ONLINE SHOE STORE

A Report of the Mini Project Work submitted in Partial fulfilment of the Requirements for the Degree of

BACHELOR OF COMPUTER APPLICATIONS

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CERTIFICATE

This is to certify that the project entitled ***"ONLINE SHOE STORE"*** *is a Bonafede record of the project work done by* ***JYOTHILAL REJI (Reg no. 210021087760)*** *under my supervision and guidance , during the academic year 2020-23, for the partial fulfillment of the requirements for the award of the Degree of Bachelor of Computer Applications under M.G. University, Kottayam.*

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DECLARATION

I, **JYOTHILAL REJI** hereby declare that the project report, titled **"Online Shoe Store"** is a record of original work undertaken by me for the award of the degree of Bachelor of Computer Applications. I have completed this project under the guidance of **Mr. SUNIL K Joseph**, Department of Computer Science.

I also declare that this project has not been submitted for the award of any degree. I hereby confirm the originality of the work.

Place: Ramapuram JYOTHILAL REJI

Date:

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ABSTRACT

In today's digital age, the e-commerce industry has witnessed exponential growth, offering consumers the convenience of shopping from anywhere at any time. Among the various segments of e-commerce, the online retailing of footwear has gained significant traction due to its widespread appeal and necessity in everyday life. This abstract presents a project aimed at developing an Online Shoe Store using the Django web framework, showcasing the implementation of essential features and functionalities crucial for a seamless shopping experience.

The proposed Online Shoe Store project will encompass the following key components:

User Authentication and Authorization: Users will be able to register, log in, and manage their accounts securely. Role-based access control will be implemented to differentiate between administrators, customers, and guests.

Product Catalog Management: The system will provide administrators with a user-friendly interface to manage the shoe catalog, including adding, editing, and removing products. Each product will have attributes such as name, description, price, size, color, and images.

Shopping Cart Functionality: Customers will have the ability to add products to their shopping carts, modify quantities, and proceed to checkout. The shopping cart will maintain session persistence and allow users to review their selected items before making a purchase.

Secure Payment Gateway Integration: Integration with a secure payment gateway will enable customers to make online payments using various payment methods, ensuring the security and confidentiality of sensitive information.

Order Management: Administrators will have access to an order management system to track and manage customer orders efficiently. Order status updates, order history, and order processing functionalities will be included.

Responsive Design: The Online Shoe Store will be designed with responsiveness in mind, ensuring optimal user experience across devices of varying screen sizes, including desktops, tablets, and smartphones.

Search and Filter Functionality: Users will be able to search for specific products and apply filters based on criteria such as price range, shoe size, brand, and color, facilitating quick and convenient product discovery.

Review and Rating System: Customers will have the ability to leave reviews and ratings for products they have purchased, providing valuable feedback to other users and enhancing the credibility of the online store.

Admin Dashboard: An intuitive admin dashboard will be provided, offering administrators insights into key metrics such as sales performance, inventory levels, and customer engagement.

Scalability and Performance Optimization: The project will focus on scalability and performance optimization techniques to ensure the Online Shoe Store can accommodate increasing user traffic and deliver a fast and responsive browsing experience.

In conclusion, the development of an Online Shoe Store using Django presents an opportunity to showcase the capabilities of the framework in building robust and scalable e-commerce applications. By implementing essential features such as user authentication, product catalog management, shopping cart functionality, and secure payment integration, the project aims to deliver a seamless online shopping experience for footwear enthusiasts while demonstrating best practices in web development and design

LIST OF ABBREVIATIONS

Terminology Meaning

ERD : Entity Relationship Diagram

DBD : Database Diagram

DFD : Data Flow Diagram

HTTP : Hyper Text Transfer Protocol

SQL : Structure Query Language

DBMS : Database Management System

IDE : Integrated Development Environment

CHAPTER ONE

1.1 INTRODUCTION

In recent years, the e-commerce sector has revolutionized the way consumers shop for goods and services, offering unparalleled convenience and accessibility. Among the myriad of products available for online purchase, footwear stands out as a staple commodity in everyday life, reflecting not only personal style but also providing essential comfort and functionality. With the increasing popularity of online shopping, the demand for robust and user-friendly platforms for purchasing shoes has grown exponentially. This has prompted the development of various e-commerce solutions tailored specifically for the footwear industry.

This project sets out to explore the development of an Online Shoe Store using Django, a high-level Python web framework renowned for its simplicity, scalability, and versatility. The objective is to create a comprehensive e-commerce platform that not only showcases a wide range of footwear products but also delivers a seamless and intuitive shopping experience for customers. By leveraging the capabilities of Django, we aim to develop an online store that incorporates essential features such as user authentication, product catalog management, shopping cart functionality, secure payment integration, and order management.

The significance of this project lies in its potential to address the evolving needs and preferences of modern consumers while demonstrating the practical application of Django in building robust and scalable web applications. Through the implementation of industry best practices in web development and design, we seek to create an Online Shoe Store that not only meets the functional requirements of an e-commerce platform but also delivers a visually appealing and responsive user interface.

This report will provide a detailed overview of the project objectives, methodology, implementation details, and outcomes. It will also discuss the challenges encountered during the development process and the strategies employed to overcome them. Additionally, the report will highlight the key features and functionalities of the Online Shoe Store, along with insights into future enhancements and potential areas for further research and development.

Overall, this project aims to contribute to the growing body of knowledge in the field of e-commerce web development while providing a practical demonstration of the capabilities of Django in building modern and feature-rich online stores. By delivering a fully functional and user-friendly platform for purchasing footwear, we hope to cater to the needs of shoe enthusiasts and contribute to the continued growth and innovation within the e-commerce industry.

1.2 BACKGROUND OF THE STUDY

The advent of the internet has transformed numerous aspects of human life, including the way we conduct business and commerce. E-commerce, or electronic commerce, refers to the buying and selling of goods and services over the internet. It has become increasingly prevalent in recent years, offering convenience, accessibility, and a wide array of choices to consumers worldwide. Among the various segments of e-commerce, the online retailing of footwear has emerged as a significant market due to its universal appeal and necessity in everyday life.

This section provides an in-depth exploration of the background and context of the proposed project, focusing on the evolution of e-commerce, the significance of the footwear industry, and the rationale behind developing an Online Shoe Store using Django.

Evolution of E-commerce:

The roots of e-commerce can be traced back to the 1960s with the development of Electronic Data Interchange (EDI), which facilitated electronic transactions between businesses. However, it was not until the late 20th century, with the rise of the World Wide Web, that e-commerce truly began to flourish. The launch of platforms such as Amazon and eBay in the 1990s revolutionized the way people shop, ushering in an era of online retail dominance.

Since then, e-commerce has undergone rapid evolution, driven by advancements in technology, changes in consumer behavior, and shifts in market dynamics. Mobile commerce (m-commerce), social commerce, and omnichannel retailing are some of the key trends shaping the e-commerce landscape today. With the proliferation of smartphones and the increasing penetration of the internet, consumers now have unprecedented access to a vast array of products and services at their fingertips.

Significance of the Footwear Industry:

Footwear is an essential component of human attire, serving both functional and aesthetic purposes. From athletic shoes for sports and fitness activities to stylish footwear for everyday wear, the global footwear market caters to a diverse range of consumer preferences and needs. According to market research firm Statista, the global footwear market was valued at over $365 billion in 2020 and is projected to continue growing in the coming years.

The rise of athleisure and casual fashion trends, coupled with increasing health and wellness consciousness, has fueled demand for footwear across various demographics and geographies. Furthermore, the advent of online shopping has democratized access to footwear, enabling consumers to browse, compare, and purchase shoes from the comfort of their homes.

Rationale for Developing an Online Shoe Store Using Django:

Given the growing popularity of online shopping and the significant market size of the footwear industry, there is a compelling rationale for developing a dedicated Online Shoe Store. By leveraging the power of e-commerce technology, businesses can reach a wider audience, streamline operations, and offer a seamless shopping experience to customers.

Django, a high-level Python web framework, offers a robust and flexible platform for building sophisticated web applications, making it an ideal choice for developing an Online Shoe Store. Its built-in features for user authentication, database management, and template rendering, coupled with its scalability and security capabilities, make it well-suited for the demands of modern e-commerce.

Moreover, Django's adherence to the Don't Repeat Yourself (DRY) principle and its emphasis on rapid development allow developers to efficiently build and deploy complex web applications, thereby reducing time-to-market and development costs.

In summary, the proposed project aims to capitalize on the growing opportunities in the e-commerce sector, particularly in the footwear industry, by developing an Online Shoe Store using Django. By combining the strengths of Django's web development framework with the inherent appeal and market demand for footwear, we aim to create a compelling online shopping destination that delivers value to both consumers and businesses alike.

1.3 STATEMENT OF THE PROBLEM

Traditionally, customers are used to buying the products at the real, in other words, factual shops or supermarkets. It needs the customers to show up in the shops in person, and walk around different shopping shelves, and it also needs the owners of shops to stock, exhibit, and transfer the products required by customers. It takes labour, time and space to process these operations.

Furthermore, the spread of the Covid-19 pandemic has caused a lot of changes in our lifestyle, people fearing to get outside their homes, transportation almost shut down and social distancing becoming all the more important. Big to small scale business that relied on the traditional incur a lot of consequence due to the lockdown issues. Some tend to more towards using social media platforms like Facebook to sell their product. However, the social media platforms have been beneficial for marketing purposes alone but leaves the whole task of customer and massive order management via direct messaging (DM), which takes a lot of time to respond to all customers. In addition, everyone tends to use social media, posing a great challenge to differentiate between scammers (fraudsters) and legit sellers.

