

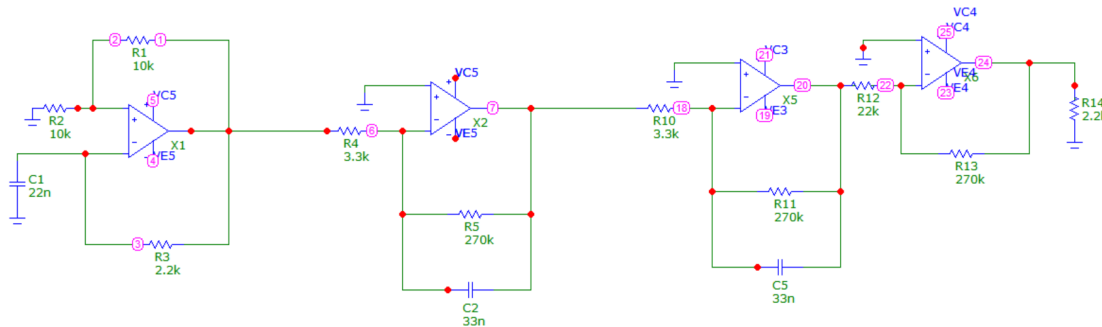
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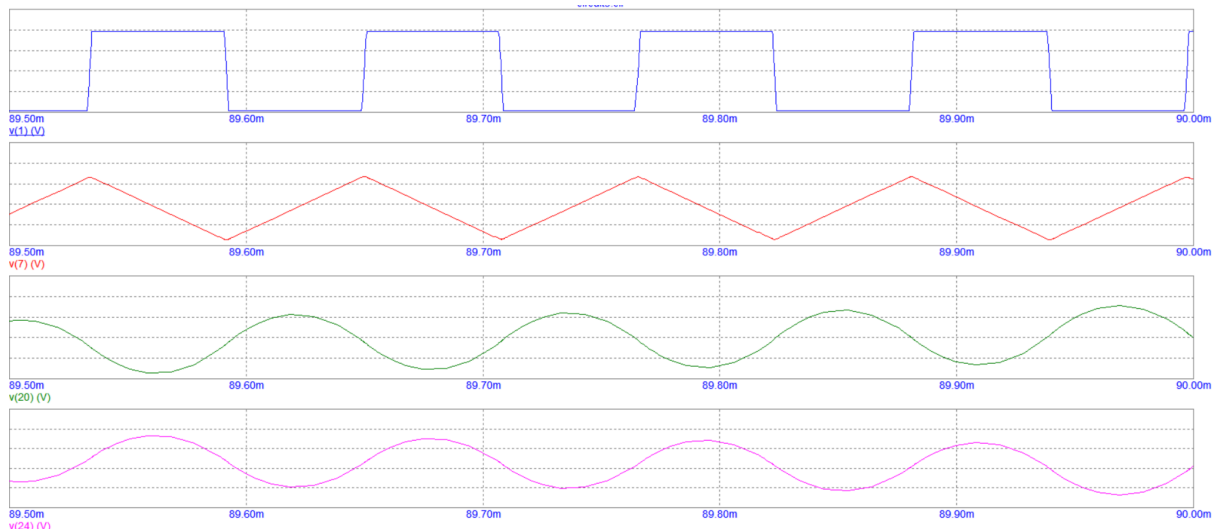
A Brief Summary of My Electrical Laboratory Project

For this project, I was asked to design, build, test and demonstrate a Function Generator circuit that can produce square, triangle and sinusoidal waveforms. I designed a multivibrator, two integrators and an amplifier and connected them in such a way to produce an output frequency of 9100Hz, output voltage of 10 Vp-p and the waveforms in the order listed above.

