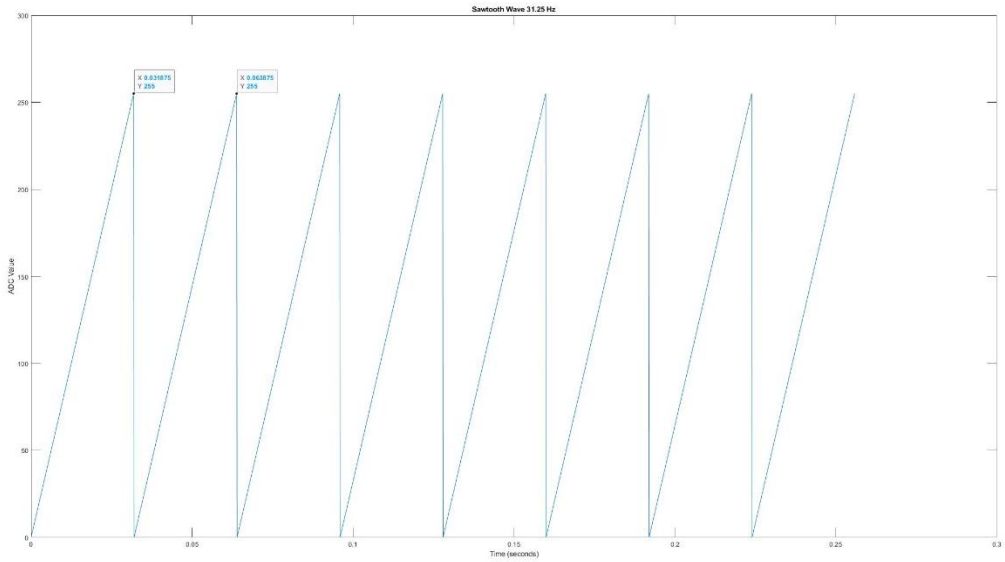
Aly Ghallab

HW 10 Report

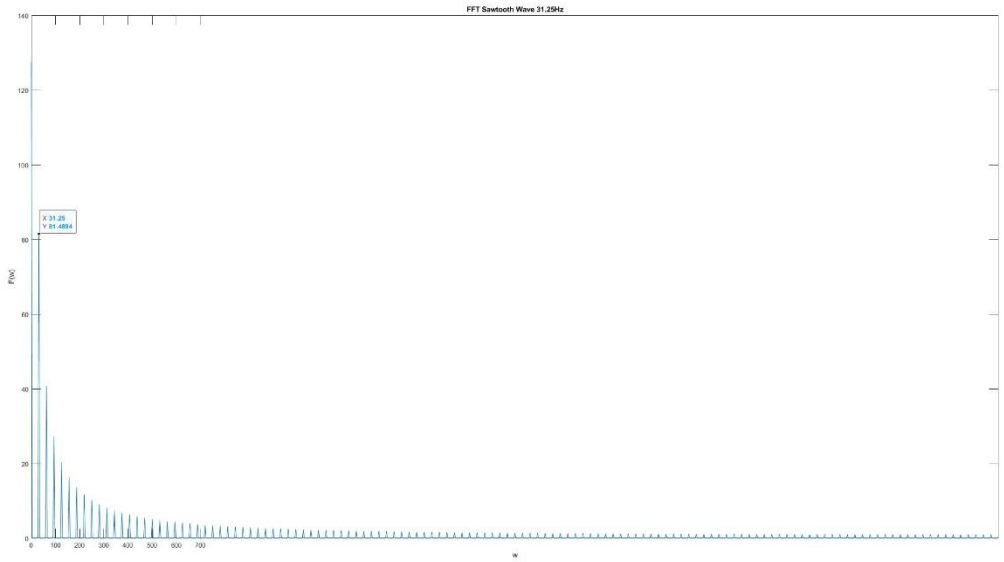
CMPEN 472

I. Sawtooth Wave



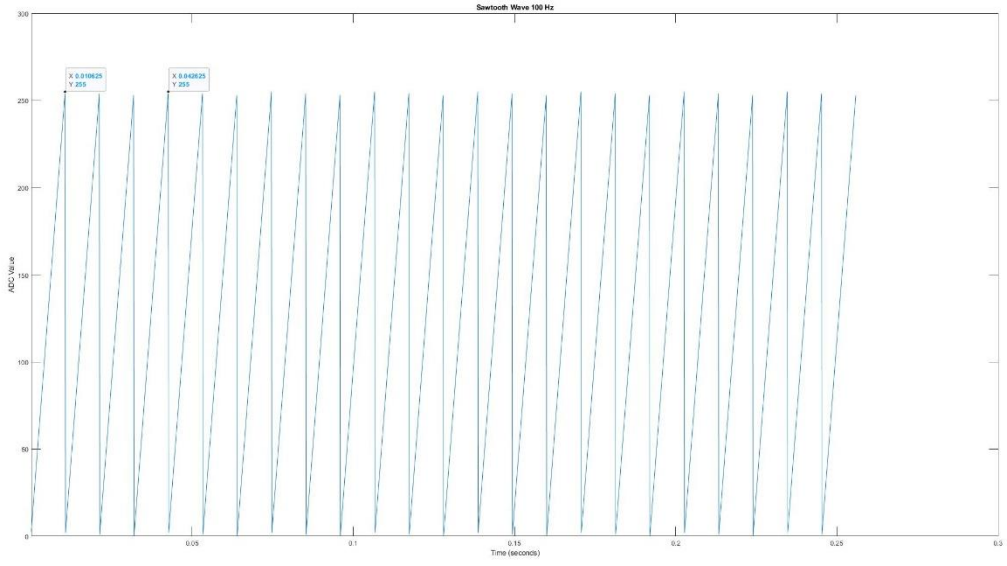
Here is a Sawtooth Wave at the base frequency, as expected it has 8 peaks over the 2048 points. When