MATLAB Important Commands

To get information or help about specific command
doc <function_name>

For Loop

```
for v = 1.0:-0.2:0.0
   disp(v)
end
```

Concatenate Matrix

horzcat

Create a 3-by-5 matrix, A.

```
A = magic(5);
A(4:5,:) = []
A =

    17    24     1     8    15
    23     5     7    14    16
     4     6    13    20    22
```

Create a 3-by-3 matrix, B.

```
B = magic(3)*100
B =

   800   100   600
   300   500   700
   400   900   200
```

Horizontally concatenate A and B.

```
C = horzcat(A,B)
C =

    17    24     1     8    15   800   100   600
    23     5     7    14    16   300   500   700
     4     6    13    20    22   400   900   200
```

Data Conversion

(https://de.mathworks.com/help/matlab/data-type-conversion.html)

char	Convert to character array
cellstr	Convert to cell array of character vectors
int2str	Convert integers to character array
mat2str	Convert matrix to character vector
num2str	Convert numbers to character array
str2double	Convert string to double precision value
str2num	Convert character array to numeric array
native2unicode	Convert numeric bytes to Unicode character representation
unicode2native	Convert Unicode character representation to numeric bytes
base2dec	Convert text representing number in base N to decimal number
bin2dec	Convert text representation of binary number to decimal number
dec2base	Convert decimal number to character vector representing base N number
dec2bin	Convert decimal number to character vector representing binary number
dec2hex	Convert decimal number to character vector representing hexadecimal number
hex2dec	Convert text representation of hexadecimal number to decimal number
hex2num	Convert IEEE hexadecimal string to double-precision number
num2hex	Convert singles and doubles to IEEE hexadecimal strings
table2array	Convert table to homogeneous array
table2cell	Convert table to cell array
table2struct	Convert table to structure array
array2table	Convert homogeneous array to table
cell2table	Convert cell array to table
struct2table	Convert structure array to table
cell2mat	Convert cell array to ordinary array of the underlying data type
cell2struct	Convert cell array to structure array
mat2cell	Convert array to cell array with potentially different sized cells
num2cell	Convert array to cell array with consistently sized cells
struct2cell	Convert structure to cell array

(https://de.mathworks.com/help/daq/functionlist.html?s_cid=doc_ftr)

decimalToBinaryVector	Convert decimal value to binary vector
binaryVectorToDecimal	Convert binary vector value to decimal value
hexToBinaryVector	Convert hexadecimal value to binary vector
binaryVectorToHex	Convert binary vector value to hexadecimal

Open/Read/Write/Close Text Files

```
in_filename='in_file.txt';
out_filename='out_file.txt';

% open input file and read
in_fid=fopen(in_filename, 'r');
Data_Original=fscanf(in_fid, '%d', [1 Inf]);
fclose(in_fid);

% open output file and write
out_fid=fopen(out_filename, 'w+');
fprintf(out_fid, '%c', Data_Original (:));
fclose(out_fid);
```

Read Data from Excel file and plot it

```
%if package io is not installed, install it using
% pkg install -forge io

pkg load io

for idx = 6:19

    printf("processing graph data, please wait ... year %02d\r", idx)
    sheet_i = sprintf('%02d_%02d', idx, idx+1);

    [d_num, d_str, raw] = xlsread('combined.xlsx', sheet_i);
    officedate = d_num(1:end,1);
    octavedate = officedate+datenum('30-Dec-1899');
    val = d_num(1:end,3);
    plot(octavedate, val)
    hold on

end

datetick('x','dd.mm.yyyy','keeplimits')
hold off
printf("\n done successfully\n")
```

EOF