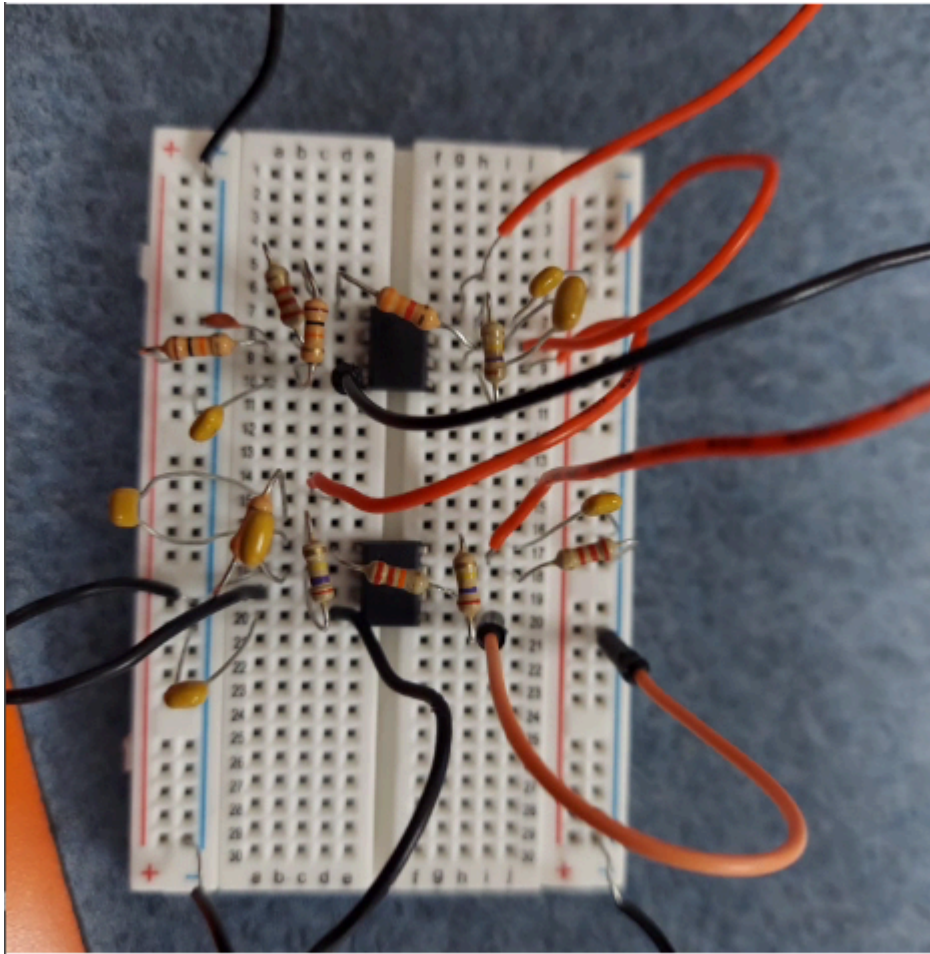
I first simulated my designed circuit using Microcap to make sure the circuit would produce the results needed under ideal conditions.



Here are the output waveforms that my simulated circuit produced.

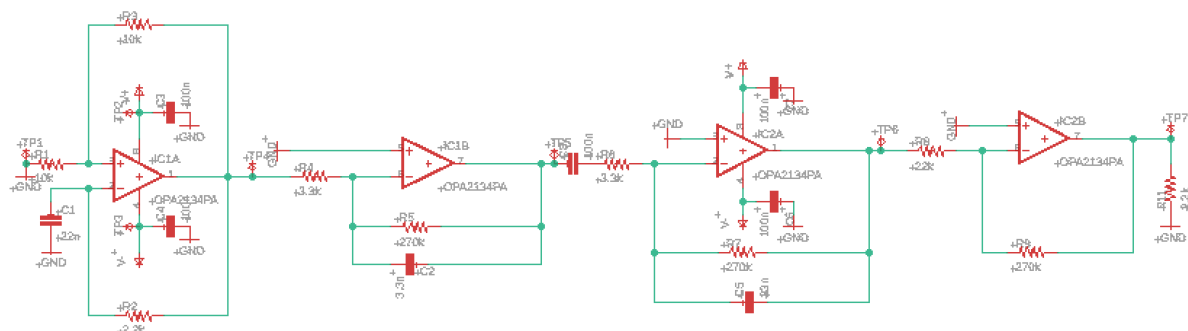


After making sure the simulated circuit produced the values that were needed, I built the circuit on a breadboard to test the circuit in non-ideal conditions. I used my knowledge on how to operate an oscilloscope, a functional generator and a multimeter to test my circuit. Below is the circuit I built for this project.



