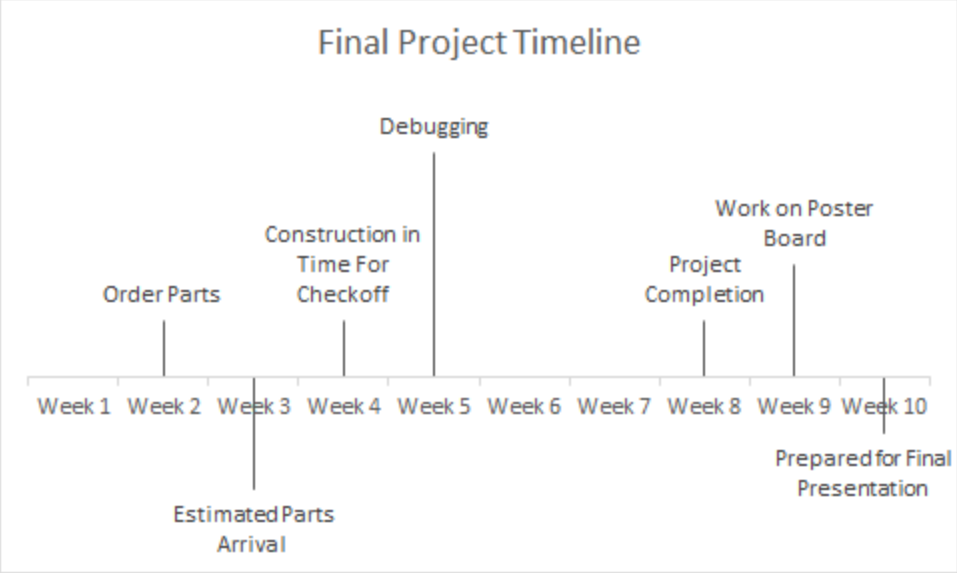
For this project I was assigned to design, build, and test a rangefinder that had two requirements. Those were that the system must be able to detect an object between 3cm to 10cm, and that it would display the distance from the object. Since the project had to include a PCB at some point in the implementation, I decided early on that I wanted to have a PCB shield that would contain all of the necessary components and rest on top of the Arduino. With that in mind I went to work researching the parts I would need. My first decision to make was what type of distance detecting sensor to use in the project, with the two most common choices being an infrared sensor, and the ultrasonic sensor I ended up using. I determined that while an infrared sensor would do a fine job, an ultrasonic sensor would have far superior distance capabilities, with the maximum distance being around 30 cm for the infrared sensor I had found, to a boasted 400 cm for the ultrasonic sensor. It was at about that time that I'd created a timeline for the project as seen below.



One thing that I didn't anticipate when creating the timeline was the amount of time it took to order and receive the PCB which took about two weeks and occurred around week six. I realized that I'd been spending too long debugging the project in a breadboard state, and while it did allow me to learn a lot about the workings of a sixteen pin LCD it had also eaten into my time that should have been spent getting the PCB ordered. Luckily I was able to complete that design, and come the arrival of the newly manufactured PCBs in the mail during week eight I was able to assemble the board without any faults.

A key lesson I learned from this project is that sometimes it's best to keep moving and to not get stuck on one particular phase of design to the detriment of others. While my initial timeline was fulfilled by being finished at week eight, much of the work was done close to the deadline after I'd realized I'd wasted a few weeks trying to iron out as many bugs as possible in the programming side of my project. Had I not waited so long on designing and ordering the PCB I would have saved myself much stress towards the last few weeks.