**Project Design Phase-II**

## Technology Stack (Architecture & Stack)

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|---|---|
| Date | 27 October 2022 |
| Team ID | |
| 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. | Application Logic-1 | To calculate the distance of dreck and show the real time level in web portal , information getting via ultra sonic 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 | 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 application. It offers NoSQL 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 Deployment on Local | Localhost,Web portal. |

| | | | |
|---|---|---|---|
| | (Server / Cloud) | System / Cloud<br>Local Server Configuration:localhostCloud Server Configuration:localhost,Firebase. | |

**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<br>Soc: rspi ZERO W<br>CPU: 32-bit computer with a 1 GHz ARMv6RAM: 512MB<br>Networking: Wi-Fi<br>Bluetooth: Bluetooth 5.0, Bluetooth Low Energy(BLE).<br>Storage: MicroSD<br>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<br>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. |