

**RV COLLEGE OF ENGINEERING<sup>®</sup>, BENGALURU-560059**

**(Autonomous Institution Affiliated to VTU, Belagavi)**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**



**TITLE OF THE PROJECT**

**“Ecommerce Platform with a Loan Approval System”**

***Mini - Project Report***

***Submitted by***

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***in partial fulfillment for the requirement of 5<sup>th</sup> Semester***

***DBMS Laboratory Mini Project (18CS53)***

**Under the Guidance of**

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**Academic Year 2020- 2021**

**RV COLLEGE OF ENGINEERING<sup>®</sup>, BENGALURU - 560059**

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**



**CERTIFICATE**

Certified that the project work titled '**Integrating An Ecommerce Platform With a Loan Approval System**' is carried out by **Rajath S Vasisth (1RV18CS128)**, **Vecha Rama Surendra (1RV18CS184)**, who are bonafide students of RV College of Engineering®, Bengaluru, in partial fulfillment of the curriculum requirement of 5<sup>th</sup> Semester Database Design Laboratory Mini Project during the academic year **2020-2021**. 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 Examination**

**Name of Examiners**

**Signature with date**

**1**

**2**

## **ACKNOWLEDGEMENT**

Any achievement, be it scholastic or otherwise does not depend solely on the individual efforts but on the guidance, encouragement and cooperation of intellectuals, elders and friends. A number of personalities, in their own capacities have helped me in carrying out this project work. I would like to take this opportunity to thank them all.

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## **Abstract**

Ecommerce websites are on the rise in today's modern world and ever growing with features. What starts out as a website just connecting sellers with customers then slowly ventures into other fields also like media and music through the concept of memberships. The websites also introduce many discounted sales linked to certain banks which the customers can avail during the period of the sales. Ecommerce giants like flipkart and amazon are dominating currently in India but through this project we feel they could perform even better because of their huge turnovers and capital investment capacity.

The existing system of ecommerce always offers some or the other bank offer on a section or whole of its products. All consumers will not have all the cards to avail all those offers. So, they buy products without an applicable offer or buy products when their banks offer a discount in the upcoming future as this is the typical consumer mind-set. For the debit card users this will not be much of a problem as they can get to make payments through their friends or relative's cards to avail the best offers but for people who want to pay through EMI's this will be a huge problem and cannot get the best offer also.

The proposed system wants to alleviate this problem and thus make it possible for the customer to avail one or the other offer every time a consumer buys a product from the website. This can again be made possible through a membership option of 3-5 years wherein the customer will be able to open two more joint accounts with the ecommerce website company at a nominal fee which will be fully managed/controlled by the ecommerce website only and it will be the customer's choice of banks.

So, when a sale on the website is put up with a card/EMI offer of a card that the customer doesn't have but has availed through the membership scheme, the customer can make a payment through his normal debit card but the ecommerce website will acquire that payment and process it through the membership card for the customer avail the required benefits. This will enable the customer to save so much money and doesn't incur losses either to the bank or the website.

Based on the project the result delivered are very impressive since it also captures personal information but also protects it securely. No-SQL integration also has helped manage data effectively.

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# Chapter 1

## Introduction

This chapter highlights the major objectives and the scope of the developed project, emphasizing on the key ideas and relevance of the project.

### 1.1 Objectives

- Make it possible to analyse weekly sales, quarterly sales of the website and also record the number of hits each product receives on the website to make intelligent business decisions.
- Make it possible for the customer to avail one or the other offer every time a consumer buys a product from the website.
- Make the website as secure enough as possible for customer to store personal details and confidential information.
- Give more autonomous monitoring power to the admin and make him as a primary user.

### 1.2 Scope

- This product will enable to effectively analyse and remediate customer's needs and improve business management.
- This project investigates into the EMI options flexibility at ecommerce website by safely and securely storing user's personal information on a NoSQL Database and retrieve it whenever the user wants to view it and notify the user when to complete payments.
- The scope of the to-be-developed 'ecommerce management' software package is:
  - To cater to all types of Emi options offered by the bank to its eligible customers
  - To enable the bank's customers to securely access this 'ecommerce management' software package using internet in order to place orders through various payment options/gateways, subsequently know the status of their application, make re-payments and close the EMI.
  - Bank can publish various upcoming offers for customers through this software.
  - Admin can access all accounts present in the website through this application.
  - Reduction in work load of all employees will possible through this application as transaction rights are provided online to customer and can be extended for global communication between all banks in the world.

# Chapter 2

## Software Requirement Specification

In this chapter, the hardware and software requirements for the project are described. It also includes the functional requirements pertaining to this project.

### 2.1 Software Requirements

The software requirements for the system include:

- Any windows operating system.
- The environment must be installed. For the database handling MYSQL must be installed. These products are open-source products.
- The final application must be packaged in a set up program, so that the products can be easily installed on machines. This application must be networked to corresponding banks

### 2.2 Hardware Requirements

- Processor: 64-bit, 2 cores, Pentium IV or higher
- Processor Speed: 1.8GHz minimum per core
- RAM: 2GB or higher
- Hard disk: 2 GB free space for installation. For production use additional disk space for day-to-day operations.

### 2.3 Functional Requirements

#### 1. Admin

- The admin should be able to upload new products or remove them.
- He will also be able to monitor all the EMI records of the users.
- He also has the authority approve membership of customers and oversee ongoing transactions.

