Wave file demos

For python 'wave' library, see:
https://docs.python.org/2/library/wave.html

For python 'pack' library see:
https://docs.python.org/2/library/struct.html

Demonstration files:

read_wavefile_01.m

        Reads 'cat' wav file into Matlab.
        Play signal, plot signal, illustrate quantization, FFT and plot.
        Illustrates fftshift, FFT zero-padding

read_wavefile_02.m

        Like read_wavefile_01.m, but reads arctic_a0001.wav into Matlab.

read_wav_example_01.py

        Open a wav file in python and read information.

make_sin01.py

        How many bits per sample ?
        How many bits per second ?
        What if maxAmp is higher ? lower ?
        For stereo, how many bits per second ?
        What if 'h' is a different code ?
        What if number of channels > 2 ?

read_sin01.m

        Plot spectrum. Verify frequency of sine matches
        the peak of the frequency spectrum.

make_sin02.py

        Use python to generate a wav file with more bits per sample.
        Verify frequency and bits per sample.

For assignment:
Activities for students:

        Use Matlab to read in sin02_mono.wav
        - verify quantization size, is it as expected?
        Solution: read_sin02.m

        Use Python to generate a .wav file of a sine wave at 8
        bits per sample. (How do you do this done ?)
        Solution: make_sin03.py

Read your 8 bit/sample wav file into matlab
- verify quantization is as expected, verify spectrum,
- Is there any noticable effect of lower number of bits / second ?
Solution: read_sin03.m

Try generating a sinusoid of lower frequency, like 50 Hz
Solution: make_sin04.py

Try higher sampling rate, like 16K 32K or 441,000 samples / second

Try to use python to generate a wav file with more than
two channels. Can you read it into Matlab and plot the
individual channels?