**SMART WASTE MANAGEMENT SYSTEM FOR METROPOLITAN CITIES**

**PROJECT PLANNING II**

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| **Date** | **06 November** |
| **Team ID** | **PNT2022TMID20974** |
| **Project Name** | **SMART WASTE MANAGEMENT SYSTEM FOR METROPOLITAN CITIES** |
| **Maximum Marks** | **4 Marks** |

**TEAM LEADER**

POOJA P

**TEAM MEMBERS**

HARSHINI M

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**TECHNOLOGY ARCHITECTURE**

**Components & Technologies**

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| **S.No** | **Components** | **Description** | **Technology** |
| 1. | UserInterface | Web Portal | HTML, CSS, NodeRed,  Javascript. |
| 2. | Application Logic-1 | Tocalculatethedistance of the dreck and show the real-time level in the web portal, information getting via ultrasonic sensor and the alert message activate with a python script to the web porta**l.** | Ultrasonic sensor/ Python. |
| 3. | Application Logic-2 | To calculate the weight of the garbage and show the real-time weight in the web portal, this info gets via load cell and the alert message activate with python to the web portal. | Loadcell**/**Python |
| 4. | Application Logic-3 | Gettingthe locationoftheGarbage**.** | 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 | Firebox. |
|  |  | It offers NoSQL and real-time hosting of databases, content, social authentication, notifications, or  services, such as a real-time communication server. |  |
| 8. | Ultrasonic Sensor. | To throw an alert message when garbage is getting full.  Distance Recognition Model. | Distance Recognition Model. |
| 9. | Infrastructure (Server/Cloud). | Application Deployment on Local  System / Cloud Local  Server  Configuration: localhost  Cloud Server  Configuration: localhost,  Firebox | Localhost, Web portal. |

**Application Characteristics**

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| **S No** | **Characteristics** | **Description** | **Technology** |
| 1. | Open-Source Framework | Node-Red**,** Python**,** IBMSimulator**.** | IoT |
| 2. | Security Implementation | 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 | IoT |
|  |  | Networking: Wi-Fi Bluetooth: Bluetooth 5.0, Bluetooth Low Energy (BLE).  Storage: MicroSD  GPIO: 40-pin GPIO header, populated  Ports: micro HDMI 2.0,  3.5mm analog 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 | The number of requests: RPI manages to execute 129-139 read requests per  second. Use of Cache:512MB  Use of CDNs: Real-time | IoT /web portal. |