1.4 THE SOLUTION

The Online Shoe Store is an Online shopping system provides a solution to reduce and optimize these expenses. Authorized Customers do not need to go to the factual shops to choose, and bring the products they need by hands. They simply browse their Personal computers or cell phones to access shops, and evaluate the products description, pictures on the screen to choose products. In addition, the owners of the shop do not need to arrange or exhibit their stocks products. They just input the description, prices of products, and upload their pictures. Simply, both customers and shop owners do not need to touch the real products in the whole process of shopping, and management. In the end the logistic centre will distribute the products required by customers, or products ordered by shop owners to their locations. The customers are able to track the status of their orders until delivery, after which they can leave a review of the type of service they received. The payment and products' quantity will be saved in database through the data flow. These shopping, management and distribution processes greatly simplify and optimize the retail business.

Aims and Objectives of the System:

Aims:

1.To develop a comprehensive and user-friendly Online Shoe Store that caters to the needs and preferences of modern consumers.

2.To showcase the capabilities of the Django web framework in building robust and scalable e-commerce applications.

3.To provide a seamless and intuitive shopping experience for customers, fostering repeat business and customer loyalty.

4.To contribute to the growth and innovation within the e-commerce industry, particularly in the footwear segment.

5.To demonstrate best practices in web development and design, emphasizing usability, security, and performance.

Objectives:

1.Design and implement a user authentication system to enable secure registration, login, and account management for customers.

2.Develop a product catalog management system that allows administrators to add, edit, and remove shoe products, along with their attributes such as name, description, price, size, color, and images.

3.Implement a shopping cart functionality that enables users to add products to their carts, modify quantities, and proceed to checkout seamlessly.

4.Integrate a secure payment gateway to facilitate online payments, ensuring the confidentiality and security of sensitive financial information.

5.Create an order management system that enables administrators to track and manage customer orders efficiently, including order status updates, order history, and order processing functionalities.

6.Design a responsive user interface that adapts to various devices and screen sizes, providing an optimal shopping experience across desktops, tablets, and smartphones.

7.Implement search and filter functionality to enable users to search for specific products and apply filters based on criteria such as price range, shoe size, brand, and color.

8.Incorporate a review and rating system that allows customers to leave feedback and ratings for products, enhancing user engagement and credibility.

9.Develop an intuitive admin dashboard that provides administrators with insights into key metrics such as sales performance, inventory levels, and customer engagement.

10.Focus on scalability and performance optimization techniques to ensure the Online Shoe Store can accommodate increasing user traffic and deliver a fast and responsive browsing experience.

By achieving these aims and objectives, the system aims to deliver a robust and feature-rich Online Shoe Store that meets the needs of both customers and administrators while showcasing the capabilities of the Django web framework in e-commerce application development.

1.6 SCOPE AND LIMITATION

Every project is done to achieve a set of goals with some conditions keeping in mind that it should be easy to use, feasible and user friendly. As the goal of this project is to develop an online shoe store brochure system, this system will be designed keeping in mind the conditions (easy to use, feasibility and user friendly) stated above. It may help in effective and efficient order management. In every shot time, the collection will be obvious, simple and sensible. It is very possible to observe the customer potentials and purchase patterns because all the ordering history is store in the database. It is efficient managing all the operations of an online store within a single platform. The project aims to automate the business process of Online Shoe store. The proposed project would cover:

Customer Side

• Customer can view/search products without login.

• Customer can also add/remove product to cart without login (if customer try to add same product in cart. It will add only one)

• When customer try to purchase product, then he/she must login to system.

• After creating account and login to system, he/she can place order.

• If customer click on pay button, then their payment will be successful and their order will be placed.

• Customer can check their ordered details by clicking on orders button.

• Customer can see the order status (Pending, Confirmed, Delivered) for each order

• Customer can Download their order invoice for each order

• Customer can send feedback to admin (without login)

Administrator Side

• Admin can provide username, email, password and your admin account will be created.

• After login, there is a dashboard where admin can see how many customers is registered, how many products are there for sale, how many orders placed.

• Admin can add/delete/view/edit the products.

• Admin can view/edit/delete customer details.

• Admin can view/delete orders.

• Admin can change status of order (order is pending, confirmed, out for delivery, delivered)

• Admin can view the feedbacks sent by customers

Additionally, if customer places order and admin deleted that user (fraud detection), then their orders will automatically be deleted. Suppose one (1) customer places four (4) products order and admin deleted two (2) product from website, then that two-product order will also be deleted and other two will be there. Also, if user click on purchase button without having products in their cart, then website will ask to add product in cart first.

On the contrary, designing web applications is characterized by some constraints and limitations. Developers are limited to a small set of graphical widgets for use in presenting a user interface. Web-based applications require high investment in software, as well as maintenance costs for the software and personnel for software administration. In this study, verification of credentials for membership cannot be done. Besides, there is a payment page although just for demo. Customers are advised to fill in pseudo details. By the way, website do not save these details.

1.7 RESEARCH METHODOLOGY

The research method used for this project work is quantitative research reviews the current system, provide its description, identifying the discrepancies and eventually giving a suitable solution. Therefore, the method used in the design and collections of information from various sources are as follows:

• Studying the present system in detail and the organizational style.

• Knowing and understanding the input and output processes of the existing system.

• A qualitative form of interview was conducted in the organization to understand the mode of operation of the old system.

1.8 SIGNIFICANCE OF THE STUDY

With the aid of an efficient information system, fashion associations can be able to react quickly by giving out information about changes in the market and latest trends to the public. An online application not only saves time and money, but also minimizes administrative efforts and cost. It provides an avenue to market products to a whole new audience. Here are benefits of having an Online Shoe Store brochure system;

• Easy advertisement of new products and services

• Saves time on the part of the buyer due to the fact that they can do transactions for any product or make enquiries about any product or services provided by a company anytime and anywhere.

• It creates an avenue for expansion to national and international markets.

• An online fashion brochure system improves the brand image of a company.

• It aids a fashion company in providing better customer service.

• Helps simplify business processes and make them faster and efficient.

1.9 DEFINITION OF TERMS

Django: Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. It facilitates the creation of web applications by providing built-in features for handling tasks such as user authentication, database management, URL routing, and template rendering.

E-commerce: E-commerce, short for electronic commerce, refers to the buying and selling of goods and services over the internet. It encompasses a wide range of activities, including online retailing, electronic payments, supply chain management, and digital marketing.

User Authentication: User authentication is the process of verifying the identity of a user attempting to access a system or application. It typically involves the use of credentials such as usernames and passwords, as well as additional security measures such as multi-factor authentication.

Product Catalog Management: Product catalog management involves the organization and administration of a collection of products or items available for sale. It includes tasks such as adding new products, updating product information, categorizing products, and removing discontinued items.

Shopping Cart: A shopping cart is a virtual container that allows users to select and temporarily store items they wish to purchase while browsing an online store. It enables users to review their selected items, modify quantities, and proceed to checkout when ready to complete their purchase.

Payment Gateway: A payment gateway is a service that facilitates online payments by securely transmitting payment information between a merchant's website and the payment processor. It encrypts sensitive financial data to protect it from unauthorized access during transmission.

Order Management: Order management involves the processing and fulfillment of customer orders received through an e-commerce platform. It includes tasks such as order tracking, inventory management, order status updates, and shipping logistics.

Responsive Design: Responsive design is an approach to web design that ensures a website's layout and content adapt dynamically to the user's device and screen size. It provides an optimal viewing experience across a wide range of devices, including desktop computers, tablets, and smartphones.

Search and Filter Functionality: Search and filter functionality allows users to search for specific products or refine product listings based on predefined criteria such as price range, size, color, brand, and category. It helps users quickly find relevant products and narrow down their options.

Review and Rating System: A review and rating system enables users to leave feedback and ratings for products they have purchased or experienced. It helps other users make informed purchasing decisions and provides valuable feedback to merchants.

Admin Dashboard: An admin dashboard is a centralized interface that provides administrators with access to various tools and features for managing and monitoring an e-commerce platform. It typically includes functionalities such as sales analytics, inventory management, user management, and content management.

Web browser: a web browser is a software application used to enable computer users locate and access web pages.

Brochure: a brochure is an advertising piece mainly used to introduce a company or an organization and inform about products or services to a target audience.

These definitions provide a foundational understanding of the key terms and concepts used in the project related to developing an Online Shoe Store using Django.

1.10 CHAPTER LAYOUT

The chapter layout of this project is outlined in a sequential manner starting with Chapter one which consists of the Introduction, Background of the study, Statement of the problem, Aims and objectives, Justification and Significance of study, Research methodology, and Scope, Limitation.

Following this chapter, the rest of the paper proceeds as follows. Chapter two consist of introduction, Literature review of the project, an overview of e-commerce applications.

Chapter three deals with the Methodology. It comprises of analysis of the existing system under which description of the current system will be analysed, problems of existing system, description of the proposed system and the advantages of the proposed system. It also highlights the system design, system implementation and system documentation under the system design, the system design will have input and output specifications.

Chapter four describe the results and discussion of the study.

