Introduction to Simulink

Lab 1, DSP

Objective

Introducing students to the Simulink environment

Theoretical aspects

Often used blocks:

- In and Out ports
- Switch
- Constant
- Logical operators
- Relational operators
- Sum / Product

Exercises

1. Create a system that satisfies the following requirements:

Requirements:

1. Required interface - aa
2. Provided interface - bb
3. Functional requirements
    1. aaa bbb
    2. ccc ddd

Define two variables $a = 5$ and $b = 0.3$ and compute $a+b$, $\frac{a}{b}$, a^b, $e^{a+ln(b)}$, $sin(a)+cos(b+\frac{\pi}{2})$

2. Define a vector A with 10 zeros, a matrix B with 4×6 elements equal to 1, and a vector C with odd numbers from 1 la 21
    - Change the third element of A to 5
    - Change element $B(2, 4)$ to 7
    - Square all the elements of C, and save the result as a new vector D.
    - Compute $E = 4 * C - 50$.
    - Compare element-wise the vectors C and E. How many elements of C are larger than the corresponding elements from E?
    - Apply $sin()$ to all the elements of D
3. Define a vector t with 1000 elements uniformly spaced between 0 and 10. Compute and plot $cos(2\pi ft)$, where $f = 0.5$.
4. Plot the signal $sin(2\pi ft + \frac{\pi}{4})$, with $f = 0.2$, for a duration of 3 periods.

Final questions

1. TBD