A Tutorial on The Use of MATLAB For Plotting Functions

MATLAB is a programming platform that users especially scientists and mathematicians can use to analyze data and create models.

For the exercise, in this case, the task was to use MATLAB to plot a line graph, salt, and smooth using inbuilt commands applicable to MATLAB.

For the first step, to plot a straight-line chart, one needs to create a variable. For instance, variable X. After declaring the variable, the user needs to assign coordinates to the variable. In the image below, the Variable x which represents the x coordinates was initialized in the format [0:1:10] meaning points from 0 to 10 will be printed to the console at an interval of one. The interval isn't fixed, and one can increase it to 2, 3, or to the best that fits the user's preferences.

After the assignment, the user can press enter to see if it's been successful, as shown in the diagram below. The y coordinate can be created as variable y and assigned figures as well. For this exercise, the equation of the line graph was put into consideration, i.e., $y = mx + c$. For this exercise scenario, 2 was used to represent m, and 1 was used to represent c. Note that mx is the product of two digits and in MATLAB multiplication is represented by the Asterix sign (*).

Once the y variable has been assigned a value, one can press enter to confirm the values are indeed assigned to the variable. Finally, to plot the line graph, the user can simply write the method plot () and put both variables inside the parenthesis. For example, plot (x, y) and press enter. Once this is done, a line graph image is displayed on the screen as shown below.
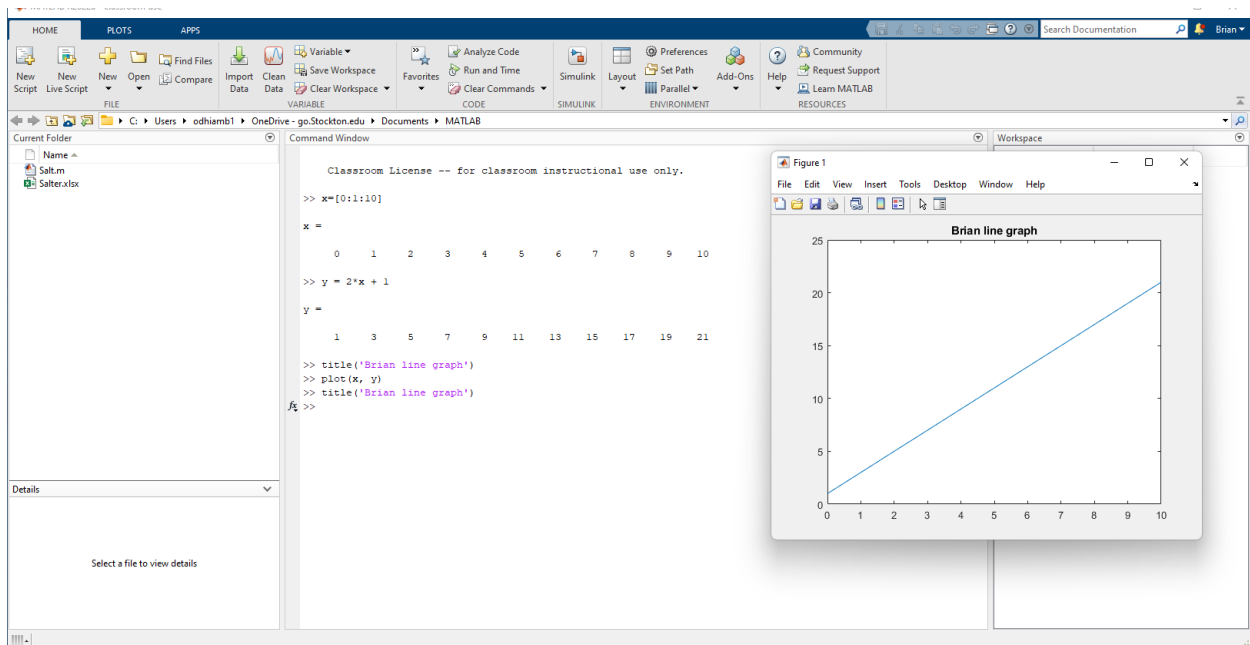

The user can use the title method to give one's graph a title. Note that the text within the title's parenthesis should be enclosed in single quotes.

MATLAB also provides the option of importing your data for example, in the figures below, the data for the graphs were imported from an excel spreadsheet. To import data from an excel file,

the user can click on the "Import Data" button under the "Home" tab and select the file one wishes to import. Once present in the current folder section, one can create a variable as used in the example below as graphSalted and the variable reads from the excel file and picks data from a particular column.

Assign x and y variables with values for plotting, and as in the example from the image below, when using, imported data, assign values to the variables about the imported data. For instance, x = graphSalted(:, 1). In this example, the colon and comma mean one is selecting from the first column of the spreadsheet and for the y, one is selecting from the second column of the spreadsheet.

