Estimate computation time

```
% tic – start stopwatch timer
% toc – stop stopwatch timer
    A = rand(12000, 4400);
    B = rand(12000, 4400);
    tic
    C = A'.*B';
    toc
```

Programming in Matlab
If-operator

```
k=rand(2,1)
if k(1)<0.5
      'one'
elseif k(1)>0.5
     'two'
else
'three'
end;
```

For-loop

```
x=[10 20 30]
for i=1:3
      x(i)/10
end
```

While-loop

```
k=0;
while k<10
     k=k+1
end;
```

Function with One Output
Define a function in a file named average.m that accepts an input vector, calculates the average of the values, and returns a single result.

```
function y = average(x)
if ~isvector(x)
    error('Input must be a vector')
end
y = sum(x)/length(x);
end
```

Call the function from the command line.

```
z = 1:99;
average(z)
```

Function with Multiple Outputs
Define a function in a file named stat.m that returns the mean and standard deviation of an input vector.

```
function [m,s] = stat(x)
```

```
n = length(x);
m = sum(x)/n;
s = sqrt(sum((x-m).^2/n));
end
```

Call the function from the command line.
```
values = [12.7, 45.4, 98.9, 26.6, 53.1];
[ave,stdev] = stat(values)
```

Graphs using plot command
```
x=-pi:0.01:pi; % vector of x coordinates
y=sin(x).^2; % vector of y coordinates (point-wise operations
required)
figure (1) % label graph window
plot(x,y)
title('Graph of y=sin(x)^2')
```