LAB 1: Coding exercise

A (Entry)

1. Create the vector $x = [1 \ 3 \ 5 \ 7 \ 9 \ 11 \ 13 \ 15 \ 17 \ 19]$.  
2. Calculate the vector $y = \sin(x)$.  
3. Sort the vector $y$ in descending order.  
4. Apply the same sorting to vector $x$.  
5. Reverse the order of entries in vector $y$.  
6. ... and plot $x$ vs. $y$.

B (logical and linear indexing)

1. Create two row vectors:  
   $A = [1 \ 4 \ 6 \ 3 \ 7 \ 8 \ 10 \ 1]$  
   $B = [1 \ 1 \ 2 \ 10 \ 9 \ 4 \ 5 \ 6 \ 2 \ 5]$  
2. Find elements in $A$ that also occur in $B$.  
3. Extract elements in $B$ using $A$ as linear index.  
4. Extract elements in $B$ that do not occur in $A$.  
5. Extract every second element in $B$ and every third element in $a$ and concatenate them in a new column vector $C$.

C (matrix manipulation)

1. Create a $5 \times 10$ matrix with random values uniformly distributed between 0 and 1  
2. Filter the matrix with a 3x3 running average  
3. Transpose the matrix and  
4. reshape it to a matrix with 25 rows.