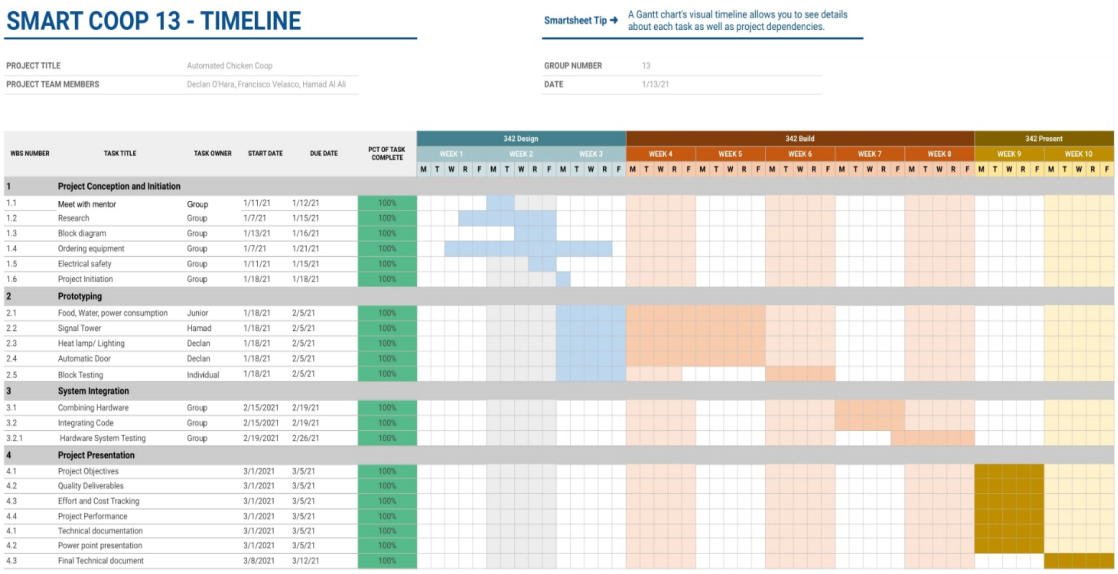
Executive Project Summary

The original problems that needed to be solved for this project include creating a smart chicken coop that can monitor and graph resource data, make it rugged and secure within an enclosure, create a printed circuit board (PCB), have a signal light that is triggered for specific warnings, and also include a heat lamp to help maintain the chickens at a comfortable temperature. Some other problems that needed to be addressed in this design was the ability to be waterproof and also be able to be something that can have certain components be easily replaceable within the system.

The approach taken in this project was to be mindful of the requirements and being able to adjust when something needed to be changed. Since the beginning of the project, most of our group took the time to understand the system and how the requirements would have to be met. In order to complete the system, it started with purchasing components that we knew would be able to coexist and be able to function with the "brains" of our project (the Arduino Mega board). The choice to use an Arduino was something that allowed the group to work with a board that all members had experience programming in. The development phases were something that changed over the course of the term. We had planned to start developing the PCB early in the term, however a group member that was responsible for the PCB ran late and that changed the timeline of the project. Looking at the timeline attached below (Figure 1), the team was still able to complete what was expected, however the setback with the PCB affected all members within the group. During this time, many revisions took place (change of components, different enclosures, etc). Also, the development phases were something that would depend on the way that the PCB was designed and that forced the group to make difficult decisions in order to meet the requirements.

Some key takeaways that the team learned was to have more team meetings in order to have all members on the same page. It appeared that a member of the group struggled to understand how things would come together due to a lack of understanding of the entire system. However, with better communication between members and the time management of a member, the final outcome could've been a substantial improvement beyond meeting the requirements. The final lesson we learned was learning how to work with someone in a different time zone and how challenges can be overcome with good communication and scheduling a time to meet that works best for all members.



SMART COOP 13 - TIMELINE

Smartsheet Tip → A Gantt chart's visual timeline allows you to see details about each task as well as project dependencies.

PROJECT TITLE	Automated Chicken Coop
PROJECT TEAM MEMBERS	Declan O'Hara, Francisco Velasco, Hamad Al Ali

GROUP NUMBER	13
DATE	1/13/21

WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	PCT OF TASK COMPLETE
1	**Project Conception and Initiation**				
1.1	Meet with mentor	Group	1/11/21	1/12/21	100%
1.2	Research	Group	1/7/21	1/15/21	100%
1.3	Block diagram	Group	1/13/21	1/16/21	100%
1.4	Ordering equipment	Group	1/7/21	1/21/21	100%
1.5	Electrical safety	Group	1/11/21	1/15/21	100%
1.6	Project Initiation	Group	1/18/21	1/18/21	100%
2	**Prototyping**				
2.1	Food, Water, power consumption	Junior	1/18/21	2/5/21	100%
2.2	Signal Tower	Hamad	1/18/21	2/5/21	100%
2.3	Heat lamp/ Lighting	Declan	1/18/21	2/5/21	100%
2.4	Automatic Door	Declan	1/18/21	2/5/21	100%
2.5	Block Testing	Individual	1/18/21	2/5/21	100%
3	**System Integration**				
3.1	Combining Hardware	Group	2/15/2021	2/19/21	100%
3.2	Integrating Code	Group	2/15/2021	2/19/21	100%
3.2.1	Hardware System Testing	Group	2/19/2021	2/26/21	100%
4	**Project Presentation**				
4.1	Project Objectives		3/1/2021	3/5/21	100%
4.2	Quality Deliverables		3/1/2021	3/5/21	100%
4.3	Effort and Cost Tracking		3/1/2021	3/5/21	100%
4.4	Project Performance		3/1/2021	3/5/21	100%
4.1	Technical documentation		3/1/2021	3/5/21	100%
4.2	Power point presentation		3/1/2021	3/5/21	100%
4.3	Final Technical document		3/8/2021	3/12/21	100%

Figure 1: The timeline for the 342 Smart Coop project.