

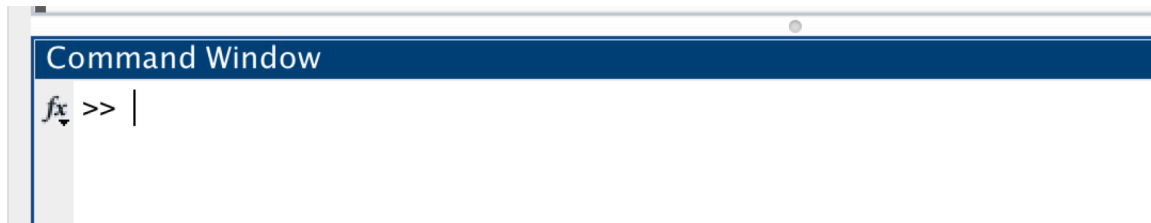
# Matlab fundamentals

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Matlab is opened. What's next?

It's ready to executive whatever comes up the command window, and use Enter to execute.

How can Matlab understand what you put in the command window?

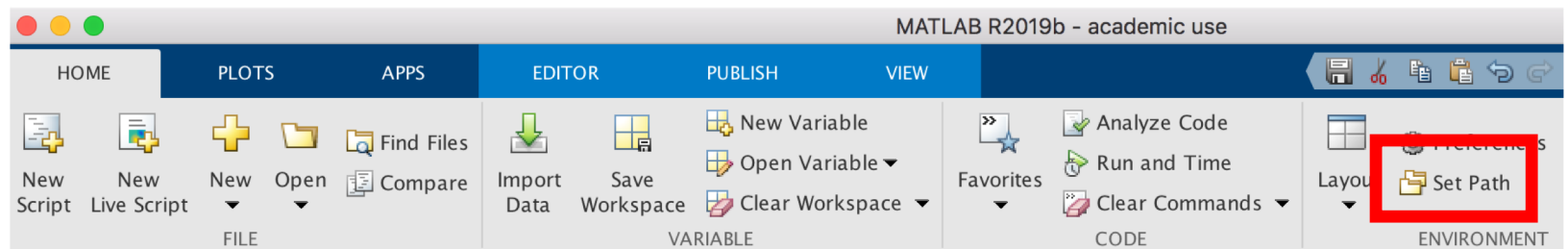


# 1. Search path No. 1 – the working directory

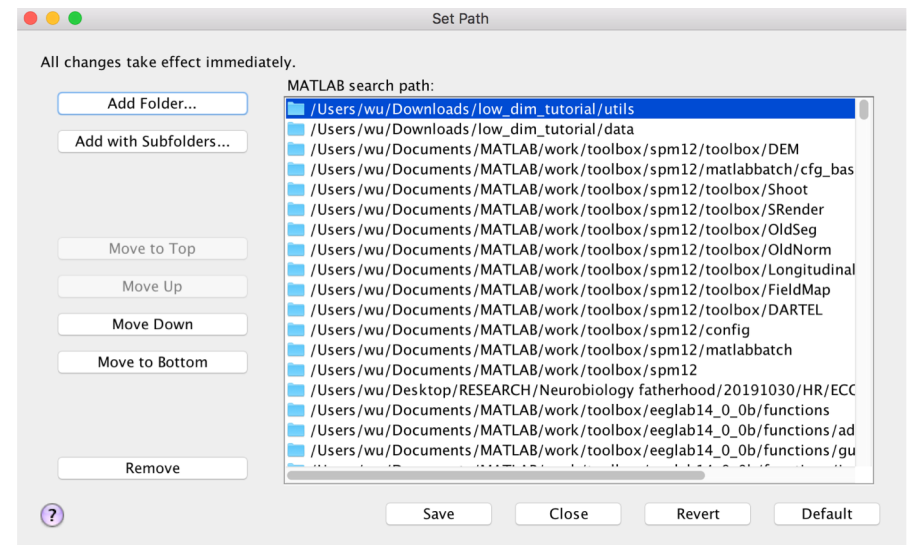
- A folder where I store the information (data, scripts, etc) of my current project
- Usually not for shared resource (which should go to 'path')
- Can you identify your current working directory?
- Do you know how to change your working directory?



