RENT MASTER

A PROJECT REPORT

Submitted by

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October, 2016

Sardar Vallabhbhai Patel Institute of Technology

Computer Engineering

2016

CERTIFICATE

This is to certify that the dissertation entitled "**Rent Master**" has been carried out by **Aishwarya Kanitkar** under my guidance in fulfilment of the Bachelor of Engineering in Computer Engineering, 7th Semester of Gujarat Technological University, Ahmedabad during the academic year 2016.

Guide: Prof. Vishal Shah

Head of Department

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Head of Department

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We are thankful to **Mr. Vishal M. Shah** (Computer Department, SVIT, Vasad); for guiding us in our project and sharing his valuable knowledge with us. By his uncompromising demand for quality and his insistence for meeting the deadlines, we were able to do such an excellent work. He has been a constant source of motivation for us

We also thank our project coordinators and faculty members for comprehending their support and giving invaluable feedback to us.

Aishwarya Kanitkar (130410107027)

Apurva Kemkar (130410107030)

ABSTRACT

An online renting system that permits a customer to submit online orders for items from our website. The online renting system presents an online display of an order cut off time and an associated delivery window for items selected by the customer and product’s associated costs. The system accepts the customer's submission of a order for the item in response to a time of submission being before the order cut off time. The online shopping system also provides the facility that does not settle with a credit supplier of the customer until the item selected by the customer is picked from inventory but before it is delivered. Therefore, the customer can go online and make changes to the order. In addition, available service windows are presented to the customer as a function of customer selected order and service types and further, the order picking is assigned in accordance with a picker's preference. When ordering goods, many shopping systems provide a virtual shopping cart for holding items selected for purchase. Successive items selected for purchase are placed into the virtual shopping cart until a customer completes their shopping trip. Virtual shopping carts may be examined at any time, and their contents can be edited or deleted at the option of the customer. Once the customer decides to submit a purchase order, the customer may print the contents of the virtual shopping basket in order to obtain a hard copy record of the transaction.

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CHAPTER-1: INTRODUCTION

1.1 Problem Summary

There are copious shopping sites for example amazon, ebay, jabong, etc. Everything you want is available merely with 'one click on website'. But somethings are missing in these sites, primarily, when the customers are really tied up with the strings of being frugal. The missing part is focused in our website to overcome the above described situation. Our system is based on the idea of renting products instead of buying.

Sometimes the situation may arise when we, the customers need to use particular item for a limited period of time e.g. a Barbeque grill. For instance, someone is organizing a party/get together and he wants to serve some BBQ to the guests. Just for one night or one day, nobody will prefer buying a brand new grill. On the contrary, if the same is available on rent at an economic price, then we can return it after making use of it, then this option will be definitely more preferable.

Let us take an example of our friend to describe a different perspective. Our friend Aarsh lives in a hostel room. He was having money crunch and was thinking for ideas for making up some extra money. The idea for giving unused items of furniture for e.g study table on rent seemed exciting to him. There are similar sites available for selling of products for eg olx. But it is not always favourable to sell our items. Hence if we can temporarily make money only by renting them and not selling permanently, then this is economically and practically very favourable.

The above represented two conditions form the base for the idea of our website. The idea came up of creating an economical website which can benefit both the buyers as well as sellers. The sellers can make money sitting at home from the furniture/items which are not in use. The buyers can get the desired products at economical rate for short span. Hence both will be satisfied.

1.2 Aims and Objectives

This project is aimed to provide services which include lending the desired products from seller side and borrowing the needed products from the buyer's side. It intends to provide a user-friendly environment for the users. The website is aimed to be very convenient for the users. It is proposed to be an economical system which is easy to use and money saving. Thus, reducing unnecessary expenditure is one of its main objectives.

1.3 Solutions

Considering the existing problem, the following are the solution provided by our system to the problems.

- Create a user-friendly and economical renting system.
- Ease of login and registration.
- Easy to manage products (add, update, delete).
- Capable of comparing products in various dimensions like price, feature, time-duration etc.
- Accessible to only authorized users.
- Storage of product's database and retrieval should be easy.
- Easy to view various products and search them according to different filters and sort-by options.
- Provides door-step delivery.
- Easy to return products.

1.4 Literature Review

Title	Author	Publication	Year
Software engineering: A Practitioner's Approach	Roger S Pressman	The McGraw-Hill College	2014
Web development, 5th edition	Ralph Mosely	The McGraw-Hill Companies	2009
Data Mining Concepts and	Jiawei Han, Micheline	The Morgan Kaufmann	2006

Techniques, Second Edition	Kember	Publishers	

Table 1: Literature Review

1.5 Plan of Work

- Finding the Project Topic. (Shodh Yatra)
- Abstract Formation.
- Briefing the project to our Project Guide.
- Requirement Analysis
- Selection of tools to be used.
- Feasibility Analysis
- Software model to be used.
- System Diagrams.

CHAPTER-2: DESIGN: ANALYSIS, DESIGN METHODOLOGY AND IMPLEMENTATION STRATEGY.

2.1 Requirement Gathering

Gathering the Requirements forms the basis of any project. It is an important process which is required to get a complete understanding of the project.

It includes three types of activities:

- Elicitation: Collecting requirement data from the user.
- Analysis of Requirement: Determine whether the stated requirements are clear, complete solid and unambiguous, and resolve any evident conflicts among them.
- Recording Requirements: Documentation of Requirements carried out in various forms.

Requirements gathered can be divided into 4 categories as follows:-

2.1.1 Functional Requirement

A functional requirement defines functions of the system and its components. It is a set of inputs, behavior and outputs.

- Sign In.
- Sign Out.
- Forgot Password.
- Request to Change Password.
- Add new Products.
- Update Product Details.
- Delete Product.
- Search Products
- Compare Products.
- Select Products.
- Place Order.
- Confirm Order.
- Communicate.
- Cancel Order.

- Make Payment.
- Return Products.

2.1.2 Non-Functional Requirement

- Reliability
  The products should be genuine and as per description.
- Maintainability
  Changes, if any, in the product details, should be easy to update and alter.
- Performance
  Data Storing and Retrieval should be quick.
  Sorting and application of filters should be possible.
- Security
  The payment gateway should be secure.
  Only admin should be able to manage products.
- Scalability
  System should be able to handle huge no. of users from varied geographical locations.
  System should now slow down owing to traffic.
  Data Retrieval should be quick irrespective of the amount of data.
- Storage
  Memory to store large amount of data should be available.

2.1.3 Software Requirement

Developer Side:

- Java Development kit.
- JavaScript.
- Spring Framework.
- Text Editor.

Host Side:

- LAN connection
- Server.
- PHP
- Web Server. (Apache/ Ngix)

Client Side:

- LAN Connection
- IE, Google Chrome and Firefox Supported Browser.

2.1.4 Hardware Requirement

Developer Side:

- Device- Minimum 4GB RAM and 250GB HDD supporting any OS.
- Processor- i3 or higher.

Host Side:

- Device- Minimum 4GB RAM and 250GB HDD supporting any OS.
- Processor- i3 or higher.

Client Side:

- Device- Minimum RAM with a functional mouse and keyboard.

2.2 Study of Feasibility

Feasibility study is carried out to get knowledge about the odds of developing a new system or improving an existing one. An overview of the problem as well as the rough possibility of our proposed solution is obtained from it.

A feasibility study aims to objectively and rationally uncover the strengths and weaknesses of an existing business or proposed venture, opportunities and threats present in the environment, the resources required to carry through, and ultimately the prospects for success. In its simplest terms, the two criteria to judge feasibility are cost required and value to be attained. So, the result would indicate whether to proceed ahead or not.

The Study of feasibility of a System has to be developed and needed to be conducted before commencing the project development. Feasibility study is carried out in the following three areas:-

2.2.1 Technical Feasibility

Technical Feasibility assessment is focused on gaining an understanding of the present technical resources of the organization and their applicability to the expected need of the proposed system. Technical feasibility will be addressed by subsequent explanation.

- *Does the technology exist? If not, then is the project feasible with the current technology?*

The technology does exist. But the basic idea altogether is different. The project is definitely feasible as similar technologies already exist.

- *Do we possess the necessary technical expertise as well as the software/ hardware resources?*

If we are developing a system with a specific application, we must possess the knowledge of technology we are working with. If not, we must learn and acquire them accurately and thoroughly for smooth development of the project.

We should be familiar with the following technologies/languages as well as possess the following hardware/software for the project development.

System Platform

- Any Windows 7 or up or the latest Linux Operating System.
- Pentium Core i3 and above or any other compatible processor.
- RAM – 2 GB.
- 256 GB HDD.

Development Tools:

- Java Development Environment
- Spring Framework

Software Platform:

- Database Server- MongoDB.

- *Can the technology be easily applied to the current problems? Does it have the capability to handle the solution?*

The technology is very much applicable to solve the current problems addressed. .

2.2.2 Economical Feasibility

Economic feasibility refers to the financial aspect of the project. It is needed to be done in advance to obtain knowledge regarding the approximate effective cost of the system. Therefore, it helps in providing a cost efficient solution by minimizing the unnecessary costs as well eradicating the redundant costs.

Our proposed system is very much affordable and so economically feasible. As most of the part of the system uses open source tools and libraries, it is very much free of cost. So the system will be feasible economically given the constraints and functionalities to be completed in given amount of time.

