

# Practical Work 2

## Vector manipulation

### Exercise 01: Basic Commands

Define a <u>row vector</u> of size 5 and then a column vector of size 5. How do you transform a row vector into a column vector?	» » »
What do the following commands return? <ul style="list-style-type: none"> <li>• 0.1/1</li> <li>• <code>linspace(0, 1, 10)</code></li> <li>• <code>rand(1, 10)</code></li> <li>• <code>sort(rand(1, 10))</code></li> </ul>	
How to generate a row vector containing values from 4 to 6 spaced by 0.1? How to generate a row vector containing 10 equally spaced values between 4 and 6? How to generate a row vector containing 10 randomly spaced values between 4 and 6?	» » »
How to ask Matlab for the size or nature of a vector or matrix? Explain the difference between the commands size and length. Toolbox: <b>whos</b> <b>size</b> <b>length</b>	
Define a line vector A containing the following values: 10, 3, 4, 2, 6, 11, 7 and 8 Extract the <u>fifth component</u> of this vector What do the commands A(3:4) and A(2:6) return?	» » »
We define the vectors $x = [1\ 2\ 3\ 4\ 5]$ and $y = [0\ 1\ 2\ 1/2\ 3]$ . Test now the following commands: Explain what they return. <ul style="list-style-type: none"> <li>• <math>x*y</math> and <math>x.*y</math></li> <li>• <code>sum(x.*y)</code></li> <li>• <math>y./x</math> and <math>x./y</math>; What does the <i>inf</i> value mean?</li> </ul>	

**Exercise 2:** Answer the questions below in a file named **TP2\_Exo2.m** :

1. Create a column vector **V** of 5 elements linearly spaced between 2 and 3.
2. Add two elements to the end of this vector with the value 0.
3. Add 1 to the second and sixth elements of this vector.
4. Sort the new vector **V**.
5. Create a second line vector **W** of the same dimension as the new vector **V** containing even integers greater than or equal to 6.
6. Convert **W** to a column vector (name this vector **N**).
7. Define a vector **SumV**=  $V + W$ .
8. Calculate **ProdVec** the product of the two vectors **V** and **N**.
9. What is the sum of the elements of **SumVec**? (use **sum** command).
10. What is the average of the elements of **SumVec**? (use the **mean** command).
11. Calculate the vector

$$U = \frac{V^2 + \sqrt[2]{W+1}}{V \times (N+1)}$$

12. Calculate **m** the maximum of **U**. (use **max** command).
13. Calculate **n** the minimum of **U**. (use **min** command).

**Working from home:** *questions 7 to 13.*

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% MATLAB code: Vector manipulation
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