## 2. Search Path No. 2 -- Path

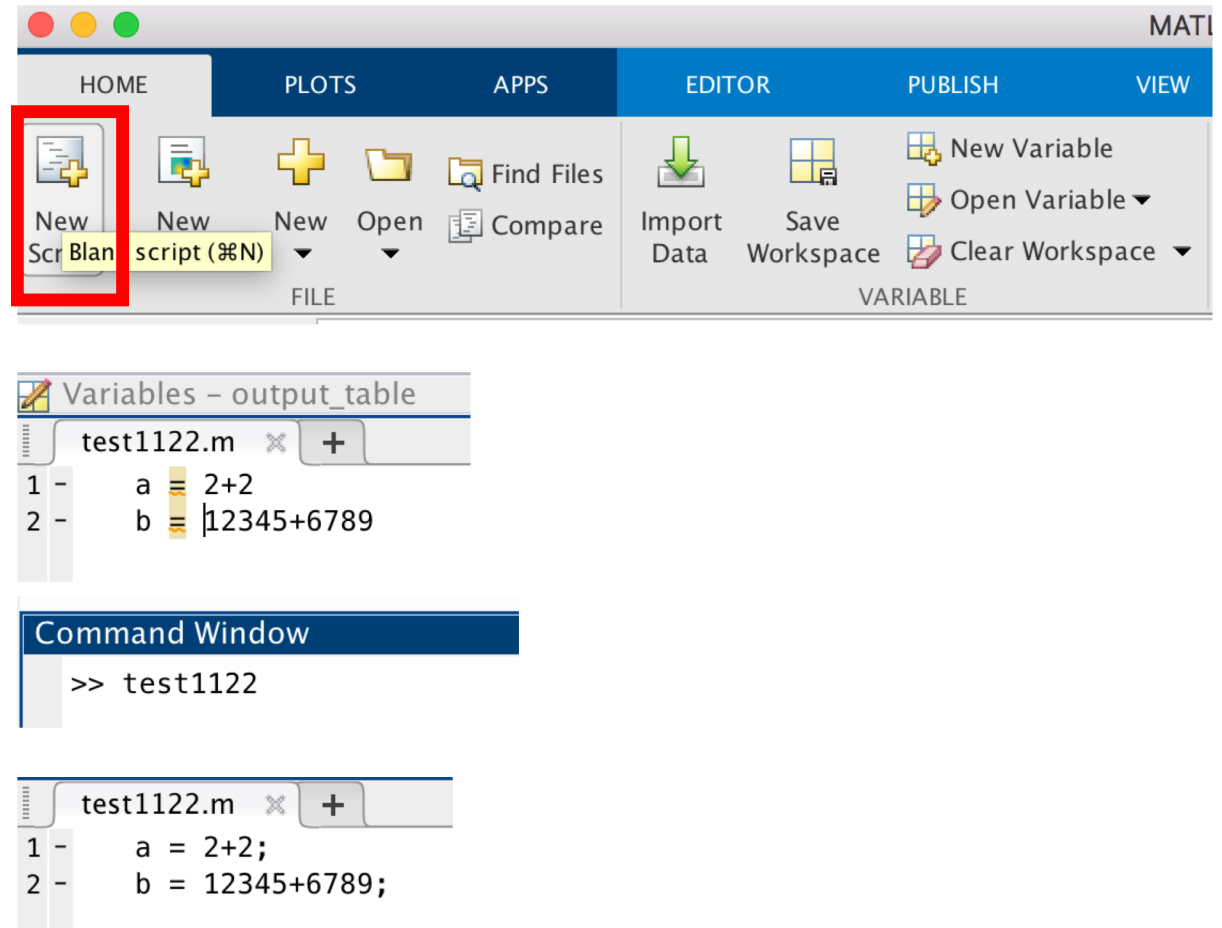


- Shared resource/functions.
- What's in your "path"? Can you change it?
- For example, you may have eeglab folders in there added from previous trainings
- The search goes from the top to the bottom in sequence
- You will see towards the bottom are matlab default libraries that does various things.



### 3. Let's try it- using a script

- In your current directory, create a new script, name as test1122.m
- In the script type any arithmetics:
  - $a = 2+2$
  - $b = 12345+6789$
- Then in the command window, type
  - test1122
- What is a script?
  - A collection of commands
  - All variables show up in workspace
- Let's modify it and rerun it!
  - You can use the up arrow at the command window to repeat the last command
  - add ; at the end of each line?



## 4. Another type of command -- function

- Open a new script

- Elements:

- filename =  
functionname

- Structure

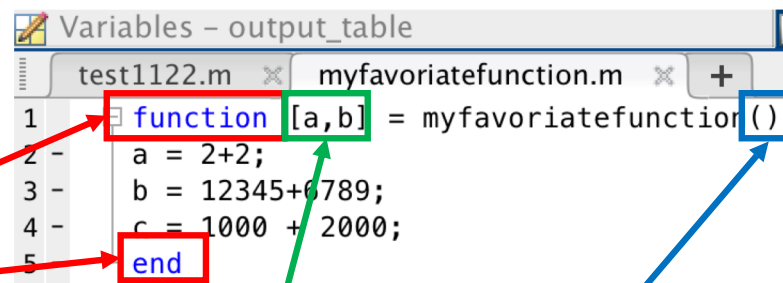
- Input

- Output

- How to run it?

- Without input

- What do you get?
- Where is variable c?