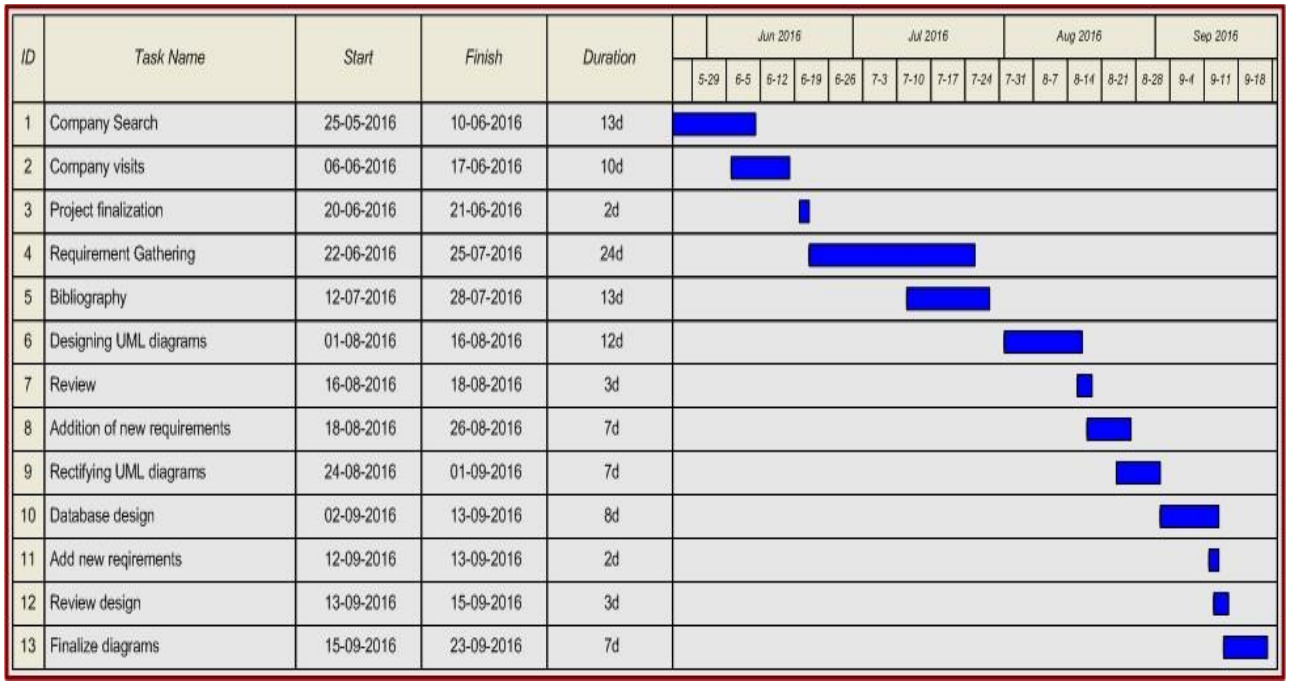
However, the cost of hardware for the class of application is being taken into considered if no further changes are expected, and so will be quite feasible. Thus, we can say our software is quite economically feasible, is aspects of cost as well, directly as well as indirectly.

2.2.3 Time Feasibility

The time allocated for the completion of our project is already divided into different tasks of analysis, design, coding and evaluation.

Currently, analysis and designing phase are given more emphasis which will be followed by the coding and evaluation phases in the later part.

As per our system, we have already dispensed the tasks among the three of us. Generally we work in "democratic decentralized" manner for the accomplishment of the given work including analysis, designing and coding. At the time of completion, we would work in centralized manner for amalgamating the given work.



ID	Task Name	Start	Finish	Duration
1	Company Search	25-05-2016	10-06-2016	13d
2	Company visits	06-06-2016	17-06-2016	10d
3	Project finalization	20-06-2016	21-06-2016	2d
4	Requirement Gathering	22-06-2016	25-07-2016	24d
5	Bibliography	12-07-2016	28-07-2016	13d
6	Designing UML diagrams	01-08-2016	16-08-2016	12d
7	Review	16-08-2016	18-08-2016	3d
8	Addition of new requirements	18-08-2016	26-08-2016	7d
9	Rectifying UML diagrams	24-08-2016	01-09-2016	7d
10	Database design	02-09-2016	13-09-2016	8d
11	Add new reqirements	12-09-2016	13-09-2016	2d
12	Review design	13-09-2016	15-09-2016	3d
13	Finalize diagrams	15-09-2016	23-09-2016	7d

Figure 2.2.3 Time Feasibility Diagram

2.3 System Design

2.3.1 Software Development Model

The spiral model combines the idea of iterative development with the systematic, controlled aspects of the waterfall model.

Spiral model is a combination of iterative development process model and sequential linear development model i.e. waterfall model with very high emphasis on risk analysis.

It allows for incremental releases of the product, or incremental refinement through each iteration around the spiral.

Spiral Model design

The spiral model has four phases. A software project repeatedly passes through these phases in iterations called Spirals.

- **Identification:** This phase starts with gathering the business requirements in the baseline spiral. In the subsequent spirals as the product matures, identification of system requirements, subsystem requirements and unit requirements are all done in this phase.

  This also includes understanding the system requirements by continuous communication between the customer and the system analyst. At the end of the spiral the product is deployed in the identified market.

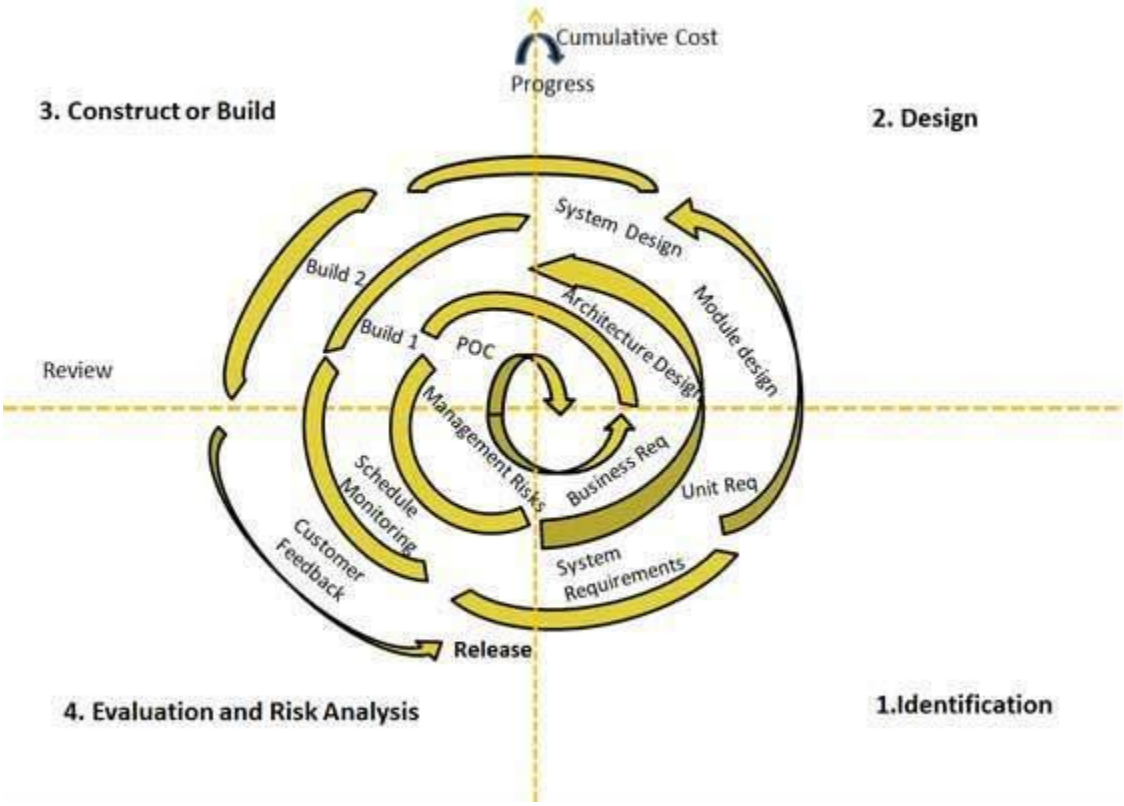
- **Design:** Design phase starts with the conceptual design in the baseline spiral and involves architectural design, logical design of modules, physical product design and final design in the subsequent spirals.

- **Construct or Build:** Construct phase refers to production of the actual software product at every spiral. In the baseline spiral when the product is just thought of and the design is being developed a POC (Proof of Concept) is developed in this phase to get customer feedback.

  Then in the subsequent spirals with higher clarity on requirements and design details a working model of the software called build is produced with a version number. These builds are sent to customer for feedback.

- **Evaluation and Risk Analysis:** Risk Analysis includes identifying, estimating, and monitoring technical feasibility and management risks, such as schedule slippage and cost overrun. After testing the build, at the end of first iteration, the customer evaluates the software and provides feedback.

Following is a diagrammatic representation of spiral model listing the activities in each phase:



Based on the customer evaluation, software development process enters into the next iteration and subsequently follows the linear approach to implement the feedback suggested by the customer. The process of iterations along the spiral continues throughout the life of the software.

Advantages

- Changing requirements can be accommodated.
- Allows for extensive use of prototypes
- Requirements can be captured more accurately.

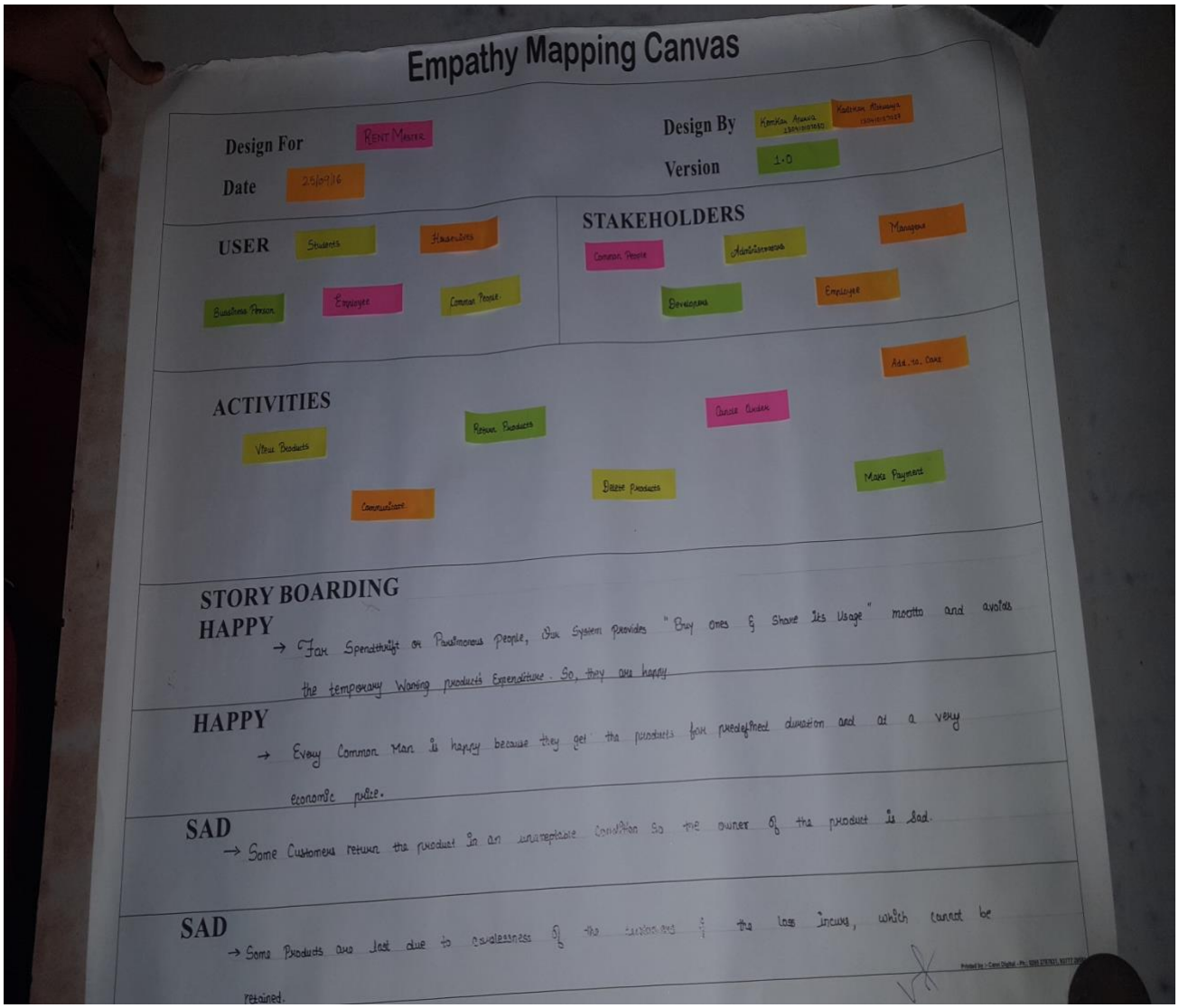
- Users see the system early.
- Development can be divided into smaller parts and more risky parts can be developed earlier which helps better risk management.