#### 2. Website

- The website should be active at all times and should perform without lag and will have access to customer details present in the database including user authentication.



- The website is responsible for retrieving products as a search result from the database and also assigning proper delivery person and dates based on availability calculations present in the database.
- It should also mention different products categories that are available and also enable customer input of a specified product through camera/photo for easy product identification.

### **3. Customer**

- Customer has his own account. Only he has the authority to access his personal information and confidential details.
- He can at any time delete his account or place orders from the website or also alter his personal information.
- He can also opt for a membership in which case he will have the authority to choose two more cards linked to different bank accounts which will be managed by the ecommerce website owners.

### **4. Order management**

- As soon as the order is placed the website should check for payment confirmation and once the payment is confirmed it should show the customer the Transaction ID and the final order products as well as automatically mail the details to the customer.
- The details should contain Tracking Info for the order placed as well as the receipt for the order.
- In case of EMI transactions, it should send timely reminders to the customer through mail automatically.
- During order placement the website itself should recommend the best payment method for the customer considering payment methods as a part of membership as well as personally added payment methods.

### **5. Authentication**

- Here there is separate authentication for each user (customer, admin), according to their roles and a separate interface is presented to each one.
- Administrator authorization permits restricted access and therefore is done through company given email id's only.

## Chapter 3

### ER Diagram

This chapter describes the entity relationship diagram (ER) for the project. An ER diagram shows the relationship among entity sets. In terms of DBMS, an entity is a table or attribute of a table in database, so by showing relationship among tables and their attributes, ER diagram shows the complete logical structure of a database. In our ER model we have a total of 13 entities and they have been mapped by proper relationship constraints using the (min, max) notation. A ternary relation 'prepares' between entities 'customer', 'product' and 'cart' has also been included in the model.

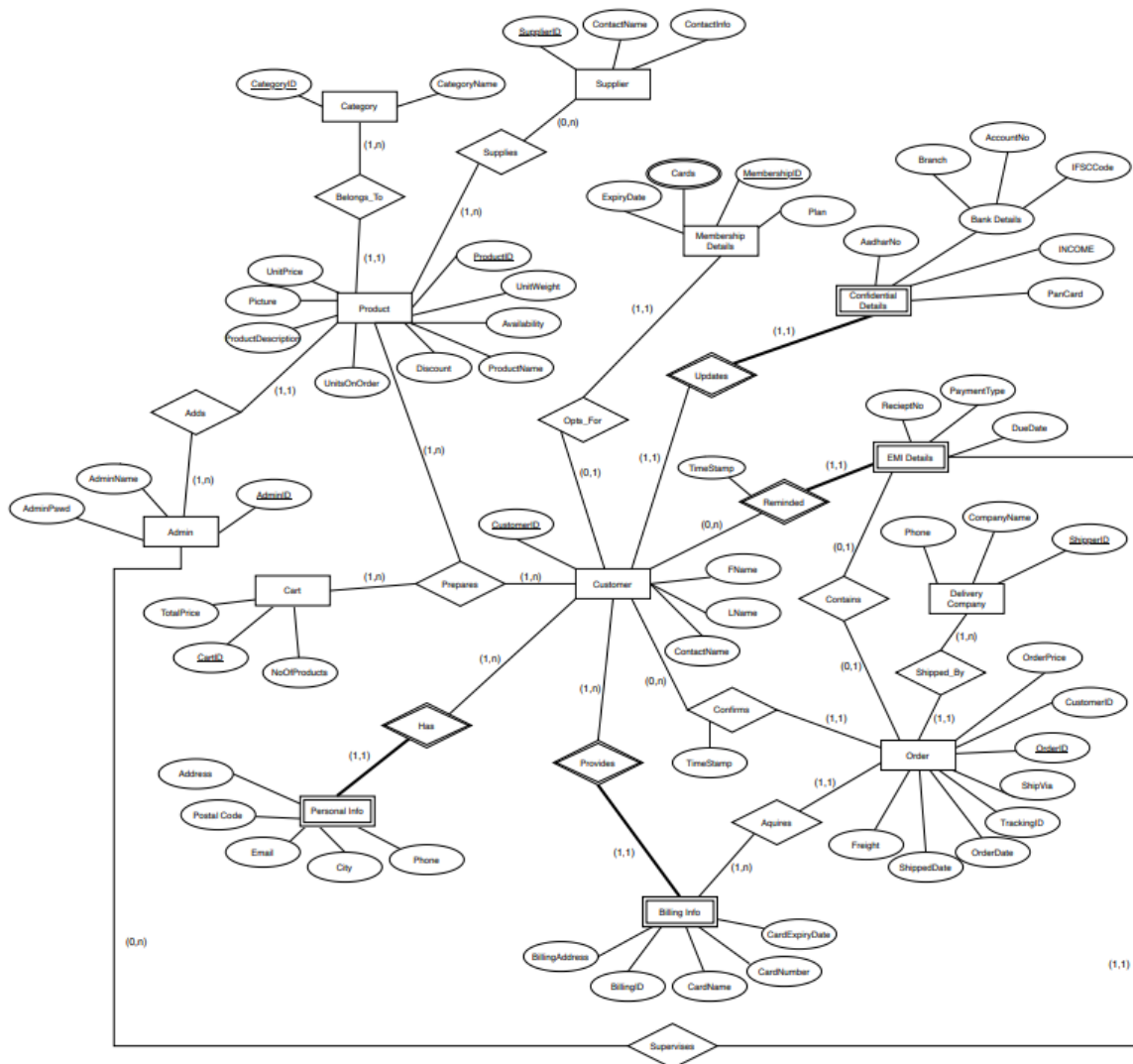


Figure 1- ER diagram

## Chapter 4

### Detailed Design

This chapter focuses on the design phase of the project. It illustrates the level 0 and level 1 data flow diagrams for the integrated hostel management system

#### 4.1 Data Flow Diagram

A data flow diagram (DFD) is a graphical representation of the flow of data through an information system. Data flow models describe how data flows through a sequence of processing steps. With a data flow diagram, the users can easily visualize the operations within the system, what can be accomplished using the system and the implementation of the system.

