R. V. COLLEGE OF ENGINEERING, BENGALURU-560059

(Autonomous Institution Affiliated to VTU, Belagavi)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DAIRY PRODUCT MANAGEMENT SYSTEM

Mini - Project Report

Submitted by

NITHIN H K **1RV15CS102**
N.PAVAN SAI DIWAKAR **1RV15CS103**

in partial fulfillment for the requirement of 5th Semester

DBMS Laboratory Mini Project (12CS54)

Under the Guidance of

Prof. Pratiba D , Assistant Professor, CSE, RVCE
Dr. Usha B. A. , Assistant Professor, CSE, RVCE

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R.V. COLLEGE OF ENGINEERING, BENGALURU - 560059
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

Certified that the project work titled **'Dairy Product Management System'** is carried out by **NITHIN H K (1RV15CS102) and N.PAVAN SAI DIWAKAR(1RV15CS103),** who are bonafide students of R.V College of Engineering, Bengaluru, in partial fulfillment of the curriculum requirement of 5th Semester DBMS Laboratory Mini Project during the academic year **2017-2018**. It is certified that all corrections/suggestions indicated for the internal Assessment have been incorporated in the report deposited in the departmental library. The report has been approved as it satisfies the academic requirements in all respect laboratory mini-project work prescribed by the institution.

Signature of Faculty In-charge:

Head of the Department,
Dept. of CSE, RVCE

External Viva

Name of Examiners	**Signature with date**
1	
2	

List of Figures

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

Dairy products are those food products which are derived from or containing milk or its derivatives. A dairy is a business enterprise that involves production, processing and marketing of dairy products like milk, butter, cheese, ghee, sweets, ice-creams etc. Dairy product management system is an application to maintain day to day transactions in dairy. It is used to register all the details of staff and customers. It enables staff to maintain the records such as number of milk units sold, availability of products, transactions made on a particular day and customer details accurately. Customer can order the products online and get products delivered to the doorstep. It gives an overview of the different products available at the dairy to the customer. It provides different subscription plans for customers to opt in and just pay monthly bill. It saves the valuable time of the customer as the products are delivered to home daily. If the customer needs any extra products he can order them through instant order.

1.1 Purpose

Most Dairies rely and have always relied on a large number of physical files and logs to maintain information about the transactions made, not only is this tedious, but is also prone to all the data being lost.

Generally there is a lot of paper work which is required to maintain records of one particular product; the process of maintaining the records of several products ,customers only makes the task exponentially tedious. The constant updating of the records which is required also becomes increasingly cumbersome with the ever-growing records of customers and products. Hence the procedure of maintaining physical records becomes a very difficult task.

The proposed system maintains a database and a management system for the database. The database will store information regarding each product, variants price, shelf life, units remaining in an outlet, price and several other attributes. We will implement the system using MySQL RDBMS based on structured query language.

The system is very simple in design and to implement. The system requires very low system resources and the system will work in almost all configurations.

1. Security of data.
2. Proper control of administrator
3. Minimum time for needed for the various processing.
4. Greater efficiency & Better service

1.2 Scope

The project would serve a lot of purposes as the people who would log in as users can manage their subscription easily and they need not visit the dairies.

The areas that we seek to cover include:

1) A reliable and up to-date platform which users can get the information about the different products available.
2) A simple source of information about the outlets spread across the city.
3) A secure platform that can in turn be used to update product information and store it.
4) Web platform means that system will be available for access 24x7 except when there is a temporary server issue which is expected to be minimal.

CHAPTER 2

SOFTWARE REQUIREMENT SPECIFICATION

A computerized way of handling information about products and customers details is efficient, organized and time saving, compared to a manual way of doing so. We aim at doing this through a database driven web application whose requirements are mentioned in this section.

The purpose of this SRS document is to provide a detailed overview of our software product, its parameters and goals. This project document describes the project's target audience and its user interface, hardware and software requirements.

2.1 Overall Description

The web application is provided with user friendly interface which is suitable for all types of customers. This project helps customers to get subscribed to monthly plans where selected products will be delivered to their home every day or as specified in the plan. Customers can also choose instant delivery option. It keeps track of Customer and staff records, product details, transactions done by customers etc. The system generates Invoice and bill after subscribing or ordering products. It is a reliable and scalable database driven web application with security features, that is easy to use and maintain and is available all 24 hours a day, 365 days a year.

The specific requirements of the project are stated as follows:

2.2 Specific Requirements

2.2.1 Software Requirements

- Operating system: Windows , macOS, Linux
- Database: MySQL Server, Relational Database
- Development tools and Languages: HTML, CSS, JavaScript, JSP ,MySQL database.
- IDE (Integrated development environment) : Sublime text editor, Eclipse

2.2.2 Hardware Requirements

- Processor : Pentium IV or higher.
- RAM: 2 GB or more.
- Hard Disk: 5 GB or more.

2.2.3 Functionality

Functional requirements are those requirements that are used to illustrate the internal working nature of a system, the description of a system the explanation of each subsystem. The functional requirements identified in each module are:

1. **ADMIN**
    - Manage staff: The system should allow manager to add a new staff or modify the existing details.
    - Manage products: Based on the trend, various new products could be added to the products list and their details accordingly. The specifications of existing products could be changed.
    - Manage outlets: As and when new outlets are established, admin could add their details to the database or modify existing ones.
    - Report generation: Report should be generated based on the sales of products on daily basis or specified duration of time.
2. **STAFF**
    - Manage milk vendors: The system should allow the staff to register new milk vendors or modify the details of existing milk vendor's details.
    - Manage delivery staff: The system should allow the staff to register new delivery staff or modify the details of existing delivery staff's details.
    - Manage inventory: Maintains the information about the available stock.
    - Approve subscriptions and bulk orders: Verifies the details given by customers and approves subscriptions and bulk orders.
    - View feedbacks: Feedback given by the customers can be viewed by the admin and can be marked as checked representing the necessary actions have been taken care of.

3. **CUSTOMER**
    - Product info: All the product/item details can be viewed by customers.
    - Regular orders: Customers can get subscribed to monthly plans. Required products are added to his subscription and it can be customised.
    - Bulk Orders: A bulk order can be placed for the products prior to some limited time in order to get delivered.

2.2.4 Non-functional Requirements

- Availability:

  The system should be available for all the users. As the customers can be living out of the limited network reach, the system should be made openly available to all.
- Security:

  Data is kept secured from unauthorized access. As the users are provided with login credentials from the admin, the chances of security breaching is less.
- Performance and response time:

  Using the high end processor and hardware system, the performance of the system is made better. It should be able to respond within minimum time. Lagging of the system due to data traffic/network usage should be minimized.
- Reliability:

  The system should be able to recover after any error that has been detected in the least amount of time.
- Stability:

  The performance of the system should be stable. It should not show the wrong output in the working state.

CHAPTER 3

DETAILED DESIGN

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects. A DFD is often used as a preliminary step to create an overview of the system without going into great detail, which can later be elaborated. DFDs can also be used for the visualization of data processing (structured design).

A DFD shows what kind of information will be input to and output from the system, how the data will advance through the system, and where the data will be stored. It does not show information about process timing or whether processes will operate in sequence or in parallel, unlike a traditional structured flowchart which focuses on control flow, or a UML activity workflow diagram, which presents both control and data, flows as a unified model.

The following conventions are used in data flow diagrams:

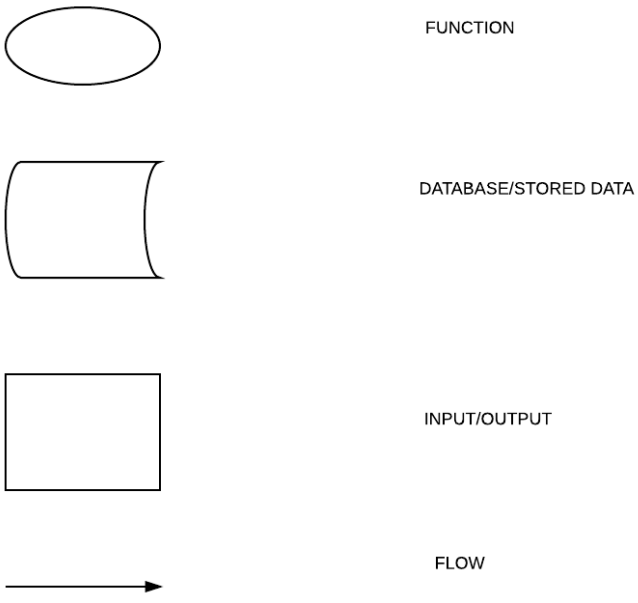


Fig 3 Conventions followed in Data Flow Diagrams

3.1 DFD Level 0

A level 0 data flow diagram(DFD) , also known as the context diagram , shows a data system as a whole and emphasizes the way it interacts with external entities.