Disadvantages

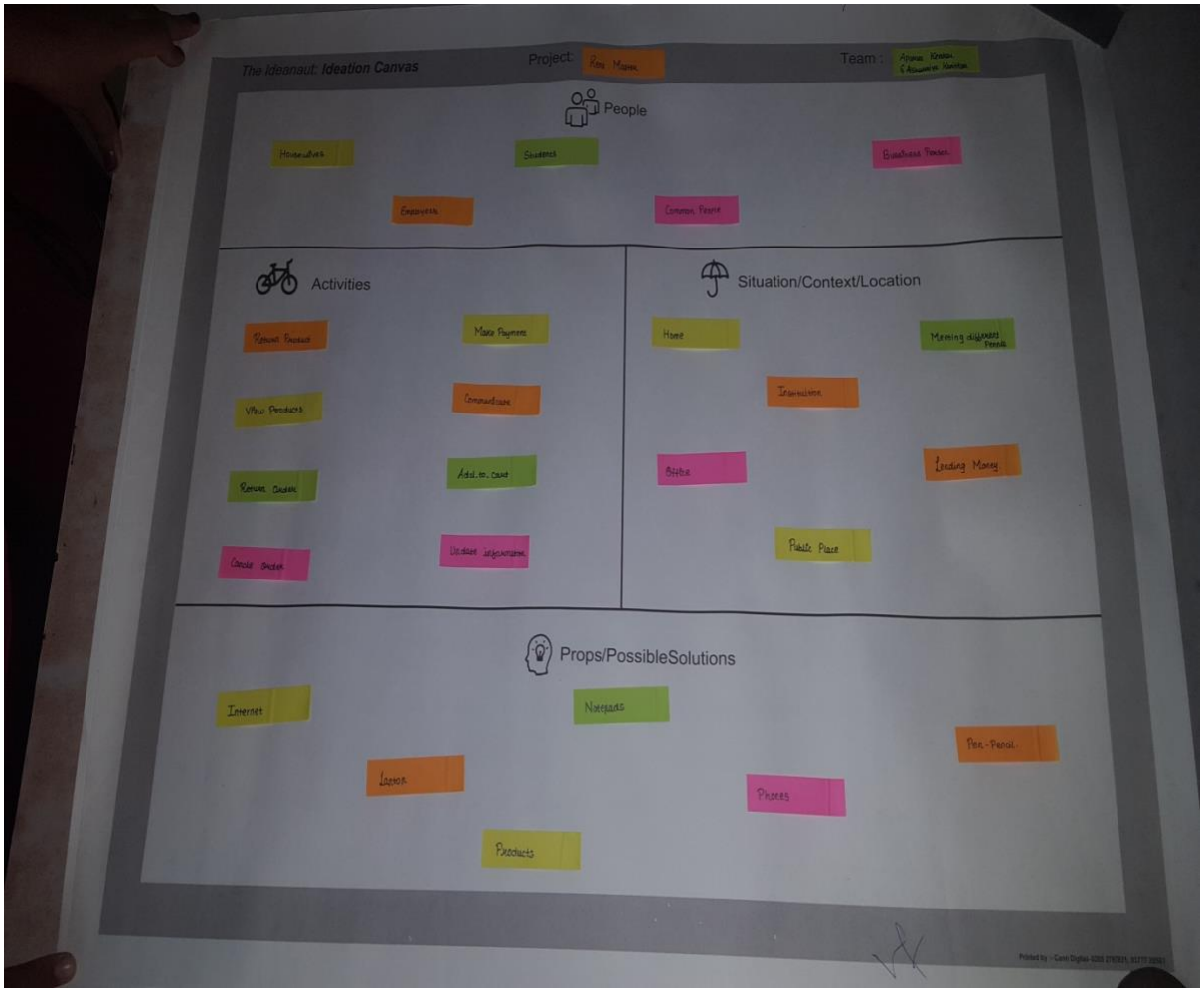
- Management is more complex.
- End of project may not be known early.
- Not suitable for small or low risk projects and could be expensive for small projects.
- Process is complex
- Spiral may go indefinitely.
- Large number of intermediate stages requires excessive documentation.

