# **Step 4: Word coding**

# WORD CODE

1. Start the device
2. **Load Config & Time**: Read current rtc\_time and system configuration.
3. **Check Manual Feed Button**:

* If pressed → set FeedingReason = MANUAL → proceed to Step 4 (Bin Check).

1. **Check Scheduled Feed**:

* If rtc\_time ∈ schedule [] → set FeedingReason = SCHEDULED → proceed to Step 4 (Bin Check).
* If not feeding time → log “Idle” → wait 1 minute → loop back to Step 1 (Load Config & Time).

1. **Bin Check**:

* If bin\_level == EMPTY → alert “No Dispense / Bin Empty” → loop back to Step 1 (Load Config & Time).
* Else → proceed to Step 5 (Dispense Portion).

1. **Dispense Portion**:

* Compute dispense\_sec = portion\_g / grams\_per\_second.
* Record pre\_weight = bowl\_weight\_g.
* Rotate servo for dispense\_sec seconds.

1. **Verify Dispense**:

* Measure post\_weight.
* If (post\_weight - pre\_weight) < 50% of portion\_g or jam\_flag == true → alert “No Dispense / Jam” → loop back to Step 1 (Load Config & Time).
* Else → proceed to Step 7 (Wait for Eating).

8. **Wait eat\_timeout\_min**: Wait configured minutes for pet to eat.

1. **Check if Eaten**:

* Measure bowl weight after wait.
* If ≥ 60% of portion consumed → log “Eaten” with timestamp and FeedingReason → loop back to Step 1 (Load Config & Time).
* Else → alert “Not Eaten” → loop back to Step 1 (Load Config & Time).

10. **Log Events**: Append all actions, alerts, and timestamps to persistent log.  
  
**Constants & Variables**

* **schedule[]** — An array containing the configured feeding times for the automated feeder.
* **portion\_g** — The amount of food (in grams) to dispense for each feeding.
* **grams\_per\_second** — Calibration constant that converts servo rotation time to grams of food dispensed.
* **eat\_timeout\_min** — The duration (in minutes) to wait after dispensing for the pet to eat.
* **bowl\_weight\_g** — Real-time reading of the bowl’s weight from the load cell sensor.
* **bin\_level** — Status of the food storage bin, represented as one of {OK, LOW, EMPTY}.
* **jam\_flag** — Boolean indicator that becomes true if a motor jam or dispensing failure is detected.
* **FeedingReason** — Records the reason for feeding, either {SCHEDULED, MANUAL}, depending on whether the feed was automatic or manually triggered.