# Prerequisites

The challenge requires you to complete all tasks within a Jupyter Notebook environment. You are permitted to use Pandas or Numpy to process your data as you see fit and Matplotlib to visualize your result. Please include a line that installs all dependencies if any other libraries are used. External dependencies can be install using `!`, for example, `!pip install matplotlib`.

You must upload all notebooks and code to a public repository on github.com and send a `git clone` link to the examiners by 10 Dec 2021.

## Exercise : Audio data pre-processing

## Part 1: Data Mining

## You are given a soundscloud\_urls.csv file containing URLs to SoundCloud.com. You are tasked with extracting the audio files, the name of the author and the track name from the provided links, save this data in a `.csv` and display the dataframe in your notebook. All audio file must be saved as `.wav` in the `./data` directory.

## Part 2: Data Processing and Visualization

Once you have downloaded your audio files, you are tasked with pre-processing your data by conversing the raw waveform to a spectrogram using the Fast Fourier Transform (FFT). You can find more information about the FFT [HERE](http://www.dspguide.com/ch12.htm)

Finally, your must convert your spectrogram from Hz range to the mel-scale. More information about me-scaling can be found [HERE](http://pdf-s3.xuebalib.com:1262/249gn34RBxh1.pdf)

\*\*Note:\*\* You are not permitted to use built-in functions to perform FFT and mel-scale operations mentioned in part 2.