

Step 5

Testing and Refining the Solution

Testing Logic

TEST CASES			
Case	Input Conditions for Case	Expected Process	Expected Outcome
Pet eats as expected	Real_Time = Feeding Time1 or 2 + Food Level >= 500g + Food is dispensed properly = 200g + Pet eats completely	Servo motor dispenses appropriate amount = 200g + Bowl_Weight decreases over time + The final Bowl_Weight is less than 30g	Outputs in display log = "Feeding Complete."
Pet doesn't eat as expected	Real_Time = Feeding Time1 or 2 + Food Level >= 500g + Food is dispensed properly = 200g + Bowl_Weight stays 200g	System measures no change in bowl weight + Buzzer turns ON for 5 seconds + System waits 5 minutes + Returns to monitoring Real Time Clock	Outputs in display log = "Pet may not have eaten, please check the food bowl."
Food bin is empty	Real_Time = Feeding Time1 or 2 + Food_Level < 500g	System doesn't dispense food + Buzzer turns ON for 5 seconds +	Outputs in display log = "Please fill the food storage container."

		Waits 5 minutes for food to be deposited + Re-checks the sensor and re-weighs the Food_Level	
Pet eats partially	Real_Time = Feeding Time1 or 2 + Food Level >= 500G + Food is dispensed properly = 200g + Pet eats gradually but leaves more than 30g remaining in the food bowl	System detects remaining amount of food + Buzzer turns ON for 5 seconds + Waits 5 minutes + Returns to monitoring the Real Time Clock	Outputs in the display log = "Feeding Incomplete, please remove food from the bowl for the next feed."

System Enhancements

These are the enhancements that seem logical and easy to implement when wanting to better my algorithm.

1. In the cases of power outages, the system would be able to recover all data smoothly and there wouldn't be a need to reconfigure the sensors, or the display would not be malfunctioning.
2. If a pet doesn't eat for 10 minutes, but on the 11th minute decides to go back to eating, the system will be able to accommodate the pet and not output the alert message to check the food bowl.
3. If a pet has an emergency and requires instant feeding, the enhanced system will be supplied with an instant feeding option, so that the pet does not have to wait long for the next scheduled feeding.

4. The enhanced system would be able to predict when the food storage container needs to be filled before an alert message is sent and output an according prompt saying, "Please fill the food storage container for smooth operation and undisturbed feeding of pets."

5. As this is a shelter, funds sometimes may need to be tracked closely, in that case a tracker could be implemented that allows the local shelter to recognize trends within eating and buy food supplies accordingly.