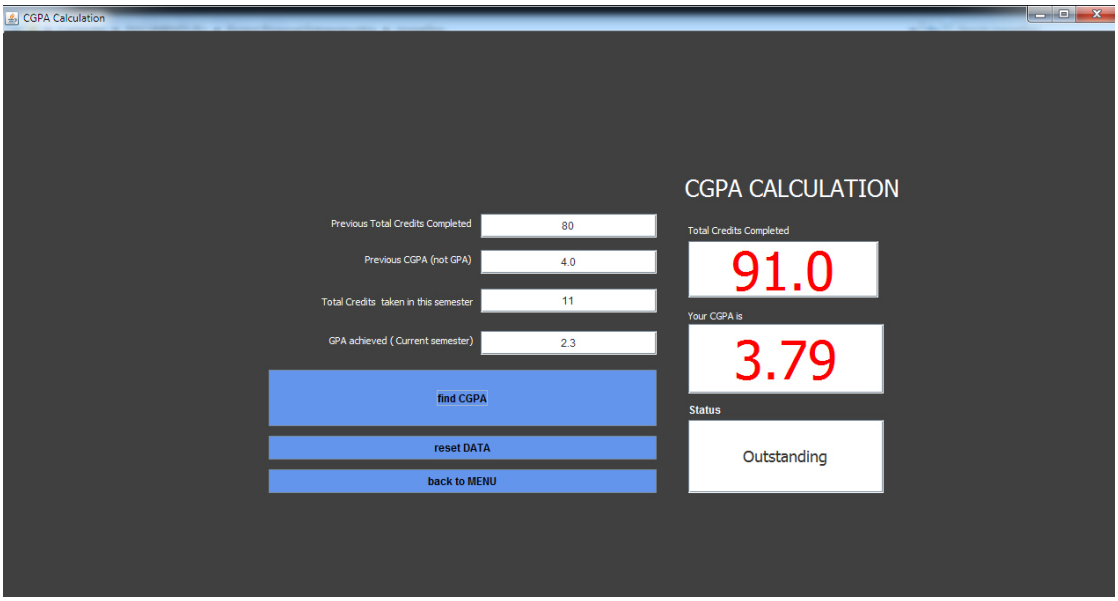

Figure 2.7: Cumulative Grade Point Average(CGPA) calculation interface with sample input

Chapter 3
Debug and Contact Information

Chapter 3

Debug and Contact Information

3.1 Contact person

The primary contact person is the Author of the GPA and CGPA.

3.2 Official address

Rashadul Islam Ross
Rangpur, Bangladesh
ross08@gmail.com

3.3 Debug Information

Software Bugs[1] are everywhere. Please send the debug information to us or email at ross08@gmail.com.

[1] A software bug is an error, flaw, failure, or fault in a computer program or system that produces an incorrect or unexpected result, or causes it to behave in unintended ways. Most bugs arise from mistakes and errors made by people in either a program's source code or its design, or in frameworks and operating systems used by such programs, and a few are caused by compilers producing incorrect code. A program that contains a large number of bugs, and/or bugs that seriously interfere with its functionality, is said to be buggy. Reports detailing bugs in a program are commonly known as bug reports, defect reports, fault reports, problem reports, trouble reports, change requests, and so forth.

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