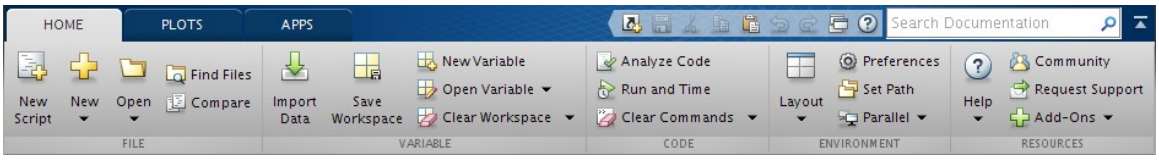
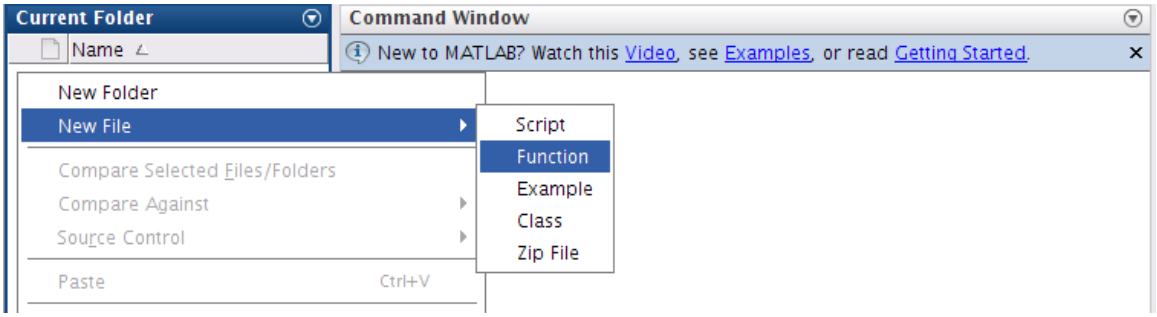
Lab 04

Getting Started

1. Start MATLAB
2. On the HOME tab, in the ENVIRONMENT section, click Layout, then Default.[1]



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



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,……,99]`.

```
function [ ave ] = average( x )
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end
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>> -------------------------------------------
>> -------------------------------------------
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```

1 You may like to try other Layout options.

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]
```

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

>> -----------------------------------------------------------------
>> -----------------------------------------------------------------
-----------------------------------------------------------------
```

6. There are 39.37 inches in a meter, 12 inches in a foot, and 3 feet in a yard. Write a function `meter2yard` 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 yds, 2 ft, 6.19 in.)

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

>> -----------------------------------------------------------------
-----------------------------------------------------------------
```

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 ')
```