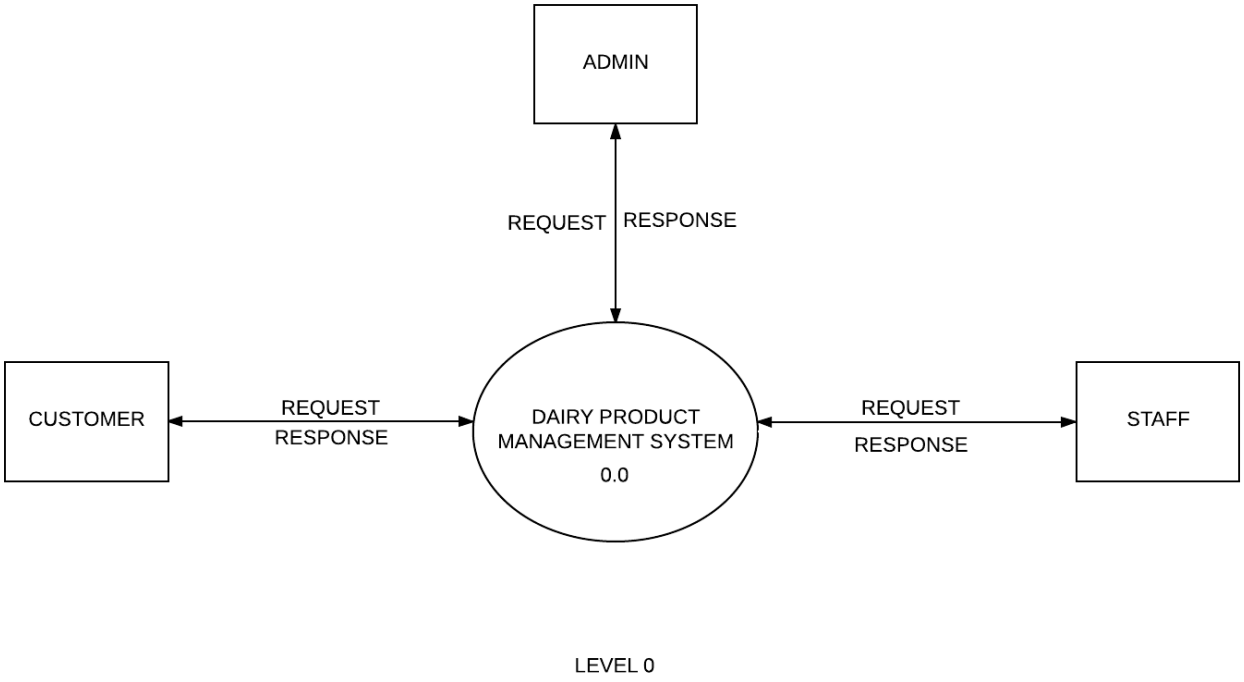


Fig 3.1 DFD Level 0

The above DFD Level 0 depicts Dairy Product Management System which consists of three entities- Customer, Staff and Admin which interact among each other.

3.2 DFD Level 1

A level 1 DFD is more detailed than level 0 DFD. It breaks down the main processes into sub processes that can then be analyzed and improved on a more intimate level.

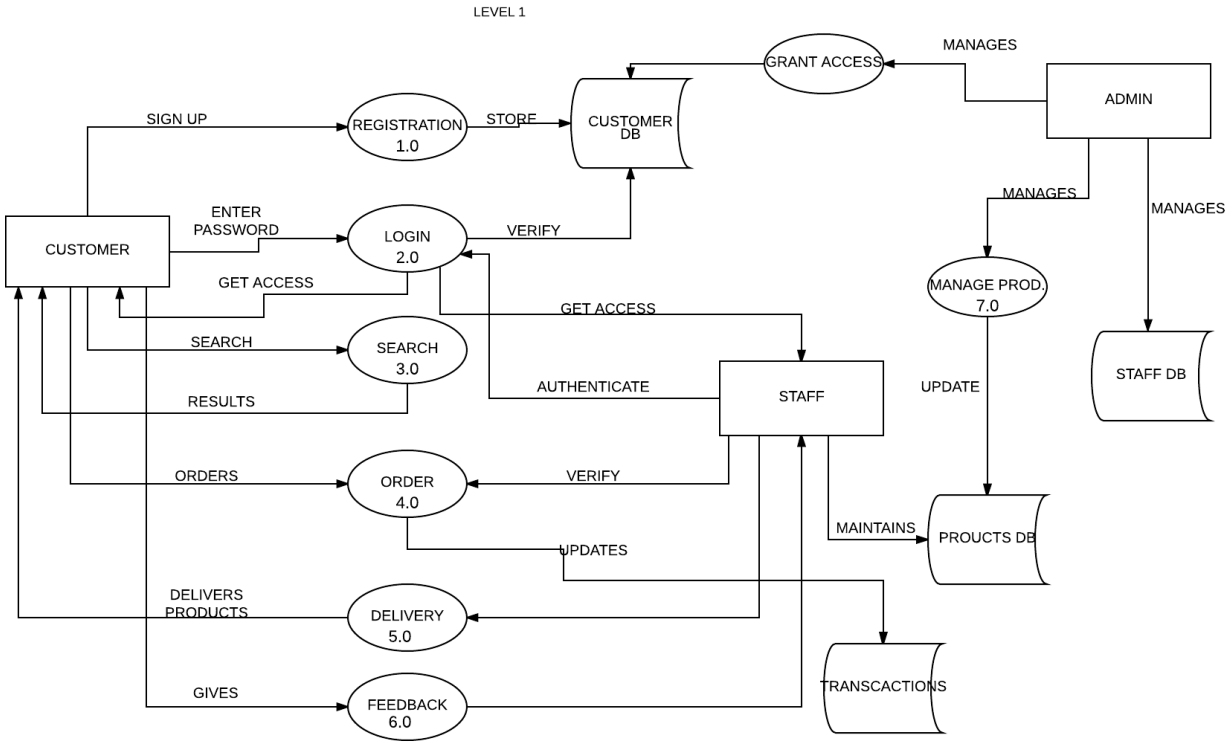


Fig 3.2 DFD Level 1

The DFD Level 1 shown above is divided into 6 processes- Registration, Login , Search, Order, Delivery, Feedback and Add/Modify Products. Registration and Login activity refers to the customer signing up and logging into the application. Search activity searches the products entered by the customer in the products available. Order activity deals with the customer orders. Delivery activity deals with products being delivered to the customer by the delivery staff. Feedback activity lets the customers to share their feedback on the products to the staff as part of improving the overall service.

3.3 DFD Level 2

A level 2 DFD as shown in figure 3.3 offers a detailed look at the processes that makeup an information system than a level 1 DFD does. It can be used to plan or record the specific makeup of a system.