2.4 Canvas

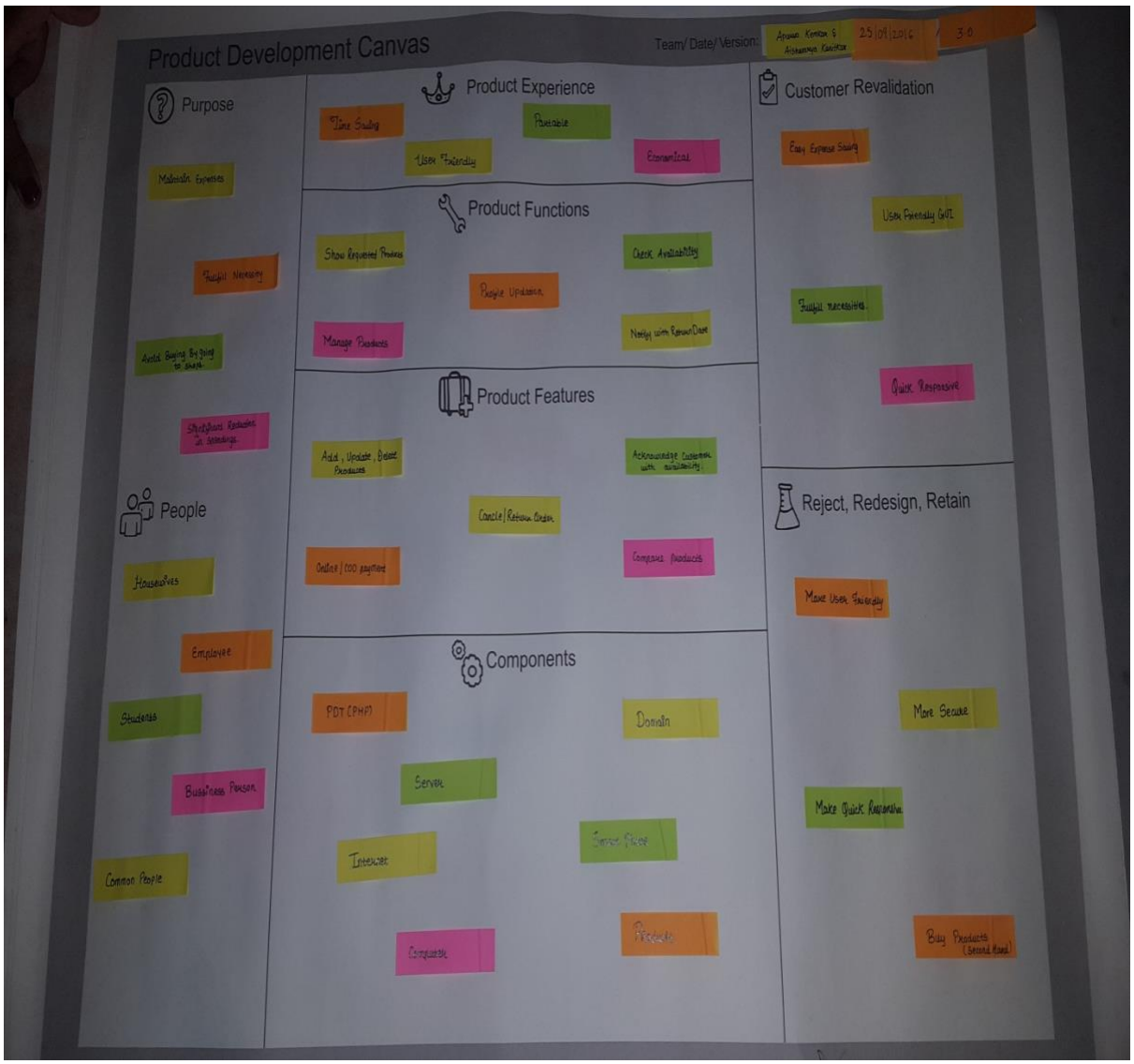
2.4.1 Empathy Mapping



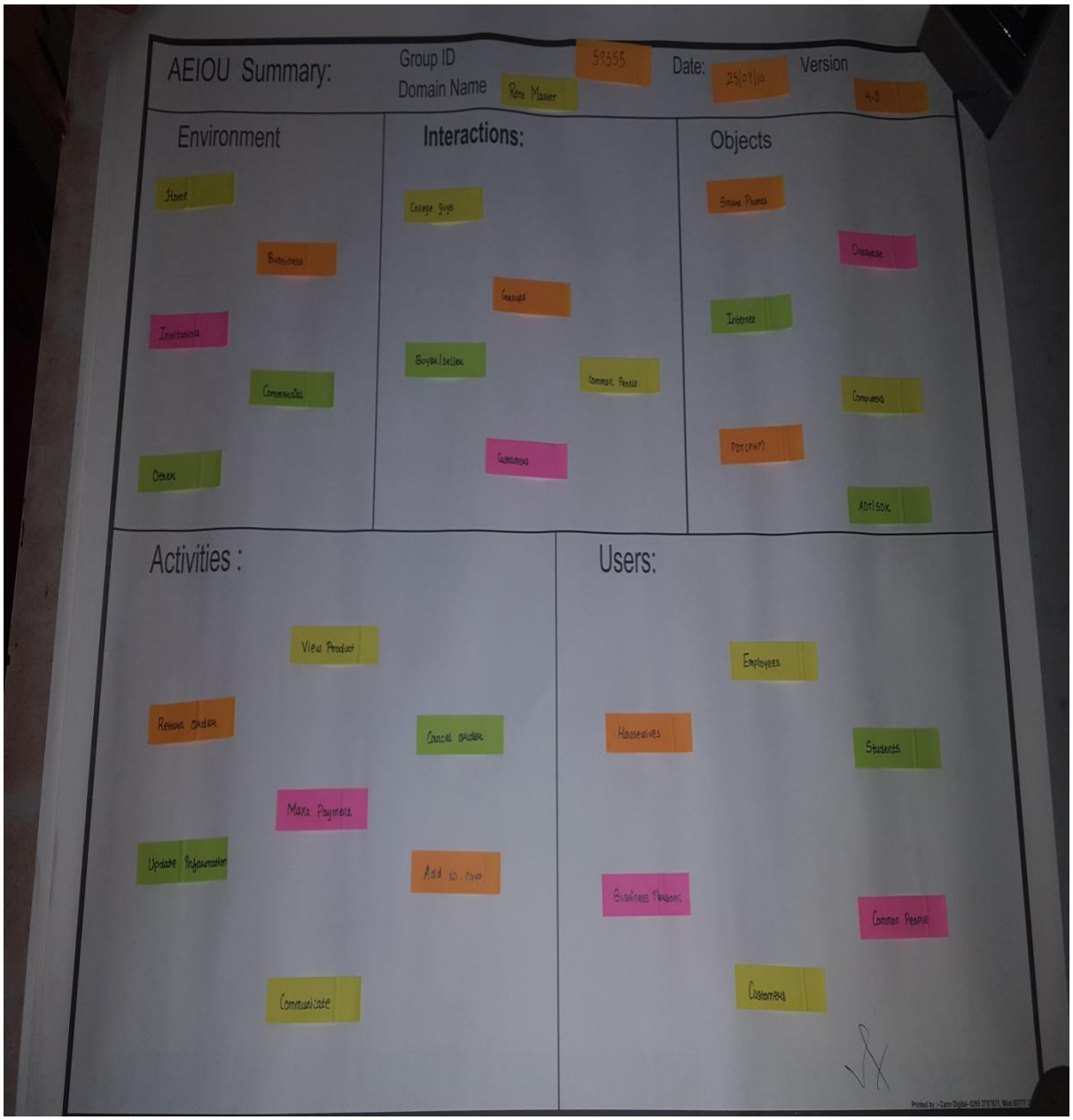
2.4.2 Ideation Canvas



2.4.3 Product Development

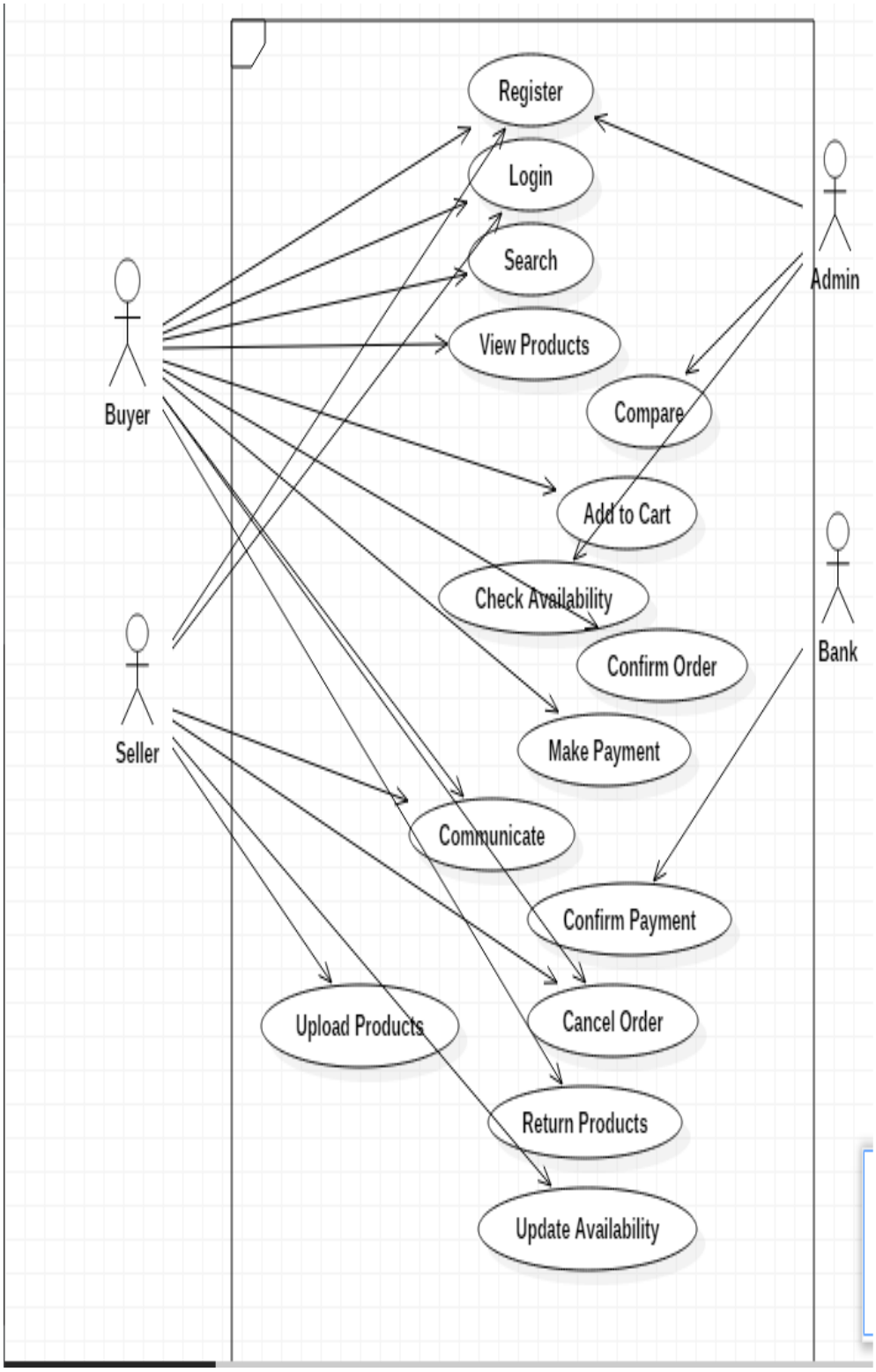


2.4.4 AEIOU Summary



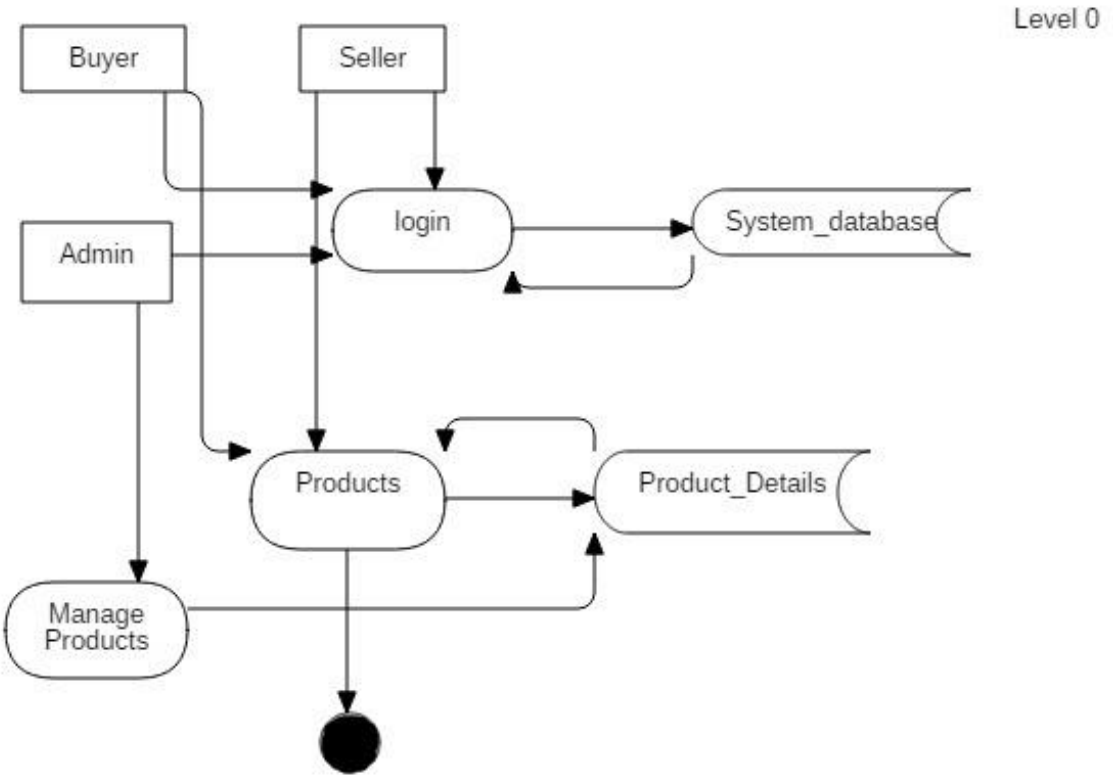
CHAPTER 3: SYSTEM DESIGN AND IMPLEMENTATION