Chapter five will include summary, conclusion and recommendation. It consists of the summary of the project report, conclusion and recommendation based on the research done and achievable outcomes.

CHAPTER TWO: LITERATURE REVIEW

2.0 INTRODUCTION

Literature review is an expressive study based on the detailed review of earlier pertinent studies related to the various concepts of online shopping to discover the concept of online shopping. It highlights the status of online shopping, importance and problems of online shopping, factors affecting online shopping and a critical review of the privacy and security issues in online shopping.

2.1 STATUS OF ONLINE SHOPPING IN PRESENT BUSINESS ENVIRONMENT

In today's rapidly evolving digital landscape, the development of an Online Shoe Store using Django stands as a beacon of technological innovation and business adaptation. With consumers increasingly turning to online platforms for their shopping needs, this project signifies a strategic response to changing market dynamics and consumer preferences. By leveraging the power of Django, a robust and versatile web framework, businesses can create a seamless and intuitive online shopping experience for customers, thereby enhancing convenience and accessibility in today's fast-paced world.

At its core, the significance of this project lies in its ability to drive digital transformation within the retail sector. By embracing e-commerce technologies and best practices, businesses can adapt to the digital age and stay competitive in an increasingly crowded marketplace. The Online Shoe Store serves as a prime example of how businesses can harness the power of technology to meet the evolving needs of modern consumers while staying ahead of the curve in a rapidly changing business environment.

Furthermore, the project underscores the importance of innovation in driving business growth and differentiation. By adopting cutting-edge technologies such as Django, businesses can build scalable, feature-rich e-commerce platforms that offer a superior user experience. This focus on innovation not only enhances customer satisfaction but also enables businesses to stand out in a crowded marketplace, fostering brand loyalty and driving long-term success.

In addition to its technological significance, the Online Shoe Store holds immense potential for economic empowerment and entrepreneurship. By providing a platform for small businesses and entrepreneurs to showcase their products to a global audience, the project democratizes access to the online marketplace and creates opportunities for growth and prosperity. This socio-economic impact extends beyond individual businesses to the broader community, driving job creation, economic development, and social mobility.

Moreover, the project aligns with broader societal trends towards sustainability and environmental responsibility. By promoting online shopping, the Online Shoe Store helps reduce the carbon footprint associated with traditional retail practices, such as brick-and-mortar stores and excessive packaging. This commitment to environmental sustainability reflects a broader ethos of corporate social responsibility and underscores the project's contribution to a more sustainable future.

In conclusion, the significance of developing an Online Shoe Store using Django extends far beyond its immediate application as an e-commerce platform. It represents a strategic response to changing consumer behaviours, technological advancements, and environmental imperatives in today's interconnected world. By embracing innovation, fostering economic empowerment, and promoting sustainability, the project exemplifies the transformative potential of technology in shaping the future of commerce and society.

2.3 IMPORTANCE OF ONLINE SHOPPING

The importance of developing an Online Shoe Store using Django is paramount in the contemporary business landscape for several compelling reasons:

1.Meeting Consumer Demand: In today's digital era, consumers increasingly prefer the convenience and accessibility offered by online shopping platforms. By establishing an Online Shoe Store, businesses can meet this growing demand and provide customers with a seamless and user-friendly platform to browse, select, and purchase footwear from the comfort of their homes or on the go.

2.Expanding Market Reach: An Online Shoe Store allows businesses to transcend geographical limitations and tap into global markets. Through effective digital marketing strategies and search engine optimization, businesses can reach a wider audience of potential customers, thereby expanding their market reach and driving revenue growth.

3.Enhancing Customer Experience: The Online Shoe Store enhances the overall customer experience by providing features such as intuitive navigation, detailed product descriptions, user reviews, and secure payment options. By prioritizing user experience, businesses can foster customer satisfaction and loyalty, leading to repeat purchases and positive word-of-mouth recommendations.

4.Streamlining Operations: With the integration of Django's robust backend functionalities, businesses can streamline various aspects of their operations, including inventory management, order processing, and customer relationship management. This streamlining of operations not only improves efficiency but also reduces overhead costs and enhances overall business productivity.

Competitive Advantage: In a crowded marketplace, having an Online Shoe Store can provide businesses with a competitive edge. By offering a comprehensive range of footwear products, superior customer service, and innovative features, businesses can differentiate themselves from competitors and attract discerning consumers who value convenience, quality, and reliability.

Data-Driven Insights: The Online Shoe Store generates valuable data on customer preferences, purchasing behavior, and market trends. By analyzing this data, businesses can gain actionable insights that inform decision-making, marketing strategies, and product development initiatives. This data-driven approach enables businesses to stay agile and responsive to changing market dynamics, thereby maintaining a competitive edge in the industry.

Adaptation to Digital Trends: As technology continues to evolve, businesses must adapt to emerging digital trends to remain relevant and competitive. Developing an Online Shoe Store using Django allows businesses to stay at the forefront of technological innovation and embrace digital transformation, positioning themselves as leaders in the e-commerce space.

The importance of developing an Online Shoe Store using Django lies in its ability to meet consumer demand, expand market reach, enhance customer experience, streamline operations, gain competitive advantage, leverage data-driven insights, and adapt to digital trends. By investing in an Online Shoe Store, businesses can position themselves for long-term success and growth in today's dynamic and increasingly digital business environment.

2.4 PROBLEMS OF ONLINE SHOPPING

Online shopping problems are great barrier to the online purchase aim of customers. General problems include prospect of having credit card. The obscurity to confirm the reliability of the provide goods and the risk to buy a product that it would not value as much as customer pay for it. Aftersales problems, involved difficulty to change not working product with a new one and products warranty are not assured. Online shopping has various disadvantages:

• The customers can not touch and fell of the products when they want to Purchase.

• Some time delivery time is so much late

• Some time they will pay the shipping charges so why the cost of the product may increase.

• Lack of personal attention by the sellers. More chance to fraud.

• Security of internet banking password and credit card password

• Lack of quality

2.5 THE FACTORS WHICH AFFECT ONLINE SHOPPING

There are some factors which affect the online shopping by the Kotler who is a great marketing writer

• Convenience (no traffic, crowds,24 hr. Access)

• Product Selection

• 3. Delivery Mode

2.6 PRIVACY AND SECURITY ISSUES IN ONLINE SHOPPING

Privacy and security are paramount concerns in the development and operation of an Online Shoe Store, given the sensitive nature of the data involved. Firstly, ensuring robust data privacy measures is imperative to protect customers' personal information, such as names, addresses, and payment details, from unauthorized access or disclosure. Adherence to data protection regulations, such as GDPR or CCPA, is crucial, requiring transparent data handling practices, user consent mechanisms, and secure storage and transmission protocols to safeguard customer privacy effectively.

Secondly, secure transactions are essential to prevent financial fraud and protect customers' payment information during online purchases. Integration with reputable payment gateways and the implementation of encryption protocols, such as SSL/TLS, ensure that sensitive data is encrypted during transmission and securely stored. Additional security measures like tokenization and two-factor authentication add layers of protection, reducing the risk of unauthorized access to payment information.

Thirdly, robust authentication and authorization mechanisms are critical to prevent unauthorized access to the Online Shoe Store's backend systems and customer accounts. Utilizing strong authentication methods like multi-factor authentication and implementing role-based access controls ensure that only authorized users can access sensitive data and perform privileged actions. Regular monitoring and auditing of user activities help detect and mitigate security threats promptly, ensuring the integrity and confidentiality of customer data.

Finally, proactive measures to mitigate the risk of cyber attacks, such as DDoS attacks, are essential to ensure the availability and continuity of the Online Shoe Store's services. Implementing DDoS mitigation solutions, such as traffic filtering, rate limiting, and content delivery networks, help defend against malicious traffic and maintain uninterrupted service availability. Additionally, regular security audits, updates, and employee training programs are indispensable for staying ahead of emerging threats and ensuring the ongoing privacy and security of the Online Shoe Store and its customers.

CHAPTER THREE

3.1. Methodology

3.1.1. Introduction

This Section describes the methodology applied during the development of Online Shoe Store. A methodology is a model, which project managers employ for the design, planning, implementation and achievement of their project objectives. Effective project management is essential in absolutely any organization, regardless of the nature of the business and the scale of the organization. From choosing a project to right through to the end, it is important that the project is carefully and closely managed. Based on the nature of my project solution, it was essential to use incremental Software development life cycle (SDLC). The project typically has a number of Phases and the level of control required over each phase are primarily defined by the nature of the Project, the complexity of the same and the industry to which the Project has to cater to. An Incremental (SDLC) model consists of a number of dependent increments that are completed in a prescribed sequence. Each increment includes a Launching, Monitoring and Controlling, and Closing Process Group for the functions and features in that increment only. Each increment integrates additional parts of the solution until the final increment, where the remaining parts of the solution are integrated.

The methodology for developing an Online Shoe Store using Django involves several key stages and approaches to ensure the successful planning, implementation, and deployment of the project. Here's a structured outline of the methodology:

Requirement Analysis:

1.Gather requirements from stakeholders to understand the objectives, functionalities, and scope of the Online Shoe Store project.

2.Conduct interviews, surveys, and stakeholder meetings to identify key features, user stories, and technical specifications.

3.Define clear and achievable project goals, deliverables, and success criteria.

Design Phase:

1.Create a detailed system architecture and database schema based on the identified requirements.