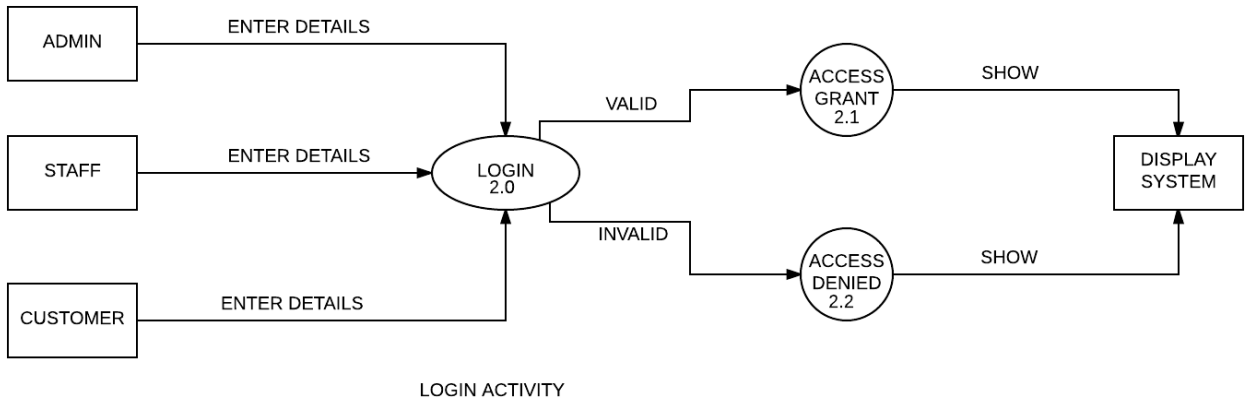


Fig 3.3.1 DFD Level 2

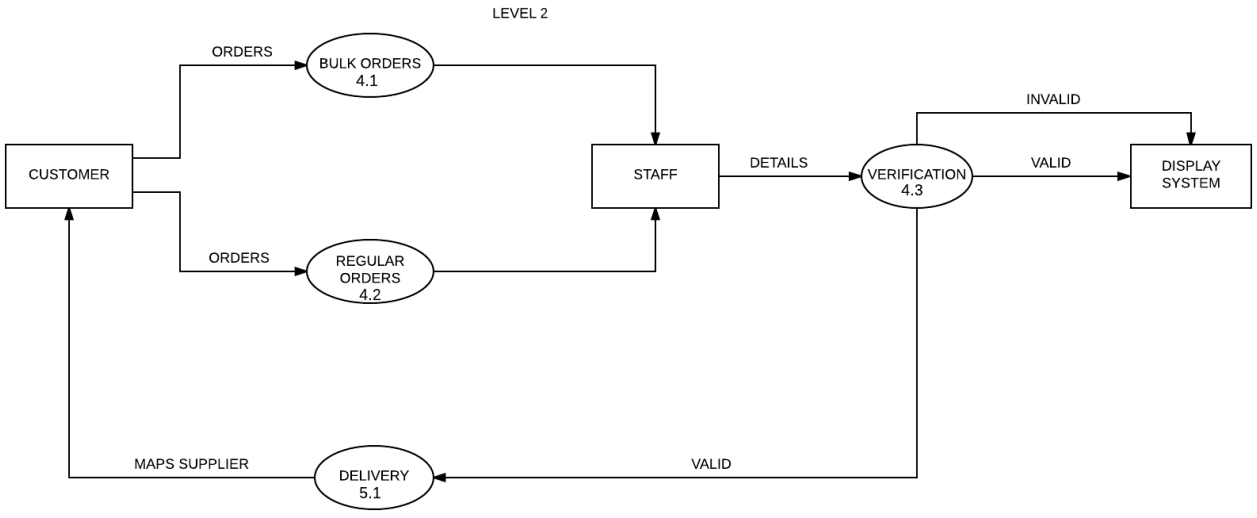


Fig 3.3.2 DFD Level 2

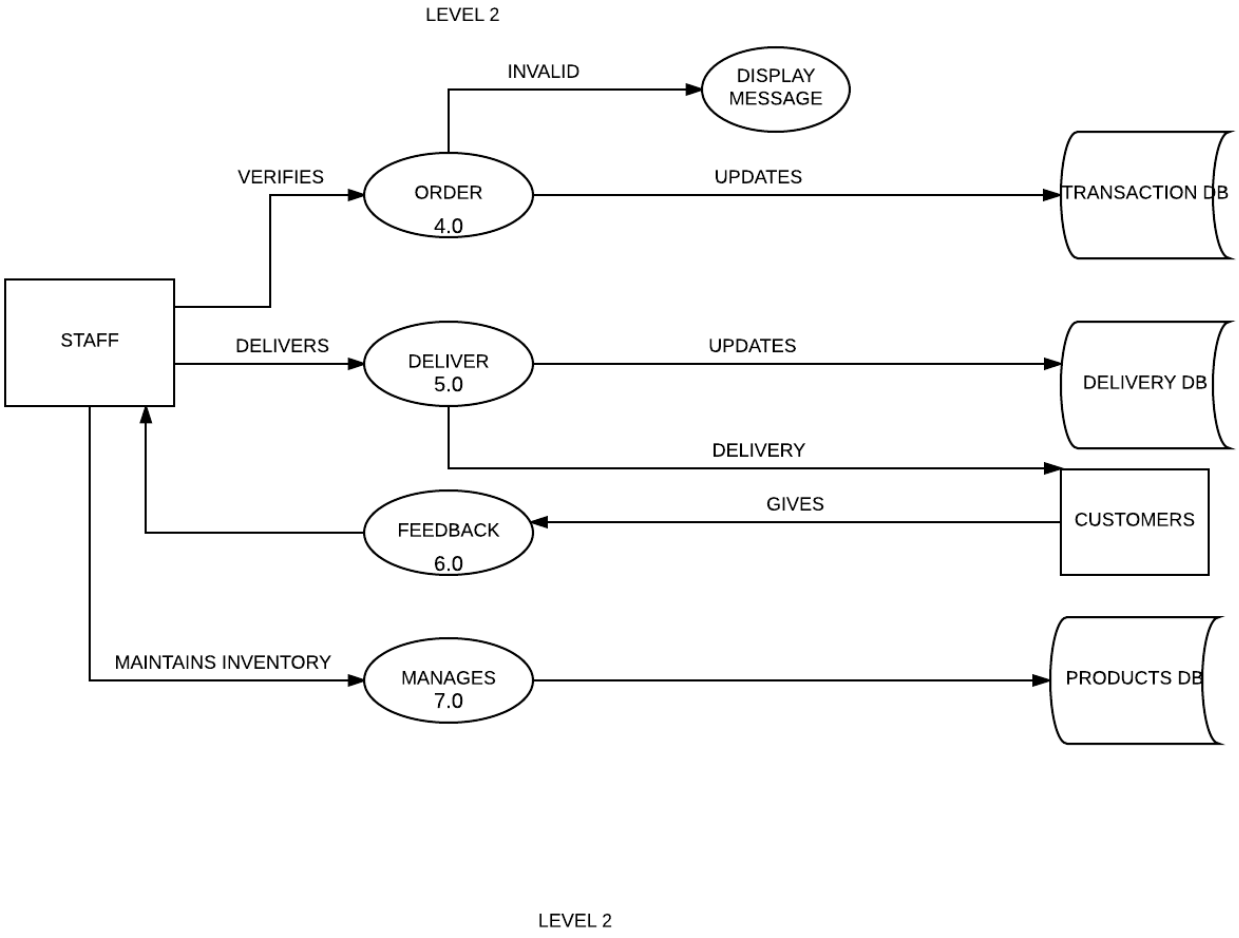


Fig 3.3.3 DFD Level 2

DFD Level 2 further describes each process identified in DFD Level 1.

CHAPTER 4

ER DIAGRAM

An entity–relationship model (ER model) describes inter-related things of interest in a specific domain of knowledge. An ER model is composed of entity types (which classify the things of interest) and specifies relationships that can exist between instances of those entity types.

Entities may be characterized not only by relationships, but also by additional properties (attributes), which include identifiers called "primary keys". Diagrams created to represent attributes as well as entities and relationships may be called entity-attribute-relationship diagrams, rather than entity-relationship models.

Three main components of an ERD are the entities the relationship between those entities, and the cardinality, which defines that relationship in terms of numbers.

The ER Diagram below is for the Dairy Products Management. It identifies 9 Entities namely- Admin, Customer, Staff, Products, Subscription, Outlet, Delivery, Transaction, Transaction details and the relationships that exist among them.