3.1 Use Case Diagram

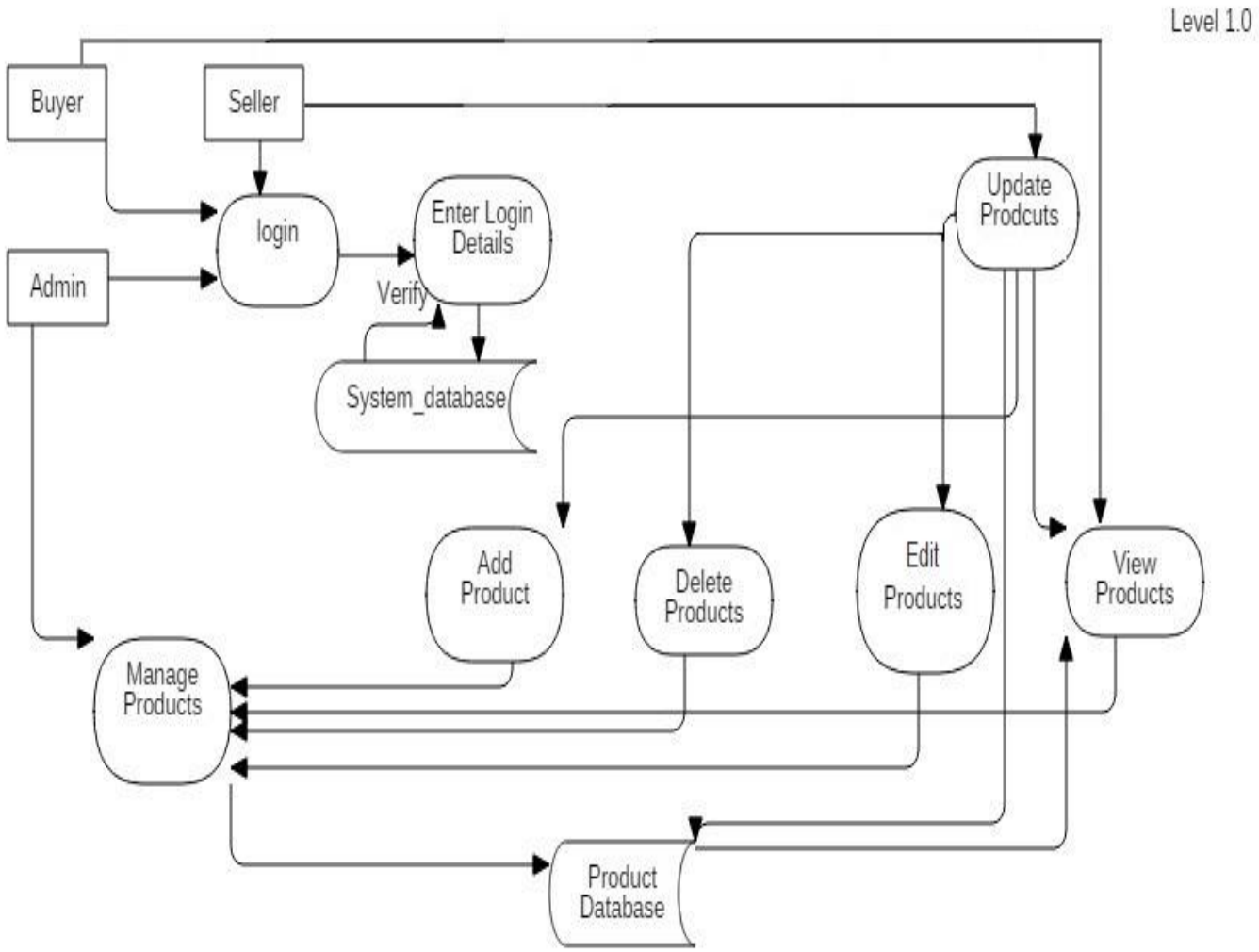


3.2 Data Flow Diagram

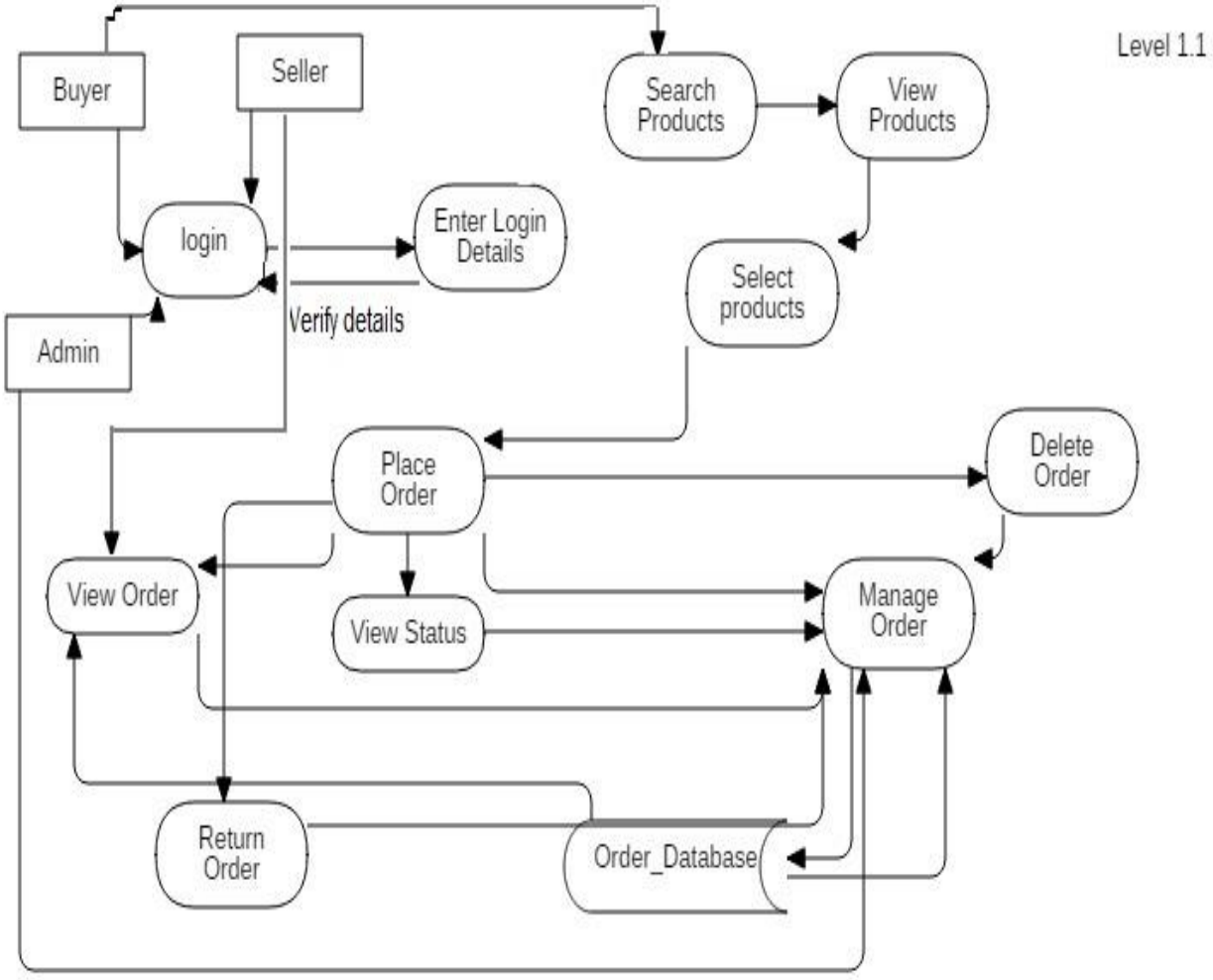
3.2.1 Level 0:



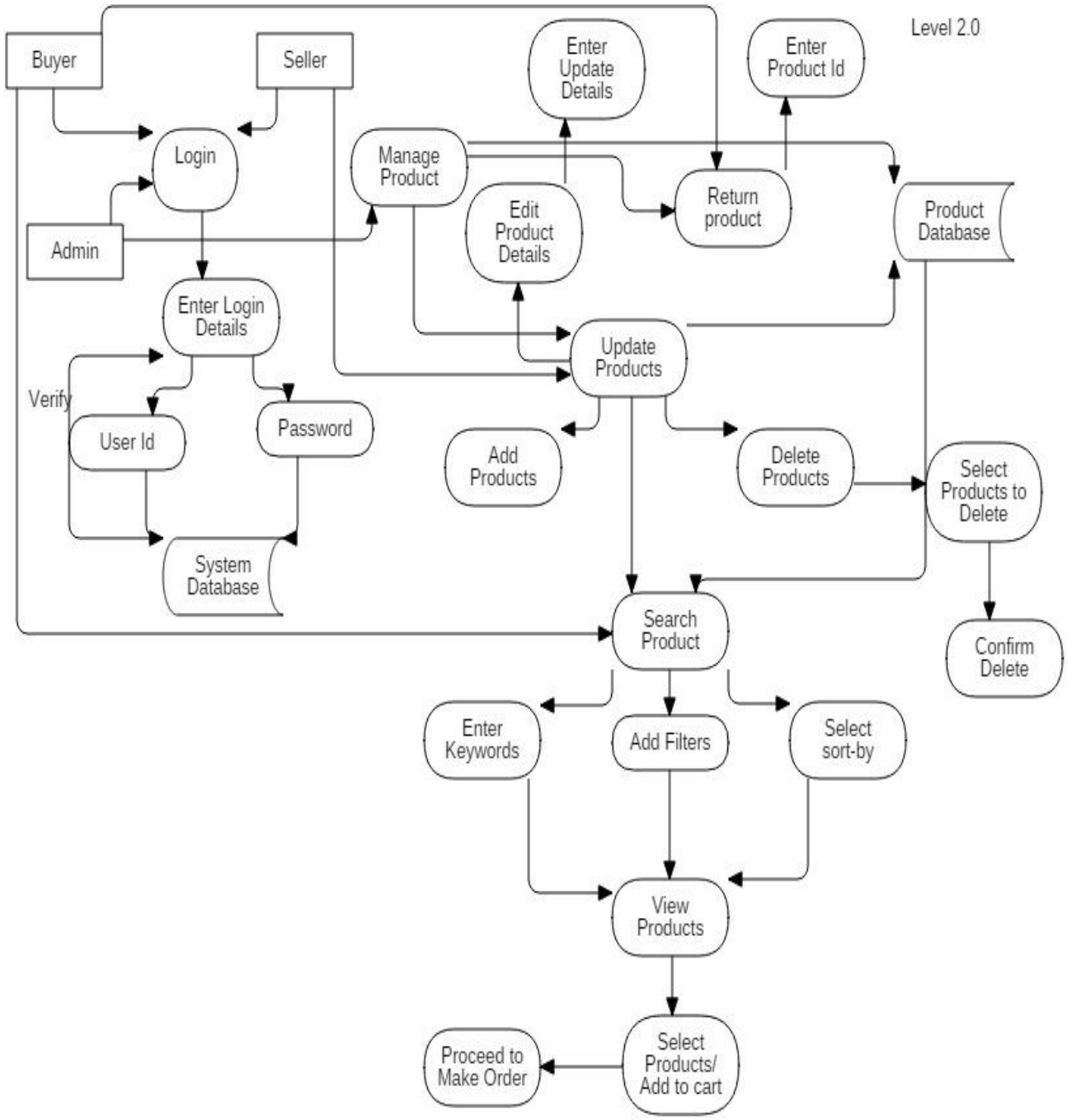
3.2.2 Level 1.0


Level 1.0
Buyer
Seller
Admin
login
Enter Login Details
Verify
System_database
Update Prodcuts
Add Product
Delete Products
Edit Products
View Products
Manage Products
Product Database

