# CIS11 Course Project Part 1: Documenting the Project

Fill in the following areas (purple).

**Introduction**

* 1. **Purpose**

The purpose of this program is to display the min, max and average of 5 test scores.

* 1. **Intended Audience and Users**

College students in the engineering field because they have to take some form of computer science class and professors to calculate student grades.

* 1. **Product Scope**

What is the intention of this program?

**To verify ones assumptions are correct and have this program as a reference showing that LC3 can be used for any arithmetic situation.**

* 1. **Reference**

**Source Documents for the Program Requirements and Specification**

Reference Project requirements and LC-3 specifications.

**Companion Application Requirements Documents (If applicable)**

What other documents should be reviewed with this document?

**PattPatelCh13.ppt (iterative/conditional statements)**

**2. Overall Description**

**2.1 Product Perspective**

Primary program objectives

* Adds up all data to create final result and output exact min, max and average letter grades.
  1. **Product Functions**

**The overall description of functionality:**

Highlight the program functionality: Identify tasks and subtasks of the program in summary.

More convenient way to find out results

Less strenuous

Saves the environment

Economical

**Technical functionality**

A configurable toolkit of functions including:

What are the technical functions of the program? Subroutines and operations.

Branching, make all positive, or zero, values.

Subroutine for arithmetic

Labels tied to overall values

Iterative statements (if, if-else) for numbers of students

* 1. **User Classes and Characteristics**

**Who are involved in this development process? Include business and technical personnel and their tasks.**

**Zach**

**CIS 5, 17C, 18A**

**Math up to Differential Equations**

**Kevin**

**CIS 5, 18A**

**Math up to Differential Equations**

**David**

**CIS 1A, 21, 5**

**Math up to pre-calculus**

* 1. **Operating Environment**

What type of system will the application be operated on? Operating system? System types? Development platform?

Any up to date internet accessible device would work with LC-3 simulator and editor downloaded.

* 1. **Design and Implementation Constraints**

Note any constraints or limitation to the application.

The limitations to this program are that the grades have to be whole numbers from 0-100

100 points is the max possible points one can achieve, (Extra credit cannot be included for those scoring a perfect score)

* 1. **Assumptions and Dependencies**

Note any dependencies

Computer that has internet access for specific software download.

Dependent on having LC-3 installed on your computer which is used to assemble program.

Dependent on user being able to identify the functionality of each piece used in the program.

***3*. External Interface Requirements**

* 1. **User Interfaces**

How will the user interface with your program? Menus? Access prompt? Links? Icons?

The member can access through a QuickAccess icon on the Desktop that will open up to various files for viewing of simulator and editor along with saved recent data files.

* 1. **Hardware Interfaces**

Specify hardware interface – computer types? Terminal types?

Keyboard computers to input data along with monitor to display output.

* 1. **Software Interfaces**

Specify additional software interface – if any. What type of software will the application require to run?

For a smooth running program, the user would run an up to date computer as LC-3 is a low level program.

* 1. Communications Interface

Does your application require web, Internet or network connectivity? If so, which browser? What type of network connection?

The program only requires Internet connectivity for the purpose of downloading LC-3 simulator and editor. Google Chrome is highly recommended.

**4. Detailed Description of Functional requirements**

**4.1     Type of Requirement (summarize from Section 2.2)**

**What are the functions? Their purposes? Inputs? Outputs? Data? Where is the data stored (internal or external to the application)?**

**Each member purchasing this software would be given the option to purchase for student or for a professor. Students would not be given the option for login requirements unlike professors which would keep their students information safe as it is sensitive.**

**Both however would be required to input their information by keyboard and would have some sort of mouse to scroll.**

**All information would be verified through confirmation codes sent via text to phone or would also have the option of email.**

**The output would then be displayed in a new window as a downloadable file which would also be saved in the database for future references.**

**Data would be stored in a cloud database and the QuickAccess icon for future references.**

**Purpose:For Students, one would register with their student email.**

**Inputs: Keyboard/Mouse**

**Processing: Validation would be the confirmation via an email to the student address provided. If address is already in use, an error message would come up and further action would be required.**

**For Professors, the same form of registration would be required with their work email.**

**Output: Upon successful registration, user would be directed to a main page with tutorials and links of how to use the program and how the program works alongside where one can access the cloud database.**

**Analysis Requirement**

* **The program performs display of specific letter grades from analytical comparison.**
* **Input will be the score values which the code will translate later to a letter grade.**
* **Processing would be through various branching and subroutine calls to relate all scores into the appropriate MAX, MIN or AVE value.**
* **The output would be the actual letter grade for the scores**

**4.2 Performance requirements  
 What is the expected performance level of the program?**

The application is accessible anywhere via Internet access for LC-3.

