Project Design Phase-II

Technology Stack (Architecture & Stack)

Date	21 October 2022
Team ID	PNT2022TMID09618
Project Name	Smart waste management system.
Maximum Marks	4 Marks

Technical Architecture:

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web Portal	HTML,CSS,NodeRed, Javascript. o r on
2.	ApplicationLogic-1	To calculate the distance of dreck and show the real-time level in the web portal, information getting via ultrasonic sensor and the alert message activates with a python script to the web portal.	Ultrasonic sensor/Python.
3.	ApplicationLogic-2	To calculate the weight of the garbage and show the real-time weight in the web portal, this info getting via load cell and the alertmessage activate with python to web portal.	Load cell/Python.
4.	ApplicationLogic-3	Getting the 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 filesystem.
7.	External API-1.	Firebase is a set of hostingservices for any type of	Firebase.

		application. It offers NoSQL and real-time hosting of databases, content, social authentication, notifications, or services, such as a real-time communication server.	
8.	UltrasonicSensor.	To throw an alert message whengarbage is getting full.	Distance RecognitionModel.
9.	Infrastructure(Server / Cloud)	Application Deployment on LocalSystem / Cloud Local Server Configuration: localhostCloud Server Configuration:localhost,Firebase.	Localhost, Web portal.

Table 2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	NodeRed, Python, IBMSimulator.	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 theUFW(uncomplicated Firewall).	IoT
3.	Scalable Architecture	Raspberry pi: SpecificationsSoc: rsi 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 and load cells to send an alert message about the trash level recognition technology, and artificial intelligence, enabling them to automatically sort and categorize recycling litter into one of its smaller bins.	IoT.
5.	Performance	Many requests: RPI manages to execute 129-139 read requests per second. Use of Cache:512MB Use of CDNs: Real time	IoT/Web portal.