* Why are sound waves on both sides of the zero axis i.e., symmetrical around a line?

When a disturbance is created in the form of sound or a signal out of our mouth that creates a disturbance in the air by pushing the air around creating Compression Wave which is the positive amplitude and a negative amplitude in the form of Rarefaction Wave. Thus, both the waves combined creates sound!

* Why are we choosing STFT(Short-Time Fourier Transform) over Fourier Transform

Fourier Transform looses the sense of time or time domain keeping only the Frequency Domain after converting the signal to frequency domain, while STFT processes the time domain along with the frequency domain

* So we perform STFT in python we use optional parameters like n\_ffst, Window length, hop\_length

N\_fft indicates the zero padding we are adding at the end of each window so that the frequency bins have higher frequency resolutions….,   
Hop length indicates the gap between the windows to perform FFT

* Converting amplitude to decibels of the FFT output gives us the Spectogram

We give the reference frequency to convert which in this case is the max frequency available