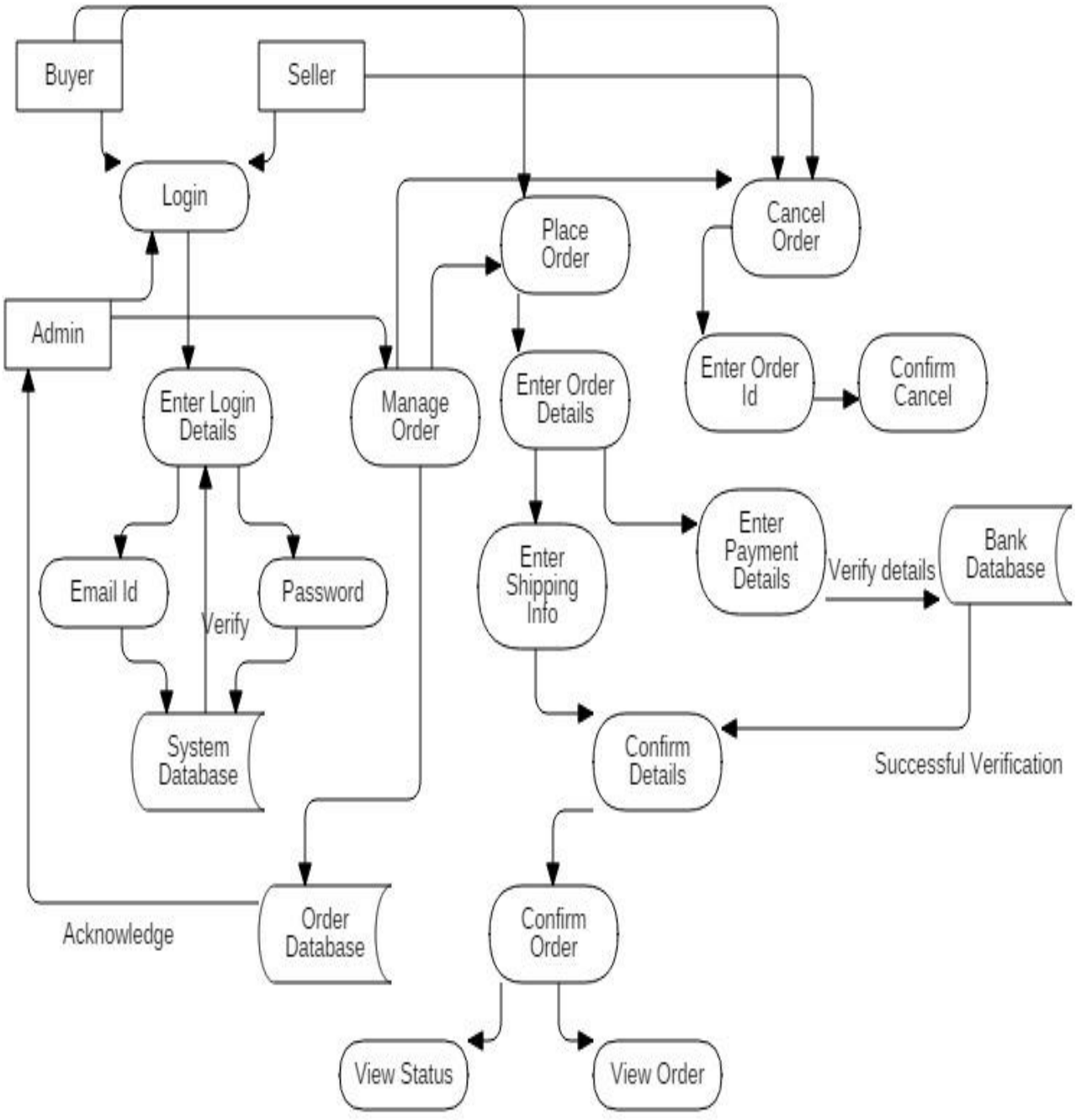
3.2.3 Level 1.1


Level 1.1
Buyer
Seller
Search Products
View Products
login
Enter Login Details
Verify details
Select products
Admin
Place Order
Delete Order
View Order
View Status
Manage Order
Return Order
Order_Database

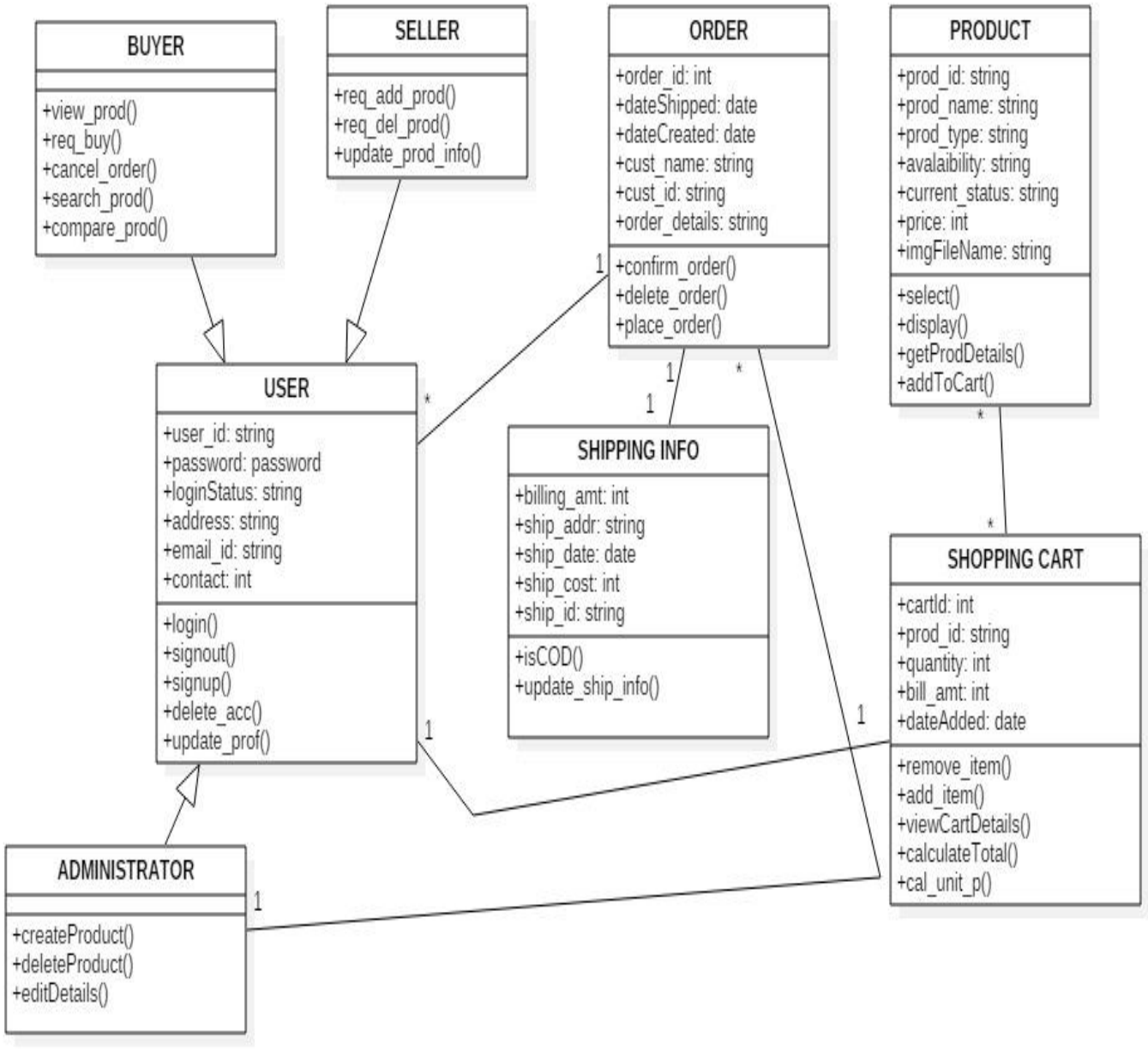
3.2.4 Level 2.0


Level 2.0
Buyer
Seller
Enter Update Details
Enter Product Id
Login
Manage Product
Return product
Product Database
Edit Product Details
Admin
Enter Login Details
Update Products
Verify
User Id
Password
Add Products
Delete Products
Select Products to Delete
System Database
Search Product
Confirm Delete
Enter Keywords
Add Filters
Select sort-by
View Products
Proceed to Make Order
Select Products/ Add to cart

