Mobile and Wireless Networking

ITCE450-417 ITNE360

Lab1 : Introduction to MATLAB

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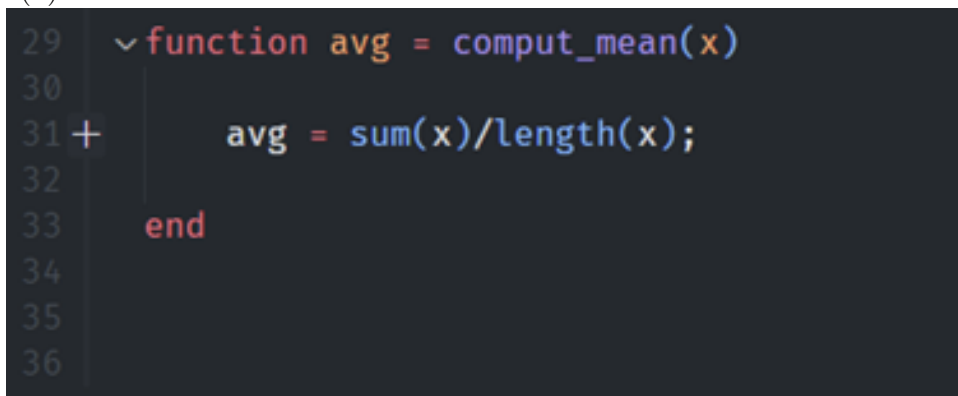COMPUTER ENGINEERING

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1 Objectives

- To learn how to install MATLAB and use the portal.
- To learn how to use MATLAB to solve simple problems.
- To learn how to use MATLAB to plot the graph of the cosine function using values of x ranging from 0 to and label the x- and y- accesses.

2 Introduction

MATLAB is a high-level language and interactive environment that enables you to perform computationally intensive tasks faster than with traditional programming languages such as C, C++, and Fortran. MATLAB allows matrix manipulations, plotting of functions and data, implementation of algorithms, creation of user interfaces, and interfacing with programs written in other languages, including C, C++,Java, Fortran, and Python.

3 report tasks

1. Write a MATLAB function to compute the average (mean) of a vector x, then call and execute the function from the command window

   (a) Take a screenshot of the command.

```
29    ∨ function avg = comput_mean(x)
30
31 +       avg = sum(x)/length(x);
32
33    end
34
35
36
```

2. Take three screenshots for the output after calling the function with different Values of x.we wrote a simple function to generate a rand vector and then we called the function with the vector as an input and we got the mean of the vector as an output and for loop call 2 function and then printout .

```
function rand_vector = generate_random_vector (x)

    rand_vector = randi([1 50],1,10);

end
```

```
rand_vector =

    36     2    14     3     5    42    35    16    48     2

avg =

   20.3000

rand_vector =

    22    20    39    40    10    25    23    33    36    38

avg =

   28.6000

rand_vector =

    14    34    33     9     6    25    48    18    30    12

avg =

   22.9000
```
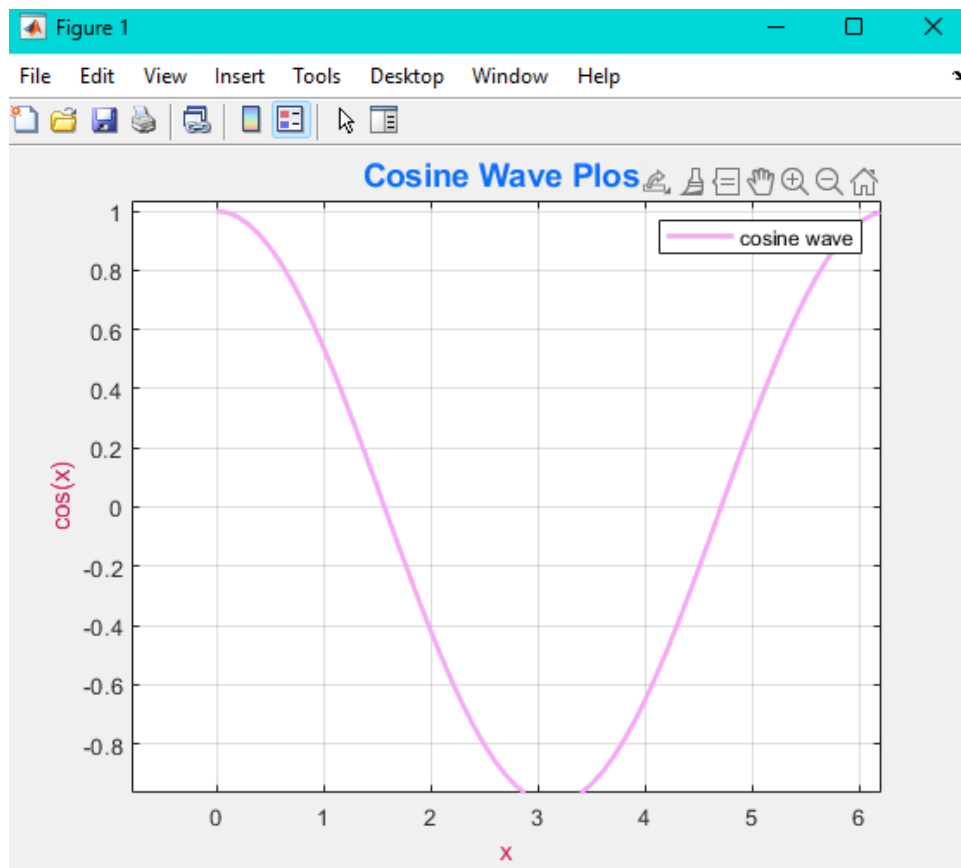
3. Plot the graph of the cosine function using values of x ranging from 0 to and label the x- and y- accesses.
    - Add Labels for the x- and y- accesses.
    - Add a title for your graph call it "Cosine Wave plot".
    - Add a grid
    - Add a legend and call your result "Cosine Wave".
    - Take a screenshot of your code and the cosine graph

```
1  x=[0:0.1:2*pi];
2
3  plot(x, cos(x), 'color', '#F5A9F7', 'LineWidth', 2);
4  ylabel('cos(x)', 'color', '#D21D55');
5  xlabel('x', 'color', '#D21D55');
6  title ('Cosine Wave Plost', 'color', '#0d6efd','FontSize',14,'FontName' ...
7      ,'TimeNewRoman');
8  grid on;
9  legend('cosine wave');
```

4   Conclusion

In this lab we learned how to use MATLAB to solve simple problems and we learned how to use MATLAB to plot the graph of the cosine function using values of x ranging from 0 to and label the x- and y- accesses.