SMART WASTE MANAGEMENT SYSTEM

LIST OF COMPONENTS:

SENSORS:

 **Ultrasonic Sensors**

* Measure distance to waste level

 **Infrared (IR) Sensors**

* Detect presence of waste using light reflection

 **Weight Sensors (Load Cells)**

* Measure weight of waste

HARDWARE:

**Arduino**:

* + Easy to program with a wide range of compatible sensors.
  + Suitable for simple applications with less processing power needed.

**Raspberry Pi**:

* + More powerful, capable of handling complex computations and multiple sensors.
  + Suitable for applications requiring higher processing power and memory.

Communication Modules:

* **Wi-Fi Modules** (e.g., ESP8266):
  + Provides high data transmission rates.
  + Suitable for areas with strong Wi-Fi infrastructure.
* **GSM Modules** (e.g., SIM800):
  + Uses cellular networks to transmit data.
  + Ideal for remote locations without Wi-Fi access

**Power Supply:**.

* **Batteries**:
  + Rechargeable or disposable.
  + Easy to install and replace, suitable for locations without access to the power grid.
* **Solar Panels**:
  + Converts sunlight into electrical energy, providing a renewable power source.
  + Ideal for outdoor installations and remote areas with ample sunlight.

**Centralized Monitoring System:**

**Server or Cloud Platform**: For data storage and processing.

**Collection Vehicles**

* + **GPS Tracking Devices**: For monitoring vehicle routes and locations.
  + **RFID Readers**: For identifying bins and recording collection data.

Software Components:

Data Collection and Transmission

* **Firmware**: Code on microcontrollers to read and transmit sensor data.

Data Processing and Storage

* **Database Management System**: For storing collected data.

User Interface

* **Web Application**: For administrators to monitor and manage the system.

**FLOWCHART:**