##### 4.1.1 DFD Level 0

The level 0 DFD shows some of the basic functions carried out by the two end users who are the user and the admin.

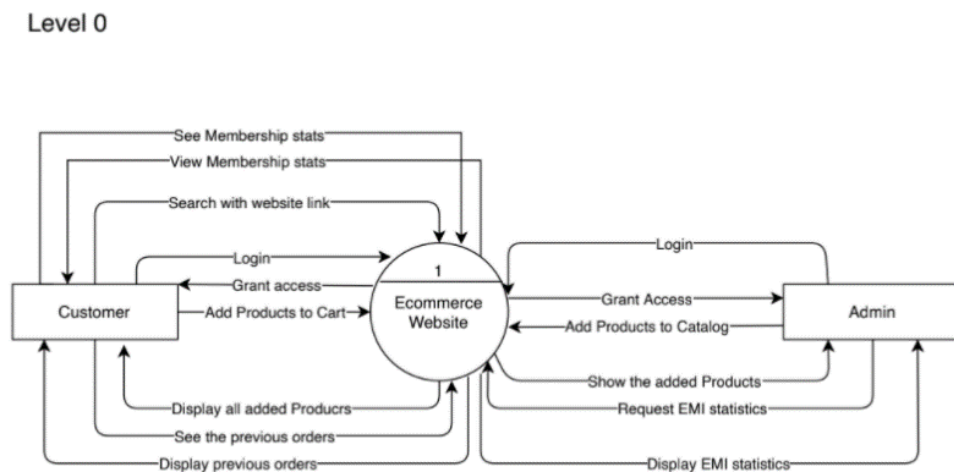


Figure 2- DFD Level 0

### 4.1.2 DFD Level 1

The level 1 DFD shows some of the basic functions performed by the customer and admin and their subsequent interactions with the database which is internally recognized by database retrievals.

