Lab #1

Objectives

- Install Scilab (https://www.scilab.org/) if it was not installed in the computer.
- Read user manual: https://www.scilab.org/sites/default/files/Scilab_beginners.pdf
- Do additional exercises on SciLab
- Use SciLab to draw the signal after every step in the ADC procedure

Report

1. For each function or group of functions that you did, you have to capture the screen as evidence that you did by yourself.
2. Then, you add all screen captures in a single word file as your report.
3. Finally, you convert your report to pdf format and upload it to BKeL before the deadline. You should down-size the image file to reduce the report file in order to be able to submit it in BKeL.

Using Scilab to do the following exercises.

Ex 1.1. Using the operators in vector and matrix to do the following tasks

- Create a vector in form of (x1 + 1, x2 + 1, x3 + 1, x4 + 1) where x1, x2, x3, x4 are components of vector x = 1:4.
- Create a vector in form of (x1y1, x2y2, x3y3, x4y4) where x1…x4 and y1…y4 are components of vector x=1:4 and vector y=5:8, respectively.
- Create a vector in form of (sin(x_1), sin(x_2), . . . , sin(x_{10})) where x is a vector of 10 values linearly chosen in the interval [0, π].

Ex 1.2. Consider the following analog signal $x_a(t) = 3sin(100\pi t)$

- Use Scilad to draw $x_a(t)$ in 5 periods.
- Determine the discrete-time signal x(n) of the signal $x_a(t)$ that is sampled with a sampling rate **F_s = 300 samples/s**.
- Determine the discrete-time signal x(n) and determine the periodic property of x(n). If x(n) is periodic signal, determine the frequency and period of x(n). Then, use SciLab to to draw x(n) in 5 periods.
- Determine the quantized signal $x_q(n)$ if $\Delta = 0.1$ using truncated method. Then, draw $x_q(n)$ in 5 periods.
- **Note:** all figures including $x_a(t)$, x(n), and $x_q(n)$ must be displayed in a single window.