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Probability and Applied Statistics

Octave Report

Octave, or GNU Octave, is a good programming language that excels at solving algebraic and differential equations. It’s not needed to compile the code to run which becomes an advantage over other programming languages. It also has a lot of built in functions and is capable of plotting a lot of different problems. It has two different running method; one with command line interface, and the other is graphical user interface. It includes the most recent topics that we’ve used in class so far such as combinations. Like other programming languages, Octave has a way to insert comments without it reading it as a script. This is achieved by either using the sign # or % at the front of the target comment. The following demonstration and/or example is synonymous with information at the website: https://www.mygreatlearning.com/blog/octave-tutorial/.

Graphical user interface

Description automatically generated with medium confidence

Like other programming languages, we can also use variable declaration on octave that stores data that can be accessed with functions later on. The only thing is that, we cannot use a number in front of the variable declaration. It is also case-sensitive. We can also use underscore as a leading letter to be used for it. We can also use a variable to store strings, just like other programming languages so long as we use single quotes and double quotation (Unlike matlab, octave can use double quotation).

Graphical user interface, text

Description automatically generated

Octave is also a powerful programming tool to execute decision making, for loops, while loops, and other powerful tools that we use on other languages. One of the fundamental statements that we use are if statements which can be extended to if-else statements or else-if. We also get to use switch cases or statements in octave just like in java.

Text

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The most important statement that we can think of using any type of programming language is a for loop statements. We can create logics that powers a lot of functionality in today’s technology using this. Octave utilizes this statement just like any other language.

Text

Description automatically generated with low confidenceA picture containing graphical user interface

Description automatically generated

Now, for the second part of this Octave Project, I needed to implement a Plotter, Salter and Smoother for my chosen function. This function is y =mx + b. I implemented it using the tutorial knowledge I gained. First, since I know that I want a range of ‘0 to 100’ plot points for x, I did an x=0:100. Then I declared the value for m and b, which was m=1 and b =2. I then used the plot function to plot my unmodified function.

A picture containing text

Description automatically generated

Chart, line chart

Description automatically generated

Salting the original function involved creating a random number added to it. First I created a new variable named ySalted to take in modified y with randomize number added to it. Then I plotted it just like with the original function.

Text, letter

Description automatically generated

Chart, line chart

Description automatically generated

Lastly, to smooth the salted y points, I had to utilize built-in function of octave called movmean. It smoothed the salted y points which I then stored in a new variable called ySmoothed which I also plotted.

Text

Description automatically generated

Chart, line chart

Description automatically generated

Now, utilizing information that I’ve learned from tutorials and doing some research on the functionality of octave, I was able to load a csv file, which is already salted and then using octave, smoothed it out to display both salted y points vs. smoothed y points. The result that I got in Octave reflects the results that I achieved in java using jfreechart and apache commons library which is very nice to see. It shows the continuity of all different types of programming languages.

Graphical user interface, chart, scatter chart

Description automatically generated