

# **SUPERMARKET AUTOMATION**



**DEPARTMENT OF COMPUTER SCIENCE &  
ENGINEERING**

**YEAR: 2020-21**

**5TH SEMESTER**

**SUBMITTED BY:**

**Siba Sankar Panda - 1802081062**

**Prasenjit Ghose - 1802110011**

**Pratyush Ranjan Bohidar - 1802060021**

## **INTRODUCTION:**

The Project Supermarket Management System deals with the automation of supermarket. It includes both sales and purchase of items. There is a lot of reason for the introduction of this project. In the manual System, there are number of inefficiencies that a sales person faces. Large records-books have to be maintained where relevant and irrelevant information has to be stored which is very untidy and clumsy process. On the other hand, there are many inherent problems that exist in any manual system. Usually, they lack efficiency. Less efficiency has a great impact on the productivity of any human being keeping the data up-to-date. But our System reduces paper works. It also reduces manpower requirement, and increases the productivity of the supermarket.

The project supermarket management system aims at full automation of big, medium, and mini supermarkets with the objective of making the system reliable, user-friendly, fast, and more informative. Using this application, one can add, modify, update, save, delete, and print details. There's also a search feature to find products available in the supermarket.

## **TYPES OF USERS:**

### **1. SUPERMARKET STAFF:**

These are the people who are working in the supermarket. Their work includes adding and updating the details of customers, the details of products available, the details of discount available, newly purchased product details to the database, collecting price, exchange products details etc.

#### **I. MANAGER:**

They are senior authority of the supermarket who are not directly involved in selling the products, but are concerned with the smooth running of the store. They have access to all the essential information including employee details which helps to smooth running of the supermarket.

Have access to:

- Employee Management
- Product Management
- Security

## **II. Employee:**

They are technical staff concerned with smooth running of the supermarket. They have access to all the details of customer and products.

Have access to:

- Billing of products
- Bill Transaction

Do not have access to:

- Product Management
- Employee Management

## **2. CUSTOMER:**

The customers have the functionalities like accessing the products, searching for a product, buying the products etc. The supermarket automation provides exact information about the number of products available for customer, out of stock products etc and it also check the discount availability and calculates the final amount of purchasing products for customer.

Have access to:

- Product Purchase / Return

## **3. SELLER:**

The seller has a functionality to check which product will need to the supermarket according to that he will sell products to supermarket.

Have access to:

- Local Product Management

## **LIST OF FEATURES OF THE SOFTWARE:**

- **ADMIN LOGIN:**

This feature will be used by the manager to access all the information about employee, seller, customer and products.

- **REGISTER NEW SELLER:**

This feature will be used by the manager to add new seller to the database system.

- **SELLER LOGIN:**

This feature will be used by the seller to access the details of the product available on the store and for sell.

- **REGISTER NEW EMPLOYEE:**

This feature will be used by the manager to add new employee to the database system.

- **VIEW EMPLOYEE DETAILS:**

This feature will be used by the manager to check all the details of employee.

- **UPDATE EMPLOYEE DETAILS:**

This feature will be used by the manager to change or add some details of employee.

- **EMPLOYEE LOGIN:**

This feature will be used by the employee to access the details of customer and product.

- **REGISTER NEW CUSTOMER:**

This feature will be used by the employee to add new customer, It will also be used by the customer to register himself.

- **QUANTITY OF PRODUCT:**

This feature will be used by the employee and customer to check the available quantity present in the store.

- **PRICE OF PRODUCT:**

This feature will be used by the employee and customer to check the current price of the product.

- **PRINT THE BILL:**

This feature will be used by the employee and customer to print the total purchase amount.

- **TRENDS IN BUYING:**

This feature will be used by the employee and seller to check which product will sell mostly. It will also be used by customer to check which product is mostly preferred by other customers.

- **CATALOGUE MANAGEMENT:**

This feature will be used by the employee to check the current stock of the product according to that the store will buy product from seller.