3.2.5 Level 2.1

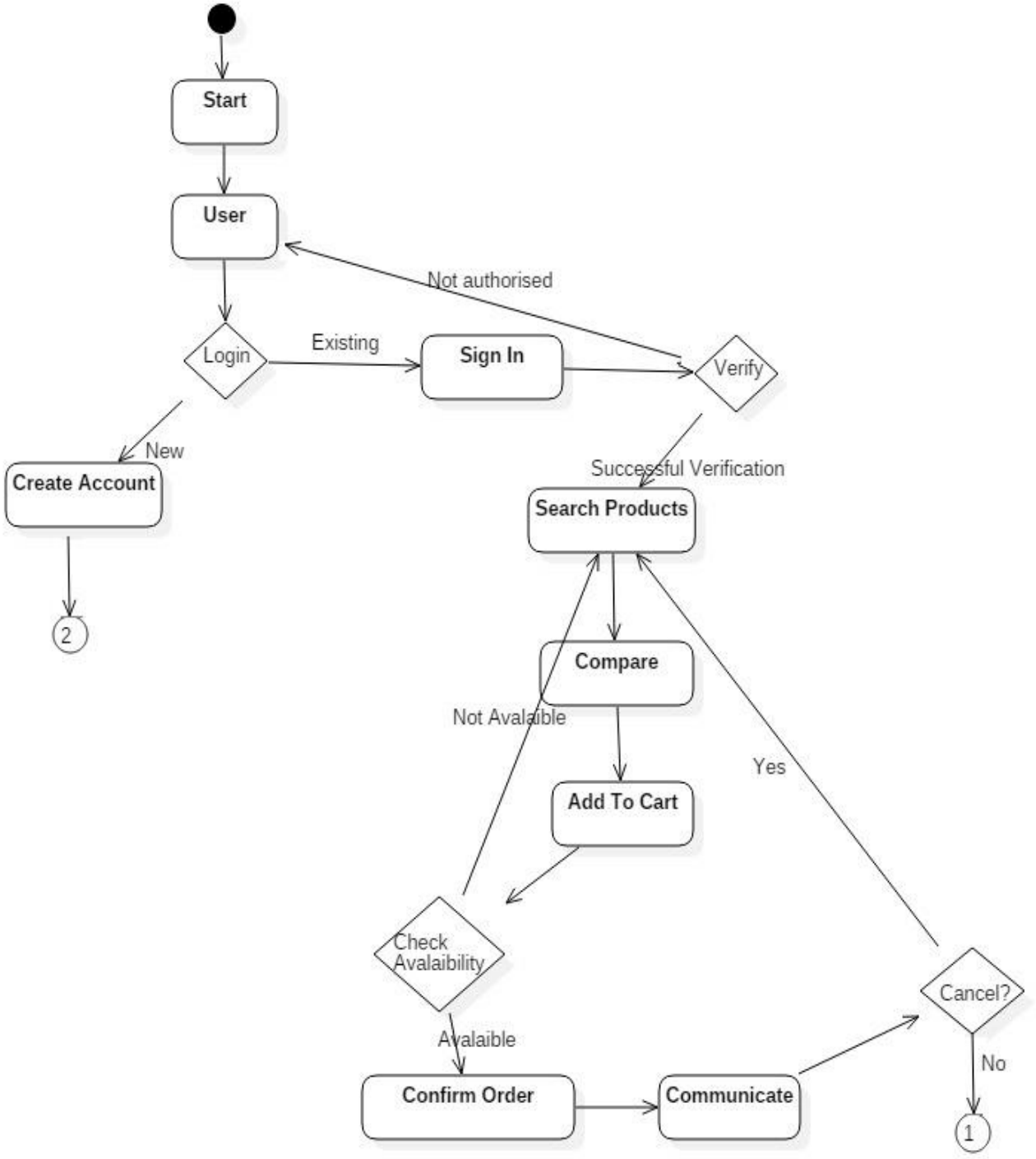

Buyer
Seller
Login
Admin
Enter Login Details
Email Id
Password
Verify
System Database
Manage Order
Place Order
Cancel Order
Enter Order Details
Enter Order Id
Confirm Cancel
Enter Shipping Info
Enter Payment Details
Verify details
Bank Database
Confirm Details
Successful Verification
Order Database
Acknowledge
Confirm Order
View Status
View Order