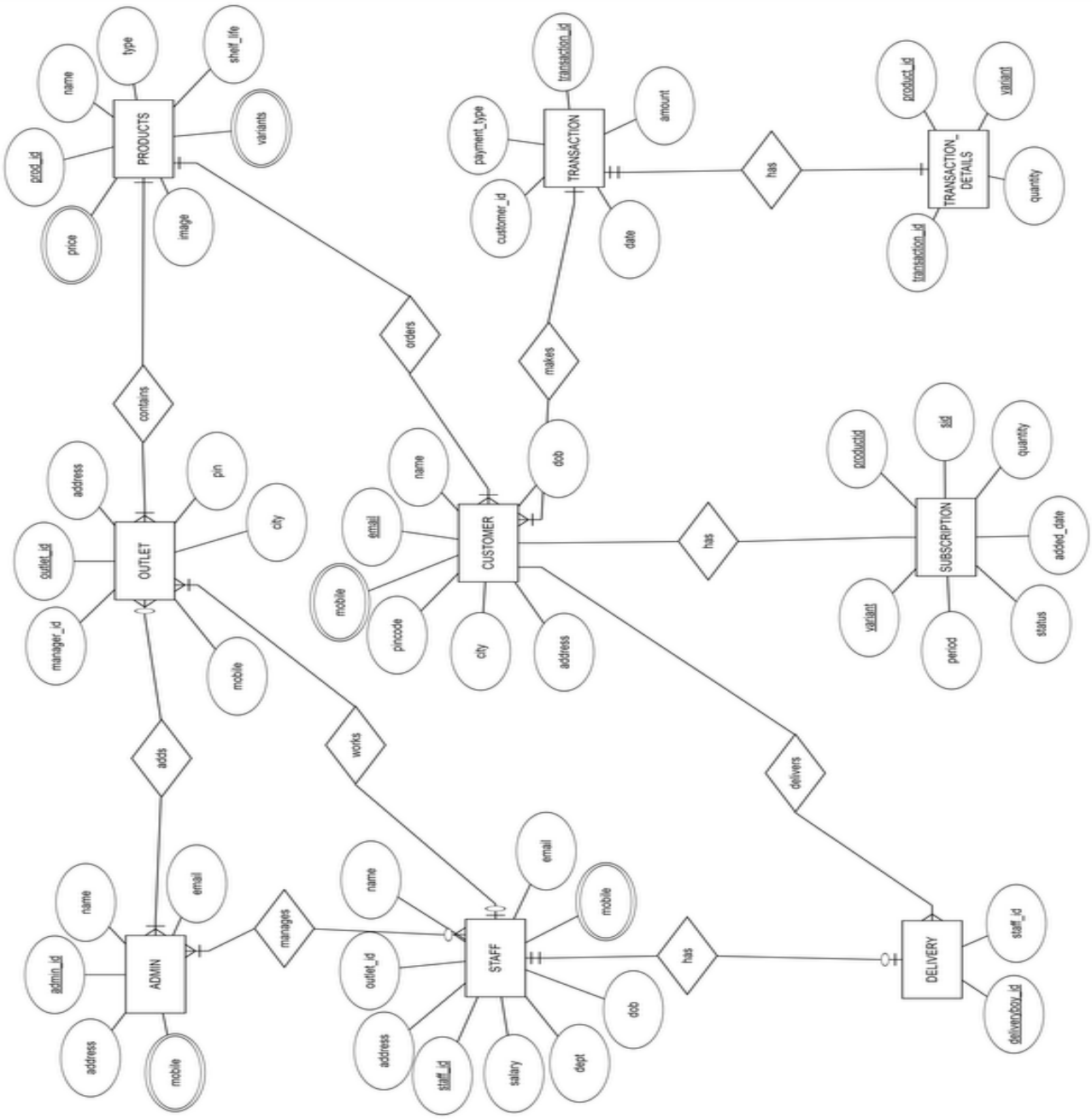


Figure 4.0 ER Diagram

CHAPTER 5

RELATIONAL SCHEMA AND NORMALIZATION

Relational Schema

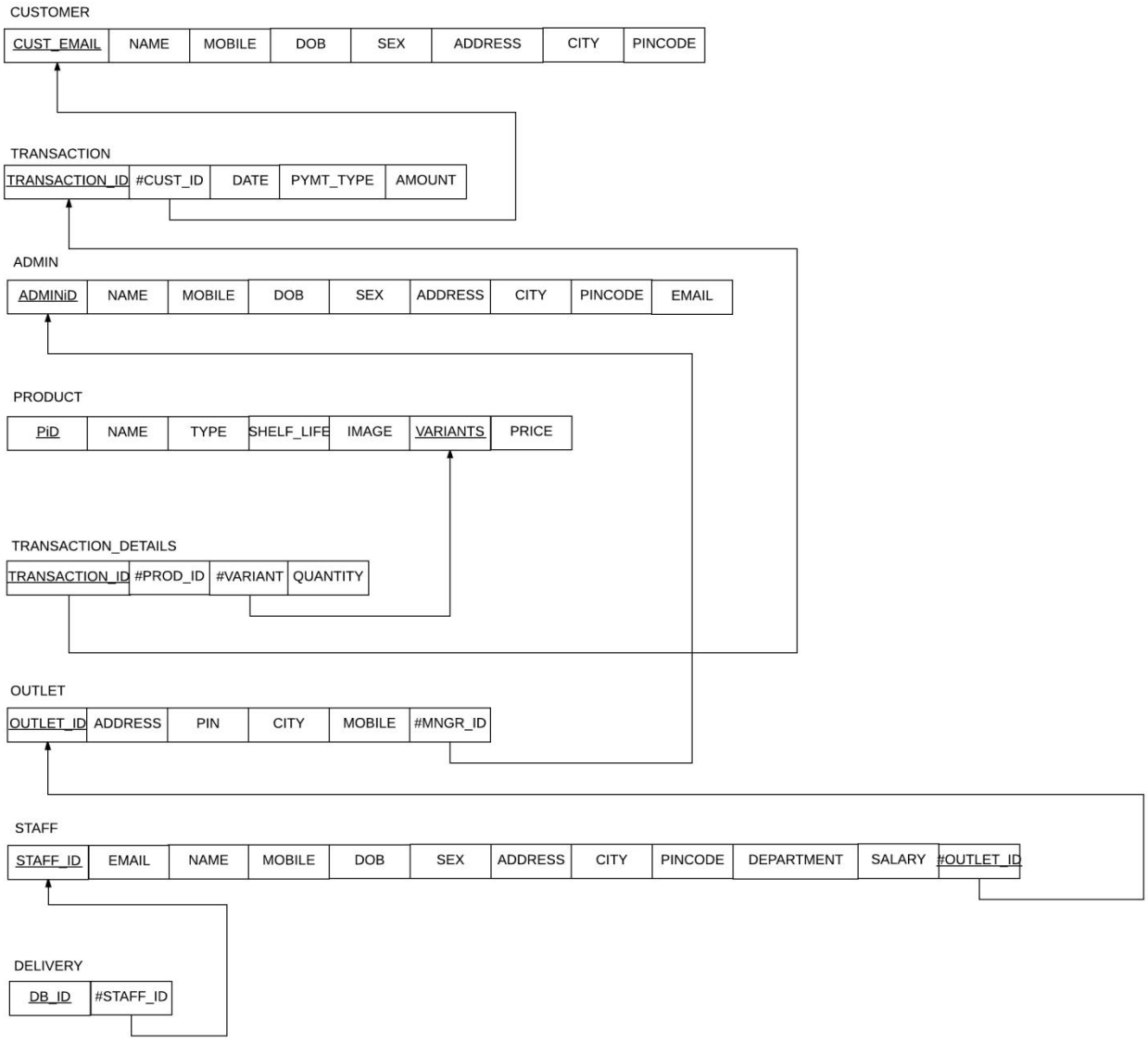
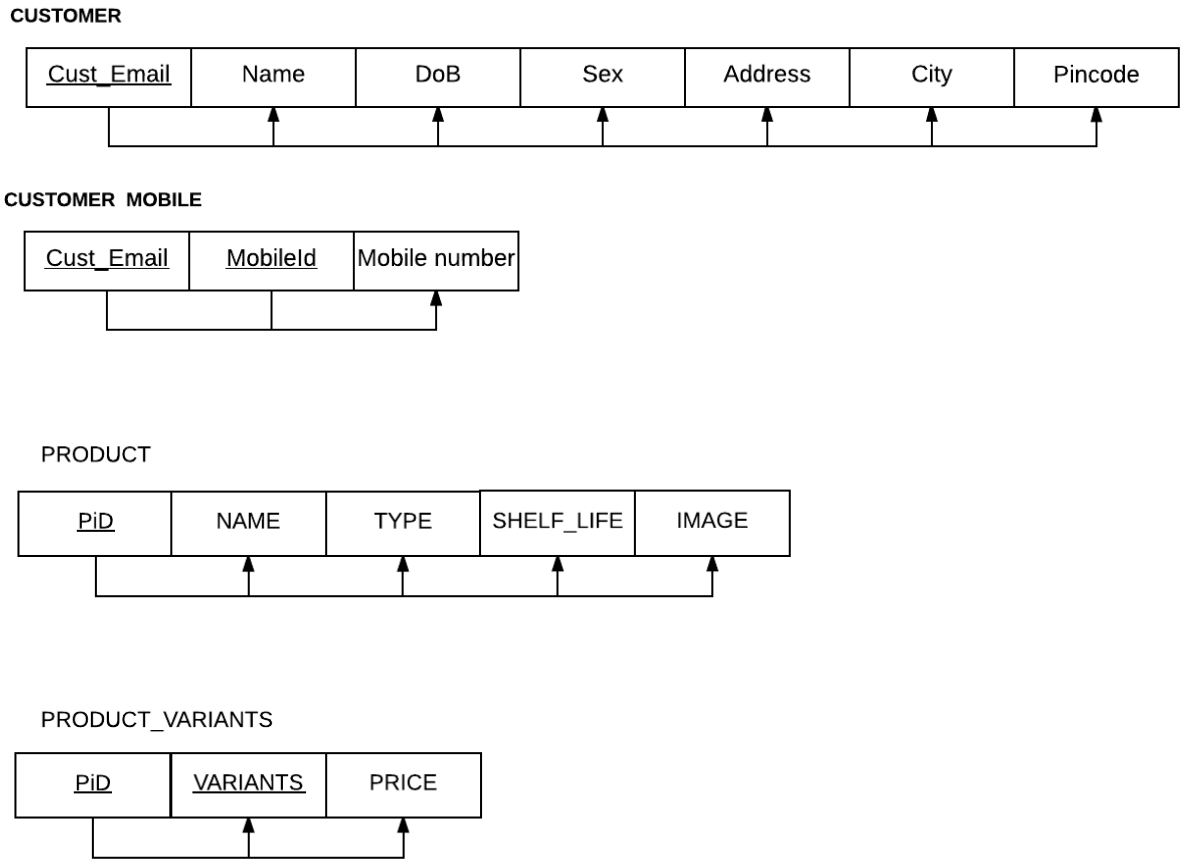


Fig 5.1 Relation Schema

Normalization

Normalization is the process of minimizing redundancy from a relation or set of relations. Redundancy in relation may cause insertion, deletion and updation anomalies. So, it helps to minimize the redundancy in relations. Normal forms are used to eliminate or reduce redundancy in database tables.

