Step 1: Understand and define the problem.

Problem Statement:

We are designing a low-cost automated pet feeder for a local animal shelter that can:

-Provide the right amounts of food at set times for cats and dogs (8 AM, 11AM and recurring like every 3 hours)

- Check if the food has been given within scheduled time accurately.

- Monitor if the cats and dogs eat the food within a certain time.

- Alert staff if there are any problems (for example, if no food is dispensed, if the bowl is still full after a set time)

Inputs:

Real-time clock (RTC) to set feeding time accurately.

Weight sensor to detect either the set quantity of food has been dispensed, eaten fully or how much has been left out.

Outputs:

Motor control to help dispensing of food at programmed times and amounts.

Display/ Indicator /LEDs to indicate system status (no food, low food or no change in quantity of food provided)

App or Buzzer alerts to alert staff if food wasn't provided or given food is not eaten in time via using Wi-Fi or GSM

Data logger to keep record of feeding times, food provided and eaten or not.

Assumptions/Limitations:

Weight sensors or motors may fail, causing dispensing errors.

RTC may need to reset or reconfigured its time if battery drains or fails as it is battery dependent.

Alert notification may not be gotten in time in animal shelter if network connection is not stable.

Animals eat from the feeder without interference.

The feeder provides the same type and quantity of food.

There is limited memory of data logger.

Block diagram of the system