3.3 Class Diagram

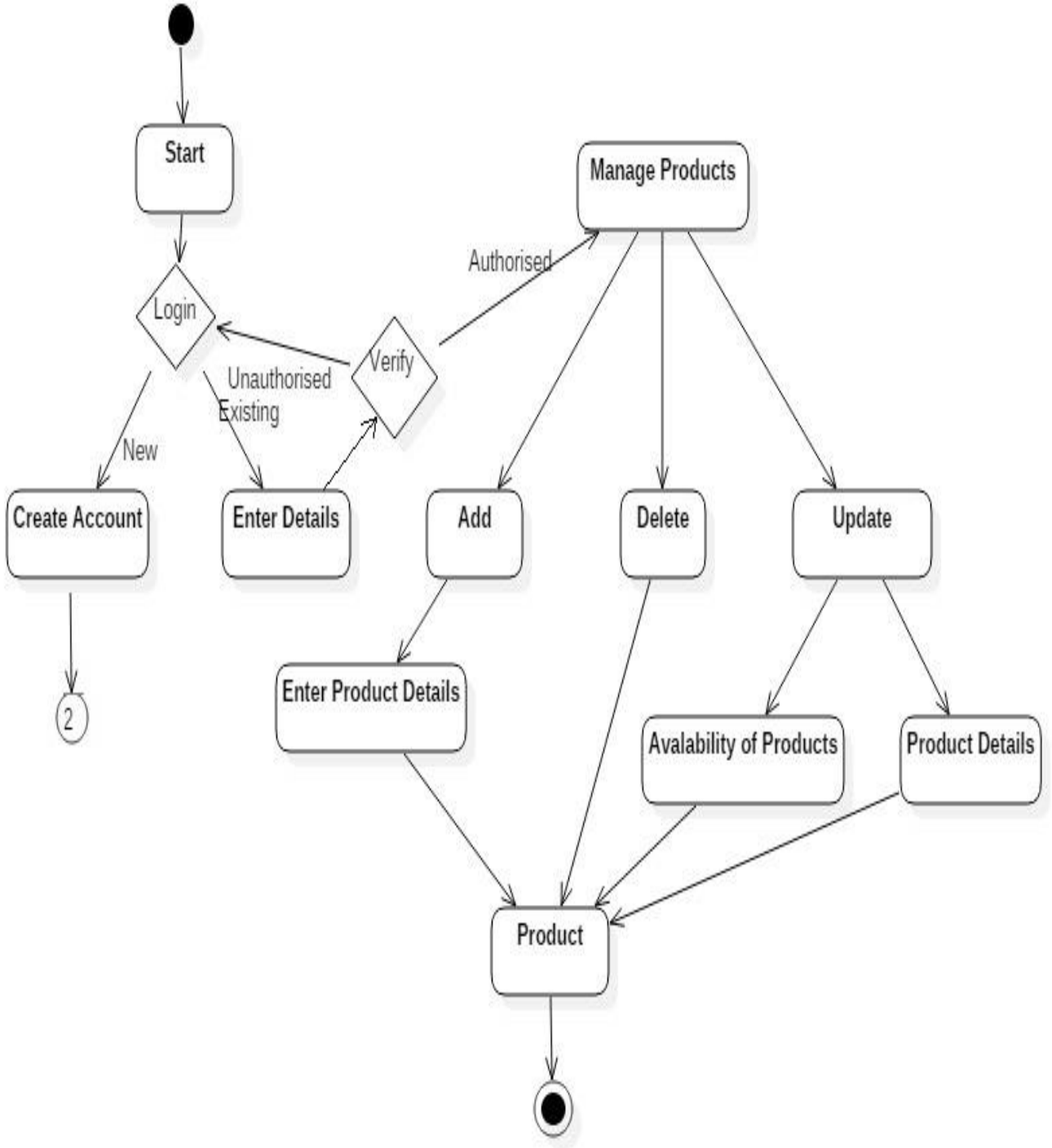


3.4 Activity Diagram

3.4.1 Activity diagram for buyer:

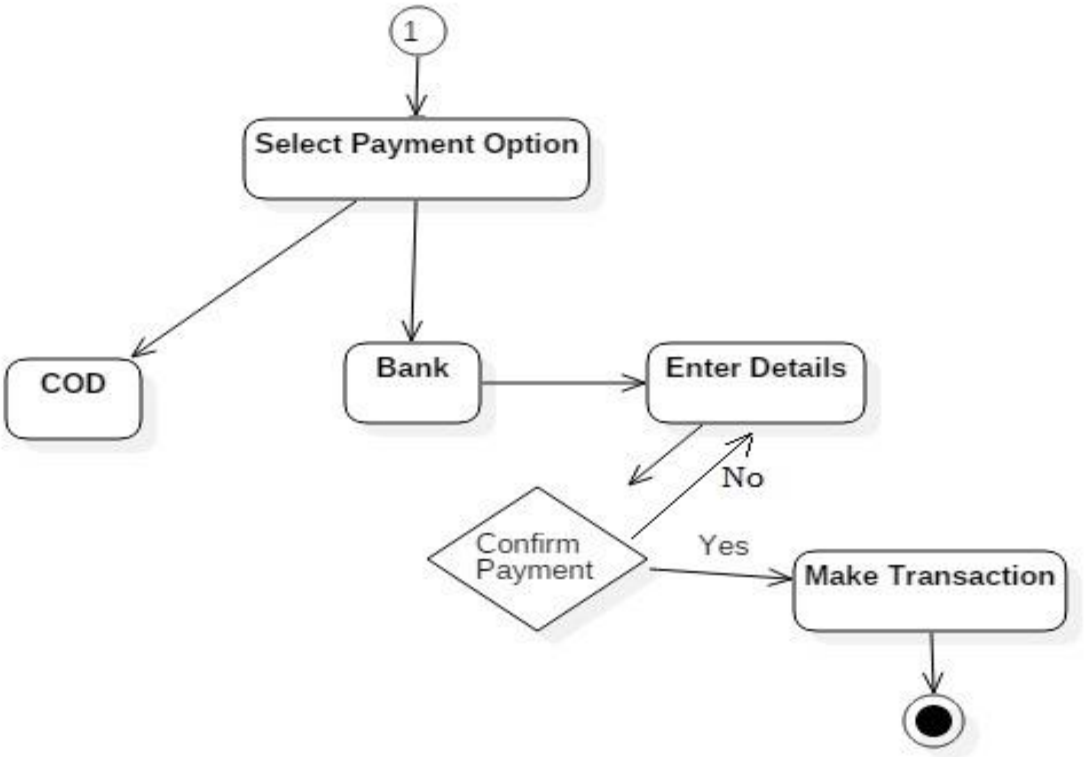


3.4.2 Activity diagram for Seller:



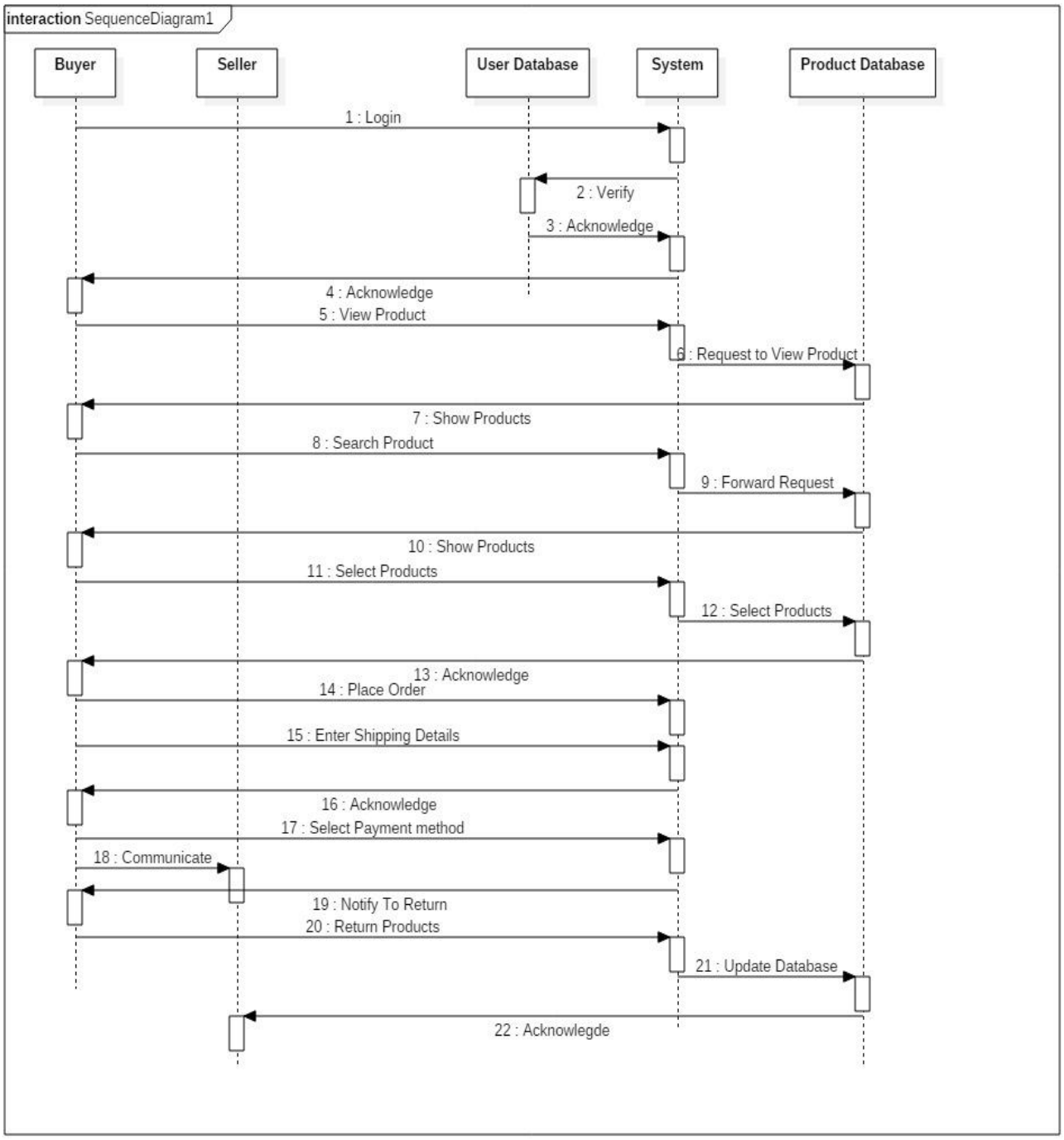
3.4.3 Activity Diagram for Registration:

3.4.4 Activity Diagram for payment:

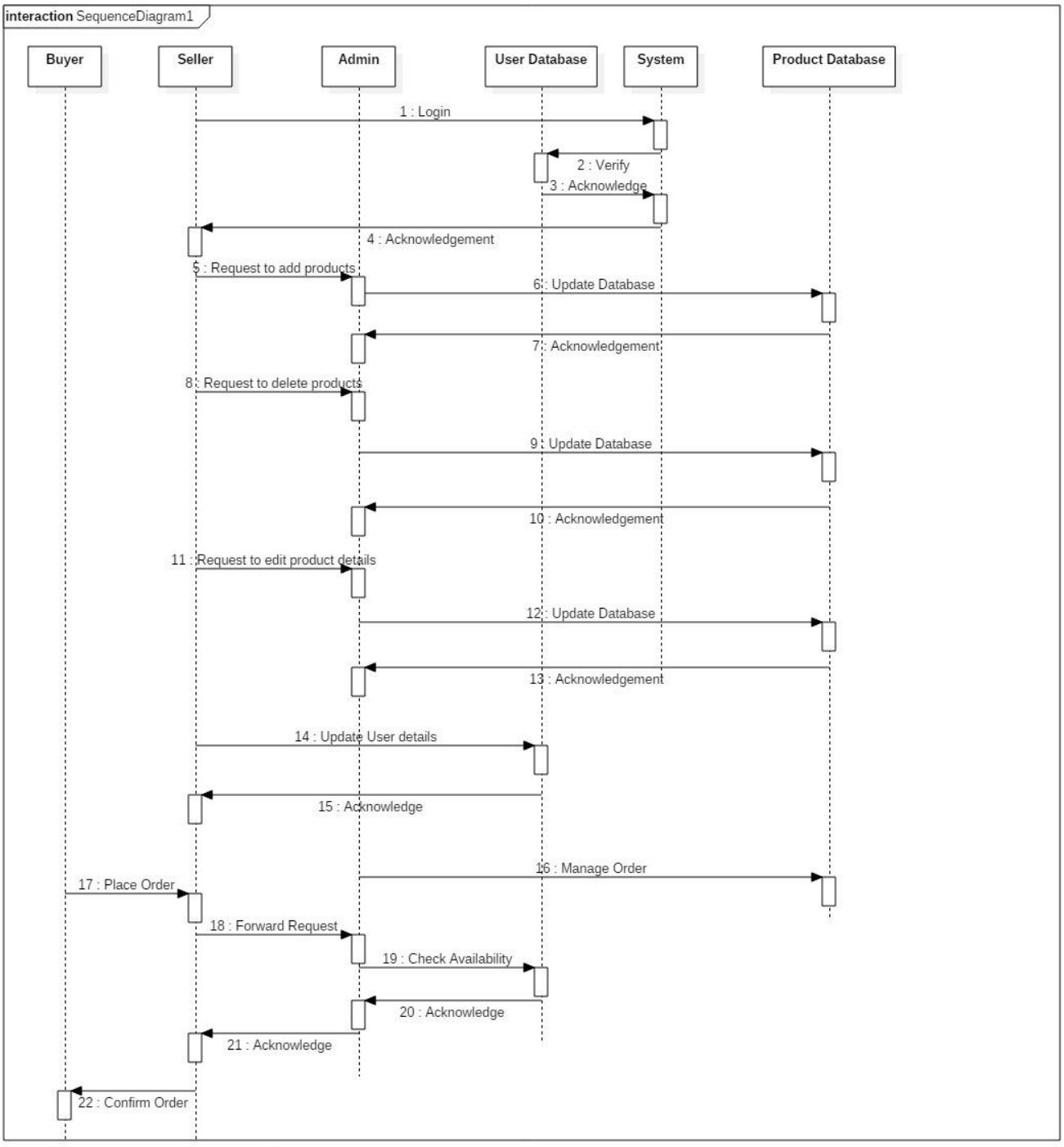


3.5 Sequence Diagram

3.5.1 Sequence Diagram for Buyer



3.5.2 Sequence Diagram for Seller



3.6 Database Design

- **Details of User:-**

Field	Data Type	Constraint	Description
User's Id No.	Numeric	Primary Key	Computer Generated Id Number
Name	Varchar	Not Null	Full name of customer
Mobile No	Numeric	Not Null	Permanent mobile no
Address	Varchar	Not Null	Permanent address
Country	Varchar	Not Null	Country Name
State	Varchar	Not Null	State Name
District	Varchar	Not Null	District Name
Pin code	Numeric	Not Null	Present pin code
Age	Numeric	Null	Age of user
Password	Numeric	Not Null	Strong Password
Confirm Password	Numeric	Not Null	Re-enter Password
E-mail Address	Varchar	Not Null	Active e-mail address

- **Details of Product:-**

Field	Data Type	Constraint	Description
Product's Id No	Numeric	Primary Key	Computer Generated Id Number
Product Name	Varchar	Not Null	Name of product
Product Image	JPEG	Not Null	Image of Product
Product Category	Varchar	Not Null	Variety of Product
Price of Product	Numeric	Not Null	price of product
Availability of	Date and Time	Not Null	Duration of product

Product			
Seller details	string	Foreign key	Information about seller.
Current status	string	Not Null	Product Available or not.

User's credit card details:

Field	Data Type	Constraint	Description
User's Id No.	Numeric	Primary Key	Computer Generated Id Number
Name on card	Varchar	Not Null	Full name of customer
Card Number	Numeric	Not Null	Card number provided by the bank
CVV	Numeric	Not Null	Three digit security no.
Expiry Date	Date	Not Null	Expiry Date as per printed on the card

Shipping Details

Field	Data Type	Constraint	Description
Billing amount	Numeric	Not Null	Total Price of the products in cart
Shipping address	Varchar	Not Null	Delivery address of the customer
Shipping Id	Numeric	Not Null	Computer Generated ID
Shipping Cost	Numeric	Not Null	Extra delivery charges that may or

			may not be incurred.
Delivery Date	Date	Not Null	Expected date of delivery

Order Details

Field	Data Type	Constraint	Description
Order Id	Numeric	Primary Key	Computer Generated Id Number
Date shipped	Date	Not Null	Expected shipping date
Date created	Date	Not Null	Date when the order was placed.
Customer Name	Varchar	Not Null	Full name of customer
Customer Id	Numeric	Foreign Key	Computer Generated Id Number
Customer Details	Varchar	Not Null	Information of the customer.

Shopping Cart

Field	Data Type	Constraint	Description
Cart Id	Numeric	Primary Key	Computer Generated Id Number
Product Id	Numeric	Foreign Key	Computer Generated Id Number
Billing Amount	Numeric	Not Null	Cost
Quantity	Numeric	Not Null	Number of products
Date added	Date	Not Null	Date of product added to cart

CHAPTER 4: CONCLUSION

As discussed before this project represents a viable alternative to accomplish a task economically.

A variation in online shopping-selling website (which is used by majority of users) we had a look to the key features, milestones and their components, stakeholders, project lifecycle, methodology used and project timeline.

The methodology that we use in this project, Spiral is the best methodology for this project because spiral is suitable for iterative application like ours, where there is scope for change, variation and development/updates. This provides clear functionality at the user interface and a clear defined user group. We will use this method to create prototypes to define user's requirements and use structured techniques to build the iterative model.

The project has been designed and developed to understand the various database access methods provided by ASP.NET MVC, and the various abilities of the programming language. It also makes efficient use of the SQL SERVER 2012 database Management System as the Back End. Effort has been made to keep the project up to data and satisfy the user requirements.

It has been a humble effort on our part to bring to you this project. I shall welcome all comments, criticisms and suggestion to improve upon

Moreover, the huge level of attention is intensified for incorporating best available practices in current web technologies and RDBMS, which enables to provide greater efficiency, quicker & easier user access, and independency up to greater level of modifications.

CHAPTER 5: BIBLIOGRAPHY AND REFERENCES

During the project, I referred to various resources that were provided to me for assistance apart from receiving help from my guide with my project titled "RentMaster" The following list provides the books and resources that I referred.

BIBLIOGRAPHY

Software engineering: A Practitioner's Approach Roger S Pressman

Web development, 5th edition Ralph Mosely

Data Mining Concepts and Techniques, 2nd Edition Jiawei Han, Micheline Kember

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