ProjectDesignPhase-II

TechnologyStack(Architecture&Stack)

Date	08 November 2022
Team ID	PNT2022TMID20979
Project Name	Smart waste management system for metropolitan cities .
Maximum Marks	4 Marks

TechnicalArchitecture:

Table-1:Components&Technologies:

S.No	Component	Description	Technology
1.	User Interface	Web Portal	HTML ,CSS , Node-Red, Javascrip t.oron
2.	Application Logic-1	To calculate the distance of dreck and show the real time level in web portal , information getting via ultrasonic sensor and The 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	IBMDB2,IBM Cloudant etc.
6.	File Storage	File storage requirements	Github, Local file system.
7.	External API-1.	Fire base is a set of hosting Services for any type of application. It offers No SQL and real time hosting of databases , content, social authentication, and notifications, or services, such as a real- time Communication server.	Firebase.

8.	Ultrasonic Sensor.	To throw alert message when Garbage is getting full.	Distance Recognition Model.
9.	Infrastructure	Application Deploymenton Local	Local host, Web portal.

|	(Server/ Cloud)	System/Cloud Local Server Configuration:localhostCloud Server Configuration:localhost,Firebase.	

Table-2:ApplicationCharacteristics:

S.No	Characteristics	Description	Technology
1.	Open-SourceFrame works	NodeRed,Python,IBM Simulator.	IoT
2.	SecurityImplem entations	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.	ScalableArc hitecture	Raspberrypi: Specifications Soc: rspiZEROW CPU:32-bitcomputerwitha1GHzARMv6RAM:512MB Networking:Wi-Fi Bluetooth:Bluetooth5.0,BluetoothLowEnergy(BLE).Storage:MicroSD GPIO:40-pinGPIOheader,populated	IoT

S.No	Characteristics	Description	Technology
		Ports: micro HDMI 2.0, 3.5mmanalogue audio-video jack, 2xUSB 2.0, 2x USB 3.0, EthernetDimensions:88mmx58 mmx 19.5mm,46g	
4.	Availability	These smart bins use sensorslikeultrasonicandload celltosend alert message about thetrash level recognitiontechnology, and artificialintelligence,enabling themtoautomaticallysort andcategorizerecyclinglitter intooneofitssmallerbin.	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.

SUMMARY :

This code pattern explains how to build an IOT based smart waste management system for some pre defined values .
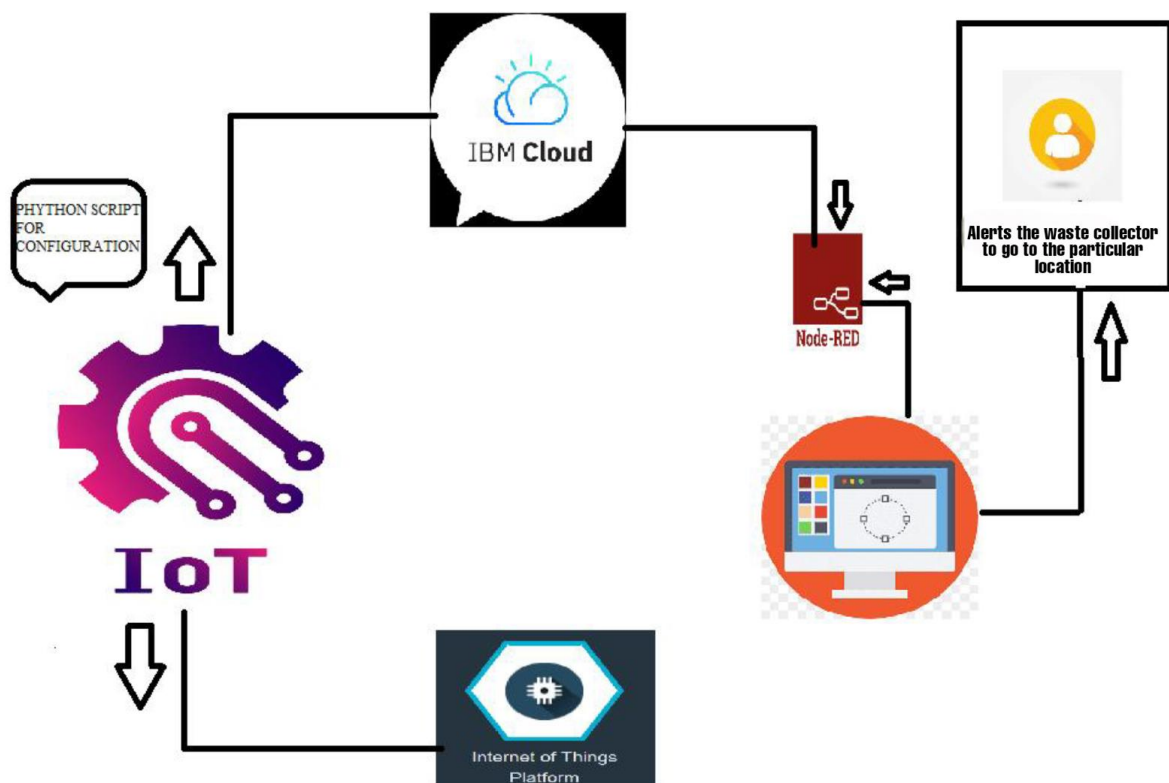
- Feed the data which are received from sensor .
- The collected data will be displayed in the web page to the user.
- Then the collected data is sent to the database , where the collected data and the pre defined data are checked and monitored.
- If any data exceed the pre defines data, the the control signal will be sent to the admin.
- The collected data will be stored in IBM cloud storage.
- Later the data will be controlled by the admin via web UI.