Lab Class 7
11.11.2021

- **Harmonic oscillator.**

Preliminary Operations

1. upload on the board via impact the executable file "sinusoidalOscillator.template.bit";

2. connect the DAC A output to the channel 1 (X) of the oscilloscope;

3. by using

   - the switches to set the frequency and
   - the "south" pushbutton to load the boundary conditions,

   observe the result;

4. connect the DAC B output to the channel 2 (Y) of the oscilloscope

   and observe the result.

Problems

1. Implementation of a harmonic oscillator:

   - development of the oscillator;
   - characterization of operation of the oscillator as a function of the input parameter k.

   The final result should look like the result that is visible in point 3.
   (rather than in both point 3. and 4.) of the preliminary operations.

At the end, show the result to the lecturer.

Upon eliminating the unuseful files (only *.v*, *.ucf*, *.xise* are necessary),
compress the working folder via
`tar czf labClass_7_<names>.tgz <Folder>`
and upload the compressed file to the Moodle platform.

Please note that the folder, and thus the compressed file, should also include
the frequency characterization.

Additional problems

- Implementation of a second harmonic oscillator working *in quadrature* with the first
  one.
  The final result should look like the result visible in point 4. (and point 3.) of prelim-
  inary operations.

Upon eliminating the unuseful files (only *.v*, *.ucf*, *.xise* are necessary),
compress the working folder via
`tar czf labClass_7_<names>_additional.tgz <Folder>`
and upload the compressed file to the Moodle platform.

At the first favorable circumstance, show the result to the lecturer.