2. Basics

2.1 MATLAB WINDOWS

There are three basic windows, which are as follows:

(i) MATLAB Desktop: This is the window, which appears by default when MATLAB is launched (Fig. 2.1). It consists of:

Command Window

This is the main window, where commands are written. It is characterized by MATLAB command prompt (>>). The results also appear on this window (except figures, which appear on figure window) when command is written. Commands cannot be edited on this window.

Current Directory

This appears on the bottom left side of MATLAB desktop. It is where all files are listed. With a mouse right click, you can run M-files, rename, delete them etc after selecting a file from here.

Workspace

This subwindow shows all the variables generated so far and also shows their type and size.

Command History

All commands typed on the MATLAB prompt are recorded here. Also commands can be selected from here and create as M–file. Thus it maintains records of MATLAB functions ran.

Current directory/
workspace

MATLAB DESKTOP

Select
Current
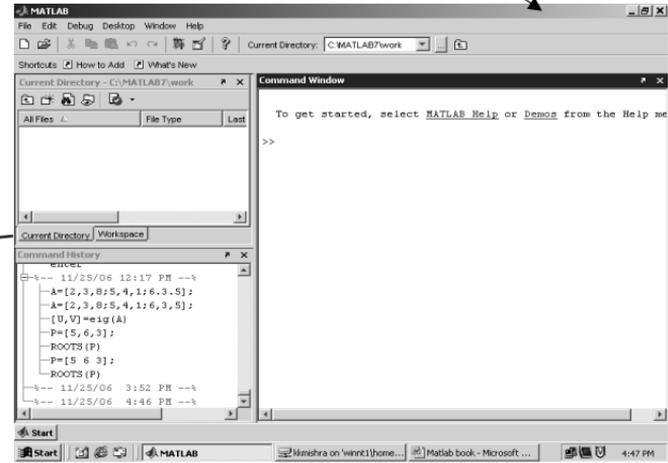**Directory**
or
workspace

Command history

Fig. 2.1 : MATLAB Desktop with subwindows.

(ii) Figure window: The output of all the commands written on command window or executed by writing in M-file, whose output is a graph, appears on this window. The user can create as many figure windows as the system memory allows. A figure window showing sine curve is shown in Fig. 2.2.
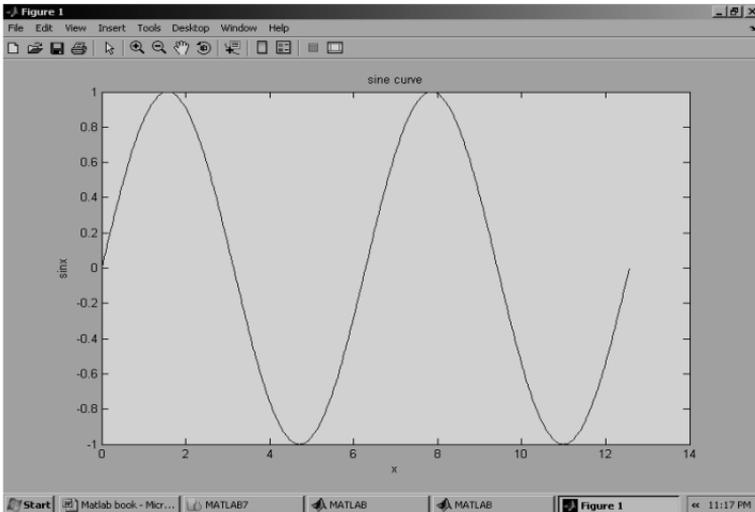

Fig. 2.2 : Figure window.

real number is entered as a variable, MATLAB automatically sets the variable to be real. Fundamental Data type is the array.

2.3.2 Dimension

Dimension statement is not required in the MATLAB. It is automatic.

2.3.3 Case Sensitivity

It differentiates between lower and upper case. It is case sensitive.

2.3.4 Output Display

The output of every command appears on the screen unless MATLAB is directed otherwise. *A semi colon (;) suppresses the output when used at the end of a command except for the graphics*.

2.4   GETTING STARTED

2.4.1 Starting MATLAB

On Windows platforms, start MATLAB by double-clicking the MATLAB shortcut icon on your Windows desktop. On UNIX platforms, start MATLAB by typing matlab at the operating system prompt.

2.4.2 Writing Commands

When you start MATLAB, the MATLAB desktop appears, containing tools (graphical user interfaces) for managing files, variables, and applications associated with MATLAB. You can start writing commands at the prompt appears on command window (Fig. 2.4). You can also write commands in M-file.

2.4.3 Printing Graphs

The simplest way to get print out of the graph is to type *print* in the command window after the graph appears in the figure window. Alternatively activate the figure window and then select print from the file menu.

3 Accessories

3.1 TOOLBOXES

MATLAB features a family of add-on application-specific solutions called toolboxes. Very important to most users of MATLAB, toolboxes allow you to learn and apply specialized technology. Toolboxes are comprehensive collections of MATLAB functions (M-files) that extend the MATLAB environment to solve particular classes of problems. Areas in which toolboxes are available include signal processing, control systems, neural networks, fuzzy logic, wavelets, simulation, and many others. There are 78 toolboxes available. Thus we can say ***MATLAB basically works as a platform*** and for **s**olving a particular problem, concerned toolbox is required. Few of the toolboxes are as follows:

Communication toolbox
Control system toolbox
Curve fitting toolbox
Data acquisition toolbox
Filter design toolbox
Fuzzy logic toolbox
Instrument control toolbox
Optimization toolbox
Statistics toolbox
Symbolic maths toolbox etc.

3.2 SIMULINK

Simulink is a software package that enables you to model, simulate, and analyze systems whose outputs change over time. Such systems are often referred to as dynamic systems. Simulink can be used to explore the behavior of a wide range of real-world dynamic systems, including electrical circuits, shock absorbers, braking systems, and many other electrical, mechanical, and thermodynamic systems. This section explains how Simulink works.