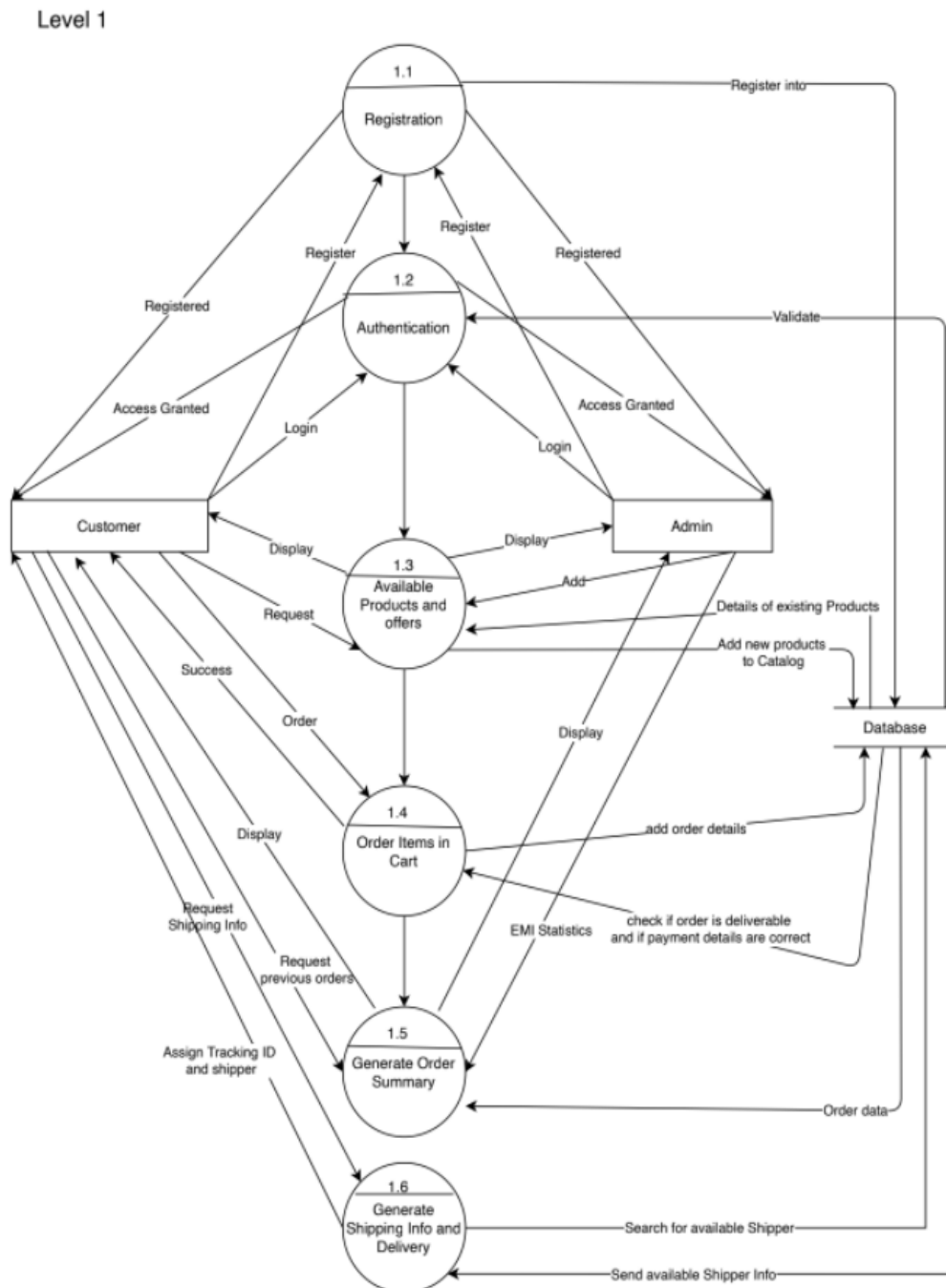


Figure 3-DFD Level1

## Chapter 5

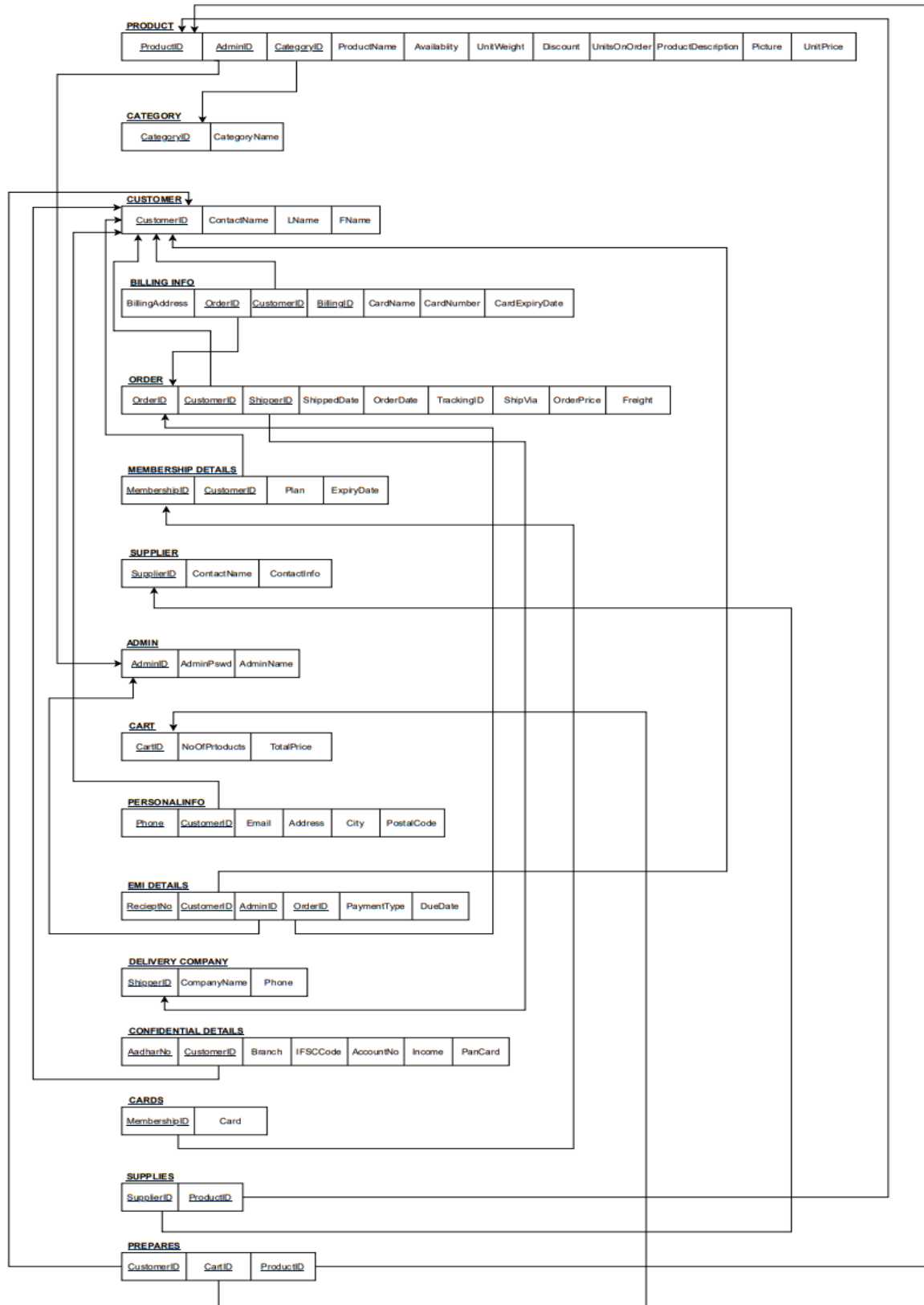
### Relational schema and Normalization

This chapter describes the relational schema associated with the integrated an Ecommerce platform with a loan Approval system project, while also emphasizing on normalization of the described relational schema.