2.Develop wireframes, mockups, and prototypes to visualize the user interface and user experience.

3.Design the user flow, navigation structure, and interaction patterns to ensure intuitive usability.

Development Phase:

1.Set up the development environment, including installing Django and configuring the necessary dependencies.

2.Implement core functionalities such as user authentication, product catalog management, shopping cart, and checkout process.

3.Develop front-end components using HTML, CSS, and JavaScript, ensuring responsiveness and accessibility across devices.

4.Integrate third-party services for payment processing, email notifications, and analytics tracking as needed.

5.Write clean, maintainable code following best practices and coding standards.

Testing and Quality Assurance:

1.Conduct unit tests, integration tests, and end-to-end tests to validate the functionality and performance of the Online Shoe Store.

2.Perform usability testing and gather feedback from stakeholders and potential users to identify and address any usability issues.

3.Test security features such as authentication mechanisms, data encryption, and protection against common vulnerabilities.

4.Perform load testing to assess the system's scalability and resilience under heavy user traffic.

3. 1. 2 Justification for the Methodology

This model can be used when the requirements of the complete system are clearly defined and
understood, like the case of this project where;

• Major requirements were evidently defined; however, some details evolved with time.

• There was a need to complete the project within a short time schedule.

• A new technology is being used or the resources with needed skill set are not available. I was learning Django and could iterate from one technology to another to ensure I effectively implement all the functionalities.

• The project had some high-risk features and goals.

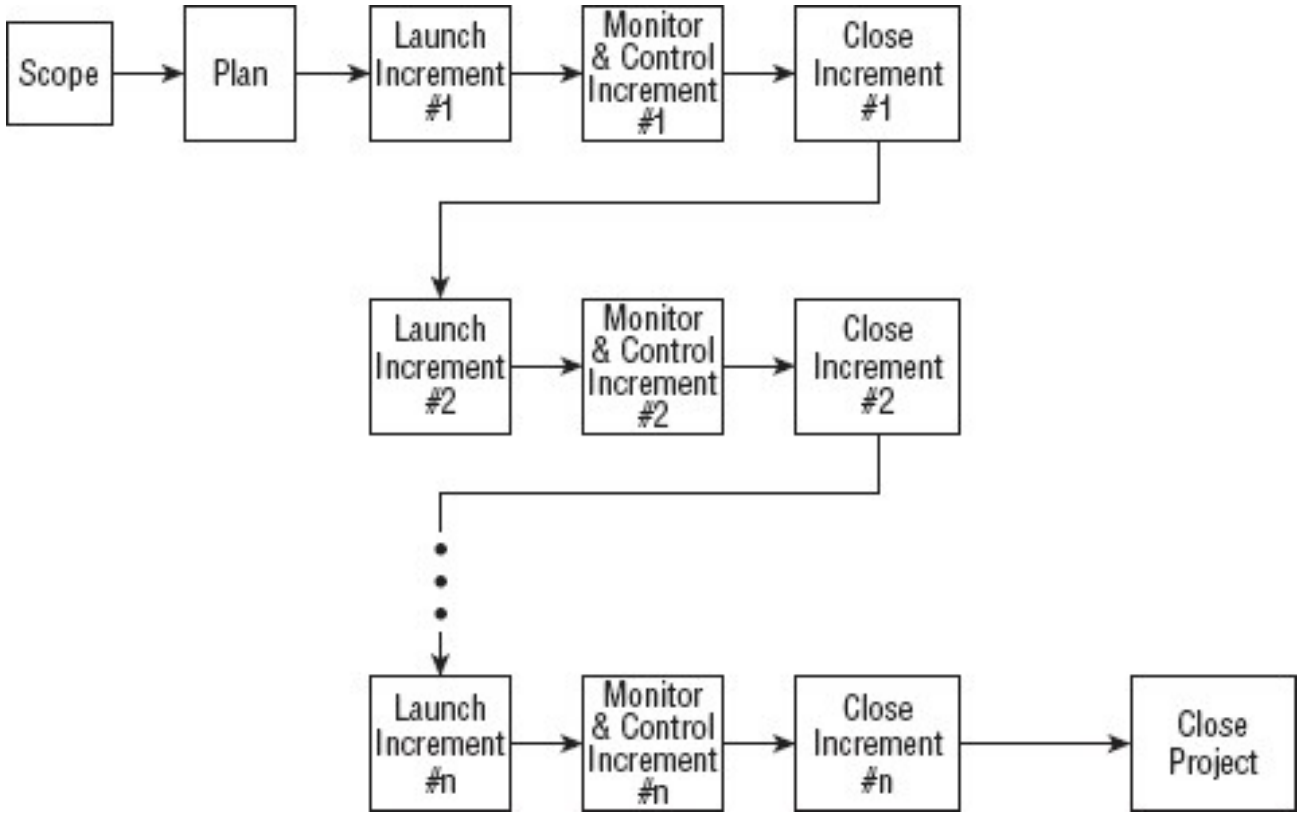


Figure 1: Incremental Project Management Life Cycle

The Incremental model is much better equipped to handle change. Each incremental functionality is verified by the customer and hence the relative risk in managing large and complex projects is substantially reduced. On the downside, there is a possibility of gold plating, wherein the functionalities not really required end up being built into the Product or Deliverable. In a nutshell, Incremental SDLC provide plethora of advantages inducing;

• Generates working software quickly and early during the software life cycle.

• This model is more flexible and less costly to change scope and requirements

• It is easier to test and debug during a smaller iteration.

• In this model customer can respond to each built.

• Lowers initial delivery cost.

• Easier to manage risk because risky pieces are identified and handled during it’s iteration.

3.2 SYSTEM ANALYSIS

Analysis is an important part of any project; is analysis is not done properly then whole project move in the wrong direction. It also provides a schedule for proper project work. Analysis task is divided into 3 areas:

✓ Problem Recognition.

✓ Feasibility Study.

✓ Requirement Analysis.

3.2. Feasibility Study

Feasibility study of the system is a very important stage during system design. Feasibility study is a test of a system proposal according to its workability impact on the organization, ability to meet user needs, and effective use of resources. Feasibility study decides whether the system is properly developed or not. There are five types of feasibility as mentioned below:

1. Technical Feasibility

2. Time Schedule feasibility

3. Operational feasibility

4. Implementation feasibility

5. Economic Feasibility

1. Technical Feasibility

Technical feasibility corresponds to determination of whether it is technically feasible to develop the software. Here those tools are considered, which will be required for developing the project. The tools, which are available, and tools, which will be required, are taken into account. Considering all above points and aspects it is observed that the cost incurred in developing this project from a technical perspective would not be too high. Thus, it is feasible for company as well as for me to develop this system.

2. Time Feasibility

Time feasibility corresponds to whether sufficient time is available to complete the project.

Parameters considered:

- Schedule of the project.
- Time by which the project has to be completed.
- Reporting period

Considering all the above factors it was decided that the allotted time that is 3 months was sufficient to complete the project.

3.Operational Feasibility

Operational feasibility corresponds to whether users are aware of interface environment and sufficient resources are available or not.

Parameters considered:

- People with a basic knowledge of computers would be able to use our system very effectively and easily, as the system would have an intuitive GUI. The director and employees of the firm who have a basic operating knowledge of computers, so understanding the working of the system and using it would be easy from the decision maker’s point of view.
- All the relevant necessary resources for implementing and operating this system are already present in the firm.

Bearing in mind the above factor, it was observed that the cost would be incurred in developing this project from an operational standpoint would be low. Thus, it would be operational feasible for the company.

4. Implementation Feasibility

Implementation Feasibility is about basic infrastructure required to develop the system. Considering all below points, it is feasible to develop system.

Factors considered:

▪ All the minimum infrastructure facility required like PC, books, technical manuals are provided.

▪ Proper guidance is provided.

▪ All necessary data and files are provided.

5. Economic Feasibility

Economic Feasibility is about total cost incurred for the system. The software resource requirement of the proposed system is Django and SQLite for functional and backend development and HTML, CSS, JS for the frontend UI.

3.3. Requirements Analysis and Specification

A complete understanding of software requirement is essential to the success of a web development effort. No matter how well designed or well coded, a poorly analysed and specific program will disappoint user and bring grief to the developers.

The requirement analysis task is process of discovery, refinement, modified and specification. The software scope, initially established by the system engineer and refined during project planning, is refined in detail. Models of the required data, information and control flow, and operational behaviour are created. Alternative solutions are analysed and various project element.

Currently who want to buy some shoes they have to go to the shop and buy them this is very tedious for customer therefore we upload this site on internet. This web-site should be developed with an aim to simplify shopping process and keeping transparency and flexibility in performing each operation.

3.3.1. Requirements Gathering

Also known as data collection. Data Collection is an important aspect of any type of research study. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results. The methods used to gather the projects requirements involves Quantitative research to review the existing systems in the market.

3.3.2. Data Collection Methods

This study used quantitative techniques like online survey and questionnaire. Qualitative data collection methods play an important role in impact evaluation by providing information useful to understand the processes behind observed results and assess changes in people's perceptions of their well-being. Furthermore, qualitative methods can be used to improve the quality of survey based quantitative evaluations by helping generate evaluation hypothesis; strengthening the design of survey questionnaires and expanding or clarifying quantitative evaluation findings. These methods are characterized by the following attributes:

• They tend to be open-ended and have less structured protocols

• They rely more heavily on interactive interviews; respondents may be interviewed several times to follow up on a particular issue, clarify concepts or check the reliability of data

• They use triangulation to increase the credibility of their findings

• Generally, their findings are not generalizable to any specific population, rather each case study produces a single piece of evidence that can be used to seek general patterns among different studies of the same issue

Existing written and visual materials were assessed to find important data and information towards the development of the system. During data collection, the investigation found out how the current system operates, not only that but also tried out which problems are faced and how best they can be settled.

