Today, chickens are very common pets, in which they can exist in an urbanized setting in a chicken coop. In order to properly take care of the chickens, the owner will have to constantly monitor the conditions inside of the chicken coop. As a result, one could develop a system that could automate some of the process and help the owner maintain the best environment they can for their chickens. This system will be able to monitor daylight as well as the temperature and humidity inside of the chicken coop. Ultrasonic distance sensors are used to determine how much food and water is left in the coop. This would be used to control a heat lamp inside of the chicken coop, as well as inform the user when food or water needs to be refilled through a signal tower. The signal tower will also be able to inform the user when the heat lamp is malfunctioning. A 14-segment display would be used to output exact information about the environment and resources in the chicken coop, and the user will be able to access a web interface to see how this information changes over time. Because the system will exist outside, it will need to be sufficiently water and dust proof.

The team began the project by focusing on the inputs and outputs of the overall system. This information would be processed by a microcontroller, which would read the inputs and determine the appropriate outputs. With this in mind, a block diagram was constructed, and team members were given isolated blocks to develop over time, which would be implemented together in the final system. As such, the team was capable of working together in a remote environment, and was also constantly in communication to discuss each part of the project and how they would eventually be integrated together.

								342 Design													342 Build					342 Present									
WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION	COMPLETE																	WEEP	6		WEEK 7		W	EEK 8		WE	K 9		WEEK	10
							м	τw	RF	м	т W	RF	M	т w	RF	м	тw	RI	FM	τw	R	м	тw	R F	M	τw	RF	мт	WR	F N	1 T 1	VRI	M	τw	RF
1	Project Conception and Initiation																																		
1.1	FP Engineering Requirements	All	1/11/21	1/11/21	1	100%																													
1.2	Client interview	All	1/12/21	1/12/21	1	100%																													
1.3	FP Requirements Collection	All	1/12/21	1/13/21	2	100%																													
1.4	Initial Timeline	All	1/13/21	1/15/21	3	100%																													
2	System Design																																		
2.1	Initial Block Diagram	All	1/13/21	1/15/21	3	100%																													
2.2	Power Supply	Sean	1/18/21	2/19/21	25	100%																													
2.3	Food Sensor	Jordyn	1/18/21	1/29/21	10	100%																													
2.4	Water Sensor	Jordyn	1/18/21	1/29/21	10	100%																													
2.5	Daylight/Heat Lamp Sensors	Shengmei	2/1/21	2/19/21	15	100%																													
2.6	Temp/Humidty Sensor	Shengmei	1/18/21	1/29/21	10	100%																													
2.7	Warning Lights	Jordyn	2/1/21	2/19/21	15	100%																													
2.8	Heat Lamp	Shengmei	2/22/21	3/5/21	10	100%																													
2.9	7-Segment Display	Sean	1/18/21	2/19/21	25	100%																													
2.10.	Graph Processing	Sean	1/18/21	1/29/21	10	100%																													
2.11	Enclosure	Sean	2/22/21	3/5/21	10	100%																													
3	System Integration																																		
3.1	First Block Checkoff	All	1/18/21	1/29/21	10	100%																													
3.1.1	Block 1	Sean	1/18/21	1/29/21	10	100%																													
3.1.2	Block 2	Jordyn	1/18/21	1/29/21	10	100%																													
3.1.3	Block 3	Shengmei	1/18/21	1/29/21	10	100%																													
3.2	Second Block Checkoff	All	2/1/21	2/19/21	15	100%																													
3.2.1	Block 4	Sean	2/1/21	2/19/21	15	100%																													
3.2.2	Block 5	Jordyn	2/1/21	2/19/21	15	100%																													
3.2.3	Block 6	Shengmei	2/1/21	2/19/21	15	100%																													
3.3	System Verification (Final Checkoff)	All	2/22/21	3/5/21	10	100%																													
4	Project Presentation																																		
4.1	Project Showcase Presentation	All	2/22/21	3/5/21	10	100%																													
4.2	Project Showcase Technical/Developer Guide	All	2/22/21	3/5/21	10	100%																													
4.3	Project Completion Video	All	2/22/21	3/5/21	10	100%																													
4.4	End of Project Self Assessment	All	3/8/21	3/12/21	5	0%																													

Throughout this project, the team learned about how electrical engineering concepts are applied in order to design a fully functional system. This involved being able to select the parts to be implemented within this system, as well as being able to interpret their datasheets so that they can be implemented into the system correctly and effectively. Implementing components such as connectors, an enclosure, and a PCB were also new concepts the team had worked with, and thus this project served as a great way for team members to learn how to work on these concepts so they can be applied properly in future projects.