
Software Requirements Specification

for

Supermarket Automation Software

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

This Software Requirements Specification (SRS) document describes the software, functional and non-functional requirements for release 1.0 of the Supermarket Automation System (SAS). This software is designed to automate the billing and inventory system in a supermarket. Unless otherwise stated, all requirements specified here are of high priority and committed for release 1.0.

1.2 Product Scope

The Supermarket Automation Software consists of the following major functions:

- Updating the inventory of the various commodities of the supermarket after each arrival and sale.*
- Checking the inventory and returning availability data for queries related to the commodities*
- Creating and printing the sales transaction bills.*
- Displaying and printing the sales statistics of various commodities for any particular period.*

1.3 Glossary

Bill

A bill is a commercial document issued by a seller to the buyer indicating the products, quantities and agreed prices for products or services the seller has provided the buyer. It can indicate a sales transaction only.

Inventory

It describes the goods and materials that a business holds for the ultimate purpose of sale.

Barcode

A barcode is an optical machine-readable representation of data related to the object to which it is attached.

Automatic Weighing Machine

An electronic device which can measure the weight of an object kept on it, and the weight is displayed on an LED display with a high level of accuracy.

Sales Clerk

A sales clerk is an employee who is responsible for carrying out transactions with the customers for the different items in the supermarket.

Supermarket Staff

Supermarket staff is the set of employees responsible for maintenance of the supermarket inventory.

Manager

A Manager is an employee who is responsible for supervising the supermarket staff and sales clerks and analyzing the sales statistics in a given period of time.

SRS

Software Requirement Specification

SAS

Supermarket Automation Software

1.4 References

- *SRS Template by Karl E. Wiegers.*
- *en.wikipedia.org for relevant definitions.*

2. Overall Description

2.1 Product Functions

2.1.1 Sales Transactions:

Whenever any item is sold from the stock of the supermarket, this function prompts the sales clerk to pass the item over a bar code reader and an automatic weighing scale, the data regarding the item type and the quantity get automatically registered then. During the sales transaction, the name of the item, code number, quantity, unit price, and item price are entered into the bill. The bill indicates the total amount payable. The inventory is then suitably updated.

2.1.1.1 Read Barcode

Input: Sold items are passed over the reader by the sales clerk.

Processing: Barcode of the item is read and registered automatically.

2.1.1.2 Weigh the items

Input: Sold items are weighed over the automatic weighing scale.

Processing: Weight of the item is automatically registered.

2.1.1.3 Register sold items

Automatically register data about the sold items along with the quantity.

2.1.1.4 Generate Bill

The transaction bill containing the serial number of the sales transaction, the name of the item, code number, quantity, unit price, and item price is printed. The bill also mentions the total amount payable, the amount paid and the amount to be returned.

2.1.2 Update the Inventory

In order to manage the inventory efficiently, this function decreases the number of units in the inventory whenever an item is sold. Again, whenever there is a new supply arrival, an employee can update the inventory by this function.

Input: Supermarket staff enters the data whenever new item arrives and Register Sales function sends data about number of items sold.

Processing: Whenever data is received regarding arrival or sales, this function updates the inventory.

2.1.3 Check Inventory

This function is responsible for providing the total inventory data for each and every item whenever a query is made by the manager/buyer.

Input: Query from the manager/staff

Processing: Return the inventory data

2.1.4 Print Sales Statistics

Upon invoking this function, it will generate a sales statistics for every item the supermarket deals with for any particular day or any particular period.

Input: Item number(s) and Date/Period entered by manager

Processing: Return the sales statistic for that item(s) during that period

2.1.5 Update Prices

In any event of change in prices of any of the items this function allows the manager to change the required prices.

Input: Item number(s) and modified prices entered by the manager/staff

Processing: Make the required changes in the central database

2.2 Operating Environment

The backend software will be deployed on a Linux Server with minimum requirements of 2 x 2.3 Ghz CPU, 4 GB RAM and 12 GB of Free Space. The user side of the software runs on any device which supports a HTML5 supported web browser. The server system should be installed with javac (java compiler), GCC compiler and PHP.

2.3 Design and Implementation Constraints

The user interface must be intuitive enough so that no training is required by customers, members, or store personnel. All availability queries and the storage of sales statistics will be done in a secure environment. Persistent storage for prices, quantity and sales information will be maintained. The weighing machine in use has a certain limitation for the maximum level of weight which can be measured by it. This may constrain the accuracy of the weight involved.

2.4 Assumptions and Dependencies

It is assumed that a standard bar code reader and an automatic weighing scale is provided to the sales clerk without which completing sales transaction would be very difficult. The software also requires a printer (Sales Statistics).

3. External Interface Requirements

3.1 User Interfaces

3.1.1 Manager Interface

The SAS screen displays interfaces to view the inventory, change the prices of the products, view and print sales statistics.

3.1.2 Sales Clerk Interface

The SAS screen displays an interface to commute a transaction with a customer, and produces and prints a bill for the transaction.

3.1.3 Supermarket Staff Interface

The SAS screen displays an interface to update the inventory for the supermarket with each arrival of new supplies.

3.2 Hardware Interfaces

For the software to function properly, the bar code reader scans the bar code from a product and sends the product ID to the software and the weighing machine sends the weight of the product.

3.3 Software Interfaces

3.3.1 Inventory Query

- *The manager queries the product whose details he/she wishes to view.*
- *The SAS programmatically determines the details of the product.*
- *The SAS displays information about the product.*
- *The manager selects the option to change the price of the product which updates the corresponding price in the database.*

3.3.2 Add to Inventory

- *The supermarket staff requests for the addition of the product and subsequently enters the details of the product.*
- *The SAS updates the product in its database and gives a confirmation message.*

3.3.3 New Transaction

- *The sales clerk provides the details of the product ready to be purchased.*
- *On pressing the print button, the details of the inventory are updated and a bill is produced and printed along with a confirmation message.*

3.4 Communications Interfaces

Any changes made to the inventory of the supermarket are automatically updated in the database which has been set up in a separate server in the supermarket itself.

4. Other Nonfunctional Requirements

4.1 Performance Requirements

- *High Speed Network*
- *High level of Connectivity*
- *Server Reliability*

4.2 Software Quality Attributes

- *Every user of the software is provided a unique login ID and a password which is stored in the database hashed by SHA2 algorithm.*
- *The software is available for use from the supermarket opening time to the closing time*

5. Other Requirements

- *Each user of the SAS is required to log in his/her account to perform different activities like sales transactions, update inventory, view sales statistics and update process etc.*
- *MySQL is required for maintaining the databases of inventory, sales, and employees.*