- **CUSTOMER LOGIN:**

This feature will be used by the customer to check the product details and for buying products.

- **SEARCH PRODUCT:**

This feature will be used by the customer and seller to check the product is available or not.

- **VIEW PRODUCT DETAILS:**

This feature will be used by the customer and to check the products validity, price, quantity, manufactured company etc.

- **BUY PRODUCT:**

This feature will be used by the customer for purchasing the product, with an option for home delivery is available.

- **VIEW PRODUCT DISCOUNT:**

This feature will be used by the customer to check the discount available on the product.

- **BILL PAYMENT:**

This feature will be used by the customer to pay the bill amount.

- **VIEW THE BILL:**

This feature will be used by the customer for payment, check the frequency of purchasing product, date of purchasing, products name etc.

- **PRINT BILL:**

This feature will be used by the customer to print out his bill.

- **SEND DETAILS:**

This feature will occur automatically, it will send the bill details to the customer after purchasing the product.

- **CUSTOMER FEEDBACK:**

This feature allows a customer to give a feedback about any item which he/she purchased from the supermarket

- **NOTIFICATION OF NEW / WANTED/ ESSENTIAL PRODUCTS:**

While purchasing the products from the supermarket the customer gives his/her mobile number so as to get notified about any new product in the market or any essential product.

## **FEASIBILITY ANALYSIS**

<b>FEATURES</b>	<b>TECHNICAL FEASIBILITY</b>	<b>OPERATIONAL FEASIBILITY</b>	<b>REMARKS</b>
ADMIN LOGIN	YES	YES	-
REGISTER NEW SELLER	YES	YES	-
SELLER LOGIN	YES	YES	-
REGISTER NEW EMPLOYEE	YES	YES	-
VIEW EMPLOYEE DETAILS	YES	YES	-
UPDATE EMPLOYEE DETAILS	YES	YES	-
EMPLOYEE LOGIN	YES	YES	-
REGISTER NEW CUSTOMER	YES	YES	-
QUANTITY OF PRODUCT	YES	YES	-
PRICE OF PRODUCT	YES	YES	-
PRINT THE BILL	YES	YES	-
TRENDS IN BUYING	YES	YES	-
CATALOGUE MANAGEMENT	YES	YES	-
CUSTOMER LOGIN	YES	YES	-
SEARCH PRODUCT	YES	YES	-

VIEW PRODUCT DETAILS	YES	YES	-
BUY PRODUCTS	YES	NO	This is possible technically but if the supermarket does not have enough manpower to take the items to the customer's place it shall be complex for the supermarket to implement this.
VIEW PRODUCT DISCOUNT	YES	YES	-
VIEW THE BILL	YES	YES	-
BILL PAYMENT	YES	YES	-
SEND DETAILS	YES	YES	-
CUSTOMER FEEDBACK	YES	YES	-
NOTIFICATION OF NEW / WANTED/ ESSENTIAL PRODUCTS	YES	NO	This is technically possible but if the customer is reluctant to give his/her phone number then it will be impossible because we have to have the mobile number to send sms using our software.



## Life Cycle model: Iterative waterfall

This is the better version of the waterfall model and it overcomes all the shortcomings of the waterfall model while maintaining all its benefits. Unlike the waterfall model, this model has more efficient error handling for building quality products. In this model, after each step in the sequence we go back to debug the previous steps ensuring the efficiency and authenticity of the software. It is based on the fact that errors should be detected in the same phase in which they are introduced. That is why this model is ideal for our project.

### Cost and development time calculation:

We use the cocomo model to estimate effort and developers required to develop the software. We estimate lines of code and then calculate cost and effort using the basic cocomo model.

