Up to speed with MATLAB Exercises (FYSS 585)
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Here we study some basics in using MATLAB. Asking you to complete some tasks. We don't give detailed instructions instead you should use the help function and other materials in the link to learn how to complete the task.

Report: For each question write one sentence that describes the action taken and the result.

1. Run the MATLAB Code
   a= 1:5
   d= a+i*a
   e= d'
   f= d.'

2. Given $A = \begin{bmatrix} 1 & 2 & 4 \\ 1 & 1 & 1 \\ 2 & 3 & 1 \end{bmatrix}$, and $B = \begin{bmatrix} 2 & 2 & 2 \\ 2 & 2 & 2 \\ 2 & 2 & 2 \end{bmatrix}$

   Run the MATLAB code:

   Greater = **A**>**B**

   GreaterThanOne = **A**>1

3. Given $A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 9 & 10 & 11 & 12 \\ 13 & 14 & 15 & 16 \end{bmatrix}$

   Obtain the following:
   - Diagonal matrix element.
   - Convert a magic matrix its corresponding diagonal matrix
   - For matrix A the 2nd super diagonal matrix element.

4. Create a vector of the even whole numbers between 31 and 75.

5. Let **x** = [2 5 1 6].
   a. Add 16 to each element
   b. Add 3 to just the odd-index elements
   c. Compute the square root of each element
   d. Compute the square of each element

6. Let x = [3 2 6 8]' and y = [4 1 3 5]' (NB. x and y should be column vectors).
   a. Add the sum of the elements in x to y

     b. Raise each element of *x* to the power specified by the corresponding element in *y*.

     c. Divide each element of *y* by the corresponding element in *x.*

     d. Multiply each element in *x* by the corresponding element in *y*, calling the result "*z*".

     e. Add up the elements in *z* and assign the result to a variable called "*w*".

     f. Compute *x'*y* - w* and interpret the result

7.   Find the solution of the equation $\sin x = 2x - 2$. We define the function sin*x*m(x) and store it in the M-file sinm.m:

Function s = sinm(x)
s = sin(x)-2. *x+2;

Plot the curve to find a starting value:

fplot('sinm', [-10 10]
grid on
title('The function *sin(x) -2. *x+2*')

From this plot make an acceptable first guess β and type

xzero = fzero('sinm' , β)

which gives the solution to the equation $\sin x = 2x - 2$.

8.   We want to save a vector *v*=[1 2 3 4]; into a text file. How do we do this? [Hint use save]

9.   Given a 3 by 3 matrix *F* and a 3-dimensional vector *a* which holds the entries for a 3 by 3 matrix *A* = [0 –a(3) a(2); a(3) 0 a(1); -a(2) a(1) 0]; Compute the cross product of *A* and *F*.

10. Solve the equation

$$x^2 y^2 = 0$$

$$x - \frac{y}{2} - \alpha = 0$$

Reference:

http://www.facstaff.bucknell.edu/maneval/help211/basicexercises.html

http://docs.google.com/viewer?a=v&q=cache:f_Lg0s9wkW0J:kom.aau.dk/~borre/matlab7/exercise.pdf+exercises+for+MATLAB+course&hl=fi&gl=fi&pid=bl&srcid=ADGEESg3qlFNeHGnr5JDE2vGfYUu_eeAexc1Uv0InbyXesTImFs7003LYkNGRWk_5tXXqu9HfEv809S46U5j4TkzJYVo6k40ZQoZ14WepoLrC_O91W3xvbekjZvfxcBSZ6G3RHkHJ8DY&sig=AHIEtbTtkkcLO5QagudjQA2oRbFBB-1ZRg