**Step 5: Testing and refining**

**Sample Event**

* Target amount of food: 120g
* Eating timer: 60 minutes
* “Eaten” approved if >= 80% of the weight is removed after timer ends
* Food level status: Ok
* Alert system: Enclosed network and buzzer

**Outputs**

|  |  |  |  |
| --- | --- | --- | --- |
| Scenario | Inputs | Expectations | Output |
| Pet eats as expected | Time= 10:30 Food level= Ok  Motor= Ok  Weight after dispensing= 120g  Weight after timer ends= 17g | * Dispense * No error * Mark “Eaten” * Log data | * No alerts * Log: 120g dispensed and 103g consumed |
| Pet does not eat | Time= 16:30  Food level= Ok  Motor= Ok  Weight after dispensing= 120g  Weight after timer ends=  98g | * Dispense * Alert staffs with “Not eaten” * Log data | * “Not eaten” alert sent * Log: 120g dispensed and 22g consumed |
| Food bin is empty (low) | Time: 19:30  Food level= Low Motor= Ok | * Alert staffs with “Low Food” and “No Dispense” * Food is not served * Log data | * “Low Food” and “No Dispense” alert sent * Log: No food dispensed. |
| Motor fault | Time: 22:00  Food level= Ok  Motor= Not Ok | * Alert staffs with “No Dispense” * Food is not served | * “No Dispense” alert sent. * No data logged. |

**Discussion**

1. The flowchart decisions worked as expected: time check> food level check> motor check> dispense> consumption amount check.
2. Scenario 3 proofs that dual alert is possible. “Low Food” alert can coexist with “No Dispense” alerts.
3. In case of motor failure, no data is logged as expected. If it was logged, this information would have caused confusion when checked later.
4. Scenario 2 proves that timer and weight sensors are working properly, and even after successfully dispensing, the feeder correctly detects the problem and alerts staffs.

**Refinements**

The feeder works properly as per the information and sample testing. But with better equipment and advanced processing, this system can achieve better results. Such improvements could be:

1. **Retry Policy:** If the food storage is low, attempt up to 2 tries before alerting staffs.
2. **Dispense based on weight:** Stop motor if bowl weight hits target. This will resolve any over/under weight issues of dispense.
3. **Maintenance:** Periodic manual testing of sensors, timer and the system itself will simplify debugging.