IoT- based Smart Dustbin Management System

- **Group - 4**

OUR TEAM

Peddineni Rupesh chowdary

S20210010173

Pagilla Saiteja

S20210010168

Rahul Pramod Marada

S20210010136

Sai Swetha Mekala

S20210010143

TABLE OF CONTENTS

- Introduction
- Motivation

- Related Study
- Problem Statement

- Methodology
- Components

- Flow chart

INTRODUCTION

- Effective Waste Monitoring is crucial for maintaining a clean and healthy environment

- Traditional waste collection methods, which often involve predetermined routes and schedules

- These are not only inefficient but also fail to respond to real-time needs.

- This leads to a range of problems like environmental issues, disease spread, and inefficiency in municipal operations

MOTIVATION

Current Challenges :

- Overflowing dustbins causing littering and health hazards

- Lack of real-time monitoring leading to delayed waste disposal

- Increased operational costs for municipalities due to the inefficiencies in routing and scheduling.

To Overcome above challenges, An IoT-based system is required which can optimize this process by providing real-time data on dustbin fill levels, ensuring timely waste collection.

RELATED STUDY

Previous research and implementations of smart waste collection management systems have focused on various aspects

Such technologies include

- **RFID & GPS** : These technologies were primarily used for tracking the location of waste collection trucks and bins. These systems did not typically monitor the fill levels of dustbins. They didn't address the issue of knowing which bins were full.
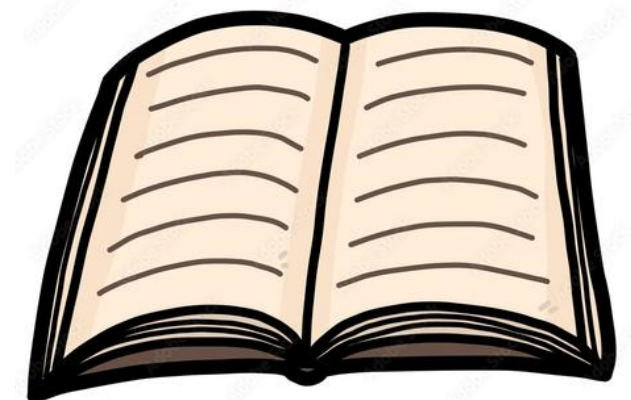
PROBLEM STATEMENT

Objective :

- To develop a smart system that provides real-time data on dustbin fill levels, which thereby optimizes the waste collection routes and reduces health risks

PROPOSED METHODLOGY

- **Data Collection:**

  - Ultra-Sonic Sensors installed in dustbins measure the fill level and send data to the NodeMCU.

- **Data Transmission:**

  - NodeMCU transmits the data to a central server or cloud-based platform like Firebase etc

- **Data Processing:**

  - In this step, Analysis of the data is performed to be sent to Application

- **Real-time Application:**

  - The processed data is now utilized in the application to monitor the dustbins and take efficient and necessary actions accordingly
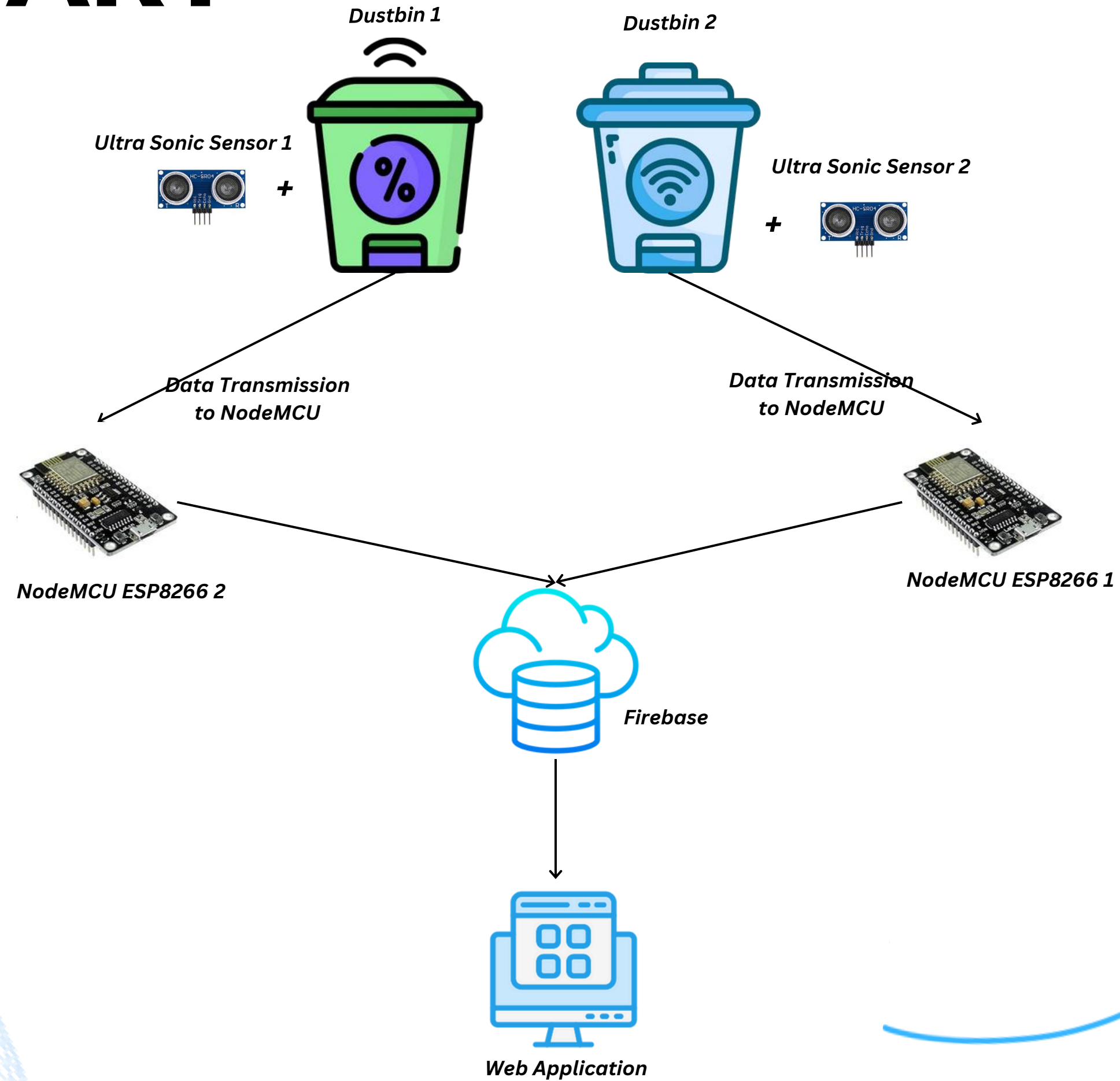
COMPONENTS

Hardware components :

- NodeMCU ESP8266

- 3-4 Dustbins

- NodeMCU jumper wires

- Connector

- BreadBoard

- Power Supply

Software components :

- Aurdino IDE

- Web Application (Interface)

- Firebase (To store data)

FLOW CHART

Dustbin 1

Dustbin 2

Ultra Sonic Sensor 1

Ultra Sonic Sensor 2

+

+

Data Transmission
to NodeMCU

Data Transmission
to NodeMCU

NodeMCU ESP8266 2

NodeMCU ESP8266 1

Firebase

Web Application

THANK YOU

- Group 4