#### Relational schema

The relational model represents the database as a collection of relations. A relation is nothing but a table of values. Every row in the table represents a collection of related data values. These rows in the table denote a real-world entity or relationship. The table name and column names are helpful to interpret the meaning of values in each row. The data are represented as a set of relations. In the relational model, data is stored as tables. However, the physical storage of the data is independent of the way the data are logically organized.

In our relational model we have 16 fields in all and all the foreign keys of each relation are mapped to the primary key of the referenced relation. Since we have a ternary relation between cart, product and the customer a new relation 'prepares' has been created for the same and keys are mapped accordingly. 'Supplies' is also an m: n relation and hence a separate relation has been created for the same and keys of 'product' and 'supplier' are mapped accordingly. All the other mapping are either 1: n, n: 1 or 1: 1 and hence suitable foreign keys from the referenced relation are included and are mapped accordingly.



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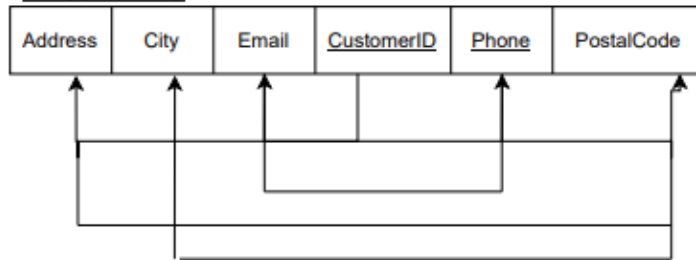
Figure 4- Relational Mapping of the Database

# Normalization of the Database

## Normalization of Database

### Functional Dependency

#### PERSONALINFO



#### PERSONALINFO1

Address	Email	<u>CustomerID</u>
---------	-------	-------------------

#### CONFIDENTIAL DETAILS1

<u>AadharNo</u>	<u>CustomerID</u>	Branch	AccountNo
-----------------	-------------------	--------	-----------

#### PERSONALINFO2

Email	<u>Phone</u>
-------	--------------

#### CONFIDENTIAL DETAILS2

AccountNo	PanCard
-----------	---------

#### PERSONALINFO3

City	PostalCode
------	------------

#### CONFIDENTIAL DETAILS3

Income	PanCard
--------	---------

#### PERSONALINFO4

Address	PostalCode
---------	------------

#### CONFIDENTIAL DETAILS4

Branch	IFSCCode
--------	----------

#### SUPPLIER1

<u>SupplierID</u>	ContactName
-------------------	-------------

#### SUPPLIER2

ContactName	ContactInfo
-------------	-------------

BY  
RAJATH S VASISTH  
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Figure 5 - Normalization

## Chapter 6

### NO-SQL

In this project we have used firebase for the NO-SQL part of our Database. Google Firebase is a Google-backed application development software that enables developers to develop iOS, Android and Web apps. Firebase provides tools for tracking analytics, reporting and fixing app crashes, creating marketing and product experiment.

Firebase offers a number of services, including:

- Analytics – Google Analytics for Firebase offers free, unlimited reporting on as many as 500 separates events. Analytics presents data about user behavior in iOS and Android apps, enabling better decision-making about improving performance and app marketing.
- Authentication – Firebase Authentication makes it easy for developers to build secure authentication systems and enhances the sign-in and onboarding experience for users. This feature offers a complete identity solution, supporting email and password accounts, phone auth, as well as Google, Facebook, GitHub, Twitter login and more.
- Cloud messaging – Firebase Cloud Messaging (FCM) is a cross-platform messaging tool that lets companies reliably receive and deliver messages on iOS, Android and the web at no cost.
- Realtime database – the Firebase Realtime Database is a cloud-hosted NoSQL database that enables data to be stored and synced between users in real time. The data is synced across all clients in real time and is still available when an app goes offline.
- Crashlytics – Firebase Crashlytics is a real-time crash reporter that helps developers track, prioritize and fix stability issues that reduce the quality of their apps. With crashlytics, developers spend less time organizing and troubleshooting crashes and more time building features for their apps.
- Performance – Firebase Performance Monitoring service gives developers insight into the performance characteristics of their iOS and Android apps to help them determine where and when the performance of their apps can be improved.
- Test lab – Firebase Test Lab is a cloud-based app-testing infrastructure. With one operation, developers can test their iOS or Android apps across a variety of devices and device configurations. They can see the results, including videos, screenshots and logs, in the Firebase console.

Firebase application in our project:

In our project we are using the Authentication and Realtime Database feature of firebase to store the name, email, password of the user along with EMI information entered if any by the user which is stored as the child of the millisecond timestamp during which the information was entered by the user.



The SQL database session is exited during this time and a new firebase session is created and all the confidential data entered by the user is pushed into the database. The data pushed contains the EMI period selected by the user, debit card/credit card number, card expiry date, name on the card and the Aadhar number/PAN number of the person applying for the EMI.

Firebase use cases include:

- Create onboarding flows – developers can give users a quick, intuitive sign-in process using Firebase Authentication. They allow users to sign into their apps via their Google, Twitter, Facebook or GitHub accounts in less than five minutes. Developers can also track each step of their onboarding flows to enhance the user experience. Additionally, developers can use Google Analytics for Firebase to log events at each step of their onboarding flows, create funnels to determine where users are dropping off and use remote configuration to make changes to their apps to see how those changes affect conversions.
- Progressively roll out new features – developers can launch new features with minimal risk by first testing those features on a few users to see how they work and how users respond. Then, when developers are satisfied, they can roll out their apps to the rest of their users.