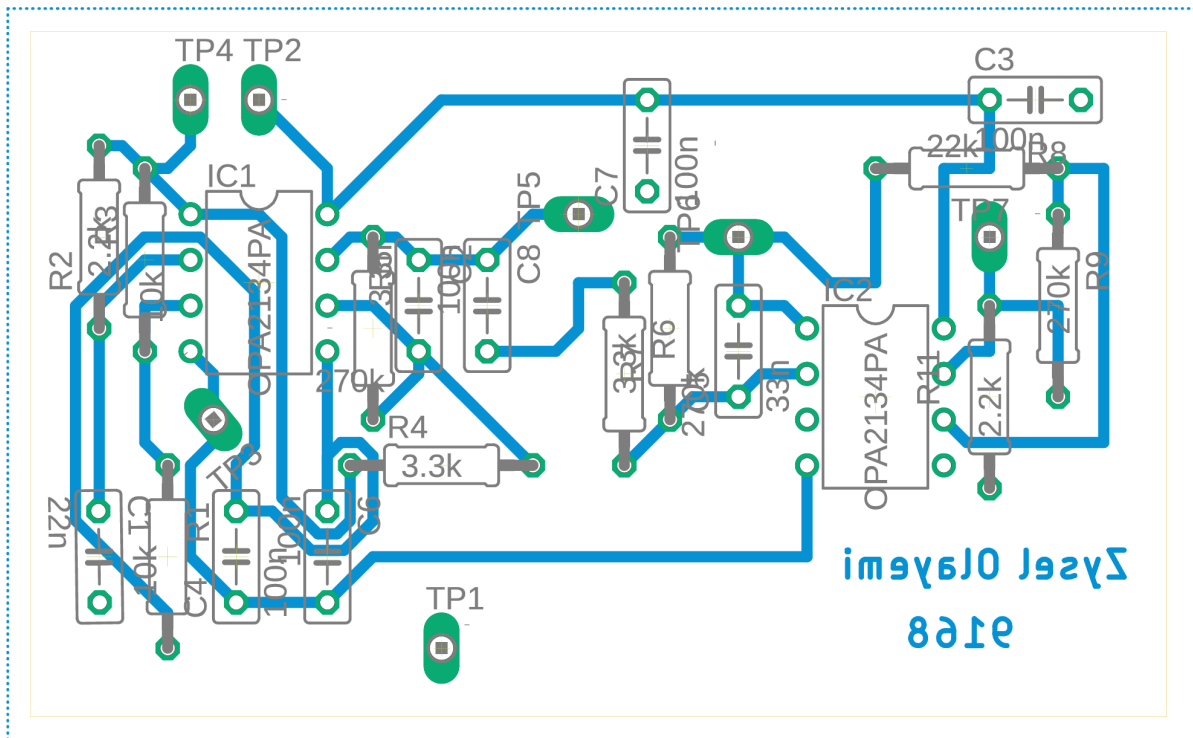
The circuit above provided the necessary values to continue with building my Function generator circuit.