calculating the period using the two points above we get the frequency to be 31.25 Hz

II. Sawtooth Wave FFT



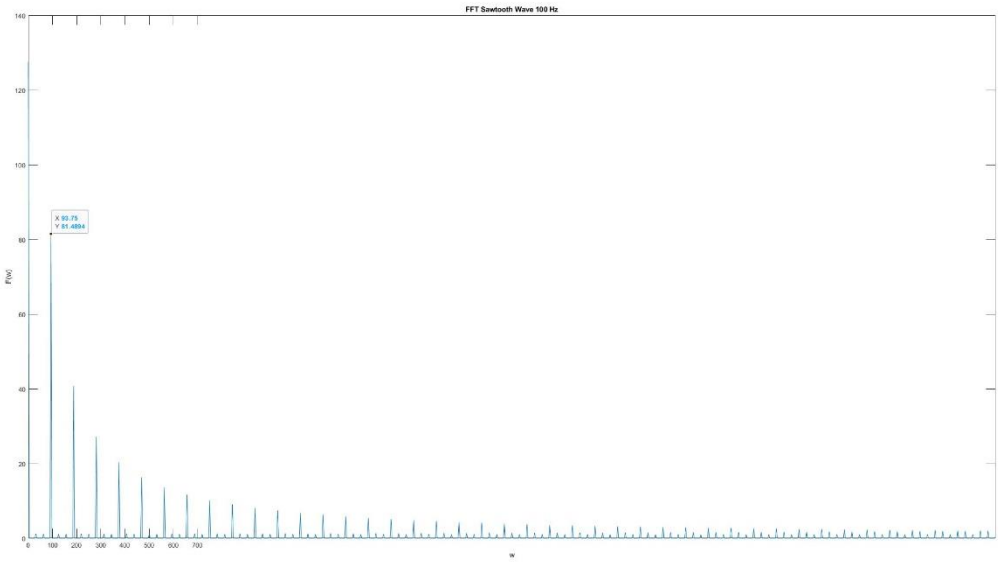
When Performing the FFT we can see a peak at 31.25Hz, the frequency of the above Sawtooth Wave, with a tight frequency distribution.

