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CIS 11

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Professor Nguyen

# CIS11 Course Project Part 1: Documenting the Project Revised

Fill in the following areas (purple).

**Introduction**

* 1. **Purpose**

The project will be Project B which will be a test score calculator which will require the user to use an LC-3 compiler to open the respective .asm file.

* 1. **Intended Audience and Users**

The general audience for the project will primarily be for teachers since the program will be measuring the minimum, average, and maximum of 5 test scores of the class.

* 1. **Product Scope**

The Test Score Calculator program will be intended to allow users to quickly calculate the minimum, average, and maximum of 5 test scores of the class.

* 1. **Reference**

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

Will display the Minimum, Average, Maximum test scores for the class based on this grade metric:

A. 90% - 100%

B. 80% - 89%

C. 70% - 79%

D. 60% - 69%

F. 0% - 59%

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)

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

LC3 Online Compiler: <https://wchargin.com/lc3web/>

**2. Overall Description**

**2.1 Product Perspective**

This program provides:

A simplified way to calculate the class’s minimum, maximum, and average scores of a test.

* 1. **Product Functions**

**The overall description of functionality:**

Will allow the user to input the test scores.

The program will output the max, min, average scores from the set of scores the user has inputted.

Grade system will go by:

F = 0 – 59

D = 60 – 69

C = 70 – 79

B = 80 – 89

A = 90 - 100

**Technical functionality**

A configurable toolkit of functions including:

1. Will use multiple subroutines to do the calculations from the user’s inputted grades, then from there it will output the results.
2. Will use pointers
3. Will utilize PUSH/POP stacks
4. Will manage overflow and storage allocation
5. Will include save-restore operations.
6. Will include origination, fill, array, input, and output addresses.
7. Will include ASCII conversion operations.
   1. **User Classes and Characteristics**

**Programmer:**

**Bishwo Sedai**

**Pseudocoder and Flowchart Maker:**

**Danny Goodlow**

**Documentation:**

**Giovanni Hernandez**

* 1. **. Operating Environment**

This program will be coded in LC-3 Assembly which is available for a variety of platforms such as Windows, Linux, Mac, Android…

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

An LC-3 simulator is required to run the program.

* 1. **. Assumptions and Dependencies**

The Program requires the use of a LC-3 Simulator to be able to run as it is an .asm file.

***3*. External Interface Requirements**

* 1. **User Interfaces**

User has to run the program and input the grades they wish to calculate

* 1. **Hardware Interfaces**

Any device that can run the LC-3 simulator.

* 1. **Software Interfaces**

LC-3 Simulator for running the program

LC-3 Edit for editing

* 1. Communications Interface

An internet connection will be required to download the LC-3 Simulator, afterwards there is not communications interface requirements after the download of the LC-3 Simulator as the simulator itself is offline.

**4. Detailed Description of Functional requirements**

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

Purpose: Allows the user to calculate 5 of the minimum, average, and maximum grades of the class’s test

Inputs: Inputs are done via the keyboard.

Processing:  The input will be calculated via the use of pointers, subroutines, PUSH/POP stacks

Outputs: The program will output the min, avg, max of the 5 test scores of the class.

Data: Student test scores.

**4.2 Performance requirements**

The performance requirements of the program will be dependent on the requirements of the LC-3 simulator, the requirements of the program listed on 1.4 is a windows or linux computer, but the online compiler listed there should work on any device that can use a browser.

**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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