University of Baghdad

College of Engineering

Department of Chemical Engineering

MATLAB for Chemical engineer

Basic and Applications

Lecture No. 2

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Lecture No. 2

Principles of MATLAB

Matlab function references

2.1   Clear Command Window (clc)

```
Clc function uses to Clear Command Window
```

As an alternative to the clc function, select Edit > Clear Command Window in the MATLAB® desktop.

Description

clc clears all input and output from the Command Window display, giving you a "clean screen."

Note/ After using clc, you cannot use the scroll bar to see the history of functions, but you still can use the up arrow to recall statements from the command history.

2.2   Clear function

Remove items from workspace, freeing up system memory Graphical Interface.

As an alternative to the clear function, use Edit > Clear Workspace in the MATLAB® desktop.

Syntax

```
clear
clear name
clear name1 name2 name3 ...
clear global name
clear('name1','name2','name3',...)
```

Description

Clear removes all variables from the workspace. This frees up system memory. Clear name removes just the M-file or MEX-file function or variable name from the workspace. You can use wildcards (*) to remove items selectively.

For example, clear my* removes any variables whose names begin with the string my.

2.3   Delete

Remove files or graphics objects

As an alternative to the delete function, you can delete files using the Current Directory Browser, as described in the Desktop Tools and Development Environment documentation.

Syntax

    Delete filename
    Delete(h)
    Delete('filename')

Description:

Delete filename deletes the named file from the disk. The filename may include an absolute pathname or a pathname relative to the current directory. The filename may also include wildcards, (*).

Delete(h) deletes the graphics object with handle h. The function deletes the object without requesting verification even if the object is a window.

Delete('filename') is the function form of delete. Use this form when the filename is stored in a string.

Examples:
To delete all files with a .mat extension in the ../mytests/ directory, type

delete('../mytests/*.mat')

To delete a directory, use rmdir rather than delete:

    rmdir mydirectory

2.4   Change directory function (cd)

It uses to change working directory

As an alternative to the cd function, use the current directory field

```
H:\Documents
```

In the MATLAB® desktop toolbar.
Syntax

```
cd
w = cd
cd('directory')
cd('..')
cd directory
```

Description:

This displays the current working directory.

w = cd assigns the current working directory to w.

cd ('directory') sets the current working directory to directory. Use the full pathname for directory.

cd('..') changes the current working directory to the directory above it.

cd directory or cd .. is the unquoted form of the syntax.

Examples

cd('c:/matlab/toolbox/control/ctrldemos')

Changes the current working directory to ctrldemos for the Control System Toolbox. Then typing

cd ..

changes the current working directory to control, and typing
cd ..

2.5   Directory (dir)

Directory listing

As an alternative to the dir function, use the Current Directory Browser.
Syntax

dir
dir name
files = dir('dirname')

2.6

Function	Description	Function	Description
sin(x)	$\sin(x)$	cos(x)	$\cos(x)$
tan(x)	$\tan(x)$	asin(x)	$\sin^{-1}(x)$
acos(x)	$\cos^{-1}(x)$	atan(x)	$\tan^{-1}(x)$

Function	Description	Function	Description
sinh(x)	$\dfrac{e^x - e^{-x}}{2}$	cosh(x)	$\dfrac{e^x - e^{-x}}{2}$
tanh(x)	$\dfrac{e^x - e^{-x}}{e^x + e^{-x}}$	asinh(x)	$\ln(x + \sqrt{x^2 + 1})$
acosh(x)	$\ln(x + \sqrt{x^2 - 1})$	atanh(x)	$\ln\sqrt{\dfrac{1+x}{1-x}}, \ |x| \le 1$

2.7

Function	Description	Function	Description
abs(x)	$\lvert x \rvert$	sqrt(x)	$\sqrt{x}$
round(x)	nearest integer	fix(x)	nearest integer
sign(x)	$\begin{cases} -1, & x < 0 \\ 0, & x = 0 \\ 1, & x > 0 \end{cases}$	log10(x)	log base 10 $\log_{10} x$
exp(x)	e^{x}	log(x)	natural log $\ln x$