MATLAB File Read and Write Operations

1. Read and Write Text

```
% Open a file with write permission ('w' means write)
fid = fopen('greetings.txt','w');

% Write text lines to the file using fprintf
fprintf(fid, 'Happy\n');
fprintf(fid, 'New\n');
fprintf(fid, 'Year\n');

% Close the file to save and release system resources
fclose(fid);

% Open another file in text write mode ('wt' = write text)
op = fopen('weekdays.txt','wt');

% Write multiple lines (weekdays) into the file
fprintf(op,'Sunday\nMonday\nTuesday\nWednesday\n');
fprintf(op,'Thursday\nFriday\nSaturday\n');

% Close the file
fclose(op);

% Reopen the file to read its contents
fileName = 'weekdays.txt';
FID = fopen(fileName);

% Read text data line by line as strings using textscan
data = textscan(FID,'%s');

% Close the file after reading
fclose(FID);

% Convert the cell data into string array for display
stringData = string(data{:})
```

2. Read and Write Numbers

```
clear all; % Clear all variables from the workspace

% Create numeric data to write into a file
data = [1 5 2 4 3 3 4 2 5 1];
filename = 'test_file.txt';

% Open the file for writing numeric data
fid = fopen(filename, 'w');
```

```
fprintf(fid, '%d\n', data); % Write each number followed by
    a newline
fclose(fid);

% (1) Read file using fscanf (reads formatted data)
fid = fopen(filename, 'r');
y1 = fscanf(fid, '%d\n'); % Reads numbers into a single
    column
fclose(fid);

% (2) Read file using textread (reads into an array)
y2 = textread(filename,'%d');

% (3) Read file using importdata (automatic detection)
y3 = importdata(filename);

% (4) Read file using load (simplest numeric import)
y4 = load(filename);

% Display results for comparison
disp('
    ------------------------------------------------------------
    ')
disp(' original vector data')
disp(data)
disp(' file content using fprintf')
disp(y2)
disp(' vector created by fscanf')
disp(y1)
disp(' matrix created by:')
disp(' textread importdata load')
disp([y1 y2 y3 y4])
```

3. Write Array Elements to a File

```
% A MATLAB program to write multiple numeric values to a
    text file.

% Create a sample 3x5 array of integers.
x = [10 20 30 40 50;
     100 200 300 400 500;
     1000 2000 3000 4000 5000];

% Open the file for writing
file1 = fopen('TextFile1.txt', 'w');

% Check if the file was successfully opened
if file1 == -1
```

```
    error('Failed to open the file.');
end

% Write array data to the text file
fprintf(file1,'%d', x);

% Close the file
fclose(file1);

disp('Data has been written to the text file.')

% Reopen the file for reading
fileID = fopen('TextFile1.txt','r');

% Read numeric data from the file
[A,count] = fscanf(fileID, ['%d']);

% Close the file after reading
fclose(fileID);
```

4. Read & Write Table

```
% Define table data
Id = [101;201;303;209;134];
Shape = {'Pan';'Round';'Button';'Pan';'Round'};
Price = [10.0;13.59;10.50;12.00;16.69];
Stock = [376;502;465;1091;562];

% Create a MATLAB table
T = table(Id,Shape,Price,Stock);

% Write the table to a text file
writetable(T,'tabledata.txt');

% Read the table back from the file
T = readtable("tabledata.txt")
```