FFT

DSP week 3

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# Problem

Process a sine wave (use Sine Generator) using FFT. This will output the spectrum of the sine wave. What spectrums do you expect?

# Progress

I made the assignment in MatLab. Naturally I re-used my sine generator; without the frequency sweep. After, I made sure to provide two new sine waves with the complex numbers given. I added these two sine waves together, creating one “new” sine wave. Consisting of 2 frequencies. I used the FFT on both the imaginary and the real part; slightly overdoing it. But I wanted to make a complete picture for myself. After this I used ABS and plotted the figures with stem();.

I predict to see two high values on either side, since we have 2 frequencies in one signal. FFT always mirrors its output; this is why I predict to see four instead of 2.

A screenshot of a computer

Description automatically generated

My predictions were completely right!

# Reflection

A complicated exercise which needed some help from the teacher to complete. I misunderstood what the output of FFT would need to be, and thus completely missed that my output was actually 100% correct! Luckily I do understand what the output means and what it should look like, as proven by my explanation!