## Chapter 7

### Conclusion & Future Enhancement

An effective system for order placement with analytics was developed. The admins were able to host the desired product by specifying the product details and providing a proper description. The users were able to successfully view the products hosted under each department, view the description and order the same. The user details along with the payment details were added to the database automatically without admin privileges. Ecommerce Website was successful in helping users in choosing the right products and with a suitable EMI and membership option. This approach brings about a lot of businesses as well benefits the banks as well as the users involved in our website.

### References

- [1] R. Lawrence, "Integration and Virtualization of Relational SQL and NoSQL Systems Including MySQL and MongoDB," 2014 International Conference on Computational Science and Computational Intelligence, Las Vegas, NV, 2014, pp. 285-290, doi: 10.1109/CSCI.2014.56.
- [2] Ágnes Vathy-Fogarassy, Tamás Húgyák, Uniform data access platform for SQL and NoSQL database systems, Information Systems, Volume 69,2017, Pages 93-105,ISSN 0306-4379, <https://doi.org/10.1016/j.is.2017.04.002>.

## Appendix: Snapshots

### Screenshots with descriptions

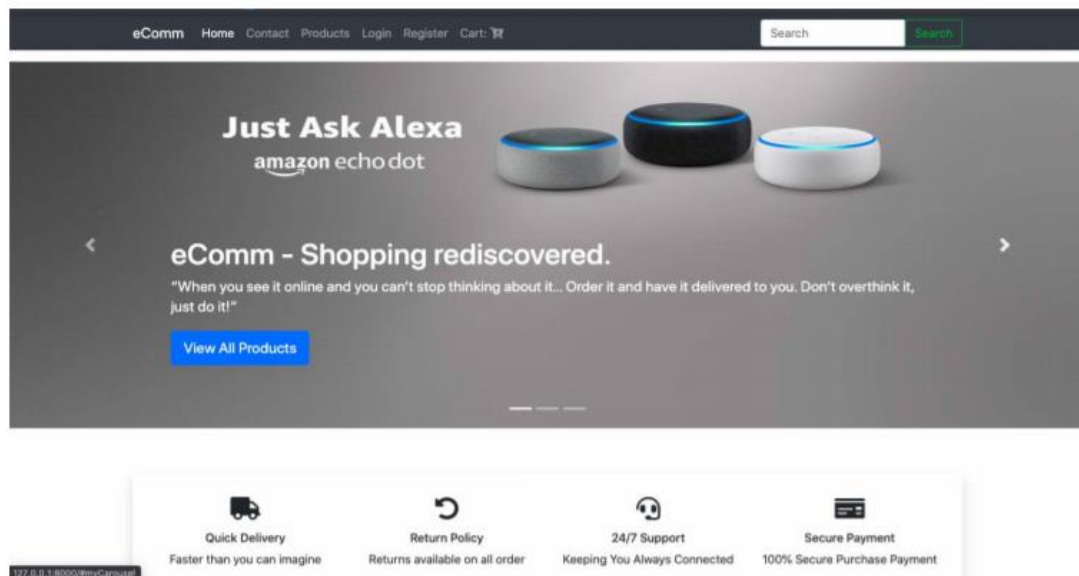


Figure 6 - Home Page

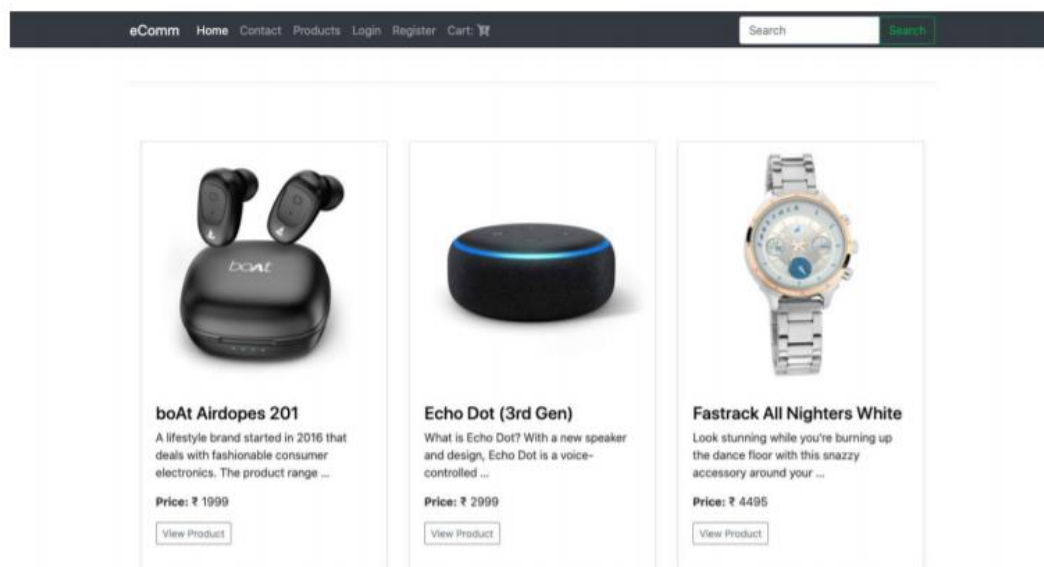



Figure 7 - Product Page

eComm
Home
Contact
Products
Login
Register
Cart: ₹



## Please Login!




Username:

