

# MATLAB - Exercises 2

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## 1. Importing/ Exporting files and data processing

The following set of exercises will look at something similar to what you'd actually have to deal with in a day to day environment (although it will be vastly simplified).

In this exercise you will have to import an excel spreadsheet containing the exam grades of a year for 5 subjects Physics, Maths, Biology, Chemistry, History. Using this data you will have to write a script that will produce and export some information about the overall grades.

1. Go to [https://github.com/dansmaranda/MATLAB\\_Data/blob/master/myData.xls](https://github.com/dansmaranda/MATLAB_Data/blob/master/myData.xls), and click *View Raw* or click the Download button. After the file has finished downloading, copy the file to your MATLAB current working directory. The columns are the different exams, and the rows represent the grades a student has gotten for each one of the exams.
2. Import the data inside the `myData.xls` file by using the `xlsread()` function. (As per usual, if you get stuck get out the Documentation or signal an instructor).
3. Create a column vector for each of the exam scores.
4. Write a function file that takes as arguments a column vector of numbers, and returns the minimum and maximum value of the column.
5. Write another function file that takes as arguments a column vector of numbers, and returns the average value and the standard deviation of the values.

**Hint!** For the standard deviation you can use the `std()` function. If you are unfamiliar with the concept of a standard deviation ask your instructor.

6. Write a function file that takes as arguments a column vector of numbers, and returns how many numbers are greater than the average value.
7. Using your newly defined functions, find the minimum, maximum, average, and standard deviation of each exam and write a MATLAB table, using the `table()` function (where the columns should be **Minimum**, **Maximum**, **Average**, **Standard Deviation**, and the rows should correspond to each of the exams)
8. Export your table as a `StatsTable.txt` file using the `writetable()` function.
9. For each exam make your script display how many students got a mark greater than the class average, and how many got a mark that is less or equal than the class average.
10. In your script, for each of the exam scores plot a histogram. Make sure you label the title, and the axis of each histogram (use `title()`, and `xlabel()`, `ylabel()`). Use `subplot()` to plot all 5 within the same window.

**Hint!** Use the `histogram()` function. A histogram is a plot that counts how many times a certain number appears, and for each number it plots a bar as tall as the number of occurrences. If you would like some more detail on histograms ask your instructor.

11. Export the histograms as a file, 'ExamHistograms.jpg', using the `print()` function.