### Basic Cocomo Model:

- E = Total effort required for the project in Person-Months(PM).
- D = Total time required for project development months(M).
- KLOC = The size of the code in kilo lines of code.
- A,b,c,d = Constants

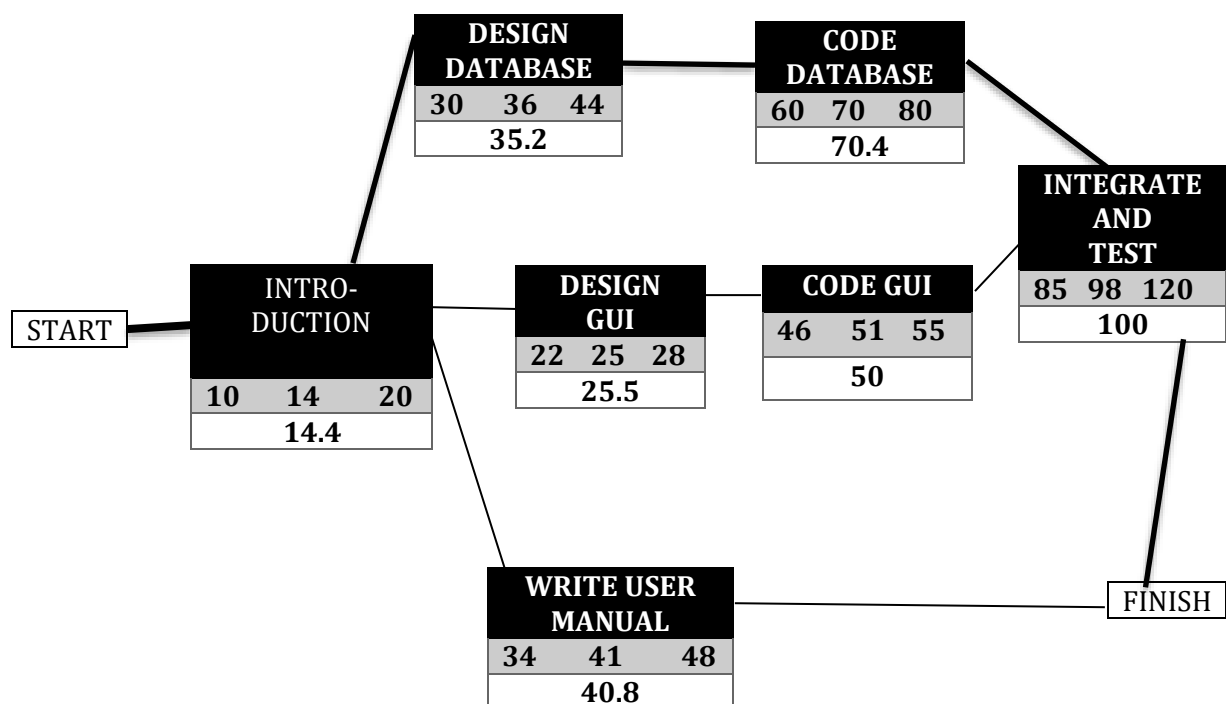
Our estimation for KLOC is 5 Kloc, which is less than 50KLOC so it belongs to the organic model. The values of constant parameters for organic model are:

- a = 2.4
- b = 1.05
- c = 2.5
- d = 0.38

$$\begin{aligned}\text{Effort(E)} &= a * (\text{KLOC})^b \text{ PM} \\ &= 2.4 * (5)^{1.05} \text{ PM} \\ &= 13.00 \text{ PM}\end{aligned}$$

$$\begin{aligned}\text{Development Time(D)} &= c * E^d \text{ M} \\ &= 2.5 * 13^{0.38} \text{ M} \\ &= 6.62 \text{ M}\end{aligned}$$

## PERT ANALYSIS:



## CRITICAL PATH:

START—INTRODUCTION—DESIGN DATABASE—CODE DATABASE—INTEGRATE AND TEST—FINISH

$$\begin{aligned}\text{Total Time} &= 14.4 + 35.2 + 70.4 + 100 \\ &= 220 \text{ days}\end{aligned}$$