**STEP 2 – Organise and Describe the Data**

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| **Variable** | **Device** | **Symbol** | **Type** | **Unit** | **Sample Data** | **Notes** |
| Feeding Time | Real Time Clock | F-TIME | Input | HH:MM | 08:00,18:00 | The display will show time in 24-hour clock. For example, 18:00 would be 6 PM. |
| Food Tank Level | Sonar Sensors | F-LEVEL | Input | centimeter | 20 cm | The Sonar Sensor emits ultrasonic waves to calculate distance to the food surface. |
| Food Bowl Weight | Load Cell | F-WEIGHT | Input | gram | 10 gm | The weight sensor under the bowl will check the amount of food in the bowl. |
| Food Dispense | Servo Motor | DISPENSE | Output | Open/Close | Food Released / Unreleased | The servo motor will open and release (dispense) food in the food bowl. |
| User Alerts | GSM Module | ALERT\_F-LEVEL  ALERT\_F-WEIGHT | Output | SMS/Text | ‘Food Level low. Please fill tank’ | The user will receive an SMS/ text message in case of an alert |

**Constraints:**

1. F-TIME = 08:00 or 18:00
2. F-LEVEL = Food level in the tank must be above 15 cm
3. F-WEIGHT = 10 minutes after food has been dispensed, the weight in the bowl must be equal to or below 150 gm to consider that pet has eaten food.
4. ALERT\_F-LEVEL = ‘Food Level low. Please fill tank’
5. ALERT\_F-WEIGHT = ‘Pet didn’t eat sufficient amount of food. Pet monitoring advised’
6. DISPENSE = Open

**Assumptions:**

1. The pet owner always has the power turned on for the pet-feeder before the scheduled feeding times. It is also assumed that system has an auto-off feature available as well.
2. The maximum F-WEIGHT in the food bowl is 250 gm; it is also the same amount of food the Servo Motor dispenses every scheduled F-TIME.
3. The pet, on average eats anywhere between 100 - 250 gm of food every scheduled F-TIME.
4. The SMS ALERT service is active.

**Limitations:**

1. The system cannot determine the exact amount of food to dispense if the pet has not eaten all the food: it will dispense 250 gm every schedule F-TIME and therefore result in food wastage.
2. If the system does not dispense food due to a low F-LEVEL, it misses the current scheduled F-TIME window even if the tank is refilled, meaning the pet cannot have food until the owner fills the food bowl directly.