

Read Me

Notes

- Extract all from zip folder
- Necessary Libraries are numpy, scipy, matplotlib, pandas, scipy, heartpy, pgzrun, pygame, pgzero, random
- Ensure all libraries are installed, if not installed make sure to pip install
- Video link found at the bottom
- Codes was also uploaded on to github, link at the bottom
- Make sure codes are being run out of the folder do not move to a new folder and run as this will break the code

Part 1

- File name: **SignalAnalysis.py**
- Goal of code is to have three separate signals that are combined into single signal. One of the signals is then to be filtered out.
 - In this case the highest signal is filtered
- Code creates 3 signals, 322Hz, 555Hz, and 663Hz.
- Code then combines these signals into one signal
- Code then produces a .wav file
 - The .wav file will be saved inside the folder and will be labeled "Combined.wav"
 - This .wav file can be listened to
- Code then filters out the highest frequency and creates new .wav file
 - The .wav file will be saved inside the folder and will be labeled "Filtered.wav"
 - This .wav file can be listened to
- When listening to the .wav files the change in tone can be heard
- Be careful as audio might be loud**
- Code also creates multiple plots including an FFT of the signals
- See documentation for further explanation of code

Part 2

- File name: **HeartRateAnalysis**
- Goal was to take a .wav audio file of a beating heart and plot the signals so that they could be analyzed.
- Needed a minimum of 30 heart beats in the audio file
- The code can detect the heart beats per minute (BPM)
- To plot heart rate the .wav needed to be converted into .csv file
- See further explanation of code in documentation
- Original .wav file included in zip folder also

Part 3

- File name: **red_withadds**
- To run the game go to the folder named Red Alert->Game Files->red_withadds
- To play click the red starts as they appear

-3 additions made to the game

- a. Try again function added
 - i. To use the function, when a mistake is made click the spacebar to reset and try again
- b. Shuffling of the starts added
 - i. Shuffles the stars around
- c. Need for Speed added
 - i. Increases the speed at which the stars move

-See documentation for further details

Video Link: <https://youtu.be/iEvAE12Kf8k>

Github Link: https://github.com/nersahin/Lab7_Ersahin_Nuh/