III. Sawtooth Wave 93.75 Hz



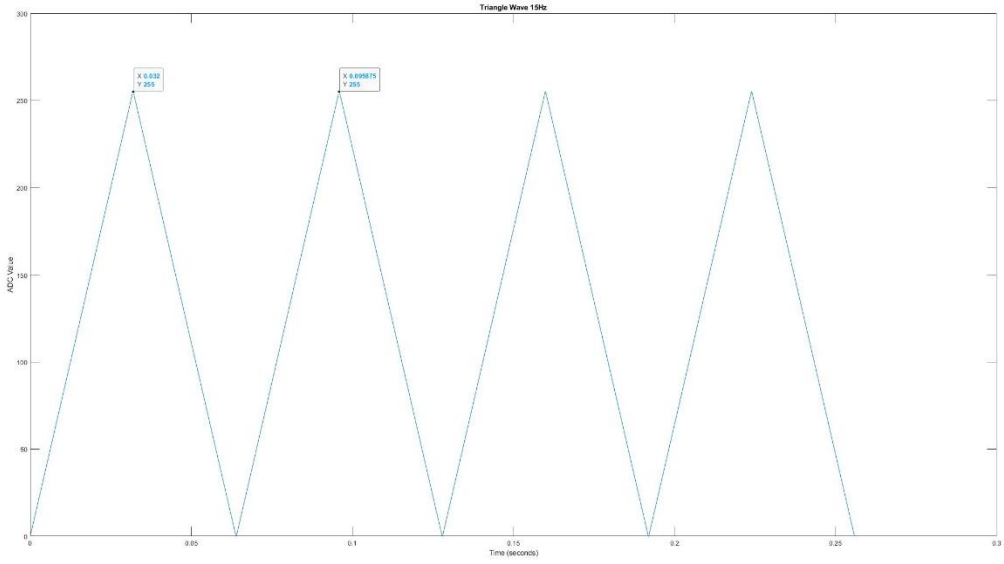
Here we can see triple the peaks in the sawtooth wave as the last one. When calculating the frequency using the two points above accountng for a multiple of the period we can see that its 93.75Hz, as expected.

IV. FFT of 93.75Hz Sawtooth Wave



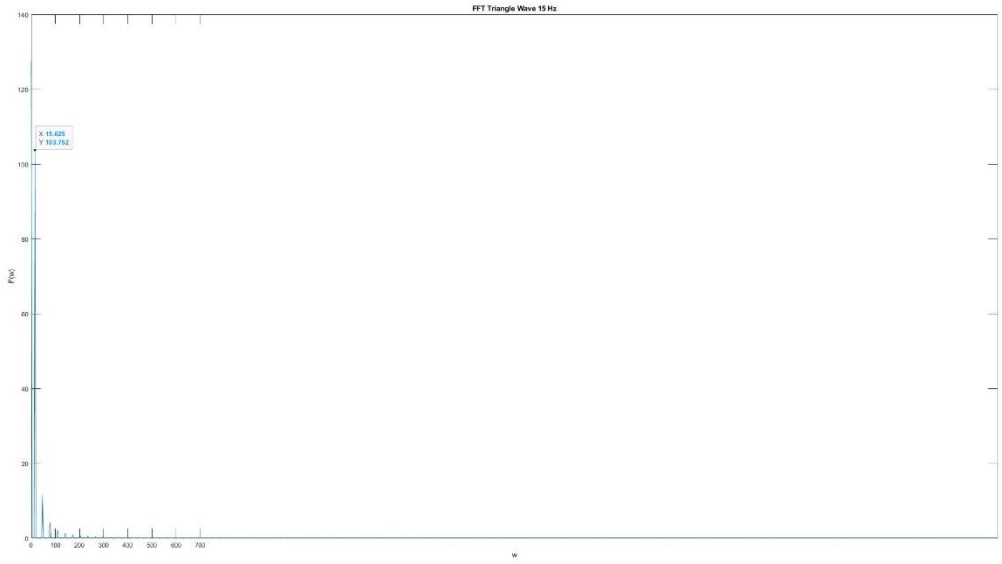
Here, we can see a peak at 93.75 Hz with a relatively tight frequency distribution.