Password:



Don't have an account? [Sign up here](#)


**E-Comm Website**  
Home - Contact - Products  
E-Comm Website © 2020

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**About the company**  
We Are Here To Provide You The Best Experience of E-Commerce Website.  
*Feel Free To Buy Anything.*

Figure 8 - Login Page

eComm
Home
Contact
Products
Login
Register
Cart: ₹



## Register Yourself

Username:

Email:

Password:

Confirm Password:



Already have an account? [Sign in here](#)

Figure 9 - Register Page

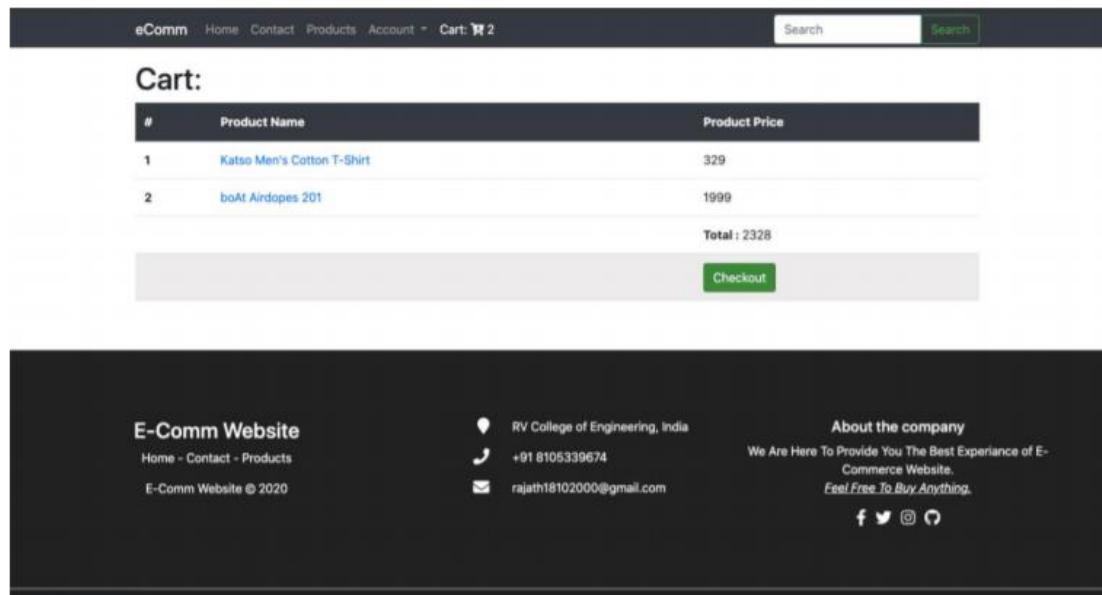


Figure 10 - Cart Page

**Checkout Page**

**Billing Address**

Address line1:  
36492598

Address line2:  
3705725048

City:  
Bangalore

State:  
Karnataka

Country:  
India

Pincode:  
560085

**Your cart** <sup>2</sup>

Katso Men's Cotton T-Shirt	₹ 329
boAt Airdopes 201	₹ 1999
<b>Cart Total</b>	<b>₹ 2328</b>
Shipping Cost	₹ 10
<b>Total (Rupees)</b>	<b>₹ 2338</b>

Figure 11 - Checkout Page

## Your Order History:

#	Order ID	Status	Ordered Products	Date of Purchase	Total Cost
1	z2hyl4bmc4	Created	Katso Men's Cotton T-Shirt , boAt Airdopes 201	Jan. 9, 2021	2338

**E-Comm Website**  
Home - Contact - Products  
E-Comm Website © 2020


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**About the company**  
We Are Here To Provide You The Best Experience of E-Commerce Website.  
*Feel Free To Buy Anything.*  
   

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Figure 12 - Order History Page