Requirement analysis and specification may appear to be relatively simple task, but appearances are deceiving. Communication content is very high, chances for misinterpretations or misinformation abound. Ambiguity is probable. The dilemma that confronts a software engineer may best be understood by repeating the statement of an anonymous customer: “I know you believe you’re understood what you think I said, but I am not sure you realize that what you heard is not what I meant”.

3.3.3. Requirements

The requirements form the proposed system was categorized into functional and non functional requirements.

Functional Requirements

The following is the desired functionality of the new system. The proposed project would cover:

<u>Customer Module</u>

- Customer can view/search products without login.
- Customer can also add/remove product to cart without login (if customer try to add same product in cart. It will add only one)
- When customer try to purchase product, then he/she must login to system.
- After creating account and login to system, he/she can place order.
- If customer click on pay button, then their payment will be successful and their order will be placed.
- Customer can check their ordered details by clicking on orders button.
- Customer can see the order status (Pending, Confirmed, Delivered) for each order
- Customer can Download their order invoice for each order
- Customer can send feedback to admin (without login)

Admin Module

• Admin can provide username, email, password and your admin account will be created.

• After login, there is a dashboard where admin can see how many customers is registered, how many products are there for sale, how many orders placed.

• Admin can add/delete/view/edit the products.

• Admin can view/edit/delete customer details.

• Admin can view/delete orders.

• Admin can change status of order (order is pending, confirmed, out for delivery, delivered)

• Admin can view the feedbacks sent by customers

Non-functional Requirements

It specifies the quality attribute of a software system. They judge the software system based on Responsiveness, Usability, Security, Portability and other non-functional standards that are critical to the success of the software system.

• **Availability:** The system should remain operational in any day and any place.

• **Accuracy:** There is a need to optimize the system to ensure more accurate results and calculations.

• **Usability:** The system should provide a User-friendly user interface and tooltips to enhance itself and be effectively responsive.

• **Secure:** The system must be able to provide security against any external injections by using a layered security system. Implementation of user login functionalities also ensures the system is secure from unauthorized persons.

• **Performance of the system:** Response time is very good for given piece of work. The system will support multi user environment.

• **Reliability of the system:** The system will be highly reliable and it generates all the updates information in correct order. Data validation and verification is done at every stage of activity. System recovery will also be speed.

3.3.4. System Specifications

This section describes the hardware components and software requirements needed for effective and efficient running of the system

Table: 1 Hardware Requirements

SL	Hardware	Minimum System Requirement
01	Processor	2.4 GHz Processor speed
02	Memory	2 GB RAM
03	Disk Space	500 GB

Table: 2 Software Requirements

SL	Hardware	Minimum System Requirement
01	Operating System	Windows 8, Windows 10 or MAC OS 10.8,10.9, or 10.11, LINUX
02	Database Management System	SQL Lite 3
03	Runtime Environment	PyCharm or Visual Studio Code

3.4. SYSTEM DESIGN

The section describes the system study, analysis, design strengths and weaknesses of the current system, Contest level diagrams, Entity Relationship Diagram, Architectural design. After interpretation of the data, tables were drawn and process of data determined to guide the researcher of the implementation stage of the project. The tools, which were employed during this methodology stage, where mainly tables, Data Flow Diagrams and Entity Relationship Diagrams. The design ensures that only allows authorized users to access the systems information.

3.4.1. Process Flow

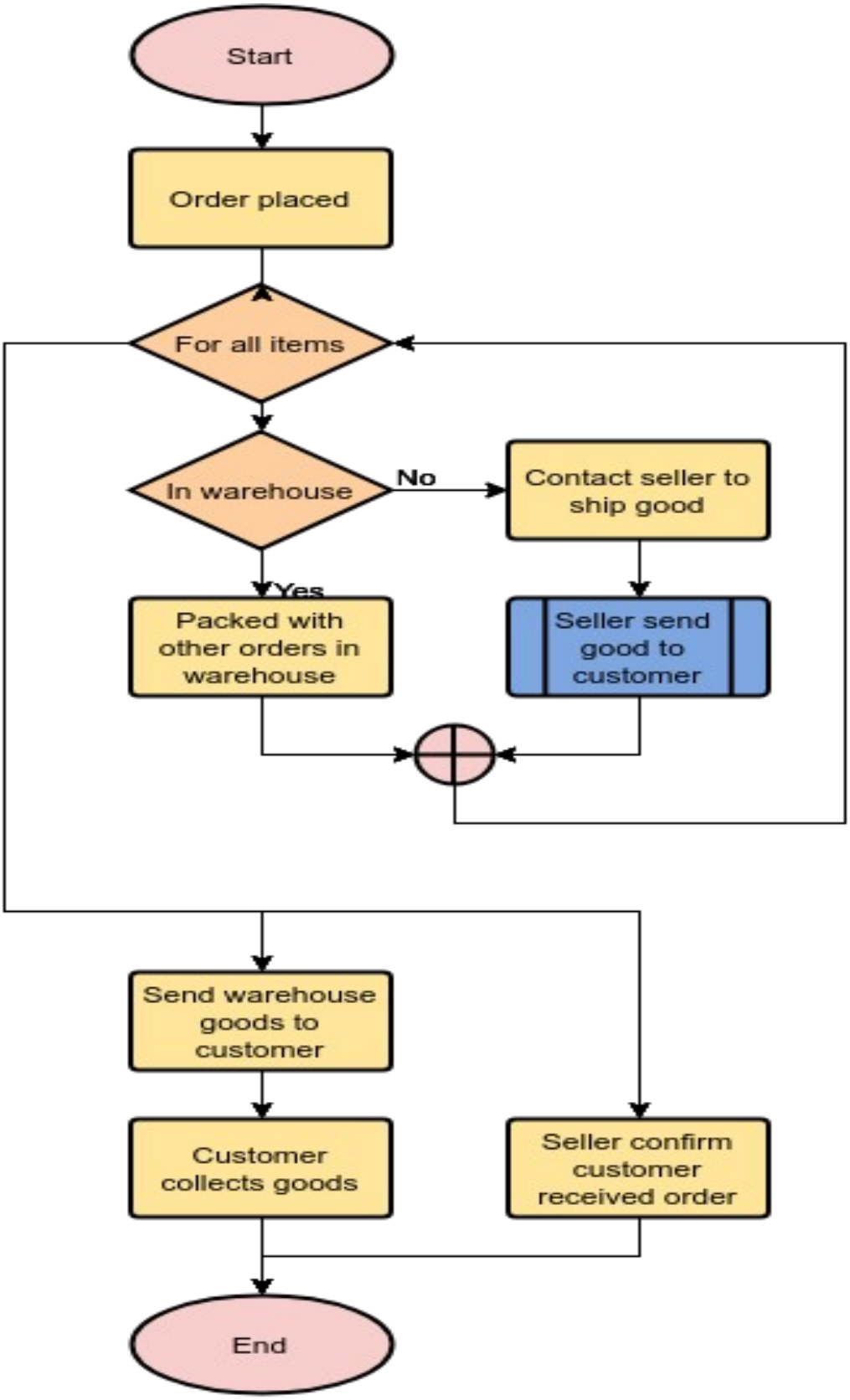


Figure 2: Process Flow Diagram

3.4.2. Data Flow Diagrams

Context level DFD – 0 level

The context level data flow diagram (dfd) is describe the whole system. The (0) level dfd describe the all user module who operate the system. Below data flow diagram 0

