Part I

***Step 1: Understand and Define the Problem (Analyse)***

At specific times the feeder will dispense food for cats and dogs. Will alert staff if there’s been no consumption (as the system will monitor consumption) or if the machine has malfunctioned and not dispensed at all.

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| **Inputs** | **Outputs** |
| Daily feeding schedule | Alert notification to staff |
| Feeding times | servo motor open and closing |
| sensors | Digital log (for alerts and so forth) |
| Mass of bowl before and after consumption |  |
| Type of species |  |
| Manual override system (for when staff are forced to intervene with dispensing) |  |
| Hopper level |  |
| Real-time clock |  |
| Preferred portion size |  |

Limitations:

* Only 2 schedules (For cat and dog).
* Memory stores last 12 feeding logs
* Each feeder dispenses 1 type of pet food (can be duplicated to accommodate other species of pet).
* Clock with current time
* Sensors will consist of load cell, rotation tick, hopper level switch
* For alert to be received, a network service must be available for staff.
* Attempt to dispense 3 times then alert staff.

How system is supposed to operate:

current time (RTC) with respect to feeding schedule

Type of species (cat or dog)

Hopper level sensor (alerts the control logic if food is running out)

Control logic

Servo motor

Load cell (mass of bowl before and after)

Alert staff

Error (unabale to dispense)