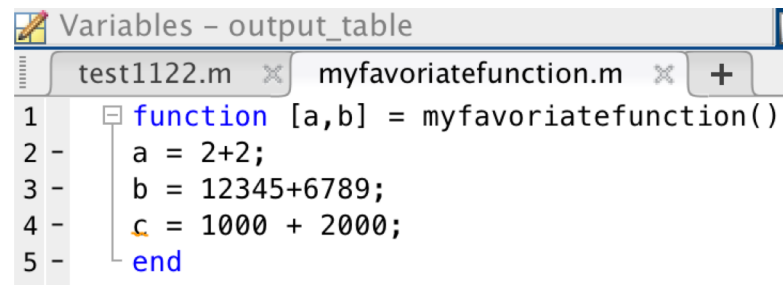


The image shows a MATLAB script editor window titled 'Variables - output\_table'. It contains two tabs: 'test1122.m' and 'myfavoriatefunction.m'. The 'myfavoriatefunction.m' tab is active, showing the following code:

```
1 function [a,b] = myfavoriatefunction()  
2 a = 2+2;  
3 b = 12345+6789;  
4 c = 1000 + 2000;  
5 end
```

Annotations include:

- A red box around the word 'function' on line 1, with a red arrow pointing to the 'Structure' element in the list.
- A green box around the input arguments '[a,b]' on line 1, with a green arrow pointing to the 'Output' element in the list.
- A blue box around the empty parentheses '()' on line 1, with a blue arrow pointing to the 'Input' element in the list.



The image shows the same MATLAB script editor window as above, but with different annotations. The code is identical:

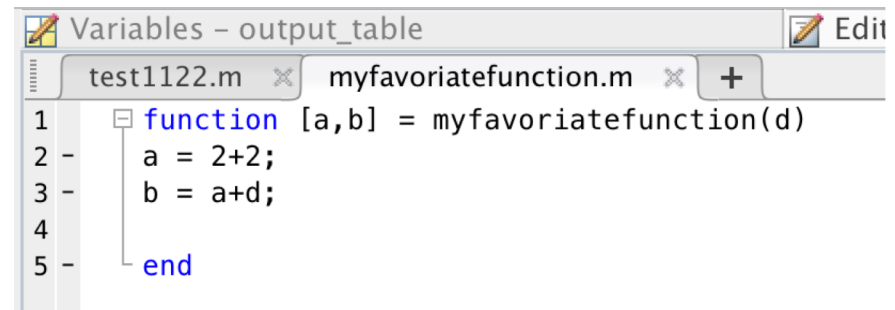
```
1 function [a,b] = myfavoriatefunction()  
2 a = 2+2;  
3 b = 12345+6789;  
4 c = 1000 + 2000;  
5 end
```

Annotations include:

- A blue box around the entire function definition line 1, with a blue arrow pointing to the 'How to run it?' section in the list.

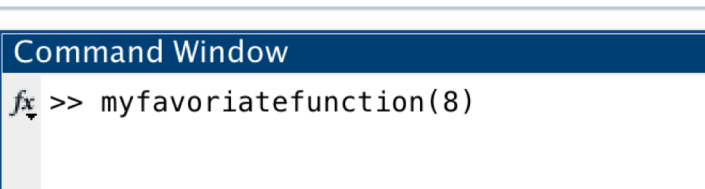
## 5. Modify a function

- Use a function with an input
- Modify the content



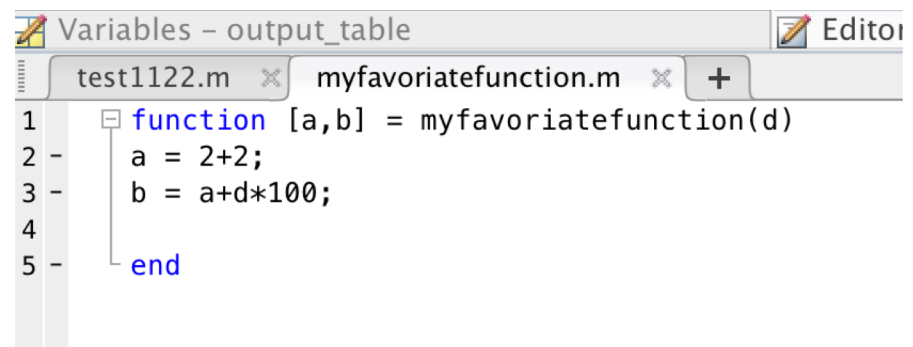
The image shows a MATLAB Editor window titled 'Variables - output\_table'. It contains two tabs: 'test1122.m' and 'myfavoritefunction.m'. The 'myfavoritefunction.m' tab is active, showing the following code:

```
1 function [a,b] = myfavoritefunction(d)
2     a = 2+2;
3     b = a+d;
4
5 end
```



The image shows the MATLAB Command Window with the following command entered:

```
fx >> myfavoritefunction(8)
```



The image shows the same MATLAB Editor window as before, but the code in 'myfavoritefunction.m' has been modified to include a multiplication by 100 in the calculation of 'b'.

```
1 function [a,b] = myfavoritefunction(d)
2     a = 2+2;
3     b = a+d*100;
4
5 end
```