ECS512 Sound Design
Lab 3: Pulse Generation

This lab is designed to help you with the next assignment, please follow it closely. Before starting, download the zip archive `lab3resources.zip` from QMPlus.

- Go to `http://www.pd-tutorial.com/english/ch03s05.html`, and go through Section 3.5.1.1
  - If some of the concepts still seem unfamiliar to you, read through chapter 3.1.1.1.2 and go through some of the examples.
- Use an `[hslider]` connected to an `[mtof]` object ("midi to frequency") to control the frequency of the pulse generator from chapter 3.5.1.1.

  Question What do you notice when setting high frequencies?
- Recreate the implementation described at the following link: `http://msp.ucsd.edu/techniques/v0.11/book-html/node98.html`
- Again use `[hslider]` and `[mtof]` objects to control the frequency.
  - Listen to the output with various parameter settings. This implementation of a pulse train seems to have fewer artefacts. Why is this so?
- Go through the tutorial at this link: `http://en.flossmanuals.net/pure-data/antialiasing/` The example file `J07.oversampling.pd` is contained in the zip file.
- Using the example from the tutorial, implement an oversampled version of your pulse generator (the necessary filtering is performed in the '16x' subpatch). The oversampled pulse generation must be done in a separate subpatch (abstraction) that is loaded from your main patch, saved within the same folder. Remove any user interface objects (e.g. bangs, toggles, sliders) from the abstraction, and also remove any table objects used for visualisation purposes.
  - Listen to the output with a high pulse width and high frequency to confirm that some of the aliasing has been filtered out.

Once you are finished, read the entire Assignment 2 sheet over thoroughly before starting, and ask questions if anything is unclear.