SRE LAB 5

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♻ SRS – Recycling Machine System (IEEE 830 Format)

1. Introduction

1.1 Purpose

This document specifies requirements for an automated Recycling Machine System that accepts bottles/cans, prints receipts, and provides refund information.

1.2 Scope

The system supports customer returns, receipt generation, refund calculation, operator monitoring, and error handling.

1.3 Definitions

Term	Meaning
Recycling Machine	Machine that accepts recyclable items and gives refund
Deposit Value	Refundable amount per item
Operator	User responsible for maintenance and monitoring
Receipt	Paper document showing returned items and refund total

1.4 References

- Case study shared in Recycling System Task
- IEEE 830 Standard

2. Overall Description

2.1 Product Perspective

Standalone embedded system installed in supermarkets/public places with sensors, display, and printer.

2.2 Product Functions

- Accept bottles and cans
- Identify item type and log count
- Print customer receipt
- Allow operator to update prices and view daily report
- Trigger alarm on machine errors

2.3 User Characteristics

User	Role
Customer	Inserts bottles/cans and requests receipt
Operator	Views reports, updates deposit values, resolves issues
System	Recognizes items, stores data, prints receipts

2.4 Constraints

- Must work offline if internet unavailable
- Printer must be available for receipts
- Sensors must accurately detect items

2.5 Assumptions

- Items inserted are valid recyclable products
- Operator checks the machine daily

3. Specific Requirements

3.1 Functional Requirements

✓ Accept and detect items (bottles/cans)
✓ Track quantity and deposit value
✓ Generate and print receipt on request
✓ Display total refund amount
✓ Operator login for settings and reports
✓ Generate end-of-day item summary
✓ Trigger alarm for malfunctions (jam, low paper, etc.)

3.2 System Features

Feature	Description
Item Detection	Identifies bottle or can
Refund Calculation	Calculates total deposit amount
Receipt Printing	Provides customer refund receipt
Daily Report	Shows number of items returned
Admin Configuration	Change deposit value, reset data
Alarm System	Alerts when machine fails

3.3 Interface Requirements

- **User Interface:** LCD touch display or buttons
- **Printer Interface:** For receipt printing
- **Database:** Internal storage for transactions
- **Sensor Interface:** Detect recyclable items

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4. Non-Functional Requirements

4.1 Performance

- Response time <2 seconds per item

4.2 Security

- Operator features require authentication

4.3 Reliability

- System should recover after power failure without data loss

4.4 Maintainability

- Modular system: hardware (sensors/printer) and software independent

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5. Other Information

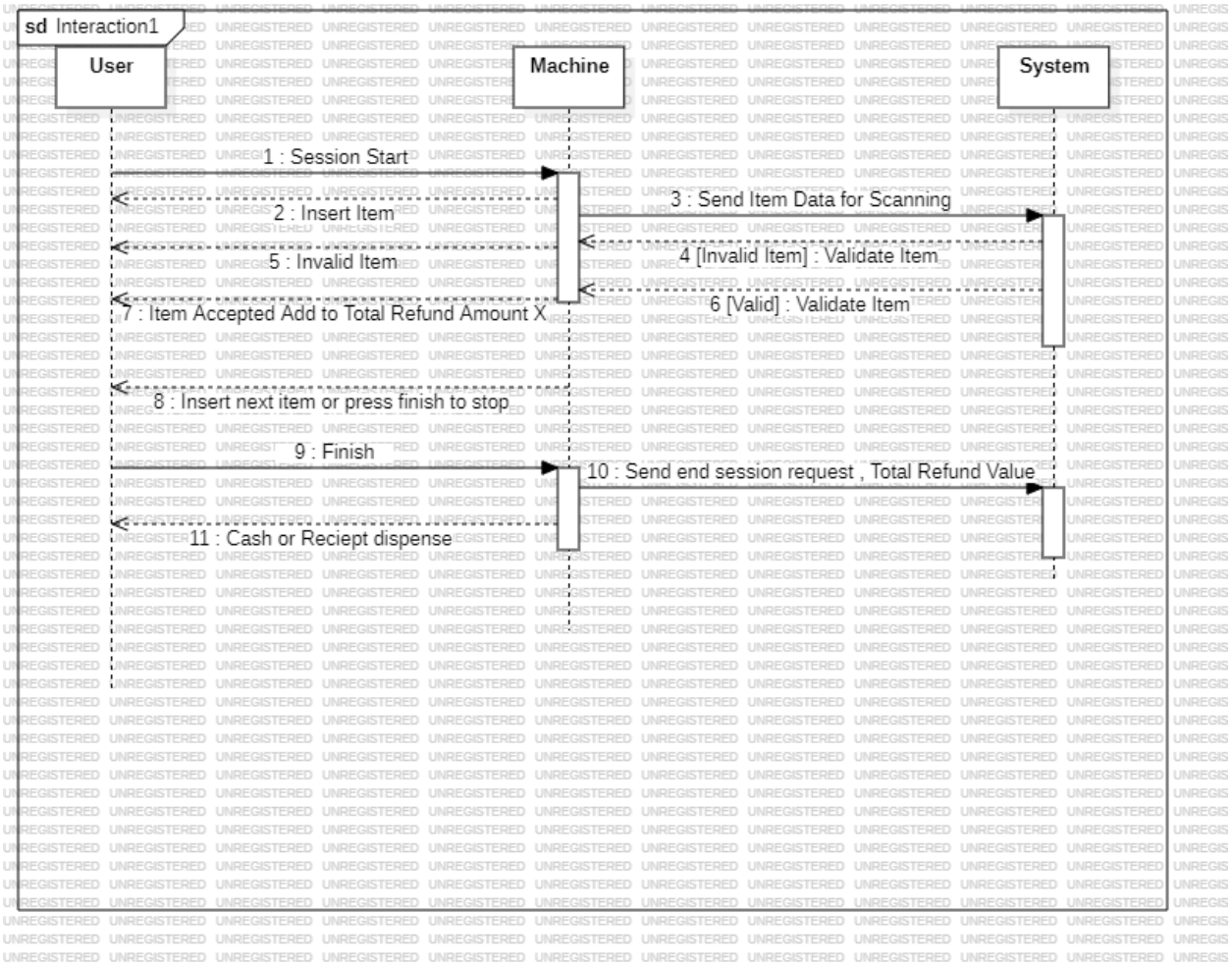
5.1 Appendices

- Sample customer receipt
- Operator report template

5.2 Index

- Deposit Values
- Item Types

Sequence Diagram



Completed version uploaded on Github