Input/Output

TIP: DO NOT try and put / in your filename. Call your file lastname\_firstname\_inputoutput.m

# Part I

You do not need to turn anything in for this part of the assignment (but it is in your best interest not to skip this as you will find out in part II)

Fill in the table of built in MATLAB functions for analyzing arrays. Use google or the MATLAB help to find them all.

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| **Permission Code** | **Description** | **Example of how to use** |
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# Part II

# Instructions

Complete the problems below by having MATLAB compute them sequentially from a .m file.

Now that you have learned how to use sections. Each problem should be in one .m file but separated by sections. You will not get full credit if you skip this step.

# Problems

1. Write a MATLAB program in a script file that calculates the average, standard deviation, and median of a list of grades as well as the number of grades on a list.   
   **Program requirements:**
   1. The program loads the values from the io\_grades.mat file supplied to you.
   2. The program calculates the required quantities using MATLAB’s built-in functions
   3. The results are displayed in the Command Window in the following format where XX is the numerical value:  
      “There are XX grades”   
      “The average grade is XX”  
      “ The standard deviation is XX”  
      “The median grade is XX”
2. Write a MATLAB program that creates a table that allows hikers to estimate their altitude based on the temperature of their boiling water.   
   Given:   
   where p is the atmospheric pressure in inches of mercury, is boiling temperature in ºF, and h is altitude in feet.  
   **Program requirements:**
   1. The program should use the shortg format for outputting to the command window.
   2. The program should display a welcome message (disp command) and another prompt that asks the user to input the elevation range as a vector. Ex) [x x x]
   3. The table should have two columns, the first altitude and the second boiling temperature and the table should be printed to the command window
   4. The table should be output to a file called ‘boilingtemp\_ elevation\_table.txt’ (fprintf command)  
      **Hint**: to make everything look nice, use spaces and the %05.0f flag for the altitude and %5.2f for the Boiling Temperature. **Hint 2.0**: Displaying the table to the command window (part c) and outputting (part d) it to the file do not have to be in the same lines of code. **Hint 3.0**: look at what it means that fprintf is vectorized from the last in class notes.
   5. In addition to the data, the “boilingtemp\_elevation\_table.txt” file should include the title “Custom Boiling Temperature to Elevation Conversion Table”
   6. Upon completion of the program, the user should be notified that the program was completed successfully and that a file was saved. (disp command)