Decomposition to First Normal Form



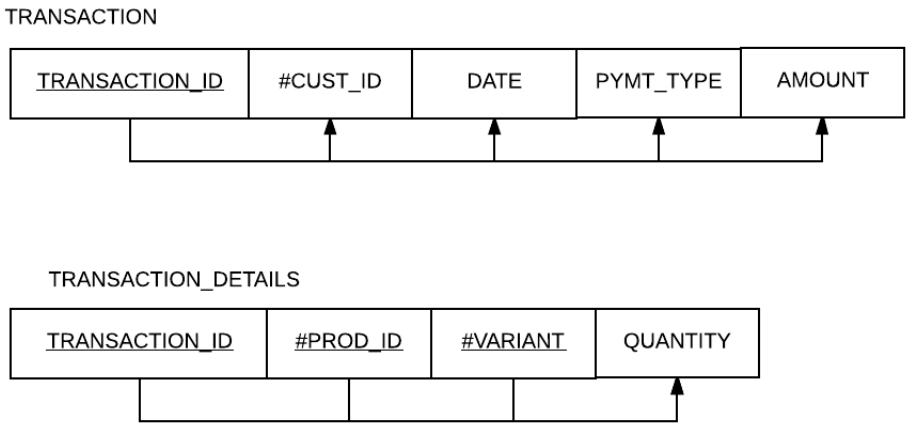


Fig 5.2 1NF DECOMPOSITION

Decomposition to Second Normal From

Second Normal Form does not exist as there is no partial dependency present in the ER diagram.

Decomposition to Third Normal Form

Third Normal Form does not exist as there is no transitive dependency in the ER diagram.

Boyce-Codd Normal Form

Since there is no Third Normal Form, Boyce-Codd Normal form does not exist.

CHAPTER 6

DATA DICTIONARY

Table 6.1:CUSTOMER

Field	Type	NULL	Key	Default	On Delete	On Update
Email	Varchar(20)	No	Primary	NULL	--	--
Name	Varchar(40)	No	--	NULL	--	--
Password	Varchar(40)	No	--	NULL	--	--
Mobile	Int(10)	No	--	NULL	--	--
Date of Birth	Varchar(10)	No	--	NULL	--	--
Sex	Char(1)	No	--	NULL	--	--
Address	Varchar(40)	No	--	NULL	--	--
City	Varchar(20)	No	--	NULL	--	--
Pin-Code	Int(6)	No	--	NULL	--	--

Table 6.2: PRODUCTS

Field	Type	NULL	Key	Default	On delete	On Update
Product_ID	Varchar(20)	No	Primary	NULL	--	--
Name	Varchar(20)	No	--	NULL	--	--
Type	Varchar(20)	No	--	NULL	--	--
Shelf Life	Int(3)	No	--	NULL	--	--
Image Link	Varchar(40)	No	--	NULL	--	--

Table 6.3: SUBSCRIPTION

Field	Type	NULL	Key	Default	On Delete	On Update
Subscription_ID	Varchar(10)	NO	Primary,Foreign	NULL	--	--
Product_ID	Varchar(10)	NO	Primary,Foreign	NULL	--	--
Variants	Varchar(10)	NO	Primary,Foreign	NULL	--	--
Quantity	Int(2)	NO	--	NULL	--	--
Period	Int(2)	NO	--	NULL	--	--
Added_Date	Timestamp(5)	NO	--	NULL	--	--
Status	Varchar(30)	NO	--	NULL	--	--

Table 6.4: ADMIN

Field	Type	NULL	Key	Default	On Delete	On Update
Admin_ID	Varchar(20)	No	Primary	NULL	--	--
Email	Varchar(20)	No	--	NULL	--	--
Name	Varchar(40)	No	--	NULL	--	--
Password	Varchar(40)	No	--	NULL	--	--
Mobile	Int(10)	No	--	NULL	--	--
Date of Birth	Varchar(10)	No	--	NULL	--	--
Sex	Char(1)	No	--	NULL	--	--
Address	Varchar(40)	No	--	NULL	--	--
Pin-Code	Int(6)	No	--	NULL	--	--

Table 6.5:STAFF

Field	Type	NULL	Key	Default	On Delete	On Update
Staff_ID	Varchar(20)	No	Primary	NULL	--	--
Email	Varchar(20)	No	--	NULL	--	--
Name	Varchar(40)	No	--	NULL	--	--
Password	Varchar(40)	No	--	NULL	--	--
Mobile	Int(10)	No	--	NULL	--	--
Date of Birth	Varchar(10)	No	--	NULL	--	--
Sex	Char(1)	No	--	NULL	--	--
Address	Varchar(40)	No	--	NULL	--	--
Pin-Code	Int(6)	No	--	NULL	--	--
Department	Varchar(20)	No	--	NULL	--	--
Salary	Int(8)	No	--	NULL	--	--
Outlet_Id	Varchar(20)	No	Foreign	NULL	--	--

Table 6.6: OUTLET

Field	Type	NULL	Key	Default	On delete	On Update
Outlet_Id	Varchar(20)	No	Primary	NULL	--	--
Address	Varchar(40)	No	--	NULL	--	--
Mobile	Int(10)	No	--	NULL	--	--
Pin	Int(6)	No	--	NULL	--	--
City	Varchar(20)	No	--	NULL	--	--
Manager_Id	Varchar(20)	No	Foreign	NULL	--	--

Table 6.7 : TRANSACTION

Field	Type	NULL	Key	Default	On delete	On Update
Transaction_Id	Int(06)	No	Primary	NULL	--	--
Cust_Email	Varchar(40)	No	Foreign	NULL	--	--
Amount	Int(06)	No	--	NULL	--	--
Payment_type	Varchar(20)	No	--	NULL	--	--
Date	Varchar(15)	No	--	NULL	--	--

CHAPTER 7

CONCLUSION

7.1 Summary

Based on the goal that we set at the beginning, we analyzed the existing trend of having manual databases and the issues prevalent. We then proposed a new and more technology-oriented approach bringing into picture a new system in order to reduce the inconvenience and increase security. The analysis was necessary for implementation making sure that most possible drawbacks were overcome. We analysed the functional requirements, data requirements and non-functional requirements. The analysis was a foundation of the new system design. The conceptual design focused on analyzing and designing the basic elements of a database system according to the requirement analysis of the new system, we created an E-R diagram, relational schema, data dictionaries, DFDs, routine queries and report types. Following the design a set of tables with values were created in database. Users and employees can look up, information and get relevant output and the admin can modify the database such that it reflects the web application as need demands.

7.2 Limitations

- The customer cannot see whether the product he added to cart is available in the inventory , that can be known only after the placing order .
- The payment gateway hasn't been integrated which lets the customer to do the transaction through credit/debit cards, net banking, e-wallets etc.
- Concurrency control of the application needs to be taken care of which lets various customers to use the application concurrently.
- The security solely relies on the validity of the password that the admin has to enter in order to make changes to the database rather than having a fingerprint/ facial recognition system which would’ve ensured tighter security.

7.3 Future Enhancements

- **Out Of Station**

  This feature enables the customers to pay only for the days they received the products. If they are not in the city they can notify to the delivery staff that products need not be delivered till they comeback thereby saving money and also time of the delivery staff.

- **Subscription Validity**

  Currently subscriptions are valid only for 30 days but it's validity could be extended as per the choice of the customer.

- **Android application**

  It will be easier for customer to order products through an android application as it is portable and handy to use . It also has huge market space as most people have smart phones now a days.

- **Predefined Subscriptions**

  Instead of choosing the products for subscription customer can choose the predefined popular subscription packs.

