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|--|--|----------------|---------------------|----------------------|--------------|----------------|-------------------------|
| Examples using the animation function to plot real-time audio signals. |  |                |                     |                      |              |                |                         |
|  |  |                |                     |                      |              |                |                         |
| <b>File name</b>   | <b>Notes</b>   | <b>Pyaudio</b> | <b>Input signal</b> | <b>Output audio?</b> | <b>Loop?</b> | <b>Effect?</b> | <b>Time-axis units?</b> |
| prog_01  | Read a signal from a wave file, and plot the signal using the animate function.  |                | File                |                      |              |                |                         |
| prog_02  | Read a signal from a wave file, implement the amplitude modulation (AM) effect, and plot the signals using the animate function.   |                | File                |                      |              | AM             |                         |
| prog_03  | Read a signal from a wave file, plot the signal using the animate function, and play the signal using pyaudio.   | Y              | File                | Y                    |              |                |                         |
| prog_04  | Read a signal from a wave file, plot the signal using the animate function, and play the signal using pyaudio. Run the process in a continuous loop.   | Y              | File                | Y                    | Y            |                | Y                       |
| prog_05  | Read a signal from a wave file, implement the amplitude modulation (AM) effect, plot the signals using the animate function, and play the output signal using pyaudio. Run the process in a continuous loop. | Y              | File                | Y                    | Y            | AM             | Y                       |
| prog_06  | Acquire the microphone signal using pyaudio, and plot the signal using the animate function.   | Y              | Microphone          |                      |              |                | Y                       |
| prog_07  | Acquire microphone signal using pyaudio, implement the amplitude modulation (AM) effect, and plot the signals using the animate function.  | Y              | Microphone          | Y                    |              | AM             | Y                       |
|  |  |                |                     |                      |              |                |                         |
| Exercise   | Modify program prog_05 so that the effect is a bandpass filter instead of amplitude modulation.  |                |                     |                      |              |                |                         |