# CIS11 Course Project Part 1: Documenting the Project

Fill in the following areas (purple).

**Introduction**

* 1. **Purpose**

This project is based on the Test Score Calculator project in which a LC-3 Simulator is required to use where 5 test scores will be inputted to show the minimum, maximum, and average of all test scores.

* 1. **Intended Audience and Users**

Intended audience for the Test Score Calculator will be for teachers.

* 1. **Product Scope**

The scope of this project is that it will allow teachers to compare the test scores of the class with the ease of a program that will give the average, minimum, maximum of the 5 test scores inputted.

* 1. **Reference**

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

Displays the Minimum, Average, Maximum test scores for the class based on the common letter grade metric.

The Compiler with Documentation:

LC3Edit and Simulator: [Introduction to Computing Systems | LC-3 Simulator (mheducation.com)](https://highered.mheducation.com/sites/0072467509/student_view0/lc-3_simulator.html)

LC3Edit and Simulator Documentation: [LC-3 Assembly Lab Manual (georgetown.edu)](https://people.cs.georgetown.edu/~squier/Teaching/HardwareFundamentals/LC3-trunk/docs/LC3-AssemblyManualAndExamples.pdf)

**2. Overall Description**

**2.1 Product Perspective**

This CIS Provides:

A way for teachers to calculate the class’s minimum, maximum, and average scores of tests with ease.

* 1. **Product Functions**

**The overall description of functionality:**

Allows users to input multiple test scores that will then output the lowest, highest, and average scores into the console based on the common grade system where 0 – 59% = F, 60 – 69% = D, 70 – 79% = C, 80 – 89% = B, 90 – 100% = A.

**Technical functionality**

The program will use to calculate the inputted grades via the use of:

Multiplication subroutines

Pointers

Stacks

ASCII conversion operations

Save-restore operations

* 1. **User Classes and Characteristics**

Programmer: Bishwo Sedai

Pseudocode and Flowchart: Danny Goodlow

Documentation: Giovanni Hernandez

* 1. **. Operating Environment**

The program is coded in LC-3 (Little Computer 3) Assembly, in which the Simulator mentioned above is available for the Windows and Linux operating systems.

* 1. **. Design and Implementation Constraints**

There are no design and implementation constraints, aside from the need of an LC-3 simulator.

* 1. **. Assumptions and Dependencies**

An LC-3 Simulator is required to run this calculator program.

***3*. External Interface Requirements**

* 1. **User Interfaces**

The .asm file is opened and run in the LC-3 Simulator.

* 1. **Hardware Interfaces**

A computer with an LC-3 Simulator.

* 1. **Software Interfaces**

The software used for this program is LC-3 Edit and Simulator.

* 1. Communications Interface

The LC-3 compiler and simulator itself will not require the usage of the internet or any other Communications interfaces.

**4. Detailed Description of Functional requirements**

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

Purpose: Will provide a way for the teacher to show the lowest, highest, average grades of the tests inputted.

Inputs: Keyboard

Processing: Input calculation is done via the use of subroutines, stacks, pointers, ASCII operations, etc.

Outputs: The lowest, highest, average grades from the series of input.

Data: Test scores.

**4.2 Performance requirements**

The test score calculator will require the LC-3 Simulator to run which is generally lightweight on computers.

**4.3 Flow Chart and Pseudocode.**

 Pseudocode

1. Start Program
2. Declare Test Score as an integer
3. “Enter Test Score and grade will be displayed”
4. Input Test Score
5. IF Test Score is 90 - 100

* “Grade is an A”

1. IF Test Score 80 - 89

* “Grade is a B"

1. IF Test Score 70 - 79

* “Grade is a C"

1. IF Test Score 60 - 69

* “Grade is a D"

1. IF Test Score 0 - 59

* “Grade is a F"

1. End

Diagram

Description automatically generated

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