**ANAYLASIS**:

The local animal shelter is looking for an automated pet feeder that must require the following: Despenser that dispenses food for both cats and dogs, Include a monitor that that knows whether or not the food has been consumed and the amount that has been consumed, and lastly if a problem is to occur, an alert will be sent to the staff.

Inputs needed for this automated pet feeder to work include **sensors** (Whether this be a weight sensor or a laser sensor or pet presence sensor, this would be used to measure the foods levels indicating how much has been eaten. The sensor could also be used to detect the presence of the animal) **Time Settings** (this allows the user to adjust specific times for when the want the food to be dispensed) **Portion sizes** (this allows the user to adjust the portion size that is dispense which would have a limit as to how big and or small the portion size is) **User Interface** (This can include programming an app on the phone that controls all other inputs said above making it a stress free easy to use item. There will also be a log into account screen that helps with saving profiles and names and which will then go into a connect to system screen when logged in. You are able to connect multiple of the systems to the one app) **Wifi/Bluetooth module** (this allows the user to connect to the dispenser being able to control the multiple things in the app) **Battery backup/power monitor** (this helps detect any power loss in the system and if it is to occur will switch to the backup battery and sends an alert letting the staff know)

Outputs needed for this automated pet feeder to work include **Motor dispenser** (This would be for the food to be dispensed into the bowl when it is time for feeding the animals. The motor would rotate ultimately causing the food to drop into the bowl and when enough is in the bowl would rotate back to stop the food from overflowing) **Alerts via app/local and voice** (if any problems are to arise, an alert will be sent to the staff via the app and or in person using a flashing light and voice alert so that they can attend to the issue and fix it)

**DATA TABLE:**

|  |  |  |  |
| --- | --- | --- | --- |
| Type | Name | Example Values | Constraints |
| Input | Weight Sensor (Under Bowl) | 0g, 70g, 120g | The rang Is 500g, Accuracy +- 1g. |
| Input | Laser Sensor (Food Level in Bowl) | Clear, Blocked | Rotate motor when laser is blocked by food. |
| Input | Food Level Sensor (Storage bin) | Full, Low, Empty | Triggers alert to top up food when value is low or empty |
| Input | |  | | --- | |  |  |  | | --- | | **Time Settings (UD)** | | 6:00am, 6:00pm | 12-hour format, if power loss occurs will need backup clock |
| Input | Portion Size Setting | 25g, 75g, 125g | Range, 10g – 500g, this can determine how long the motor goes until it rotates back around |
| Input | User Interface / App | Set Portion, Set time, Alerts, Login to account, Connect to system, Set timer for how long animal eats | Needs to be user friendly and very responsive so no problems occur. |
| Input | Battery Backup / Power Monitoring | Power: okay, running on battery, Power: low | Ensures that there will be a continuous function of the system |
| Input | Wi-Fi / Bluetooth Module | Connected, Disconnected | Has to maintain a reliable connection to the system |
| Input | |  | | --- | |  |  |  | | --- | | **LED Indicator System** | | Voice Alert “Low food”, Blinking red LED | Cannot be to loud otherwise can scare the animals |
| Input | Animal Visual sensor | Pet presence detected, pet Prescence not detected | Ensures that the pet is there when its feeding time |
| Output | Motor Dispenser | On, Off | Must stop and rotate back when the laser is blocked immediate effect |
| Output | Alerts via App | Low food, Error please attend system | Send alerts only when problems occur. |