Arizona State University

Grade Analysis System

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CSE 360 Fall 2019

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26 November 2019

Table of Contents

1. Introduction

The purpose of this report is to inform a user how to properly interact with the developed grade analysis system. This guide has provided step-by-step instructions on how to get started, how to use the different functionalities, and how to handle different types of errors. The guide has displayed images meant to be used as an aid in providing a visual for the user to see to operate the analysis system.

Our intended audience in this guide, for our grade analysis system, is any potential user who would like to learn about our product. Furthermore, its availability allows anyone to be familiarized in using the analysis functions available for them to successfully analyze any set of grades they provide. Being said, having given a step-by-step guide on how to use our product for any potential user can reduce complications for anyone brand-new, or if a regular user needs clarifications. Thus, this guide has been created for anyone who is interested in the product and anyone who already owns the grade analysis system.

2. Overview of the Program

The grade analysis system has allowed a user to input a set of grades and perform different types of analizations. The different functionalities will include the option of appending a new set of data from keyboard entry or by uploading a file type of *.txt* or *.csv*. One file will be analyzed at a time and if a new data set is entered, the previous set will be erased and all operations performed will be reset. Furthermore, the system has allowed the user to delete single values by manual entry from the keyboard. The system has also allowed the user to see a display of the data in four columns of descending order. Moving forward with the operations on the analysis of grades, the boundary settings are displayed for the user to fill in. Thus, it will allow optimal performance and accurate computations. Computations will include unique values for a mean, median, and mode on the set of grades. In addition to the visual display of analysis, a horizontal bar graph will be available by percentage of the corresponding grade, and a distribution of the data as a whole. Finally, a log of errors has been displayed in order for a user to identify where an error has occurred and what type of error was encountered. Leading into the final output of the analysis, a report will be summarized entailing the status of all functions performed on the set of data.

Providing a variety of operations available for a user allows an understanding of what a set of grades could be interpreted as. Being said, the grade analysis system will have provided them a conclusion on how a class is performing as a whole, based on their grades. In addition, the analysis available to them has given a visual representation on potentially, what the average grade is within the class.

3. External Requirements to Execute Program

A few necessary external requirements will be needed in order for the grade analysis system to be executed successfully. An Integrated Development Environment (IDE) supporting *.java* files, must be installed on a user's personal computer to properly execute the program. Complementing the IDE, they also must have updated java software running on their computer for the program to be compiled and run. Once these software requirements are fulfilled, a user must be familiarized with the IDE they have installed so that they will know how to navigate around and run a *.java* program. The data analyzed can be a file type of *.csv* or *.txt*, or the data can be entered manually through the keyboard. If a user has completed all of the listed external requirements, the program will be executed correctly.

4. Getting Started

The window of the program will include the following items:

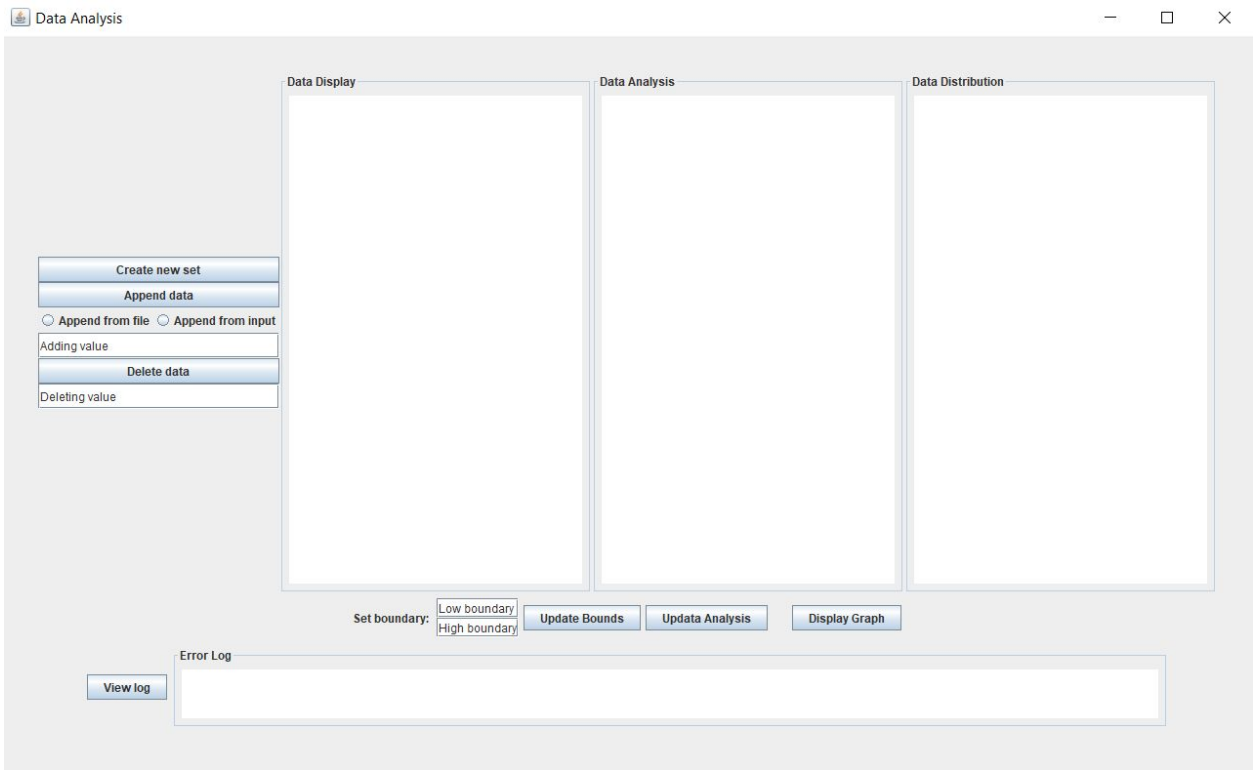
Displays:

1. ***Data***: A visual representation of all data provided by the user in four columns, in descending order.
2. ***Analysis***: Analysis report of the computations solved by the program, and display the following calculations according of the provided grades and boundaries:
    a. Highest grade value → Greatest value in the data set
    b. Lowest grade value → Smallest value in the data set
    c. Mean → Sum of all values divided by the total amount
    d. Median → Most middle element within the sorted data set
    e. Mode → Most frequent number in the data set
3. ***Distribution***: A grade distribution will be displayed at 10% intervals of grades being analyzed.
4. ***Current Error***: Most current error with informative details for a user to keep track of and seek for clarification.
    a. ***View Error Log***: A log of all reported errors by the system caused by an user. The user will have the ability to view the entire list of errors once this button is pressed.

Buttons:

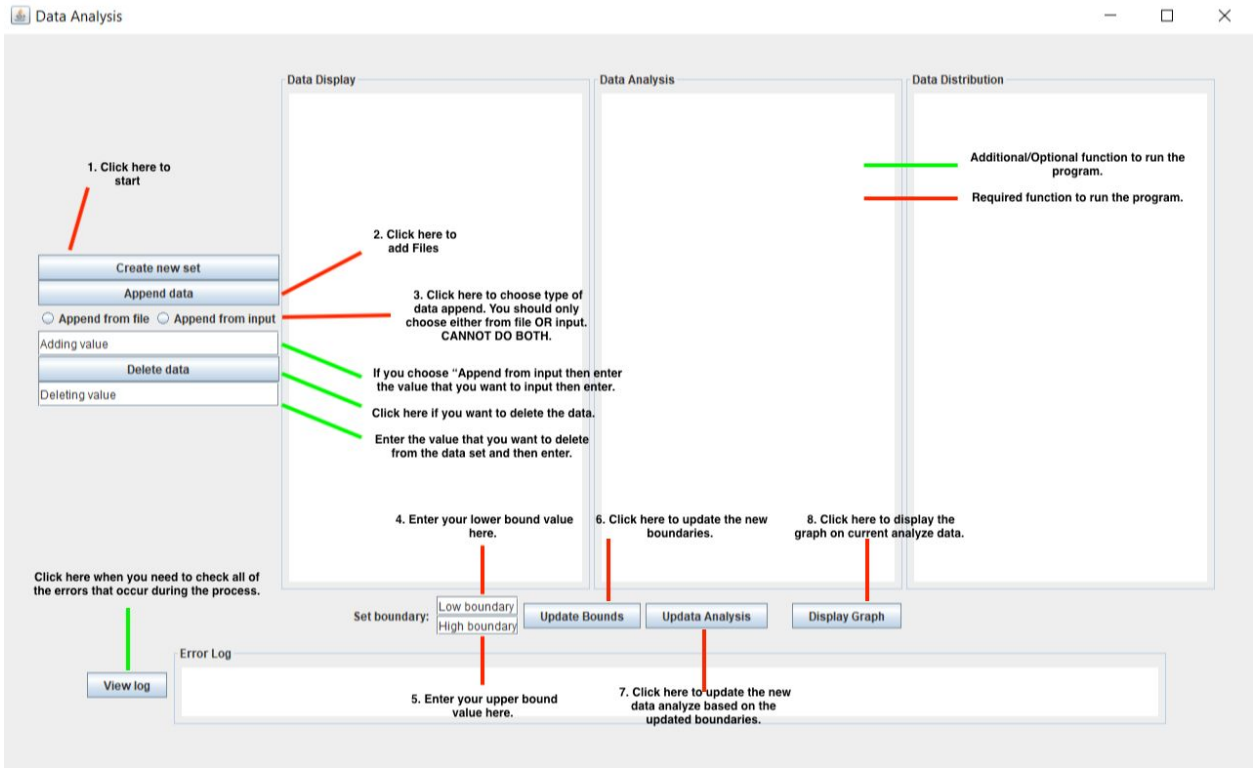
1. ***Add New Set***: File types of *.csv* and *.txt* can be provided by the user for the program to use.
2. ***Append Data***: Data will be entered into the analysis system to be analyzed and interpreted.
    a. ***Files***: Files will be entered into the analysis system.
    b. ***Keyboard***: Additional values entered manually from the keyboard will be added to the whole data set of grades.
3. ***Delete Data***: A typed in, single value given by a user will be erased from the data set.
4. ***Set Boundary***: Set the lower bounds and upper bounds of the data in order to get the best computations of a given range.
    a. ***Low***: Field for a lower bound.
    b. ***High***: Field for an upper bound.
5. ***Update***: System will have calculated a new grade analysis based on all previous fields entered. Note, this button **MUST** be pressed after all other fields have been filled in.
6. ***Display Graph***: This will show the graph analysis from the inputted data.