CHAPTER 8

REFERENCES

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[3] Chen, Peter *(March 1976). "The Entity-Relationship Model - Toward a Unified View of Data". ACM Transactions on Database Systems.* ***1*** *(1): 9–36.* doi:10.1145/320434.320440

APPENDIX A

SNAPSHOTS

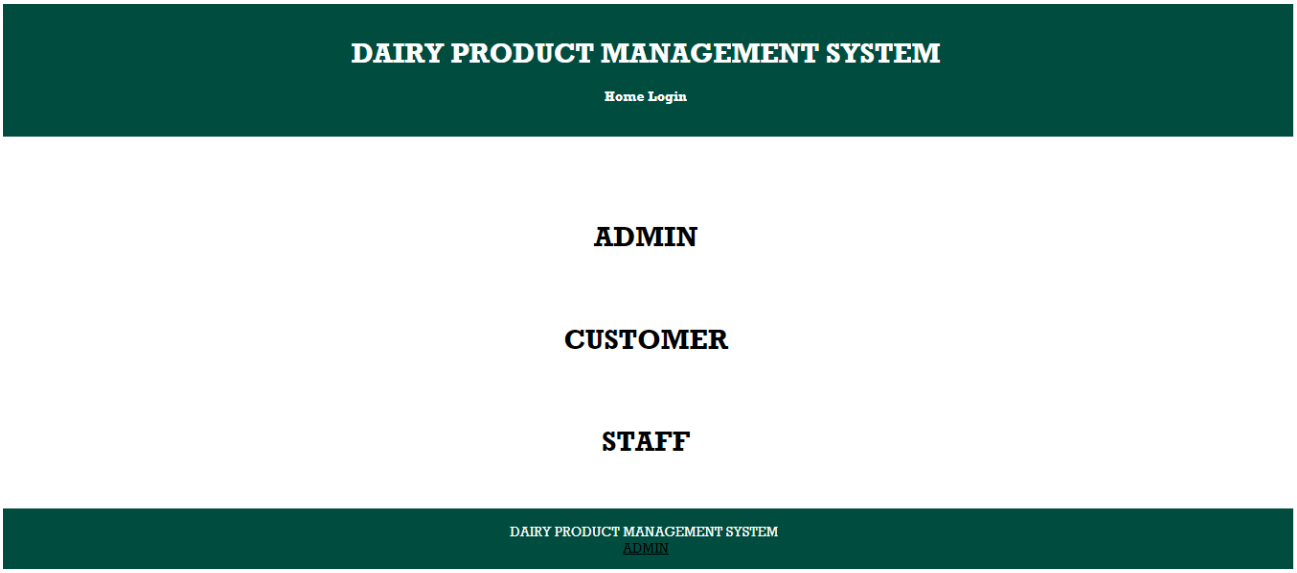

Fig A.1 Home page of the website

Central Home page which has admin, customer and staff login.

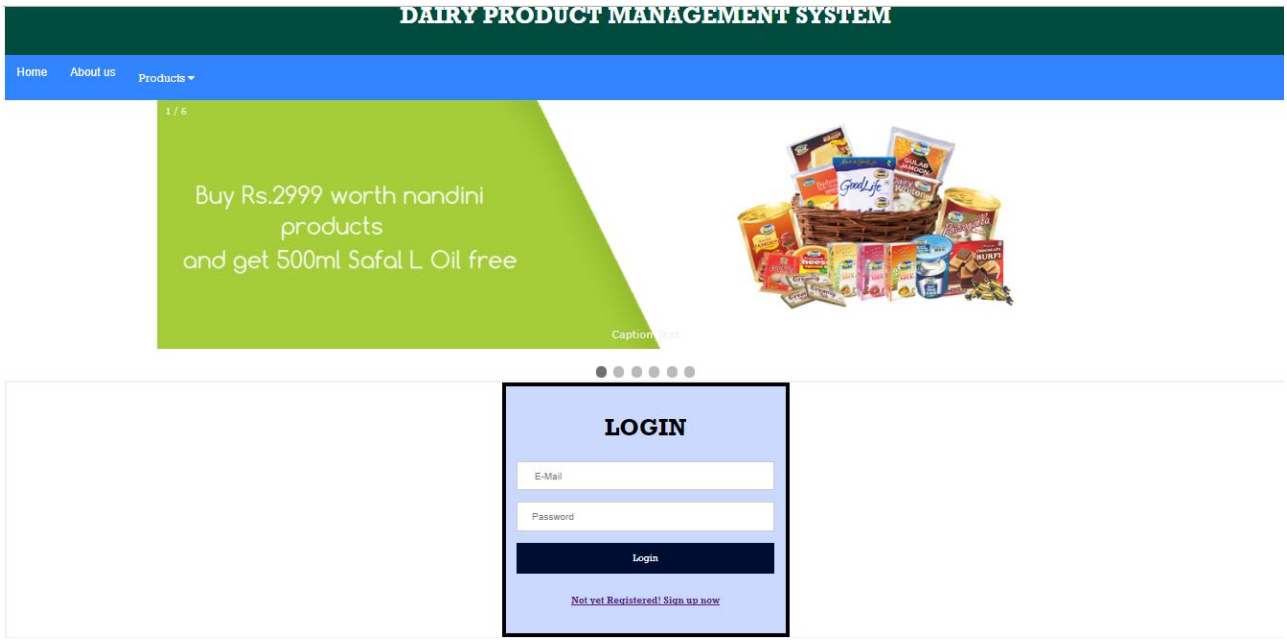

Fig A.2 Customer Login

Customers are allowed to access their respective account by entering login credentials in this page.

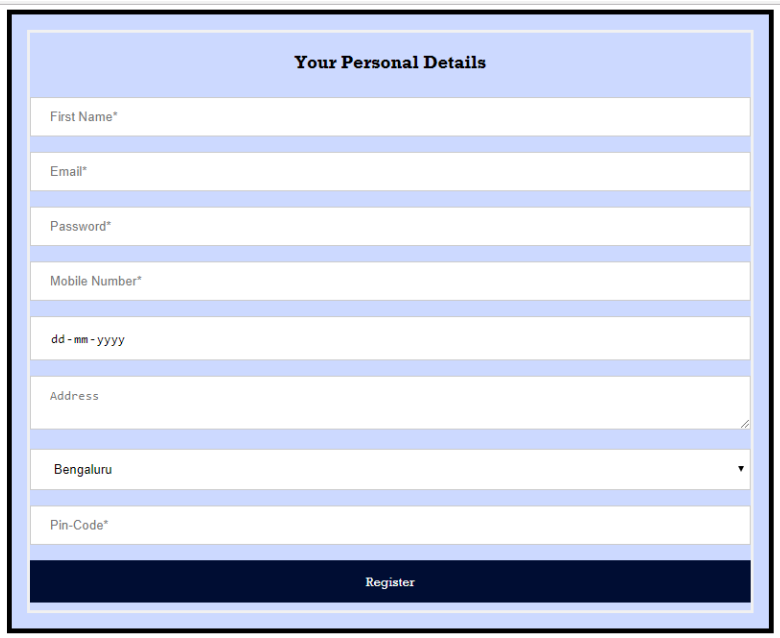

Fig A.3 Registration Form

Registration form helps a new customer to sign up to the website. Login credentials to their respective pages are taken through the registration form.

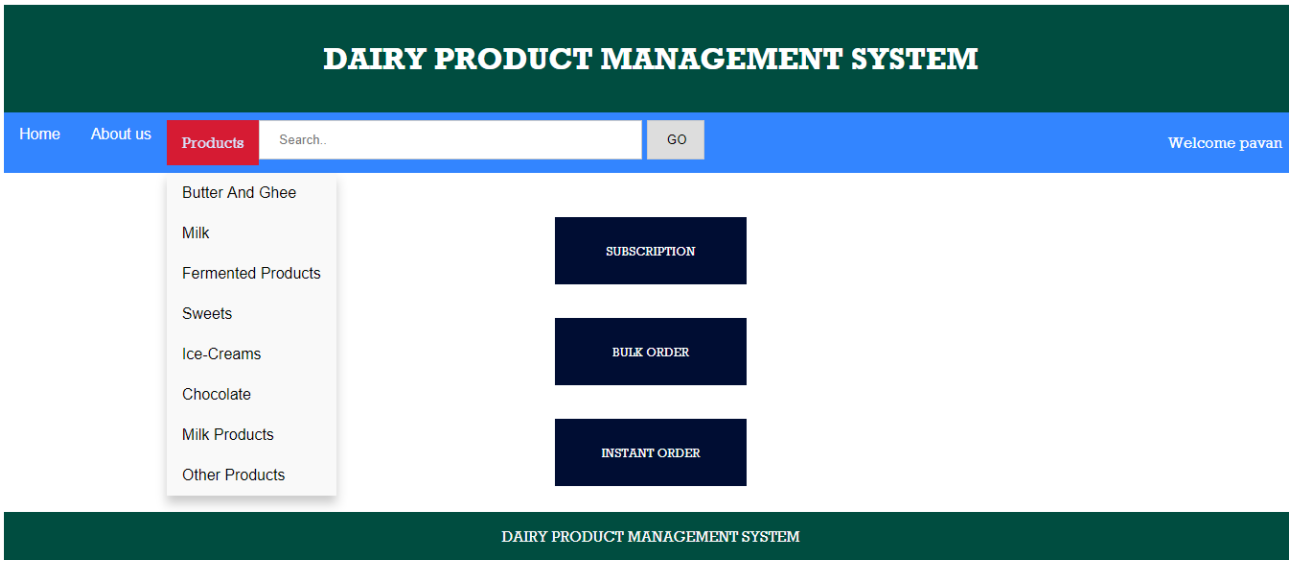

Fig A.4 Customer Home

The Home page of the customer which gives the options of further exploration like subscription, bulk order, instant order , access to search bar and different type of products description.