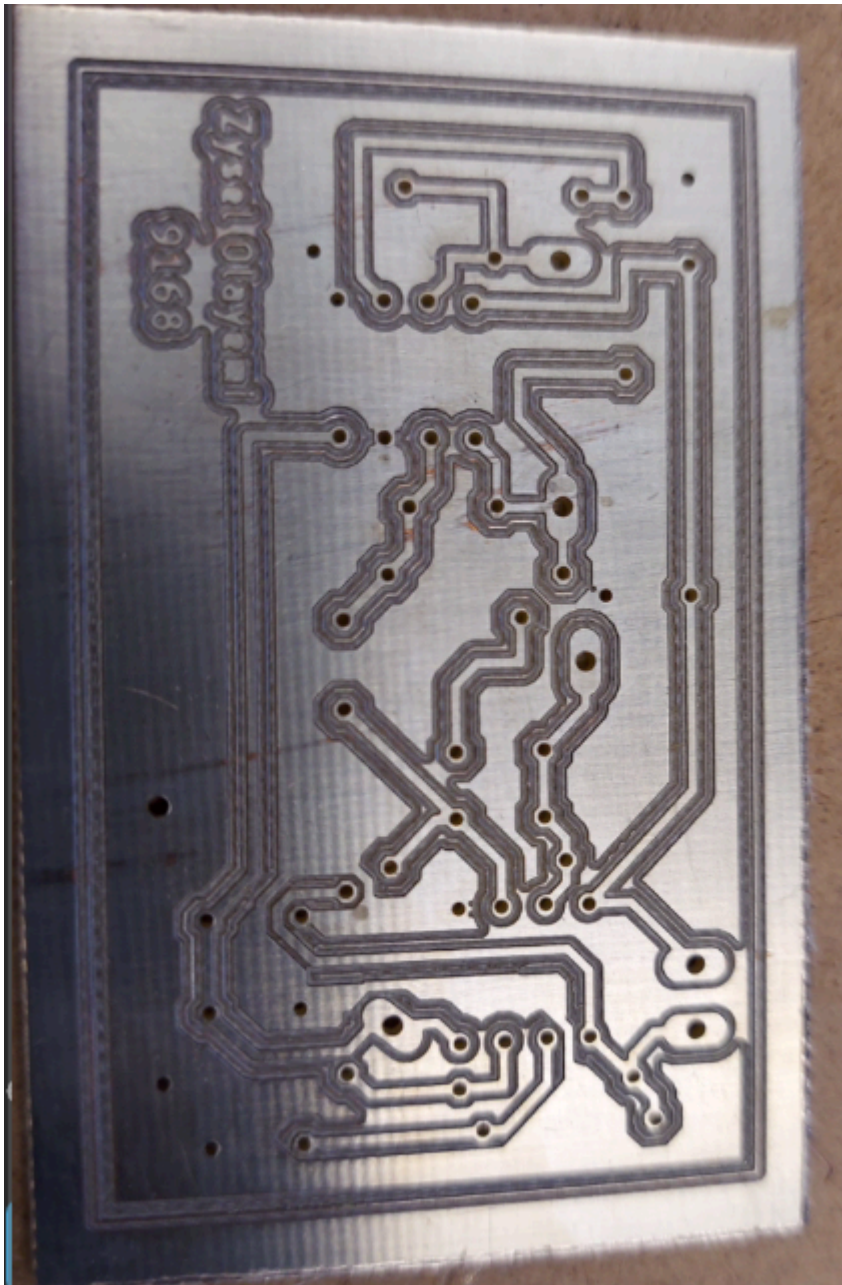
I recreated my schematic diagram on Eagle. Here is the diagram below.



Although the schematic was created using Eagle, I also have experience creating schematic diagrams using Altium as shown in my resume.

