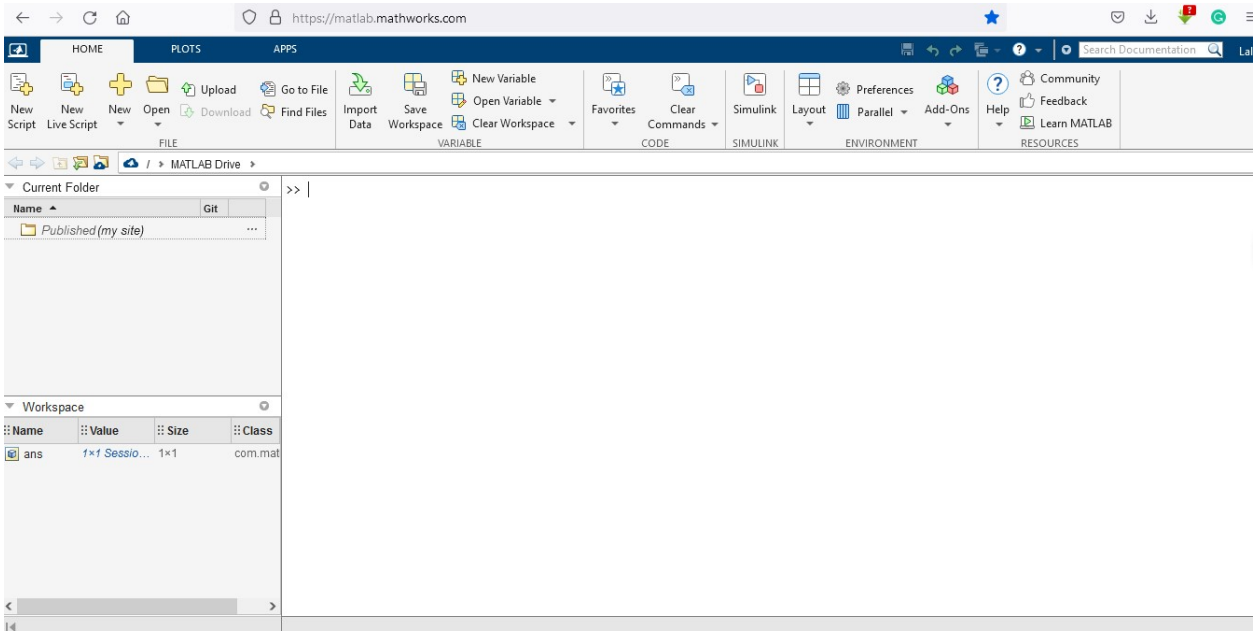
MATLAB Windows:



The MATLAB desktop consists of the following components:

1. Command Window

2. Command History

3. Workspace

4. Current Directory

5. Help Browser

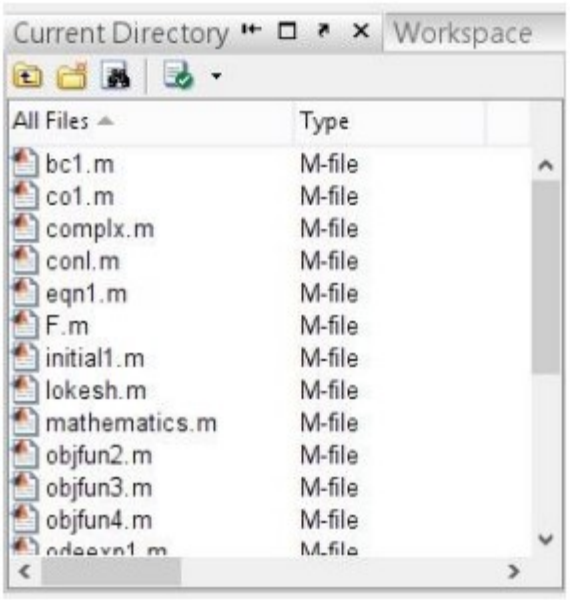
6. Start Button

The command window is a place where certain basic operations like simple mathematical calculations can be easily performed. The difficulty with command prompt is that previously typed lines cannot be modified

Command history provides all the details of the functions typed and codes executed from the command prompt in the recent past.

Workspace includes the names of variables generated during the running of certain functions or codes. It also includes details regarding the size and types of variables generated.

The current directory shows the location where the program is held or the directory from where the current execution is running. Work folder in the drive where MATLAB is installed is the default folder where programs are stored



The prompt >> is the program prompt indicating that you are in the MATLAB environment. Each instruction line in the command window begins with a prompt (>>), which is automatically inserted by MATLAB. An instruction is executed after pressing the enter key.

The result of a command appears on the next line. The result can be

- A MATLAB output
- A MATLAB prompt, meaning that the instruction was executed and MATLAB is
- waiting for the next command
- An error message

The following examples indicates the input-output relations of MATLAB and its response

A MATLAB output

```
>> A=6*9      ← input by user

A =
                ← output by MATLAB
  54

>>            ← waiting for the next command
```

A MATLAB prompt, meaning that the instruction was executed and MATLAB is waiting for the next command

>> A=6*9; ← input by user

A=

>> ← waiting for the next command (meaning that command is executed)

An error message

>>sin5

??? Undefined function or variable 'sin5'.

MATLAB Operations:

Symbol	Operation	Example	Answer
+	Addition	Z= 6+3	Z=9
-	Subtraction	Z=6-3	Z=3
/	Right division	Z=6/3	Z=2
\	Left division	Z=3\6	Z=2
*	Multiplication	Z=6*3	Z=18
^	Exponentiation	Z=6^3	Z=216

The hierarchy of operations is as follows

(i) Functions such as sqrt(x), log(x), and exp(x) , etc
(ii) Exponentiation (^)
(iii) Products and division (*, /)
(iv) Addition and subtraction (+,-)

Difference between the commands home, clc and clear

>>home

home moves the cursor to the upper-left corner of the Command Window. You can use the scroll bar to see the history of previous functions.

>> clc

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

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.

>>clear

clear removes all variables from the workspace. This frees up system memory

MATRICES & ARRAYS

ARRAY:

```
>>X=[1 -2 3 8 2 9]

X =

     1    -2     3     8     2     9

>>Y=[0 5 9 7 -6 2];
X.*Y

ans =

     0   -10    27    56   -12    18

>>X.^2

ans =

     1     4     9    64     4    81

>>X=[1 -2 9 8 2 9]


X =

     1    -2     9     8     2     9

>> sqrt(X)

ans =

   1.0000 + 0.0000i   0.0000 + 1.4142i   3.0000 + 0.0000i   2.8284 + 0.0000i
1.4142 + 0.0000i   3.0000 + 0.0000i

>> 1./X

ans =

    1.0000   -0.5000    0.1111    0.1250    0.5000    0.1111

>>2./X
```

```
ans =

    2.0000   -1.0000    0.2222    0.2500    1.0000    0.2222

>>max(X)

ans =

     9

 >>[Xmax,Xinde]=max(X)

Xmax =

     9


Xinde =

     3

 >>find(X==max(X))      % Displays positions of the maximum element


ans =

     3     6

>>a=0:10       % Displays array starting point 0 with increment 1 up to 10


a =

     0     1     2     3     4     5     6     7     8     9    10

>> a=0:2:10        % Displays array starting point 0 with increment 2 up to 10

a =

     0     2     4     6     8    10
```