DSP Lab 3
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kwc305
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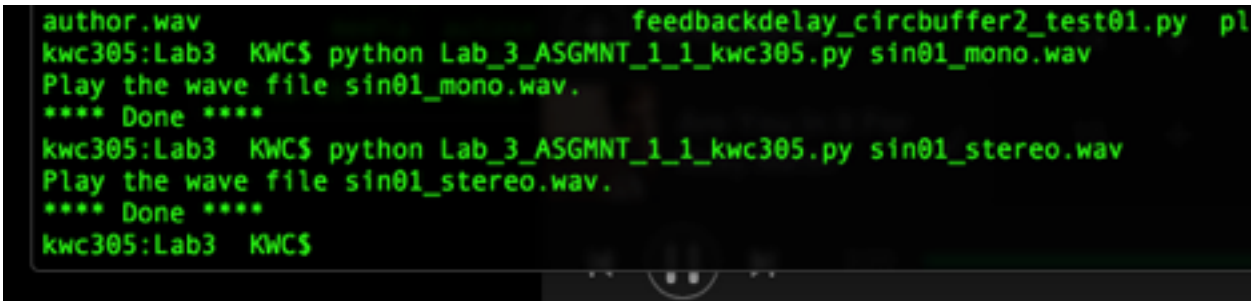
Assignment 1:

1.
See the attachment Lab_3_ASGMNT_1_1_kwc305.py



Assignment 2 :

1.
What are the poles of the basic feedforward delay system with a delay of N samples? Are there any parameter settings that make the system unstable? Explain.

For a given delay system, if the parameter of gFB(feedback gain) is smaller than 1, it will have the complex roots poles all in the unit circle and it means system will be stable.
However, if the gFB is greater than 1, it means the system will grow and make the system unstable.

4.
See the file Lab_3_ASGMNT_2_4_kwc305.py, in this file, I put one more while loop to keep the buffer's data, and let it do the delay again and again. So the output will be a many time delay until it reach the limit, which I set to the buffer_length.

Assignment 3 :

1.

The gain will also effect the system, makes it unstable when the gain is more than 1.

4.

See the file Lab_3_ASGMNT_3_4_kwc305.py, in this file, I implement the ping pong delay.

First, I create 2 delay for two different buffer in order to store two individual channel.

And then I add the feedback gain times the buffer to the original system, with different delay time, for example, 0.4s and 0.5s.

So, as my implementation, the left side will have the low frequency first, then add the high frequency. For the right side is the high pitch first, and then add the lower frequency.