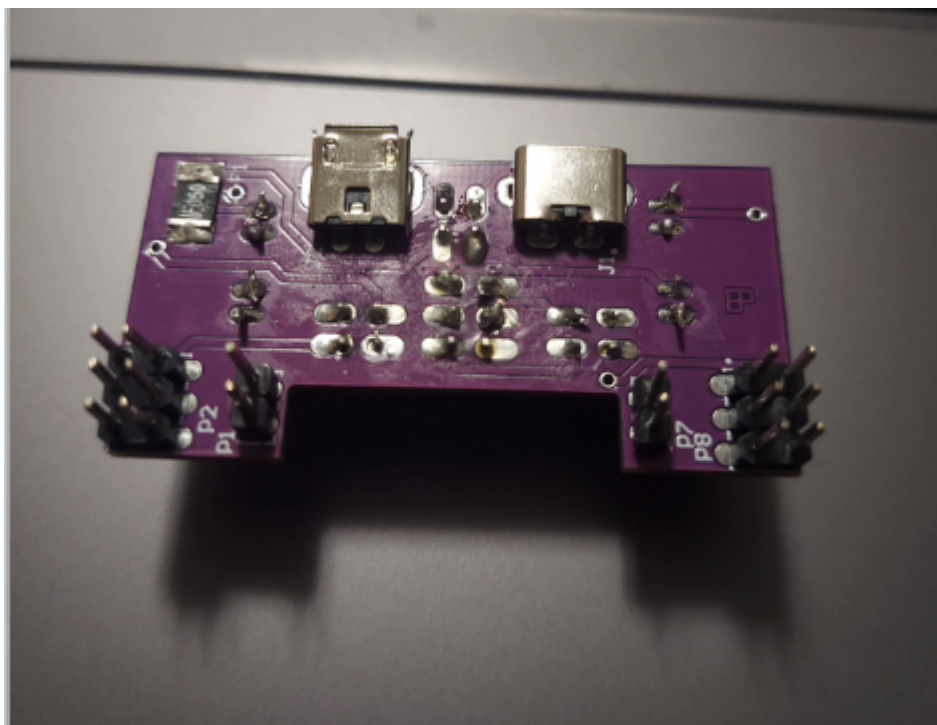
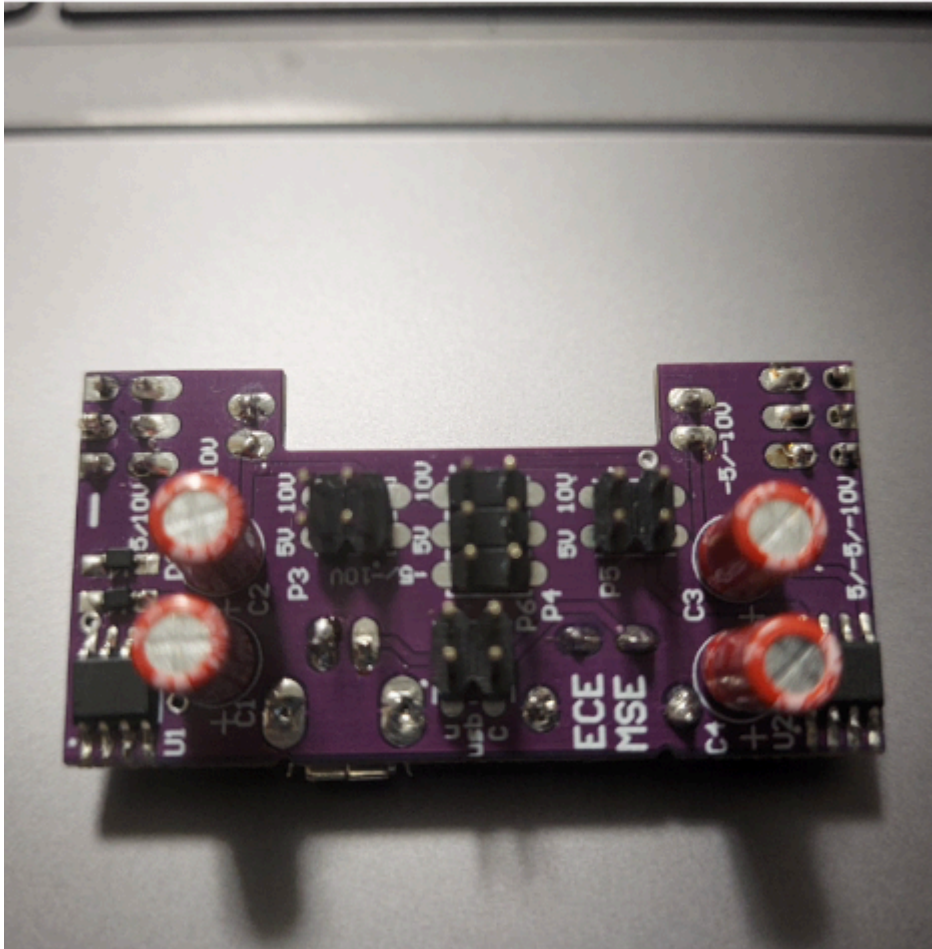
I then arranged the circuit elements of the block diagram so it could later be printed onto a PCB. Below is my block diagram.





Unfortunately I am yet to solder the components unto the board at the time of making this.

But here are pictures of a board I previously soldered but did not design.



In this project, I successfully designed, simulated, and built a Function Generator circuit capable of producing square, triangle, and sinusoidal waveforms. Through simulation and testing, I was able to verify the circuit's ability to produce an output frequency of 9100 Hz and an output voltage of 10 Vp-p. Although the soldering of the final components is yet to be completed the results achieved so far indicate that my design functions as intended and meets the required specifications.