**FUNCTIONAL & NON-FUNCTIONAL REQUIRMENTS OF RECYCLING MACHINE SYSTEM**

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| **No.** | **Functional Requirement** | **Description** |
| **1** | **Accept Recyclable Items** | The system shall enable customers to deposit one or multiple recyclable items into the machine for processing. |
| **2** | **Detect and Classify Items** | The system must automatically detect and identify the type of each deposited item, such as plastic bottles, aluminum cans, or glass containers. |
| **3** | **Compute Refund Amount** | The system shall determine the total refund amount based on the number and category of returned items. |
| **4** | **Provide Refund to Customer** | After the return session ends, the system shall dispense the calculated refund amount to the customer through the appropriate mechanism. |
| **5** | **Store Transaction Details** | The system shall record all transaction information, including item types, total refund, date, and time, for auditing and tracking purposes. |
| **6** | **Issue Receipt** | The system shall offer the customer an option to print a physical receipt summarizing the transaction details. |
| **7** | **Generate Operational Reports** | An authorized operator shall be able to generate daily reports summarizing total deposits, refund amounts, and machine activity. |
| **8** | **Modify Refund Rates** | Authorized operators shall have the ability to update and configure refund rates for various item types when required. |
| **9** | **Raise Alerts and Notifications** | The system shall display an alert or trigger an alarm in case of any malfunction, full bin, or hardware issue during operation. |
| **10** | **Perform System Maintenance** | A system administrator shall be able to carry out maintenance operations such as system startup, shutdown, and configuration updates. |

**Functional Requirements**

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| No. | Non-Functional Requirement | Description |
| 1 | **Performance** | The system should be capable of identifying and processing each deposited item within **three seconds or less** to ensure quick transactions. |
| 2 | **Reliability** | The system must maintain an **uptime of at least 99.5%** during its operational hours to ensure continuous availability. |
| 3 | **Security** | Access for operators and administrators must be secured through **strong authentication methods** such as passwords, PINs, or keycards. |
| 4 | **Usability** | The system interface should be **intuitive and user-friendly**, enabling new users to complete the recycling process within **two minutes**. |
| 5 | **Data Capacity** | The system’s database should be able to **store and manage transaction records for a minimum of one year** without performance degradation. |

**Non-Functional Requirements**