Lab 1
CO902 – Probabilistic and statistical inference – 2012-13 Term 2
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MATLAB Tips (applicable to any scripting language, really)

A. Create a directory for project/lab work. Change to that directory first thing, e.g.

```
cd /path/to/my/LabWorkDir
```

B. Avoid typing commands directly into the console window. Instead, always work inside an editor, copy-&-pasting commands as you go, creating a record (i.e. a script) of your work. (Hint, find and use the keyboard short-cut for "Evaluate Selection"; on my Mac it's Shift-F7).

C. Always document your script. The MATLAB comment character is %; first lines beginning with % are shown as help. Give one-line description, followed by more detail; for example,

```
% Scratch work for CO902 Lab 1
%
% Lab exercise 1 scratch work, and demonstration of code documentation
%_____________________________________________________________________
% Script:   Lab01.m
% Purpose:  Discrete r.v. demonstration & Monte Hall Monte Carlo
% Author:   Tom Nichols
% Date:     8 Jan 2012

% This comment doesn't appear in help
disp('hello world')
```

D. Whenever possible use mnemonic variable names, with possible exception of dummy variables. Here's some bad code

```
h=500;
f=3;
x=rand(h,f);
s=mean(x);
```

Here's some better code

```
nSim=500;
nSubj=3;
Trials=rand(nSim,nSubj);
TrialMean=mean(Trials);
```

Which do you understand?
However, don't go overboard… index variables are universally i, j, k; i.e. this is a bit silly

```
for subject_index = 1:nSubj
      TrialMean(subject_index) = mean(rand(nSim,1));
end
```

when this is perfectly clear

```
for i = 1:nSubj
      TrialMean(i) = mean(rand(nSim,1));
end
```

E. Avoid "Magic Numbers". If, in your script, you're going to creating a simulate 1000 random numbers, don't write

```
X = rand(1000,1);
```

Rather, *define* the Magic Number, 1000, and then use the variable.

```
nSim=1000;
X = rand(nSim,1);
```

This makes for code that is much easier to read and maintain.