Benha University

## Summer Training I MATLAB for Engineers

Faculty of Engineering (at Shoubra)

## Lab 04

## Getting Started

1. Start MATLAB
2. On the HOME tab, in the ENVIRONMENT section, click $\square$ Layout, then Default. ${ }^{1}$

3. Consider the Current Folder window, right click, New File, Function.

| Current Folder (\%) | Command Window |  | (1) |
| :---: | :---: | :---: | :---: |
| $\square$ Name $\angle$ | (i) New to MAT | ? Watch th | $\times$ |
| New Folder |  |  |  |
| New File | , | Script |  |
| Compare Selected Eiles/Folders |  | Function |  |
| Compare Against | - | Example |  |
| Source Control | , | Class |  |
| Paste | Ctrl+V |  |  |

## User Defined Functions

4. Define a function average in a file named average.m that accepts an input vector, calculates the average of the values, and returns a single result. Call the function from the command line to calculate the average of $z=[1,2,3,4, \ldots \ldots, 99]$.

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5. Define a function min_max in a file named min_max.m that returns the minimum and the maximum values of an input vector. Call the function from the command line to find the minimum and maximum of values = [12.7, 45.4, 98.9, 26.6, 53.1]

6. There are 39.37 inches in a meter, 12 inches in a foot, and 3 feet in a yard. Write a function meter 2 yard to input a length in meters (which may have a decimal part) and convert it to yards, feet, and inches. (Check: 3.51 m converts to $3 \mathrm{yds}, 2 \mathrm{ft}, 6.19 \mathrm{in}$.)

```
function
-----------------------------------------------------------------------------------
------------------------------------------------------------------------------
---------------------------------------------------------------------------
---------------------------------------------------------------------------
----------------------------------------------------------------------------
---------------------------------------------------------------------------
-----------------------------------------------------------------------------
end
---------------------------------------------------------------------------------
----------------------------------------------------------------------------
```

$\gg$

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Computer Systems Engineering Electrical Engineering Department

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## Plot

7. Try the following code snippets:
a)
```
> clear; clc; close;
> x = -pi:0.01:pi;
y = cos(x);
> plot(x,y)
```

b)

```
> clear; clc; close;
> x = 1:0.1:2*pi;
> y = sin(x);
> plot(x,y)
```

c)

```
> clear; clc; close;
> x = -pi:0.01:pi;
> y = cos(x);
> plot(x,y)
> xlabel('x');
> ylabel('cos(x)');
> title('Graph of cosine fron -\pi to \pi')
```

d)

```
> clear; clc; close;
> x=-pi:pi/100:pi;
> y=sin(x);
> plot(x,y)
> axis([-pi pi -1 1])
> xlabel('x')
> ylabel('sin(x)')
> title('Graph the sine function')
> text(1,-1/3,' Note the odd symmetry ')
```


[^0]:    1 You may like to try other Layout options.

