



SCS2211 - LABORATORY II

Octave Lab Practical Sheet - 02

Instructions

- Do the tasks given in the practical sheet and take screenshots of the outputs
- Create a report using the screenshots.
- Report must be in PDF format.
- Report name should be <Index number>.pdf (Eg: 2000000.pdf)
- Any form of plagiarism or collusion is not allowed
- upload the document to the submission link.

Simple Statistical Functions and Plotting 2D and 3D Graphics

- 1) Consider the following series of numbers – 11, 12, 2, 3, 45, 3, 42, 7, 89, 100, 105, 8, 98, 3, 7, 23, 21, 28, 7, 80, 87, 70, 9, 10, 7, 6
 - a. Find the mode of the above series of numbers using a relevant Octave function.
 - b. Find the median of the above series using a relevant Octave function.
 - c. Sort the above series of numbers.
 - d. Find the average of the above series.
 - e. What is the total of the above series?
 - f. Find the minimum value in the above series using Octave.
 - g. Find the maximum value in the above series using Octave.
- 2) Obtain a 11 x 11 matrix which has only ones called “w”.
- 3) Obtain a 11 x 11 null matrix called “u”.
- 4) Obtain the lower triangular matrix of “w”.
- 5) Obtain the upper triangular matrix of “w” called “v”.
- 6) What is the result of $u - v$?
- 7) Assign $u - v$ to a variable called y, and find the square root of y.
- 8) There are 2 vectors called y and z, such that $y = [1,19]$ and $z = [3,21]$. Plot y,z.
- 9) If $x = [1,2,3,4,5,6,7]$ and $y = [1,4,9,16,25,36,49]$, plot x,y. Take a screenshot of the plot and name it sc01.

- 10) If $x = \text{linspace}(1, 7, 98)$ and $y = x.^2$, plot w, y . Take a screenshot of the plot and name it `sc02`.
- 11) Compare `sc01` and `sc02`.
- 12) If $x = \text{linspace}(0, 80, 270)$ and $y = x.^3$, plot x, y .
- 13) If $x = \text{linspace}(-49, 70, 210)$ and $y = x.^3$, plot x, y . The variables x , y and z are as follows:
 - a. $x = \text{linspace}(7, 100, 7)$
 - b. $y = x.^7$
 - c. $z = x.^3$
- 14) Plot x , y and z so that you get a 3D graph.
- 15) Repeat the steps in the above example if $x = \text{linspace}(7, 700, 98)$. Examine the plot you get using the pan tool and the rotate tool. Type this code in a file called `"cubeGraph.m"` and run the file using the Octave GUI.
- 16) Execute this function `polar(30, 70)` on the command line.
- 17) Save the following code in a file called `"shapes.m"`, and run it using the Octave GUI / IDE.

```
theta = 0:0.02:2*pi;  
a1 = 0.5 + 1.3 .* theta;  
a2 = 5 * cos(theta);  
r = [a1; a2];  
PolarGraph = polar(theta, r);  
set(PolarGraph, 'LineWidth', 3);
```