Type in the method plot () and place the x and y variables inside the parenthesis and press the enter key. The result displays a salted graph as viewed in the image below.
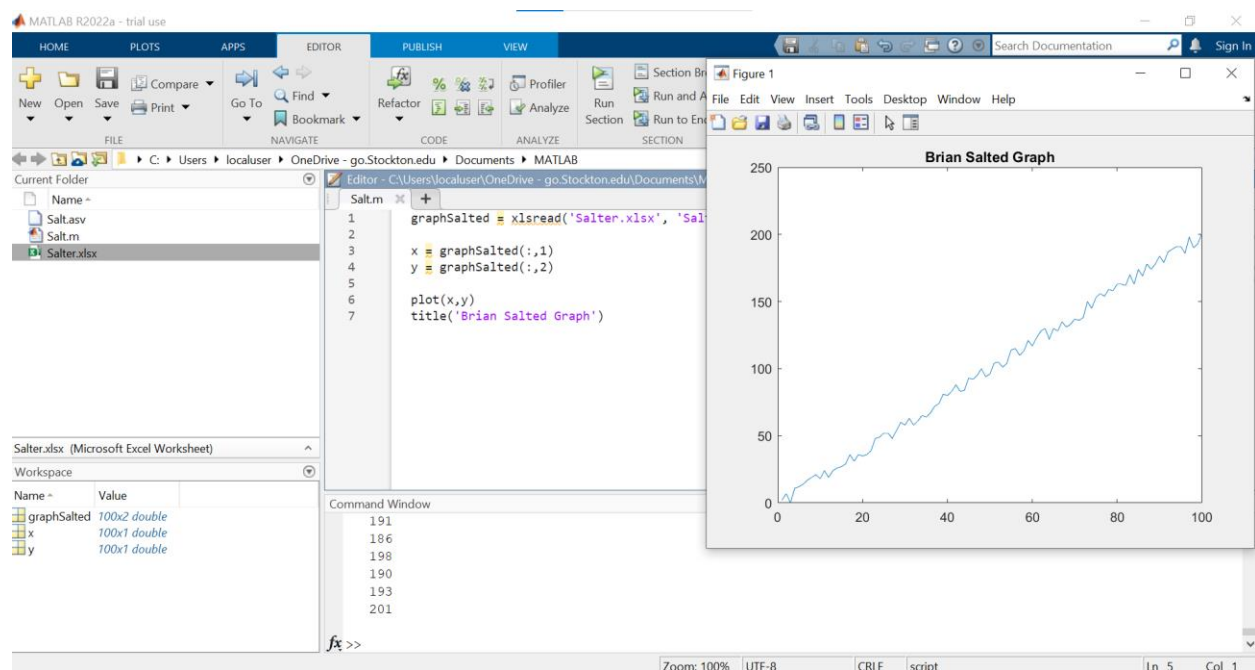
For smoothing the salted graph, MATLAB makes the process easy by using the smooth method as demonstrated in the image below. The y variable is placed as an argument inside the smooth method since the variable contains the function of the graph.

Note if the smooth method is used multiple times, the graph will return to being a straight-line chart.
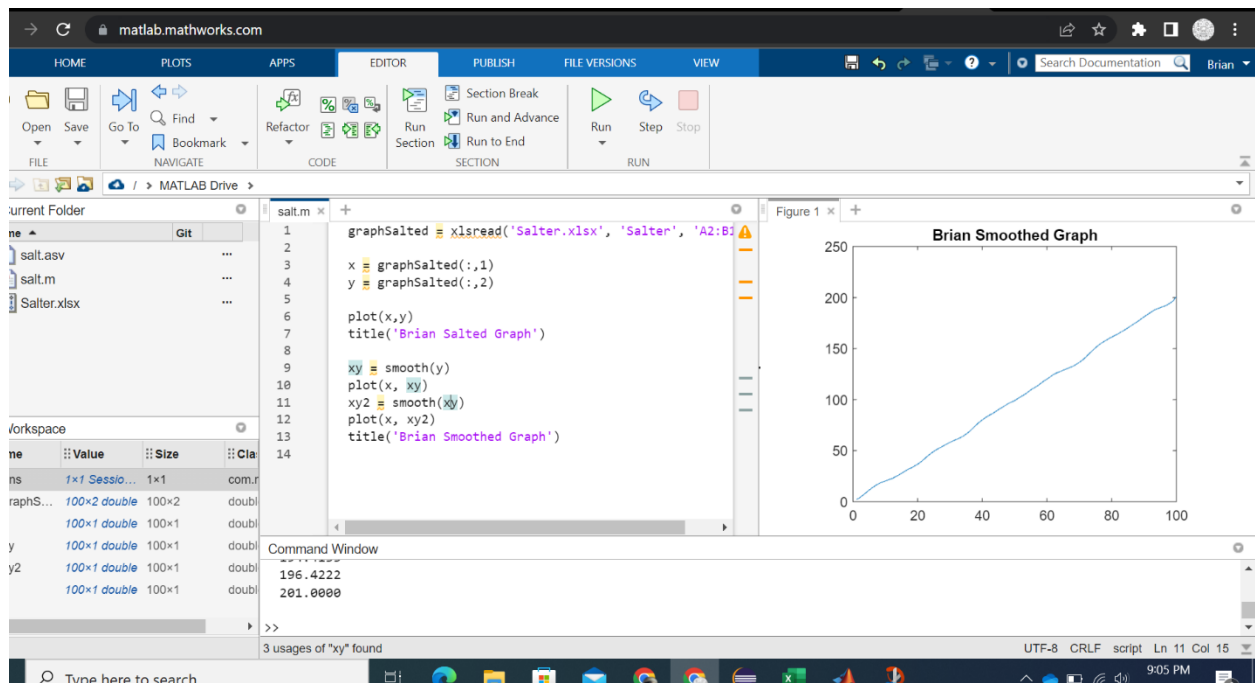
In a nutshell, MATLAB is a powerful and efficient application that provides endless opportunities for computation and is a very worthy software for matrix manipulations, plotting of functions and data and implementation of algorithms.