Bootcamp : Matlab

Baptiste Rouger

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It is better to put semicolumns at the end of instructions. It signifies Matlab that the output of the line is not needed.

```
% a comment
d=3+5;
for i=1:5
    d=d+1;
end

c = 4 ;
f = d-c;

% we can use clear to delete all or some variables.
% we can use load(pack_of_variables.mat, var) to only load var.
% to get acces to the documentation of a function, we use doc ...

v = [1,5,2,8,6,0.8147];
disp(mean(v))
disp(std(v));

load myvariables;

A = z2 * q;
A(5,:) = [1,2,3,4];
disp(A);
disp(size(A));

B= sum(A,2);
disp(B);

c = zeros(5,4); % creates a matrix with 5 rows and 4 columns full of 0
disp(c);

d = eye(3,5); % creates a matrix with 3 rows and 5 columns with 1s on the diagonal.
disp(d);

e = eye(3,3)*2; % creates a matrix 3*3 with 2 instead of 1s in the diagonal.
disp(e);

f = magic(4); % creates a square matrix 4*4  with random number.
disp(f);

% we can write rand(3,5) to get a matrix full of random numbers.

A=magic(6);
disp(A);
disp(A(1:2,1:2));
disp(A(3:5,:));

% we can concatenate matrix using [ m ; n] (row on row) and with ',' for columns.
A=[1,3,5;2,4,6];
B=[A(:,1),A(:,3)];
disp(B);
```

Part II
Exercices

2 First session

```
load myvariables
baptiste = round(b * chiara + ceil(a));

%t = linspace(0,20,11); % same as [0:2:20]
%t = t';
t=[2:2:20]';
u = [20:-1:0];

z = [-2;4;1;-5;10];
q = [3,9,0,2];
z*q % That works
%q*z % That doen't work because the vectors do not have the same dimensions

z2 = [-2;4;1;-5];
z2*q
q*z2
% The two vector can be multiplied as matrix as they are the same length.

% rand allows to pick a random number beteween 0 and 1.

%clear
load myvariables.mat weird

z2 = [-2;4;1;-5];

weird(5) = sum(weird(1:2));
weird(6) = round(rand*10);
weird = weird*length(weird);
weird
disp('Hi');
```

Part III
Differential equations

$$a \xrightarrow{k_1} b$$

$$\text{So } a + b \xrightarrow{k_2} c$$

$$v = k_2.a.b$$

$$\dot{a} = \frac{da}{dt} = -v$$

$$\dot{b} = -v$$

$$\dot{c} = v$$