



General Computer Science for Engineers CISC 106 Lecture 08

Dr. John Cavazos
Computer and Information Sciences
2/27/2009



Lecture Overview

- Miscellaneous stuff
- Relational Operators
 - what they are
 - what we can do with them
- more complex IF statements
 - using with relational operators
- how to use Arrays



How Matlab looks for M-files

- Go to Upper left hand corner “File” Menu Option
- Click on “Set Path” menu option
- Add directory where you have m-files



Maneuvering in command window

- Everything you type is in your command history
- Up arrow moves up the command history
- Down arrow moves down the command history

Scripts versus Functions

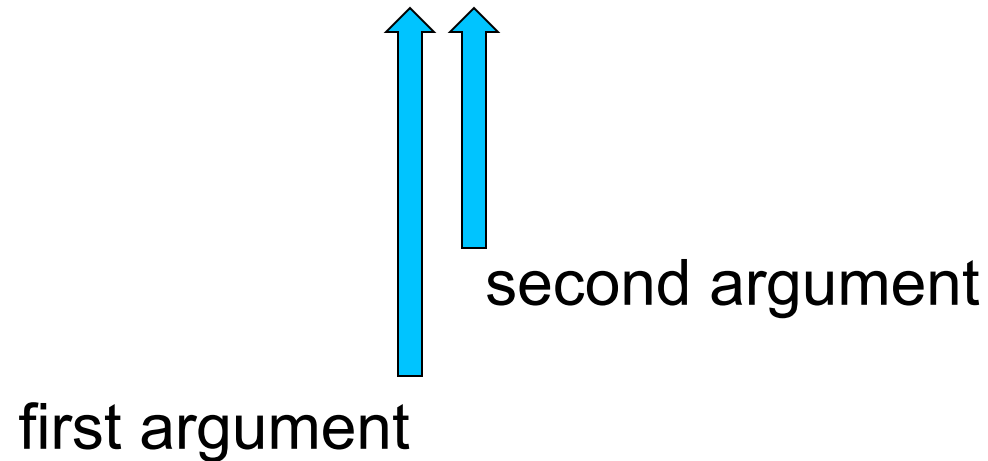
- Scripts are m-files with Matlab commands
- Functions are a special type of m-file
- Both end with .m
- Functions are called by name and inputs
 - inputs also known as parameters or arguments

More on scripts versus functions

- <http://web.cecs.pdx.edu/~gerry/MATLAB/programming/scripts.html#scriptsVSfuncs>

Functions

- `myfunction(x, y);`



Comma separates arguments

Will look in “path” of directories for an m-file called `myfunction.m`

Major Relational Operators

- $A < B$ A is less than B
- $A > B$ A is greater than B
- $A \leq B$ A is less than or equal to B
- $A \geq B$ A is greater than or equal to B
- $A == B$ A is equal to B
- $A \neq B$ A not equal B

Relational Operators

- Relational operators can only be used to compare two numbers or arrays
 - NOT to be used for strings
- Use strcmp function to compare strings
- **WARNING!!**

the operator = assigns a value, do not confuse this with the == operator which tests if two things are equal

Relational Operators

- If condition is true
 - Statement in if statement executes
- If condition is false
 - Statement does not execute
- $5 < 6$ returns true
- $7 < 6$ returns false
- $7 == 7$ returns true
- $7 \neq 8$ returns true
- $4 \geq 5$ returns false

IF Statements

- Order matters for if statements
- if multiple conditions are true the first one reached is the one that is chosen.

```
if (7 > 5 )
```

```
    200
```

```
elseif (4 > 3)
```

```
    300
```

```
else
```

```
    400
```

```
end
```



Both conditions
are true, but
the second
condition is
never reached!

IF Statement example

> x = 6

if (x > 5)

200

elseif (x > 3)

300

else

400

end

> 200



IF Statements

- Nested if statements can be used when two things have to be true for a command to execute

IF Statements

Using nested if statements

```
if (x < 5)
    if ( x > 2)
        y = 500
    else
        y = 300
else
    y= 200
end
```

Using multiple conditions in one if statement

```
if ( x < 5 & x > 2)
    y = 500
else
    y = 200
end
```

Arrays (aka Matrices)

- When dealing with matrices we refer to their size as row by column
 - 2 x 3 matrix has two rows and three columns

Arrays

- Multiply a scalar by a matrix means multiplying each element of that matrix by that scalar

$$4 * \begin{vmatrix} 1 & 2 \\ 3 & 4 \end{vmatrix} = \begin{vmatrix} 4 & 8 \\ 12 & 16 \end{vmatrix}$$