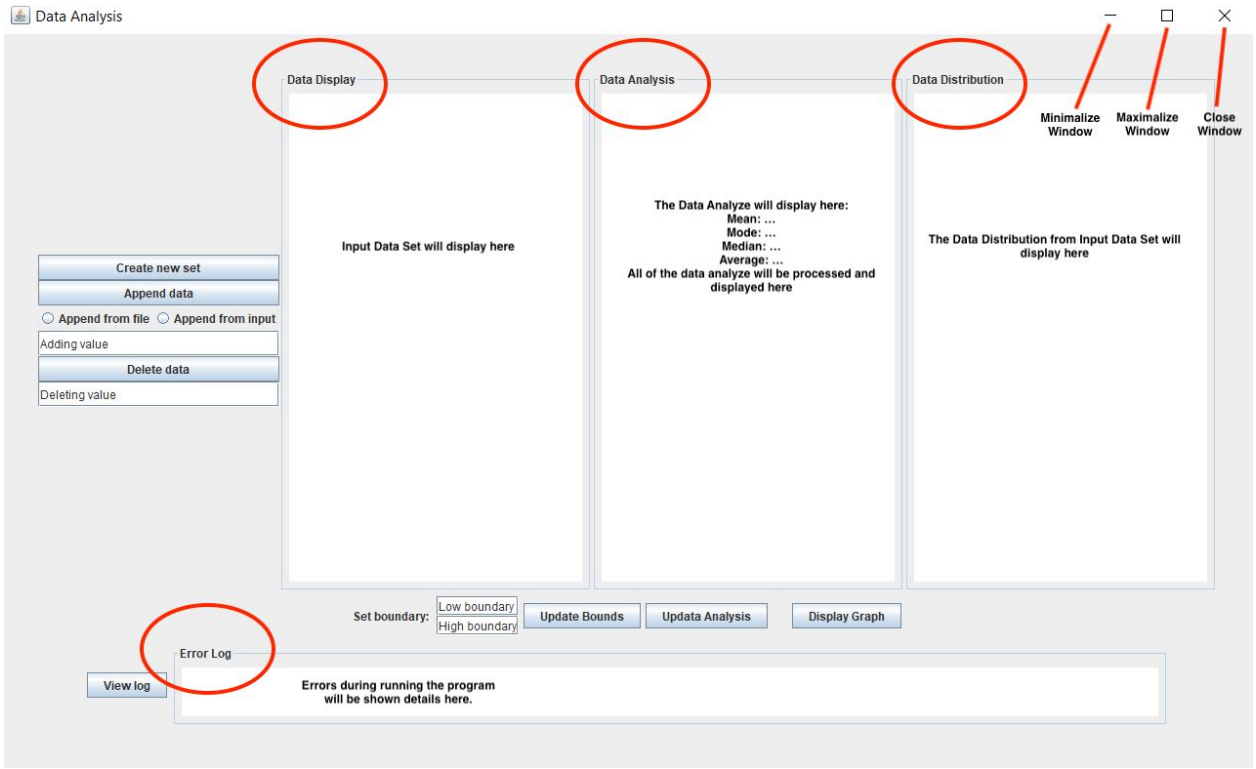
5. Program Preview



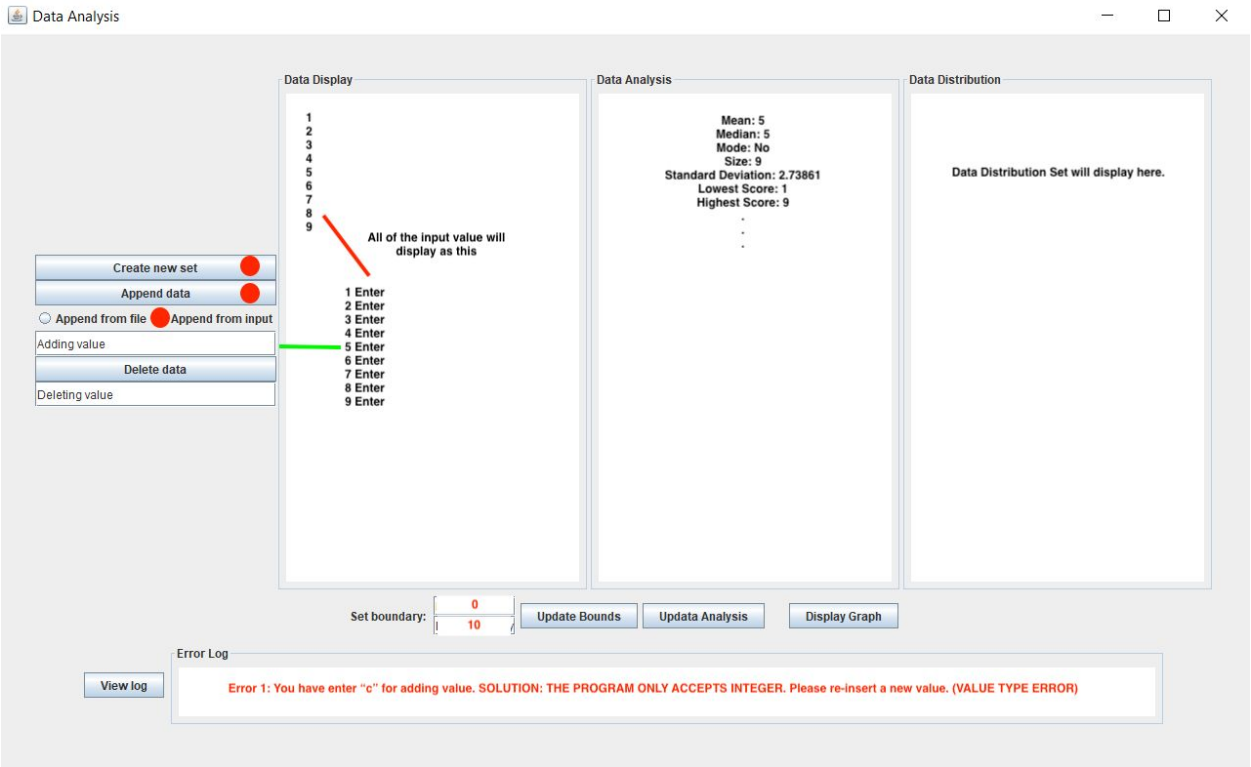
* This is a demo of the program. The user interface has the possibility of being rearranged, but the functionality of the system would remain the same. The functionality of the program and buttons are listed above (“Getting Started”, page 6).

6. Examples Showing Functionality





Example for how the program will take the input and process the output*:



* This is a sample of the inputs and outputs of the executed program, which allows the user to visualize how the program will look and the functions. The outlook of the program may be changed later for aesthetic reasons, but the functionality of the buttons will not change.

7. Error Conditions and Messages

A list of all errors accompanied by a message to be identified by a user is provided below. A user will be able to see different types of errors and enhance their knowledge by using our system because they will know what errors to avoid. All errors caused by a user can be found in the "Error Log" section of the interface. The following errors can be encountered:

1. ***Boundaries Error***:
    a. ***Low Boundary Error***: Some grade value(s) has exceeded the lower bound limit set by a user.
    b. ***High Boundary Error***: Some grade value(s) has exceeded the upper bound limit set by a user.
2. ***Wrong File Error***:
    a. ***File Type Error***: The program only accepts file extensions of *.txt* or *.csv*. Any other file types will not be accepted.
3. ***Keyboard Input Error***: Invalid character attempted to be used for analysis. Input from the keyboard such as a letter or symbol will not be accepted.
4. ***Deleting Invalid Number Error***: The user has requested a deletion of a number that does exist in the set of data.
5. ***Create Report Error***: No data from a user for the system to create a report.
6. ***Display Graph Error***: Occurs when the "Display Graph" button is pressed but the system has no data to use.

8. Ending of Program

The program will end if the user clicks the “X” at the top right of the GUI screen. When the user clicks on the “X”, it will terminate and exit the Java program. If the user clicked on “Create a Report” for the last command, it will output a summary of all the commands that was instructed by the user into an output *.txt* file after termination.