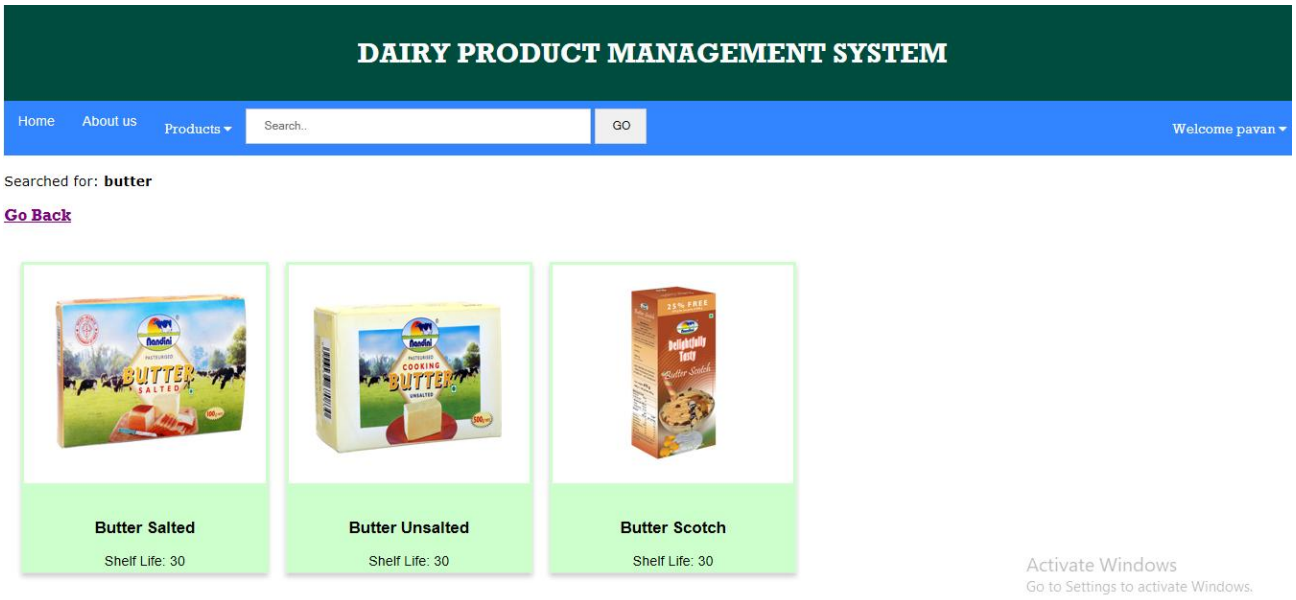

Fig A.5 Detailed information of product through search bar

The above image is the result of the search bar for the product butter salted which is fetched from the products database.

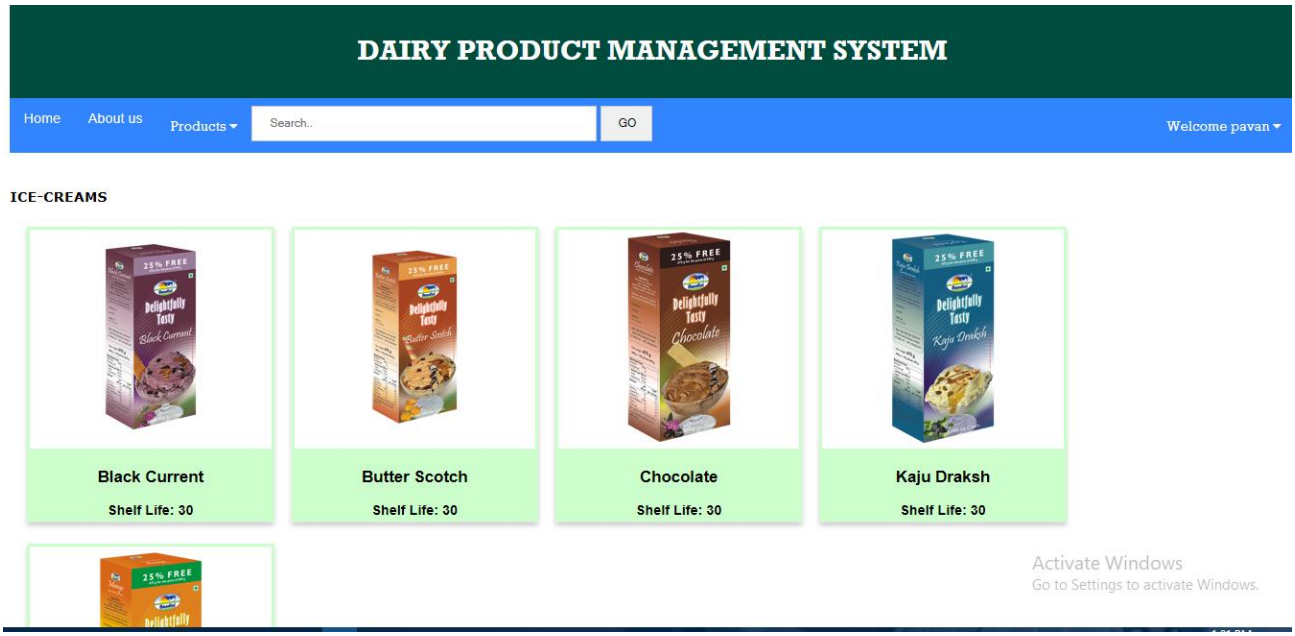

Fig A.6 Page displaying the products of category icecreams

Customers can view the different categories of products by clicking the products in navigation bar which in turn takes them to the specific products.

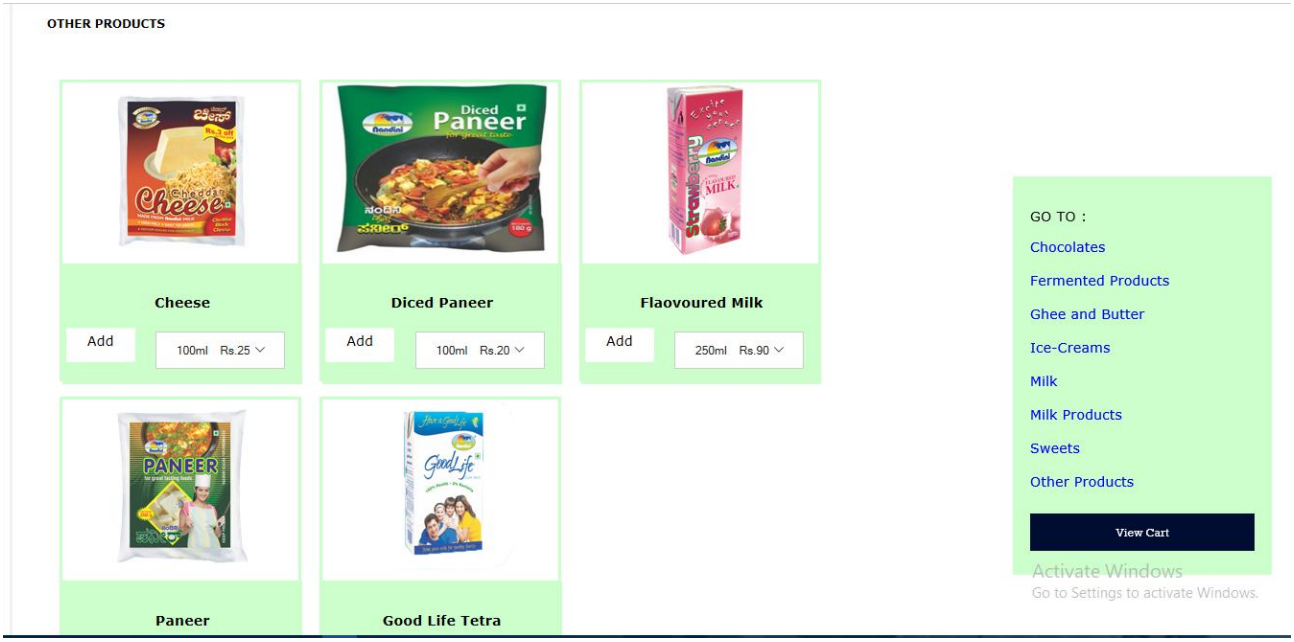

Fig A.7 Instant Order page

Customer can add the different variants of the products to the cart and get them delivered. It lists products according to the category wise showing each variant quantity and price.

