

MATLAB Session 1 Web Support Supplement

	Time Response Simulation Functions
load	Import data (array)
save	Export data (array)

M1.4 Importing and exporting data

Features covered in this session:

- Use `load` to import a matrix and break it up into vectors
- Export a matrix to a spreadsheet with `save`

Suppose we have a set of experimental data saved in a text file and we want to use MATLAB to analyze and plot them. We can transport data in and out of MATLAB. The original data file can use blanks, commas, or tabs as delimiters.

Say we have a data file named "test.dat" with three columns of numbers:

```

0      2.3000    4.3000
0.1400  3.4000    7.6000
2.3000  2.3000    5.6000
...     ...     ...
9.6700  2.3000    6.9000

```

From within MATLAB, we enter

```
load test.dat
```

and the file test.dat will be loaded into the variable "test." We can see how big it is with

```
size(test)
```

We may need to rescue the columns for plotting or analysis. This is now we can do it.

```

% To extract data, test(:,n) means all the rows in column n

t=test(:,1);           % let's assume column 1 is time
y1=test(:,2);
y2=test(:,3);

```

Now we can work with variable names, which are much easier to type. If you have to do importing all the time, put all the steps in an M-file.

To delete columns from a matrix, this is how we do it:

```

test(:,[1])=[]        % deletes the first column
test(:,[1 3])=[]      % deletes columns 1 and 3

```

The import feature is useful if we need MATLAB to analyze data. MATLAB supports a large number of statistics and data analysis functions, such as `mean`, `std`, `max`, `min`, `polyfit`,

`spline`, `sort`, `hist` (histograms), `corr` (correlation matrix), etc. If you are lucky, your institution may even have a license to the Statistics Toolbox.

We do the quick and dirty export here with `save`. Say we have a matrix named `A` and we want to export it as tab delimited text so a spreadsheet can use it. This is what we do

```
save a.dat A -ascii -tabs
```

And the matrix will be saved in the file named `a.dat`.

For more specialized needs, MATLAB supports the function `fprintf()` which writes formatted data to file.