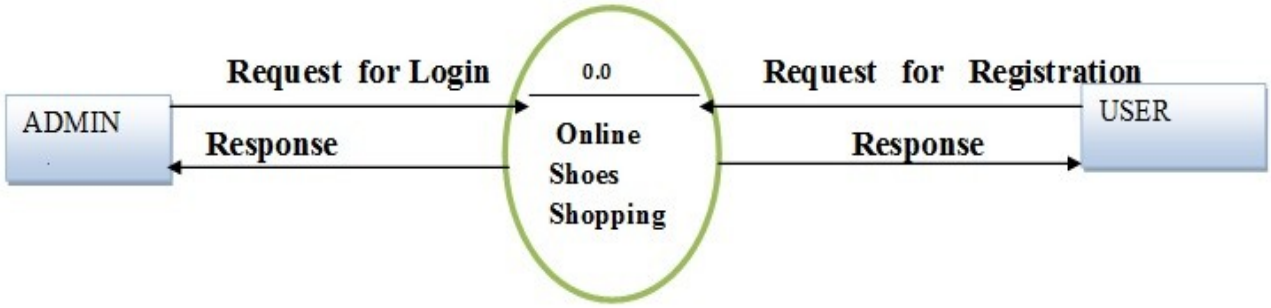
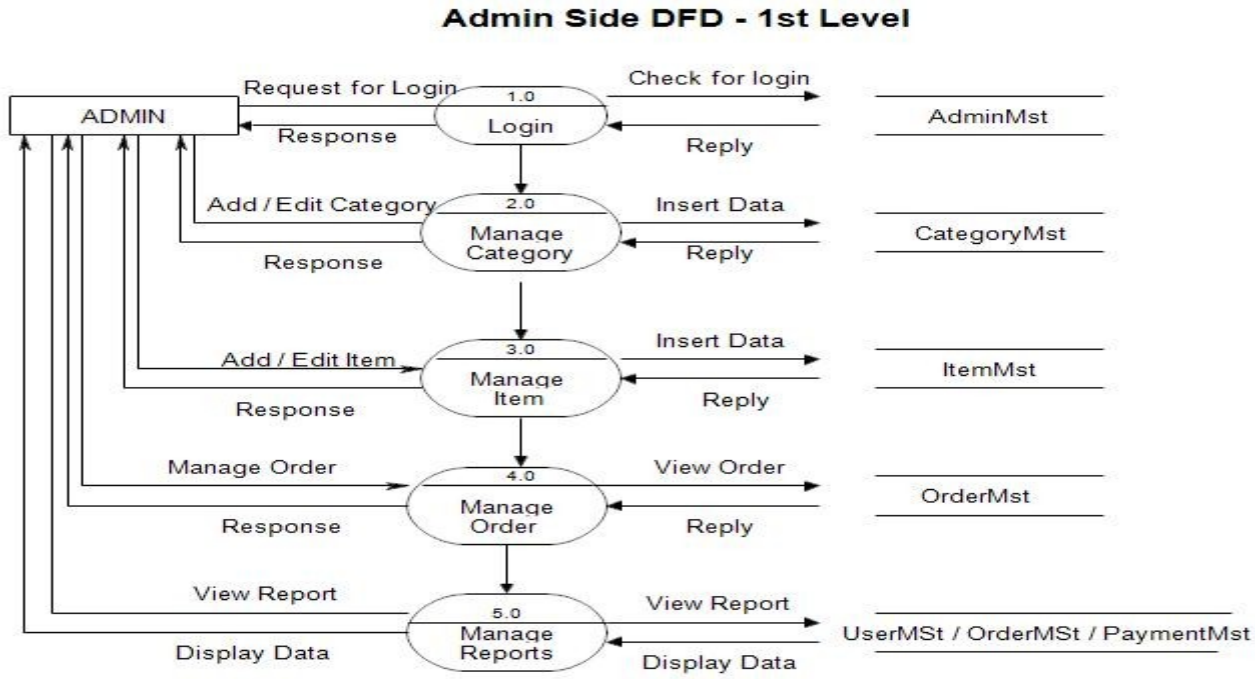


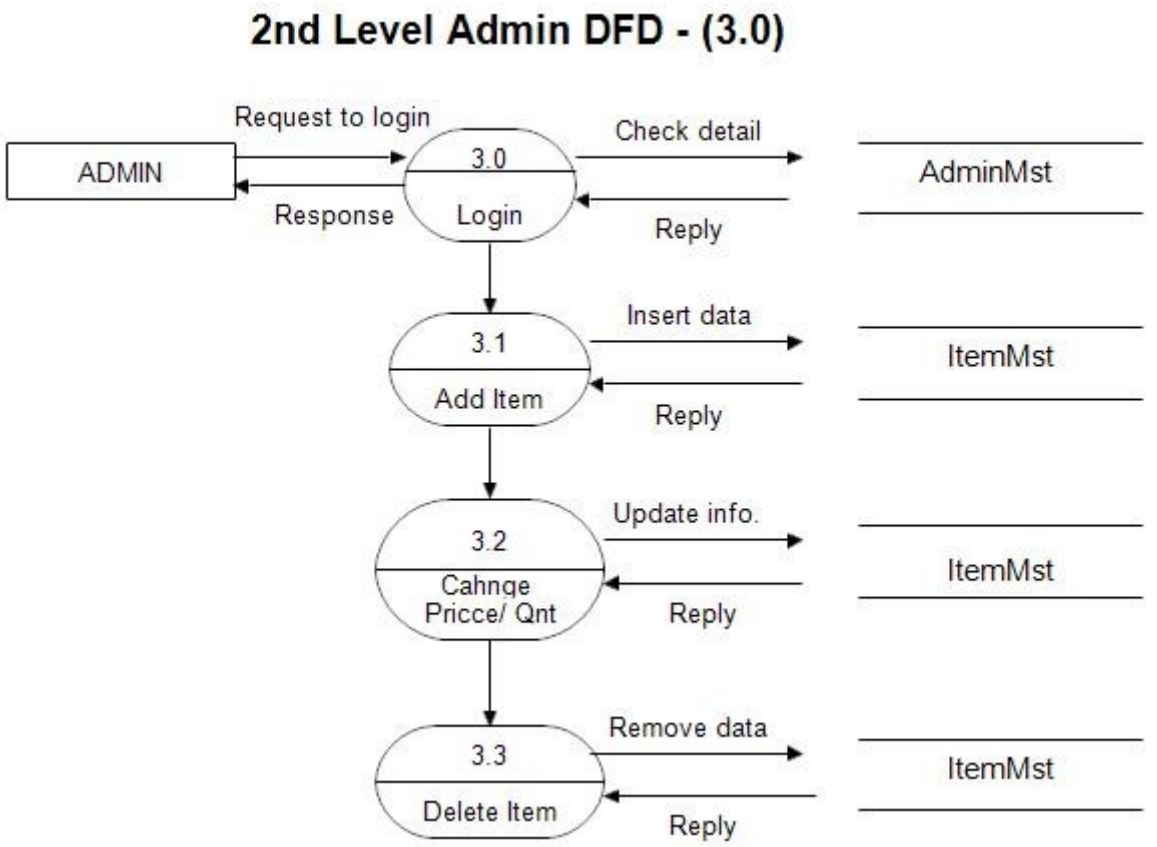
Figure 3: 0 – Level DFD for Online shopping website project

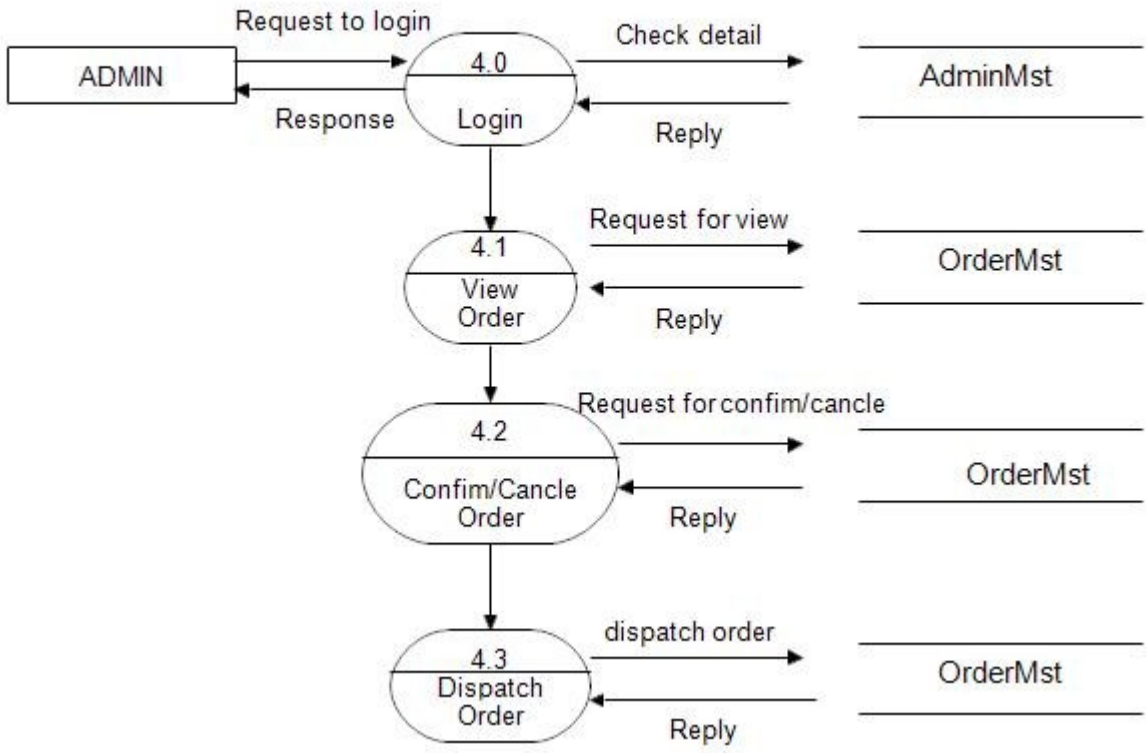
1st Level Admin Side DFD

The Admin side DFD describe the functionality of Admin, Admin is a owner of the website. Admin can first add category of item and then add items by category wise. and admin can manage order and payment detail.

