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

* **What features must the feeder include?**

▶ Automatic food dispensing, monitoring system whether food has been consumed or not, monitoring system of the amount of food consumed, alert user system that if no food dispensed, food not eaten, feeder destroyed, etc.

* **What inputs and outputs are needed (e.g., feeding times, sensors)?**

▶ inputs: feeding scheduled time, a sensor to check whether food has been consumed or not, a sensor to check the amount of food consumed, sensor to check if no food dispensed, food not eaten, feeder destroyed, etc.

▶ outputs: Dispenses food, a result whether food has been consumed or not, a measurement result of the amount of food, alarm the issues to notify the staff

* **What are possible assumptions or limitations (e.g., limited memory, one type of pet food)?**

▶ Assumptions: Pet is always at feeding time, user sets the correct schedule, the food is always one type, power supply is always stable, the schedule information does not disappear when the power is turned off (battery replacement)

▶ Limitations: Can’t prevent the machine from physical attacks, can’t control more than two pets eat at one dispensing, can’t work during the battery outage, can’t distribute the amount of each pet’s diet

\* Assumption:Something you believe is true or will always happen, but don’t verify.

\*Limitation: A restriction or weakness in the system’s design, hardware, or logic.

Deliverable: Clear problem statement, assumptions, inputs/outputs, and a simple sketch or block diagram of the system.