LED Project- Morse Code Generator

I originally got inspired by this idea after seeing an extension task in the Arduino booklet, of which I found to peak my interest. Afterwards, I started looking into various Arduino projects that included LEDs that correspond with Morse code in order to gain a general understanding on how to produce the basic module.

Once I understood what was required to create the module, I went about sketching down ideas on how to extend the module in a logical and complex way. One option was to include batteries and a lightbulb, but I figured that it would be too far out of scope for me to do. My next option, which I then decided upon, was to include multiple lights and a buzzer that would correspond with the light’s signals. Once I had that idea planned out, I first needed to test the basic module and use some code I repurposed from the internet that includes the Morse code alphabet. I assigned each of the lights to blink whenever the corresponding Morse code letter or symbol appeared, for example, the green light would blink for every space between words and letters, the red light would blink for every dot letter or symbol, and the blue light would blink for every dash letter or symbol. This is more to show a bit of aesthetic to the project rather than functionality, as this could be easily be done with only one light or just the buzzer.

I found that the most difficult part was understanding how the Morse code alphabet worked, as well as distributing clean cut input. Furthermore, I found it hard to sync up the buzzer with the corresponding lights as the original code I downloaded was vastly different to what I wished to design. The downloaded template was also very unclean code, which made it difficult to incorporate into my planned project. Therefore, I needed to reconstruct the code in order to better read and understand it, as well as make it easier to organize the Morse code layout.

One key issue I faced while designing my LED project, was that due to the number of LEDs used, it was difficult to add in the potentiometer into the project due to all GND pin slots being in use. Therefore, I scrapped it as after some thought I decided to manually assign tone frequencies for each light section rather than have a dial do it for me. This also meant that I needed to rewire to circuit board to allow a more logical layout for the ground wires, of which allowed for a much cleaner wire layout. This also made it so the ground wiring for the LEDs would not interfere with the ground wiring for the speaker pins.