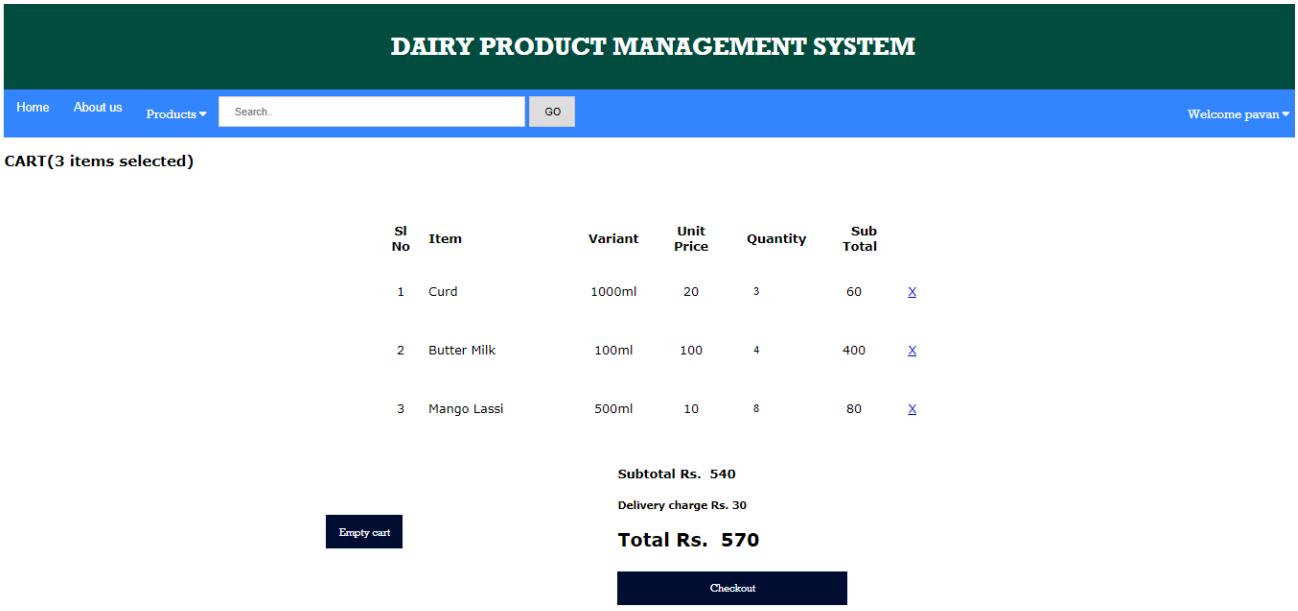

Fig A.8 Added Products in instant order page

Customer can modify the quantity of each individual product added or even remove from the cart. It also gives the instantaneous total price to be paid while checking out .It also supports the empty cart button which removes all the products which are added by the customer.

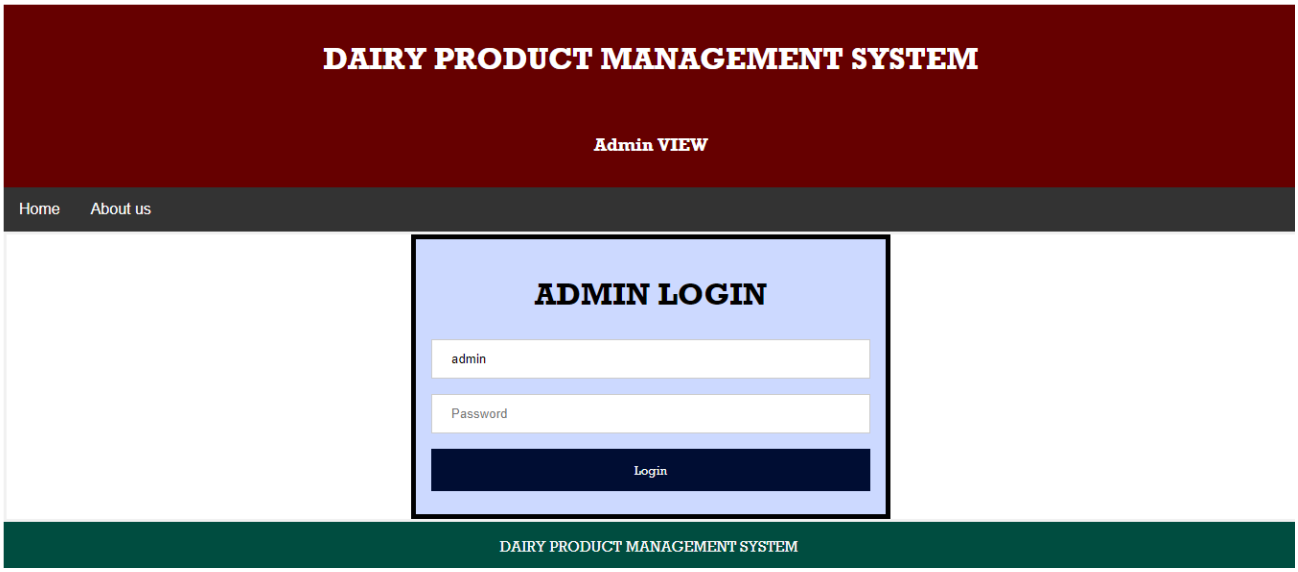

Fig A.9 Administrator login

Admins are allowed to access their respective account by entering login credentials in this page.

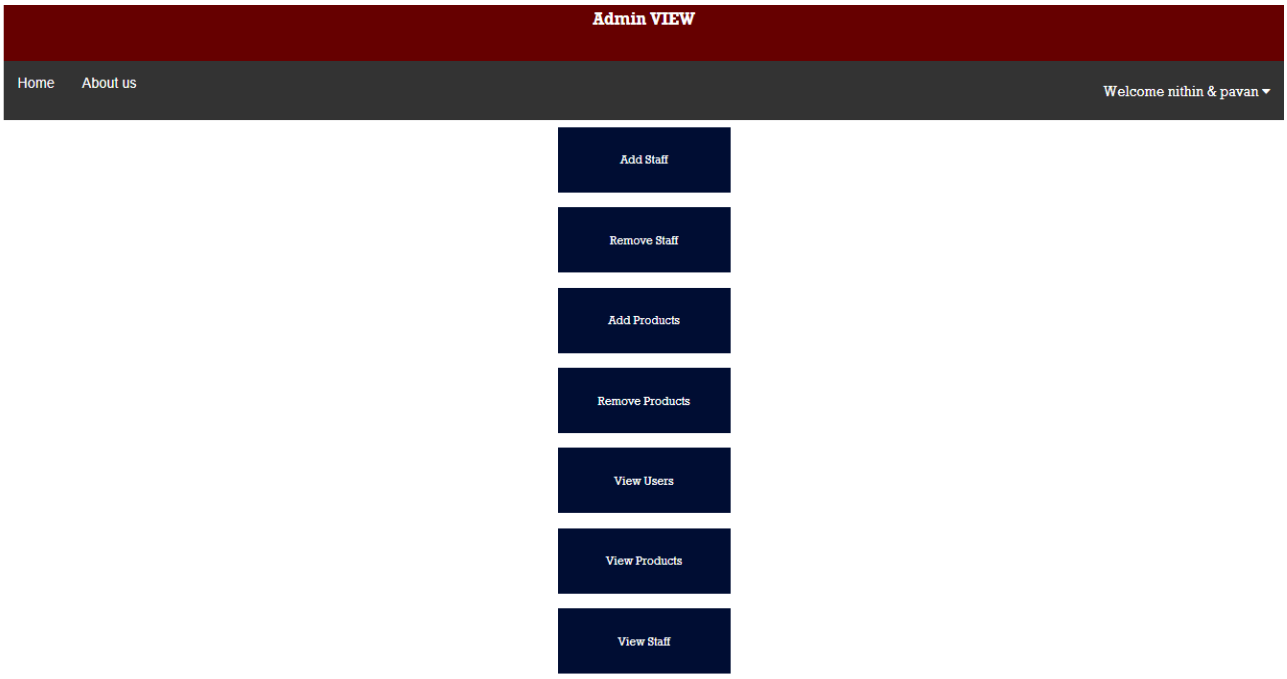

Fig A.10 Admin home page

Provides various operations for admin like adding/removing staff,adding products and also to view the enrolled staff, products available and registered customers.

Go Back

LIST OF PRODUCTS

Pid	Name	Type	Shelf Life	Variant	Price
ch001	eclairs chocolate pack	chocolates	30	150	200
fp001	Curd	Fermented Products	3	1000	20
fp001	Curd	Fermented Products	3	500	10
fp002	Butter Milk	Fermented Products	4	100	100
fp002	Butter Milk	Fermented Products	4	200	200
fp002	Butter Milk	Fermented Products	4	300	300
fp003	Sweet Lassi	Fermented Products	10	500	100
fp004	Mango Lassi	Fermented Products	10	250	50
fp004	Mango Lassi	Fermented Products	10	500	100
fp005	Yogurt	Fermented Products	10	250	70
fp005	Yogurt	Fermented Products	10	400	120
fp005	Yogurt	Fermented Products	10	800	350
fp006	Shrikhand Elaichi Flavoured	Fermented Products	15	1000	400
gb001	Butter Salted	Ghee and Butter	30	100	200
gb001	Butter Salted	Ghee and Butter	30	200	400
gb001	Butter Salted	Ghee and Butter	30	300	600

Fig A.11 View products page in admin login

The table showing the list of different products with their variants and all the other important details.