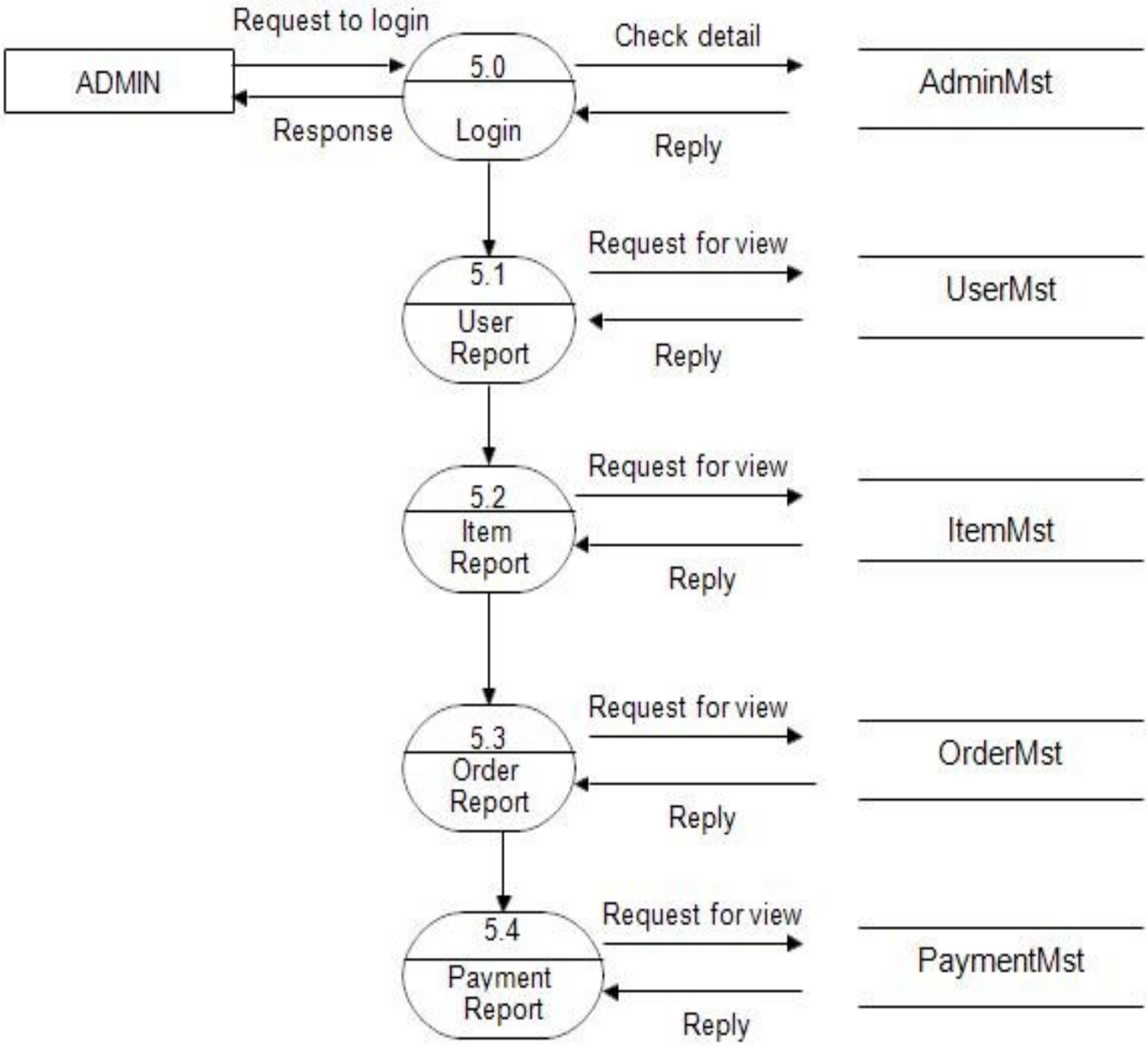


2nd Level Admin Side DFD



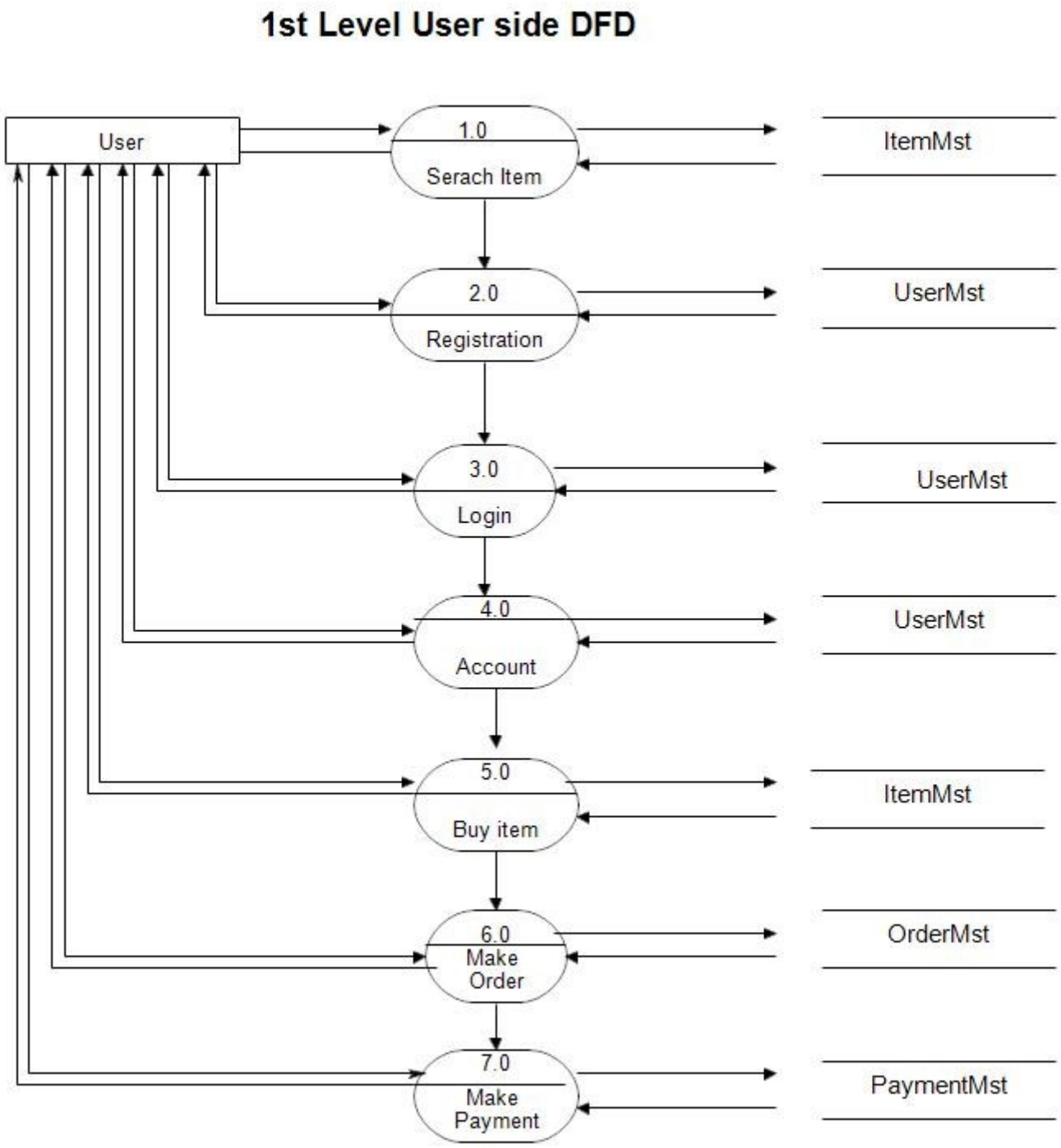


2nd Level Admin DFD - (5.0)

