Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	15 October 2022
Team ID	PNT2022TMID05219
Project Name	Smart waste management system and metropolitan cities
Maximum Marks	4 Marks

Technical Architecture:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web Portal	HTML,CSS,NodeRed, Javascript.or on
2.	Application Logic-1	To calculate the distance of dreck and show the real time level in web portal , information getting via ultra sonic sensor andthe alert message activate with python script to web portal.	Ultrasonic sensor/ Python.
3.	Application Logic-2	To calculate the weight of the garbage and show the real time weight in web portal, this info getting via load cell and the alert message activate with python to web portal.	Load cell/Python.
4.	Application Logic-3	Getting location of the Garbage.	GSM / GPS.
5.	Cloud Database.	Database Service on Cloud	IBM DB2, IBM Cloudant etc.
6.	File Storage	File storage requirements	Github,Local file system.
7.	External API-1.	Firebase is a set of hosting services for any type of	Firebase.

		application. It offers NoSQL and real-time hosting of databases, content, social authentication, and notifications, or services, such as a real-time communication server.	
8.	Ultrasonic Sensor.	To throw alert message when garbage is getting full.	Distance Recognition Model.
9.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: localhost Cloud Server Configuration:localhost,Firebase.	Localhost, Web portal.

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	NodeRed,Python,IBM Simulator.	IoT
2.	Security Implementations	Raspberry Pi is connected to the internet and for example used to broadcast live data, further security measures are recommended and use the UFW(uncomplicated Firewall).	IoT
3.	Scalable Architecture	Raspberry pi:Specifications Soc: rspi ZERO W CPU: 32-bit computer with a 1 GHz ARMv6 RAM: 512MB Networking: Wi-Fi Bluetooth: Bluetooth 5.0, Bluetooth Low Energy (BLE). Storage: MicroSD GPIO: 40-pin GPIO header, populated	IoT

S.No	Characteristics	Description	Technology
		Ports: micro HDMI 2.0, 3.5mm analogue audio-video jack, 2x USB 2.0, 2x USB 3.0, Ethernet Dimensions: 88mm x 58mm x 19.5mm, 46g	
4.	Availability	These smart bins use sensors like ultrasonic andload cell to send alert message about the trash level recognition technology, and artificial intelligence, enabling them to automatically sort and categorize recycling litter into one of itssmaller bin.	IoT.
5.	Performance	Number of request:RPI manages to execute 129-139 read requests per second. Use of Cache:512mb Use of CDN's:Real time	IoT/Web portal.