

# MATLAB Tutorial 05

**ENME 303 Computational Methods for Engineers**

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# For Loops

```
for index = values  
    statements  
end
```

- values can be
  - initVal:endVal
  - initVal:step:endVal
  - valArray
- Can use break in the statements to exit the loop

# When to use a for loop

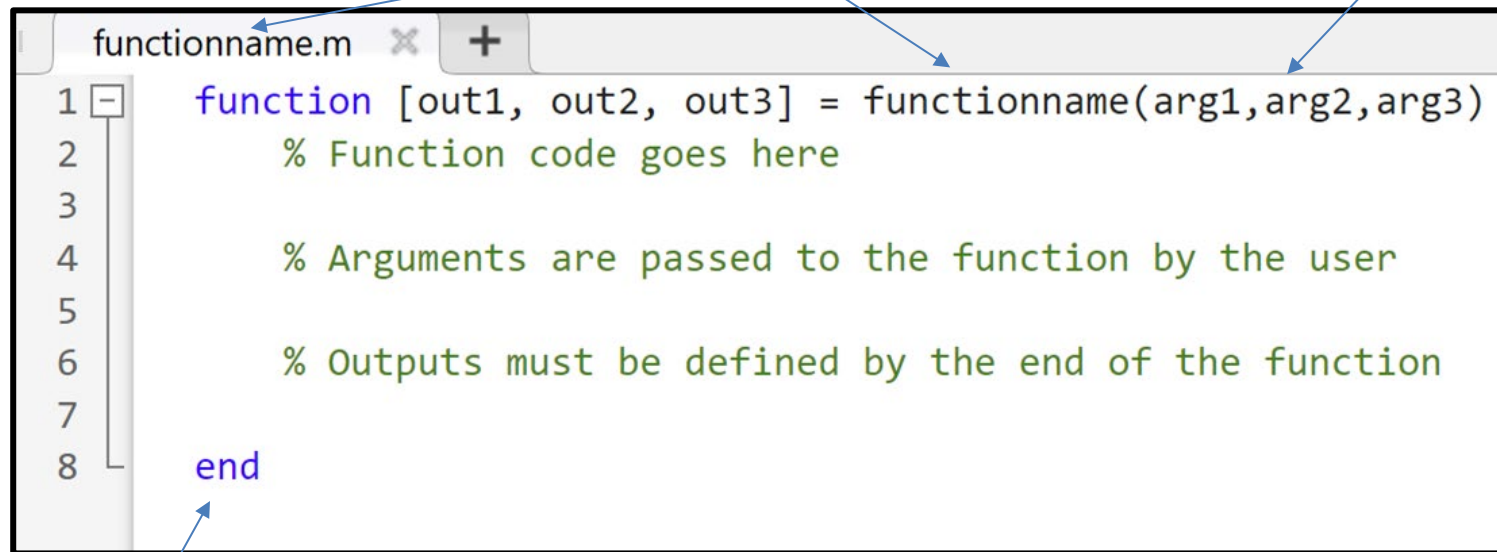
- You want to repeat code a certain number of times
- Examples:
  - Populate an array with values
  - Evaluate a function at many different values
  - Go through an array to find a value

# Functions

# Function Definition

Function name and script name match

These parameters are like placeholders, you can put any variable here when calling the function



```
functionname.m
1 function [out1, out2, out3] = functionname(arg1,arg2,arg3)
2     % Function code goes here
3
4     % Arguments are passed to the function by the user
5
6     % Outputs must be defined by the end of the function
7
8     end
```

The image shows a MATLAB function definition editor window. The title bar is labeled 'functionname.m'. The code is as follows:

```
function [out1, out2, out3] = functionname(arg1,arg2,arg3)
    % Function code goes here

    % Arguments are passed to the function by the user

    % Outputs must be defined by the end of the function

    end
```

Arrows point from the text annotations to the corresponding parts of the code: 'functionname.m' in the title bar, 'functionname' in the function signature, 'arg1,arg2,arg3' in the function signature, and 'end' at the bottom of the function body.

Tells MATLAB you are done defining your function

## Example

- Write a function to check if a value is an integer
- Should return a Boolean(true/false) value
- Then use that function to write another function to check if a number is a perfect square

## Exercise

- Create a function that takes an array and outputs its maximum value
- Use `arrayMaxDriver.m` from GitHub to test your function

Thanks!