

Project 2: Student Scores / Grades

User interface

The screenshot shows a web application titled "Student Scores". It features three input fields for "Last Name", "First Name", and "Score", with values "Murach", "Mike", and "93" respectively. Below these is an "Add Student Score" button. A section titled "Student Scores" contains a text area displaying a list of student scores: "Lowe, Doug: 82", "Murach, Joel: 92", "Murach, Mike: 93", and "Steelman, Andrea: 95". At the bottom, there is an "Average score" field showing "90.5", and two buttons: "Clear Student Scores" and "Sort By Last Name".

Operation

- This application stores the last name, first name, and score for one or more students and it calculates the average score for all of the scores that have been entered.
- When the user clicks on the Clear button, this application clears the score data from this application.
- When the user clicks on the Sort button, this application sorts the data in alphabetical order by last name.

Specifications

- The program should use one or more arrays to store the data.
- Do not assume that the user will enter valid numerical data. Assume scores should be between 0.0 and 100.0

- **BONUS – Not required. Display the following along with the average**

- *Standard deviation:*

- $$s = \sqrt{\frac{\sum (x - \bar{x})^2}{N - 1}}$$

- *where*

- *s = the standard deviation*

- $x = \text{each value in the sample}$
- $\bar{x} = \text{the mean of the values}$
- $N = \text{the number of values (the sample size)}$

- **Variance:**

$$s^2 = \frac{\sum_{k=1}^n (x_k - \bar{x})^2}{n-1}$$

- **Example – From the values entered above**
 - **Average is 90.5**
 - **Standard Deviation is 5.8023**
 - **Variance is 33.66667**