V. Triangle Wave



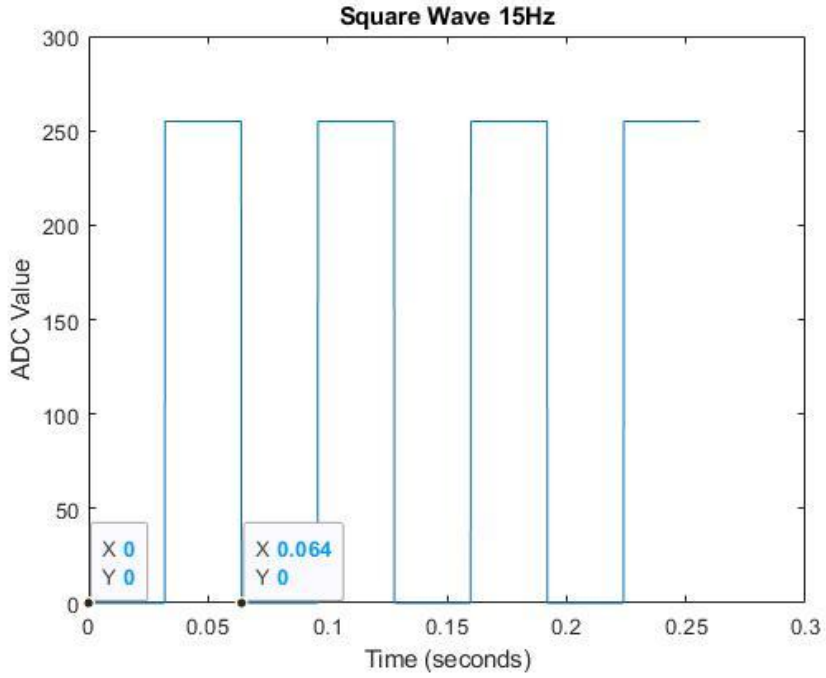
Here we can see that there are 4 peaks as expected over 2048 data points. When calculating the period is 15Hz.

VI. FFT of Triangle Wave



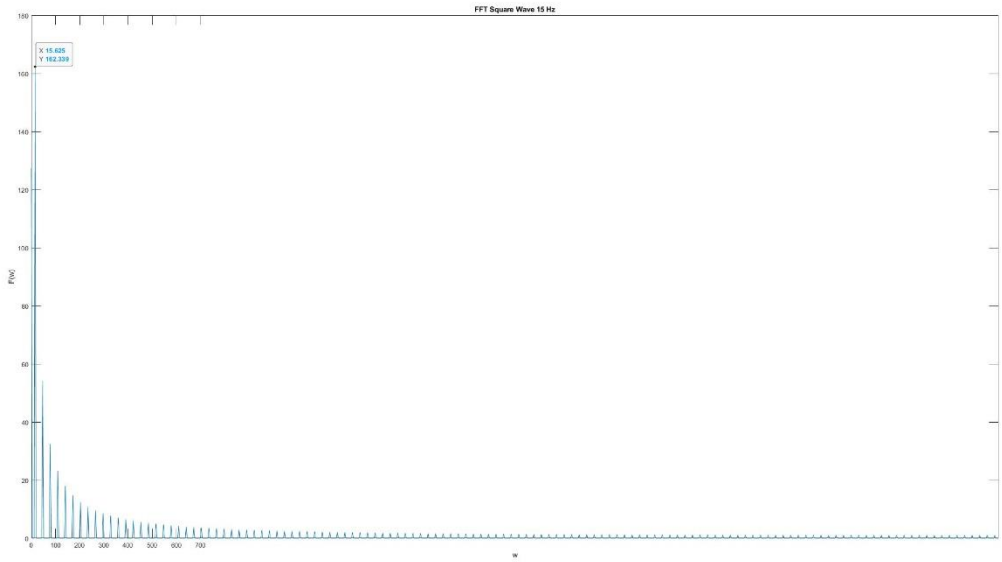
Taking the FFT of the triangle wave we can see a peak at 15Hz and a tight frequency distribution.