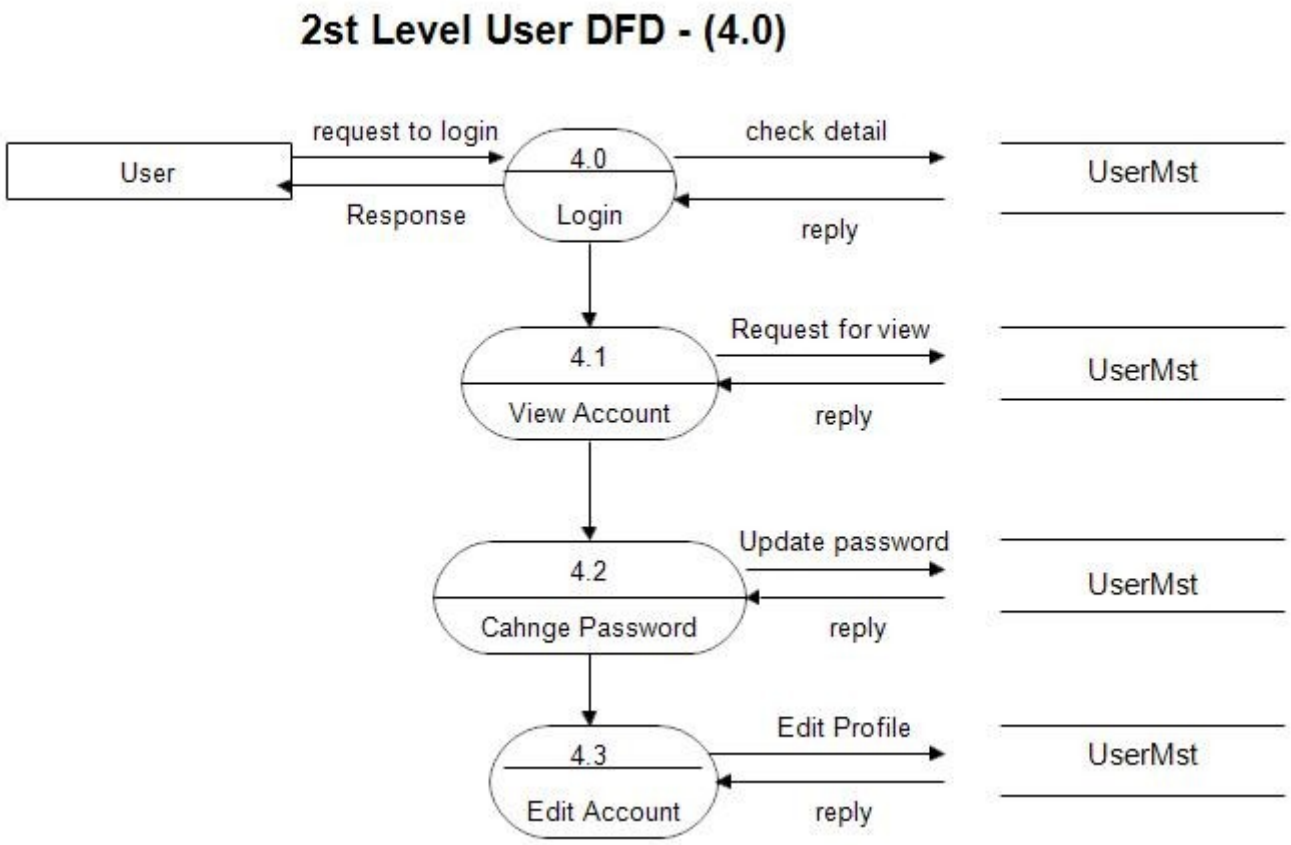


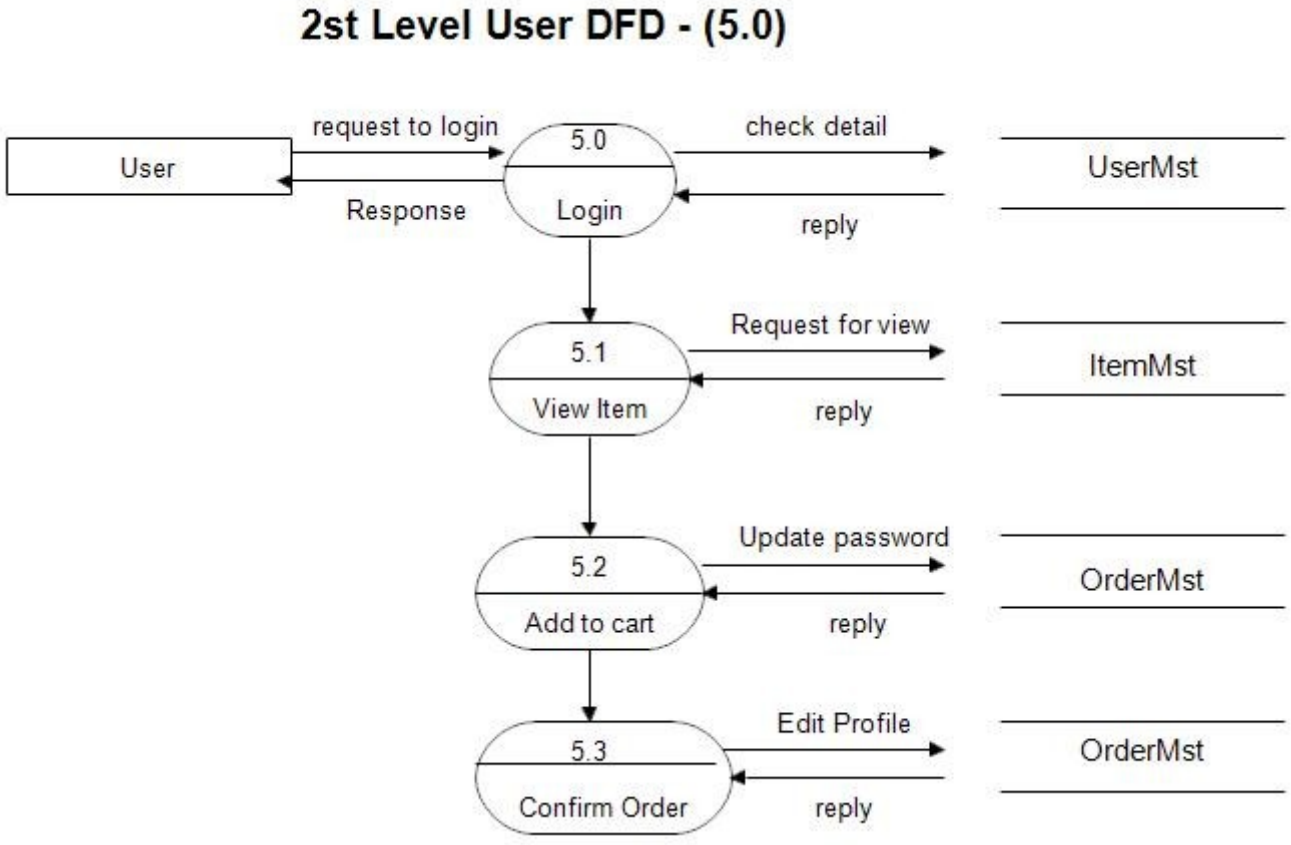
1st level – User side Data flow Diagram

The user is all people who operate or visit our website. User is a customer of a website. User can first select product for buy, user must have to register in our system for purchase any item from our website. after register he can login to site and buy item by making online payment through any bank debit card or credit card.



2nd level – User side DFD (4.0)





3.4.3. Flow Chart

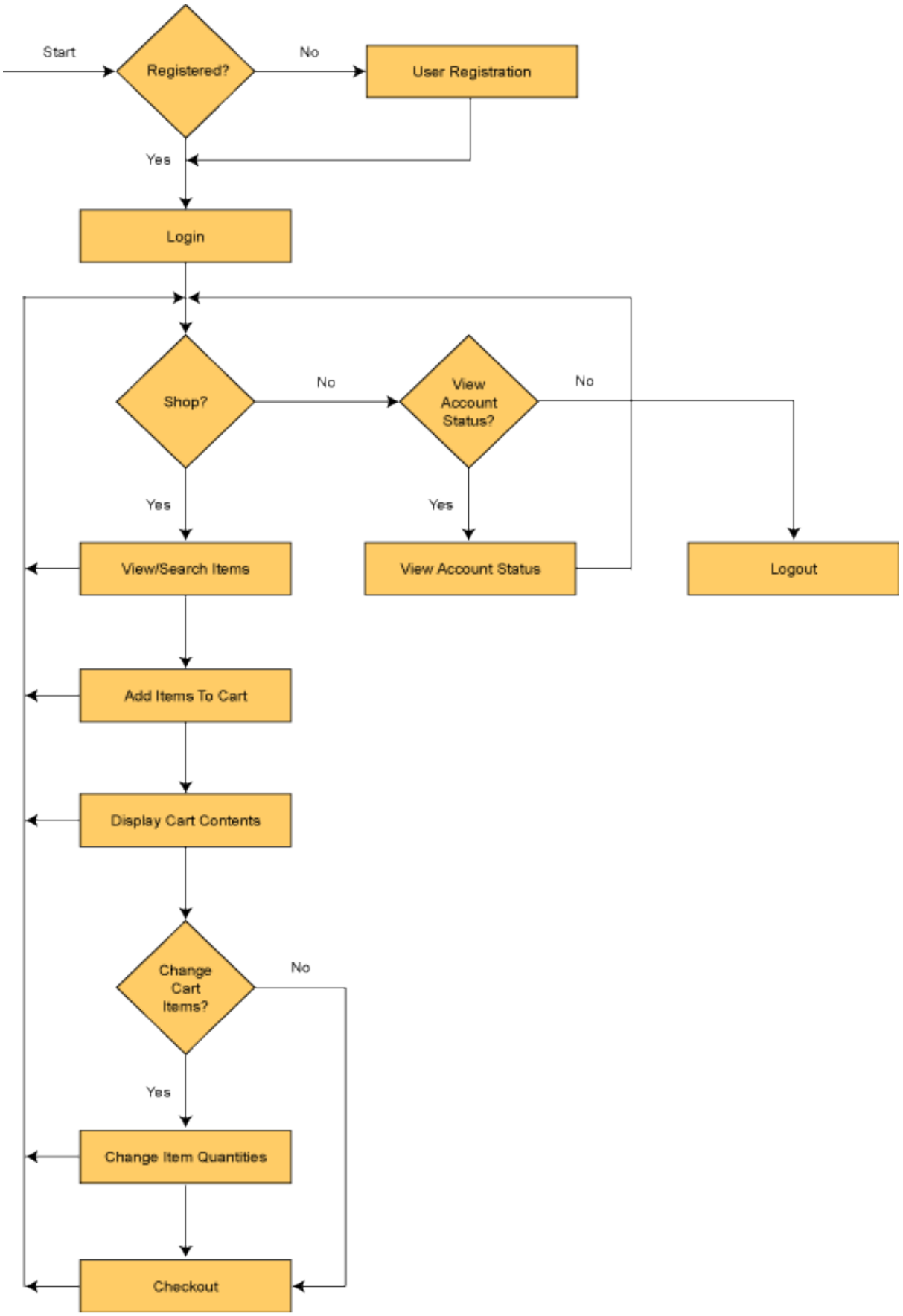


Figure 11: Customer shopping flow chat

3.4.6. ER Diagram