**Step 1:**

Problem statement:
The local animal shelter does not have a pet feeder system. The goal and final product is the production of a low cost, programmable and fully automated pet feeder system that will dispense food for cats and dogs at correctly scheduled times, monitor food quantity in the feeder bin as well as food consumption and provide alerts where necessary.

| Key Assumptions | Key Limitations |
|---|---|
| - All components operate in synergy and work all the time.<br>- The system has a constant energy supply.<br>- The system caters for both cats and dogs only.<br>- The food type is the same for all...(kibble/pellets).<br>- The system does not provide water only food.<br>- The amount of food dispensed remains constant.<br>- There is a constant internet connection to the system.<br>- Feeding schedules are the same for all pets. | - Some system components/hardware may not always be accurate/fully functional.<br>- Potential loss in energy supply could prevent the system from working.<br>- Internet connectivity is not always at its best, sometimes none.<br>- Cats and dogs do not have the same dietary requirements. This includes food quantity and type.<br>- Pets do not necessarily eat at the same times. |

Block diagram:

**Feeder Bin**
Food stored in large food bin.

**Bin Weight Sensor**
Weighs food in feeder bin as % of total capacity.

**Food Bowl**
Food dispensed into food bowl.

**Pet Feeder System**

**Real time clock**
Sets feeding schedule.

**Bowl weight sensor**
Weighs food in bowl as % of dispensed amount.

**Alerts**
Alert given on dashboard when necessary.