VII. Square Wave



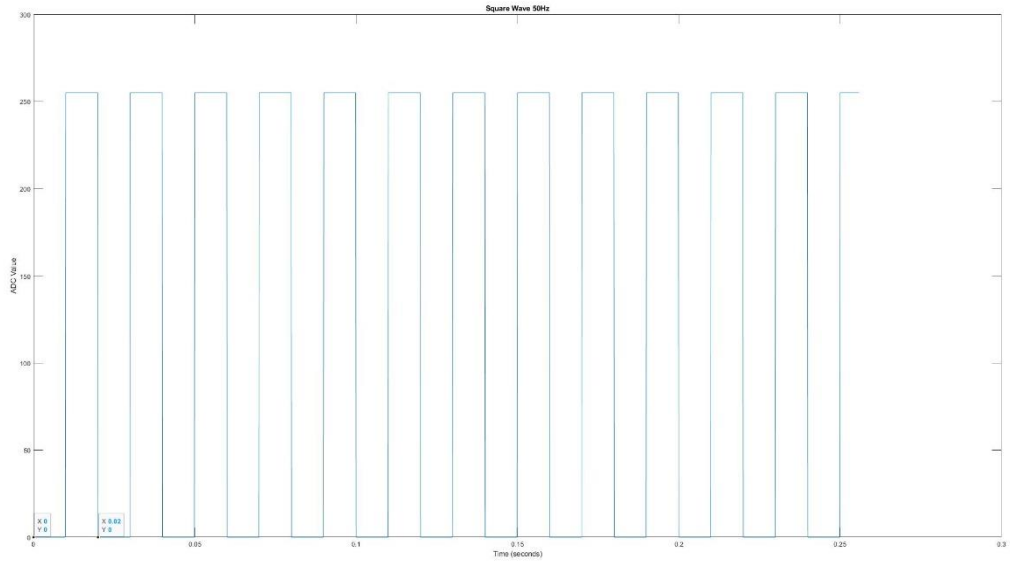
Here we can see the base Square Wave at 15hz with 4 peaks over the 2048 data points. When calculating the period based off the two points we can see the frequency

VIII. Square Wave 15Hz FFT



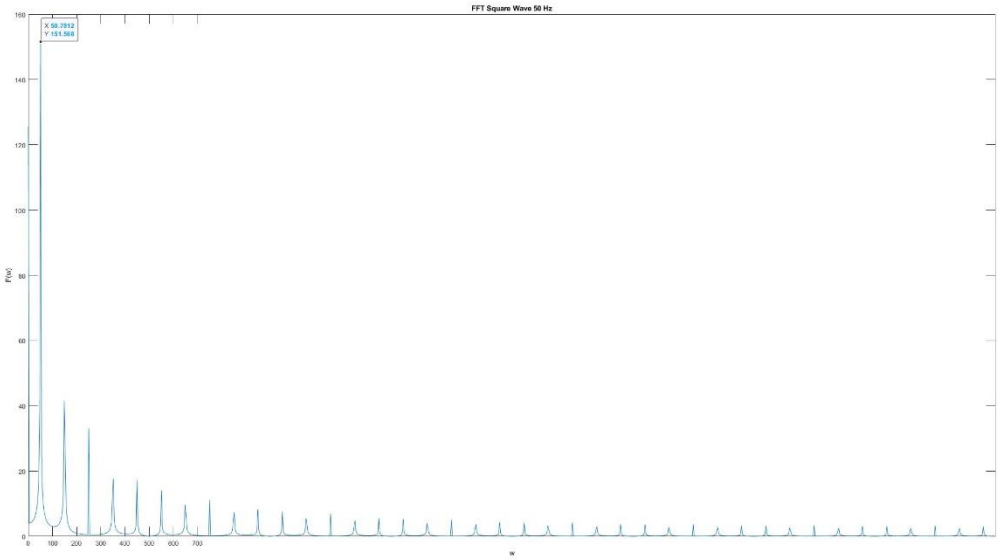
Here we can see a peak at 15 Hz indicative of the Square Wave above, it has a tight frequency distribution because the frequency is kept constant.

IX. Square Wave 50Hz



After tripling the frequency of the above square wave we can see triple the number of peaks over 2048 points, we can also see that the frequency tripled to be about 50Hz.

X. FFT of 50Hz Square Wave



Doing the FFT of the Wave above we can clearly see that the peak is at 50Hz matching the frequency of the above wave as expected.