

كلية المستقبل الجامعة
قسم الفيزياء الطبية

MATLAB

Lec - 1

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MATLAB

The tutorials are independent of the rest of the document.

The primary objective is to help you learn quickly the first steps. The emphasis here is “learning by doing”.

Therefore, the best way to learn is by trying it yourself.

Working through the examples will give you a feel for the way that MATLAB operates.

In this introduction I will describe how MATLAB handles simple numerical expressions and mathematical formulas.

The name MATLAB stands for MATrix LABoratory.

MATLAB was written originally to provide easy access to matrix software developed by the LINPACK (linear system package) and EISPACK (Eigen system package) projects. MATLAB is a high-performance language for technical computing.

It integrates computation, visualization, and programming environment.

MATLAB is a modern programming language environment: it has sophisticated data structures, contains built-in editing and debugging tools, and supports object-oriented programming.

These factors make MATLAB an excellent tool for teaching and research.

MATLAB has many advantages compared to conventional computer languages (e.g., C, FORTRAN) for solving technical problems.

MATLAB is an interactive system whose basic data element is an array that does not require dimensioning.

The software package has been commercially available since 1984 and is now considered as a standard tool at most universities and industries worldwide.

It has powerful built-in routines that enable a very wide variety of computations.

It also has easy to use graphics commands that make the visualization of results immediately available.

Specific applications are collected in packages referred to as toolbox.

There are toolboxes for signal processing, symbolic computation, control theory, simulation, optimization, and several other fields of applied science and engineering.

Basic features:

As we mentioned earlier, the following tutorial lessons are designed to get you started quickly in MATLAB.

The lessons are intended to make you familiar with the basics of MATLAB. We urge you to complete the exercises given at the end of each lesson.

- How to log on
- Invoke MATLAB
- Do a few simple calculations

How to quit MATLAB

MATLAB:

Stand for MAtrix LABoratory .

Was designed to make Matrix computations particularly easy.

Cleve moler : the first version matlab 1970s.

MATLAB: Integrates (computations + Visualization + Programming) in very easy to use.

Why MATLAB ?

- 1- Math and computation
- 2- Programming
- 3- Modeling and Simulation

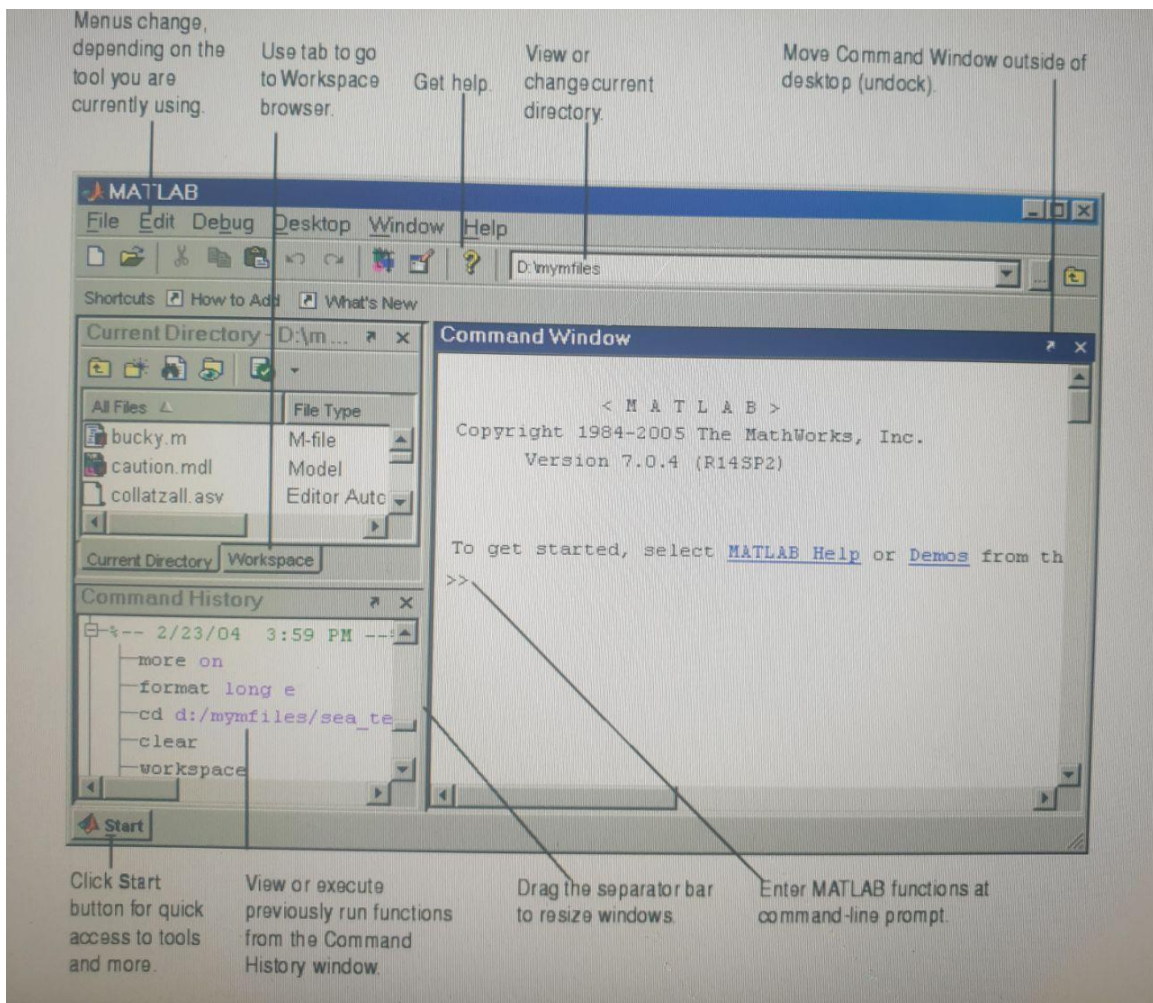
- 4- Plotting and Data representation.
- 5- Data analysis , Exploration , and Visualization.
- 6- System and Control.
- 7- Scientific and Engineering group.

Starting MATLAB :

After logging into your account, you can enter MATLAB by double-clicking on the MATLAB shortcut icon (MATLAB 7.0.4) on your Windows desktop. When you start MATLAB, a special window called the MATLAB desktop appears. The desktop is a window that contains other windows.

The major tools within or accessible from the desktop are:

- The Command Windows
- The Command History
- The Workspace
- The Current Directory
- The Help Browser
- The Start button



When MATLAB is started for the first time,
the screen looks like the one that shown in the Figure 1.1.

This illustration also shows the default configuration of the MATLAB desktop.

You can customize the arrangement of tools and documents to suit your needs.

Now, we are interested in doing some simple calculations.

We will assume that you have sufficient understanding of your computer under which MATLAB is being run.

You are now faced with the MATLAB desktop on your computer, which contains the prompt (`>>`) in the Command Window.

Usually, there are 2 types of prompt: `>>` for full version `EDU>` for educational version Note: To simplify the notation, we will use this prompt, `>>`, as a standard prompt sign, though our MATLAB version is for educational purpose.