

Intro to Functions

Function Definition

functionname.m

```
function [outputarguments] = functionname(inputarguments)
% Comment describing "what" the function does.
% Author: Ahmet Sacan, 2011
%{
Detailed comments about "how" the function works.
Examples of how to call this function.
%}

%body of the function can be separated into sections.
%% Section 1
statement1;
statement2;
...

%% Section 2
statement20;
statement21;
...

% some of the statements must assign values to
% output arguments.
```

} header

} body

Examples

```
function shout ( aword )  
disp(aword);
```

```
function addandprint ( x, y )  
disp ( x + y );
```

```
function a = add2 ( x, y )  
a = x + y;
```

```
function a = add3 ( x, y, z )  
a = x + y + z;
```

```
function [a, m] = addandmultiply ( x, y, z )  
a = x + y;  
m = x * y;
```

Recommended Development Cycle for Scripts/Functions

- Start in Command Prompt
 - Give initial values to input variables.
 - Add calculations step by step. Note the "overriding problem".
- Copy working pieces to a "script" as you go.
 - You can copy the initializations also, but remember to comment them out in the final function.
- When script is completed, add a function header to convert it to a function.

Exercise

- Write a function `areaofcircle.m` that returns the area of a circle, given its radius.

Exercise

- Write a function `circleproperties.m` that returns the area and circumference of a circle, given its radius.

Exercise

- Write a function `cylinderproperties.m` that returns the area and volume of a cylinder, given its radius and height.

Exercise

- Write a script `coneexample.m` that asks the user for radius & height of a cone, and prints its volume by calling the `volumeofcone()` function you wrote.

Save/Load

- **save('filename','variablename','-ascii')**

```
a=[1:3; 4:6];
```

```
save('mydata.txt','a','-ascii')
```

```
edit('mydata.txt')
```

```
type('mydata.txt')
```

```
save('mydata.bin','a')
```

```
type('mydata.bin')
```

- **load('filename')**

- **a=load('filename')**

```
clear; load('mydata.txt')
```

```
a=load('mydata.txt')
```