Project Design Phase-
IITechnologyStack(Architecture&Stack)

Date	03 October2022
TeamID	PNT2022TMID42565
ProjectName	Smart Waste management for metropolitan cities
MaximumMarks	4 Marks

S.No	Component	Description	Technology
1.	UserInterface	Web Portal	HTML, CSS , NodeRed, Javascript. or on
2.	ApplicationLogic-1	To calculate the distance of trash 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 actual weight in the web portal, this info getting via load cell and the alert message activate with python to web portal	ILoad cell/Python.
4.	ApplicationLogic-3	Getting the location of the Garbage.	GSM / GPS.
5	CloudDatabase	DatabaseServiceonCloud	IBMDB2,IBM Cloudantetc.
6	FileStorage	File storage requirements	IBM Block Storage or Other Storage Service or github, Local File system
7	ExternalAPI-1	Firebase is a set of hosting services for any type of application. It offers NoSQL and real-time hosting of databases, content, social authentication, notifications, or services, such as a real-time communication server.	Firebase
9.	UltrasonicSensor	To throw an alert message when garbage is getting full	Distance Recognition Model.

11.	Infrastructure(Server/Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: local host Cloud Server Configuration local host, Firebase.	Localhost, Web portal.

Table-1:Components &Technologies:

Table-2:ApplicationCharacteristics:

S.No	Characteristics	Description	Technology
1.	Open-SourceFrameworks	Node Red, Python, IBM Simulator	IoT
2.	SecurityImplementations	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.	ScalableArchitecture	Raspberry pi: Specifications Soc: 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: Micro SD GPIO: 40-pin GPIO header, populated 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	IoT
4.	Availability	These smart bins use sensors like ultrasonic and load cell s 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 bin s .	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