1. **Organize and Describe the Data**

**Inputs:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Example value** | **Source** | **Constraints** |
| Current Time | Time | 7:00 | Real-time clock | Must match feeding schedule to trigger. |
| Feeding Time | List of Time | 7:00, 14:00 | User | Max 5 times: sorted for each food and pet |
| Portion Size | Integer (g) | 100 | User | 2—250: multiples of 10g |
| Food Bin Level | Integer (g) | 600 | Bin Sensor | 0-2000g: must be >= portion size |
| Bowl Weight | Integer (g) | 50 | Load cell | +-5g accuracy: stable reading |
| Motor Status | OK/FAULT | OK | Motor Driver | Must be OK to feed. |
| Manual Override | True/False | False | Button/App | Override schedule if safe. |

**Outputs:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name** | **Type** | **Example value** | **Target** | **Constraints** |
| Rotate Motor | Action | Dispense 100g | Servo Motor | Max 12s continuous run. |
| Stop Motor | Action | Stop | Servo Motor | Triggered on portion or fault. |
| Send Alert | String | Bin Empty | Staff/App | Repeat every 15 min until fixed. |
| Log Event | String | 7:00- SUCCESS | Local Log | Max 100 records. |
| Status LED | State | Yellow Blink | LED | Simple status codes (OK/LOW/ERROR) |

**Key Operational Parameters:**

* Feeding Trigger: Exact time match in schedule
* Eaten Threshold: Bowl weight >= 80% of portion size
* Wait time after feeding: 10 minutes
* Empty Bin: Food bin Level < portion size
* Retry Policy: one retry 30s after recoverable motor fault