

Analysis & Sketch (Step 1)

Problem Statement

Feeding pets on time is very important in an animal shelter, but doing it manually every day can be difficult and time-consuming. Sometimes staff members are busy, and pets may miss their meals or get the wrong amount of food. This can affect their health and make it harder for the shelter to maintain proper care.

To solve this problem, the shelter wants an automated pet feeder that works on a schedule. The system should be able to dispense food at fixed times every day without staff needing to be present. This will save time and make sure that all pets are fed regularly and properly.

However, just giving food is not enough. The feeder should also check whether the pet has eaten the food or not. If the food is not eaten within a certain time, the system needs to let the staff know. In the same way, if the food bin becomes empty, the feeder should send an alert so staff can refill it.

The shelter also wants this system to be simple and low-cost so that it can be built using basic parts like a motor and sensors. Later, it can be improved with more features if needed, but for now, the main goal is to make feeding easier and more reliable for both pets and staff.

Assumptions

1. The feeder will use only one type of dry pet food for both cats and dogs.
2. Each feeding session will provide a fixed amount of food (about 100–150 grams).
3. There will be two feeding times per day, for example, 8:00 AM and 6:00 PM.
4. The system will have a stable power supply and is not battery-operated in the basic version.
5. Staff will refill the food container when they receive an alert.

Limitations

1. The feeder cannot recognize individual pets; it assumes one pet per feeder.
2. There is no camera for visual monitoring in the first version.
3. Only basic sensors (weight sensor and food level sensor) will be used.
4. Alerts will work locally with buzzer/LED unless connected to a network for remote notifications.

Inputs and Outputs

Inputs: Food level sensor, Real Time Clock (RTC), weight sensor.

Outputs: Servo motor action, Buzzer/SMS