The program would be almost instantaneous since we are displaying variables dependent only on LC-3 program.

Cloud database will be able to hold a large quantity of information as most of the saved data would be in the form of bytes.

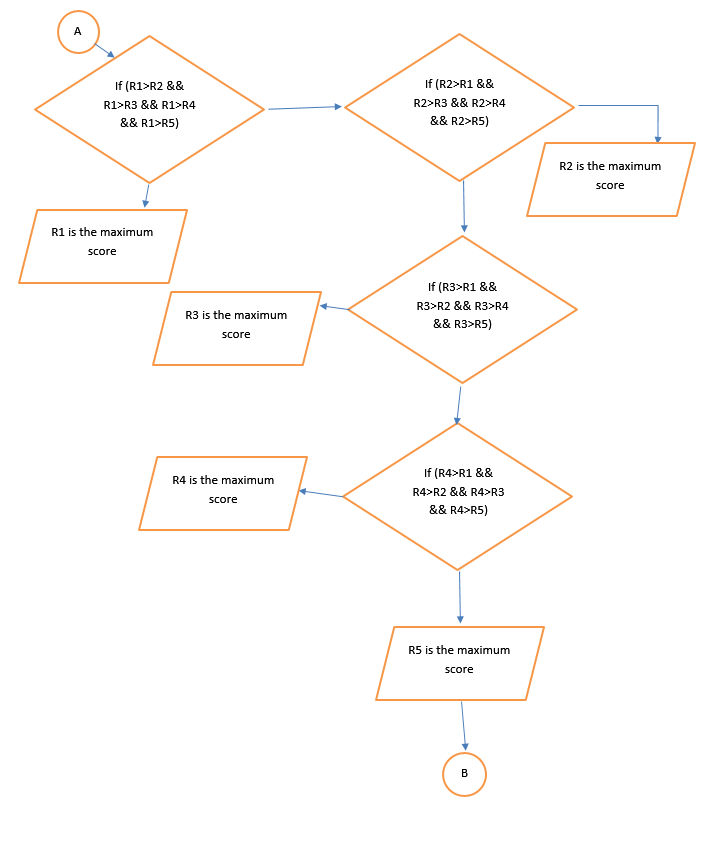
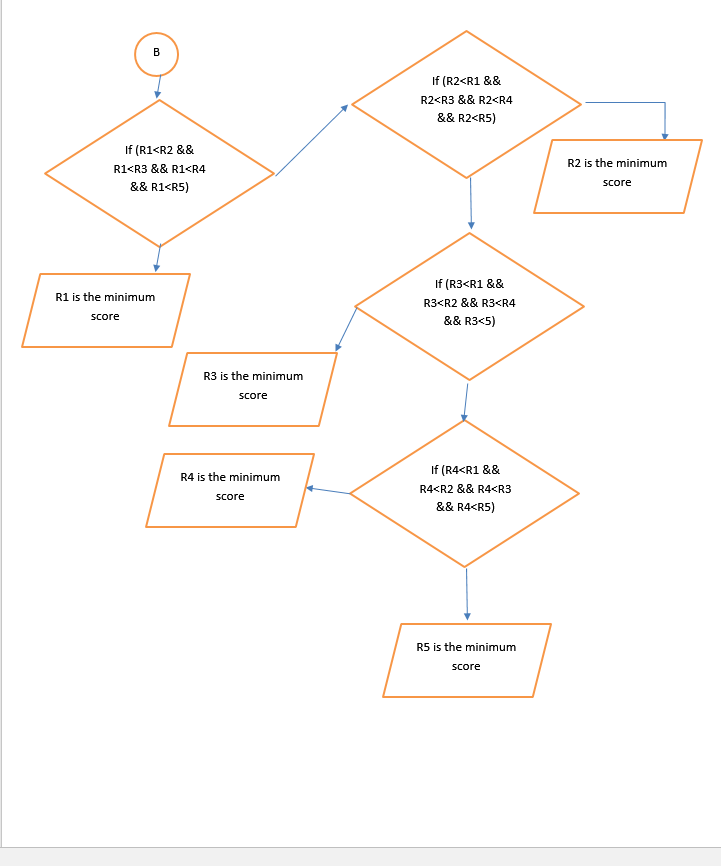
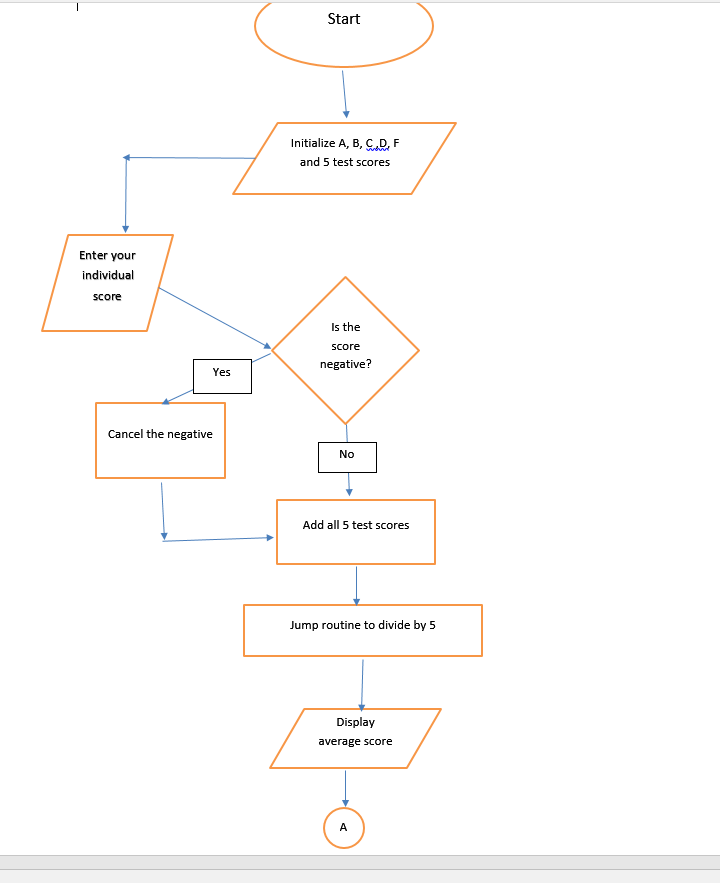
Errors would be outputted in LC-3 editor when assembled. Also, if console is being repetitive.

**4.3 Flow Chart and Pseudocode.**

1. Initialize A, B, C, D, F and 5 test scores.
2. Input all 5 scores
3. If the score is negative
   1. Invert to positive
4. Else
   1. leave score alone
5. Add all 5 test scores
6. Divide by 5
7. Output average score
8. If R1 is greater than R2, R3, R4, and R5
   1. Output “R1 is the maximum score”
9. Else If R2 is greater than R1, R3, R4, and R5
   1. Output “R2 is the maximum score”
10. Else If R3 is greater than R1, R2, R4, and R5
    1. Output “R3 is the maximum score”
11. Else If R4 is greater than R1, R2, R3, and R5
    1. Output “R4 is the maximum score”
12. Else
    1. Output “R5 is the maximum score”
13. If R1 is less than R2, R3, R4, and R5
    1. Output “R1 is the minimum score”
14. Else If R2 is less than R1, R3, R4, and R5
    1. Output “R2 is the minimum score”
15. Else If R3 is less than R1, R2, R4, and R5
    1. Output “R3 is the minimum score”
16. Else If R4 is less than R1, R2, R3, and R5
    1. Output “R4 is the minimum score”
17. Else
    1. Output “R5 is the minimum score”

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 FLOWCHART



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