Exercise for SW Validation position:

1. Overview:
   We need to find statistics on zeroes bursts on our wave files.
   i.e. find in each recording, how many repetitions of each zeroes burst length is occurring.
   A zeroes burst is defined to be a sequence of samples equals zeroes.
   Create a python script that gets a wave file as input and produce zeros burst histogram of it.
2. Input:
   a. Wave file – see attached - *in.wav*
   b. *Options:*
      i. Set X, Y axis range
         1. Set Histogram X axis to show only requested range
         2. Set Histogram Y axis to show only requested range
         3. Unless X, Y ranges supplied, default is to show all range
      ii. Set passing criteria
         1. Max allowed zeroes burst length. Default = 10
         2. Max allowed repetition of max allowed sequence. Default = 5
         3. Unless max allowed sequence length and repetition supplied, use defaults.
   c. Help/usage (--help) showing how to set the input correctly.
3. Output:
   a. Histogram of zeroes
      i. X axis – the size of a sequence
      ii. Y axis – the number of repetitions
      iii. X, Y axis should be limited to given range (if set on input configuration)
   b. message report:
      i. Pass/Fail according to passing criteria.
      ii. Max found burst length and its number of repetitions.
4. Python requirements:
   a. Python 3.5 or greater
   b. Can use any common “import”
5. Exercise deliverables:
   a. Steps for virtual environment creation (packages, dependencies) + requirements.txt
   b. Python script code
   c. Snapshot of output (both histogram and message report).
   d. Compiled standalone executable of python script (so it can be run on windows PC without python environment installed).
   e. Windows batch file with example command line.