eComm Home **Contact** Products Account ▾ Cart: ₹ 0

  
**Contact Us**

### Getting in touch is easy!

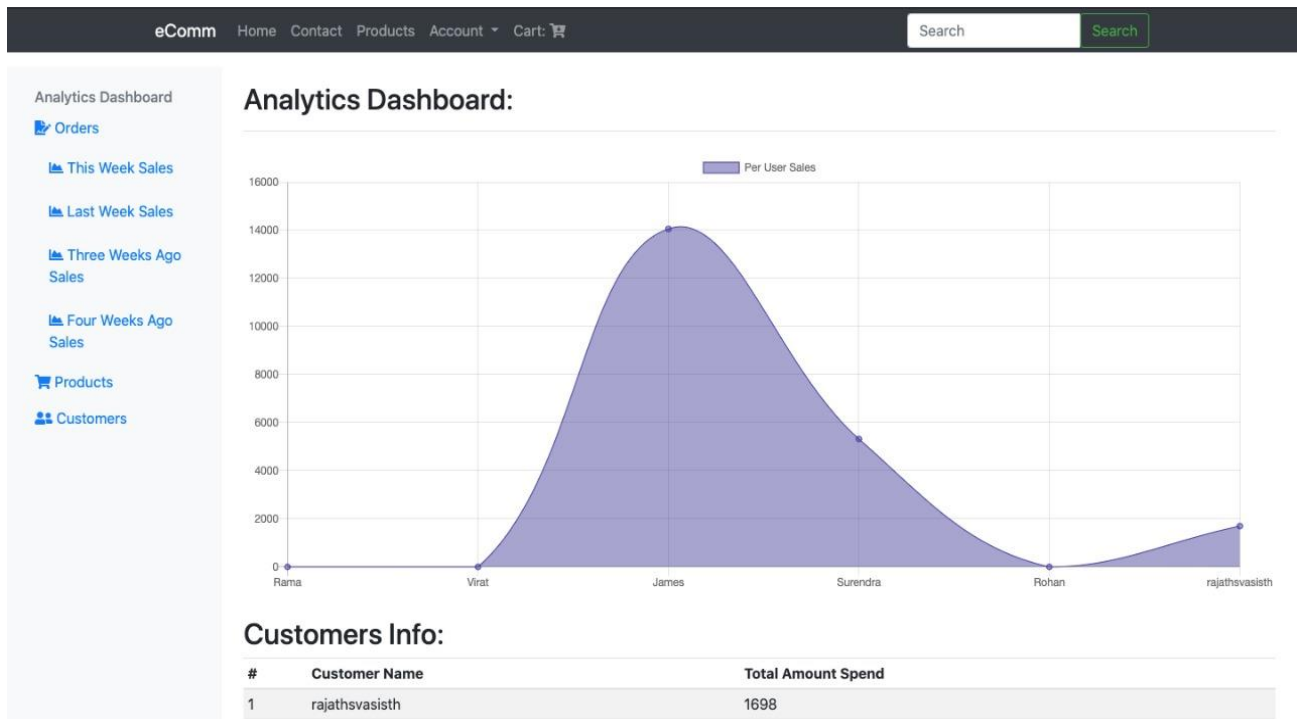
Fill this out so we can learn more about you and your needs

Full name:

Email:

Content:

Figure 13 - Customer Query Form



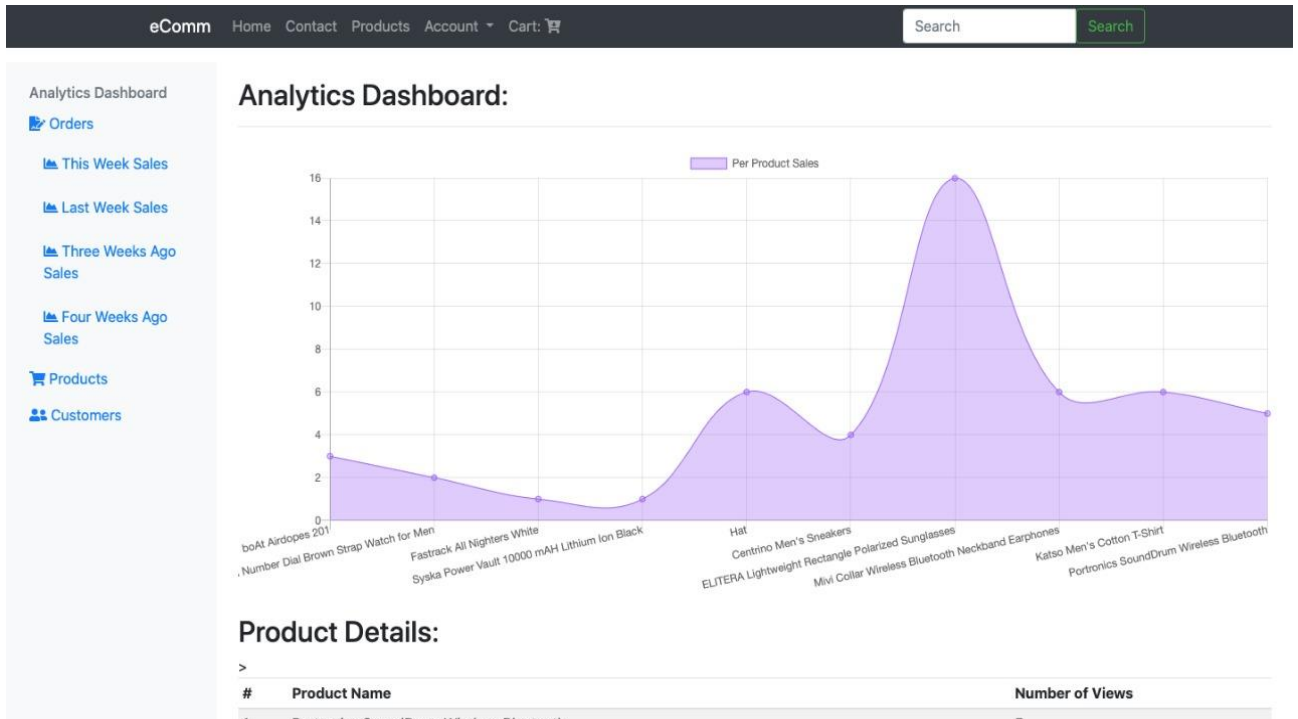


Figure 16 - Per Product Hits

eComm Home Contact Products Account Cart:  1

Search

### Credit Card Details

CONFIRM USER PASSWORD

CARD HOLDER

EXPIRATION DATE  /

CARD NUMBER

CVV

AADHAR NUMBER

PAN NUMBER

☐ OPTION 1 - 11% INTEREST FOR 24 MONTHS

☒ OPTION 2 - 7% INTEREST FOR 12 MONTHS

Figure 17 - EMI Payment Form