An Undergraduate Internship/Project on Leads E-commerce Website

By

Miraz Khan

Student ID: **1621589**

Spring, 2021

Supervisor:

Md. Asid Bin Khaled

Lecturer

Department of Computer Science & Engineering

Independent University, Bangladesh

June 17, 2021

Dissertation submitted in partial fulfillment for the degree of Bachelor of Science in Computer Science

Department of Computer Science & Engineering

Independent University, Bangladesh

Attestation

This is to certify that the report is completed by me, Miraz Khan (1621589), submitted in partial fulfillment of the requirement for the Degree of Computer Science and Engineering from Independent University,Bangladesh (IUB). It has been completed under the guidance of Md. Asif Bin Khaled. I also certify that all my work is genuine which I have learned during my Internship. All the sources of information used in this project and report has been duly acknowledged in it.

Signature	Date

Write Your Name Here

Name

Acknowledgement

I would like to firstly thank the Almighty Allah for giving me the endurance and the ability to work hard, for giving me the ability to write this report to and for giving me the chance to be able to do my internship at Star IT Limited. Also, my parents for their unconditional love and support that have sustained, nurtured, and got me ready for this challenge. I would like to thank my honorable faculty and supervisor Md. Asif Bin Khaled, Lecturer, Department of Computer Science Engineering, Independent University, Bangladesh, for his invaluable guidance, patience, time, constructive criticism and thoughtful advice regarding various aspects of my internship and preparation of this report. Then I would like to express my gratitude to Md. Rafel Hasan, CEO, for giving me the opportunity to complete my internship at Star IT Limited and Md. Naim Hosen, Senior Full stack Developer, for his guidance and support in this three months internship program. The learning and experiences I have gathered here have helped me a lot as a developer and this will surely help me in the next phase of life. I would also like to express my gratitude to all my colleagues for helping me throughout and making the Internship process so much enjoyable. Without them, this journey would have not been easy.

Letter of Transmittal

April 15, 2021
Md. Asif Bin Khaled
Lecturer
Department of Computer Science and Engineering
Independent University, Bangladesh.

Subject: Internship Report submission Spring,2021.

With due honor and respect, I, Miraz Khan, from Spring 2021, Section 10, would like to submit my Internship report. This report is written to kindly inform you that I have completed my internship program and its report. My internship was conducted from 1st March 2021 to date. I have completed my internship at Star IT Limited.
This report is based on my experience and the work I did at Star IT Limited during my internship. The primary goal for my internship was to gain experience in all the different technology related fields of the company, including research and development, documentation, software development, and to get acquainted with software development processes and practices.
Over the period of my internship at Star IT Limited, I found out that I have learned and applied a lot of new skills and technologies. The company comprises of a small team of software craftsmen who learn, collaborate, and innovate together.
I would like to thank you immensely for all your guidance and support. I hope and pray that this report fulfills all the requirements and is up to your expectations.

Sincerely,
Miraz Khan,
1621589

Evaluation Committee

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Supervisor

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Internal Examiner

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External Examiner

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Convener

Abstract

The experience and knowledge I gained throughout my internship program at Star IT Limited is written in this report.Star IT is a web development company based in Dhaka, Bangladesh. It was found in 2014. With the aim to bring a change Star IT started off with just five members. As an intern, I worked on a company project with the Full stack developer team. Most of the materials were unfamiliar to me during the first phase of the internship because I had no formal experience in the web development industry. Star IT Limited provided me with an opportunity to develop myself and was introduced to the web development process, which I can use in the future.

I was introduced to the technologies used in the Development phase during internship. I learned about useful skills and tricks for creating a fully functional and responsive website. Throughout this timeline, I gradually became acquainted with some of the Software Engineering Process and tools that are involved in taking an application from conception to development and production.

After completing all basic learning sessions, I was assigned to work on a company project in which my task was to work in a team to develop an E-commerce website admin dashboard called Leads, and the idea of the website is to create a platform for users where they can find all daily life products in one place.

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Chapter 1

Introduction

1.1 Overview/Background of the Work

Technological advancements have always had a significant impact on all aspects of human society and have affected our daily lives in a variety of ways. It is a technological breakthrough that has revolutionized our communication, entertainment, and business methods and practices over the last two decades. The Internet began as a small network of computers in the late 1960s and since then has evolved into the primary and most important link between businesses, governments, and individuals. The Internet transcends geographical boundaries, time constraints, and financial constraints. It is also easily accessible to anyone. It is a low-cost way for cutting-edge technologies, business models, and ideas to reach a large number of people, and it provides the ideal environment for entrepreneurs..

E-commerce (also known as electronic commerce or EC) is the buying and selling of goods and services, as well as the transmission of funds or data, over an electronic network, most notably the internet. Business-to-business, business-to-consumer, consumer-to-consumer, and consumer-to-business transactions are all possible.

Leads is an e-commerce site that will be able to provide every type of good and product from every industry to every consumer in Bangladesh. Any consumer with a smartphone/computer and an internet connection will have access to the world's market place at the tip of their fingers. It is a marketplace where people can buy a variety of goods from a single website. Everything from a pencil to a book to a dress to a smartphone to cars to lands is available on the website.

1.2 Objectives

The project's main goal is to ensure easy communication between sellers and customers through a user-friendly interface. We want our mobile website to contain the same content and information as our desktop website, but it should be visually optimized for a mobile screen. Our goal is to make the website responsive and to make it easy and intuitive for people to use on mobile devices. Our top priority is to protect the information of our customers and administrators. Hash encrypted passwords will be provided so that no one, not even from the database, anyone will be able to access the password.

1.3 Scopes

Features available to the user after the development of this web application:

1. Home page- The first page the user will see after visiting the website
2. Product category- User can see any product from category panel.
3. Customer Registration- Customer can register from the registration page.
4. Customer Login- Customer can login from the login page.
5. Admin Registration- Admin can register from the Admin dashboard.
6. Admin Login- Registered admin can login from the Admin dashboard.
7. Add/Remove Product- Admin can add or remove product from any category or sub-category.
8. Sort products- Customer can sort products by relevance, price.
9. Shopping Cart- Customer can add product in cart.
10. Customer address- Customer can change their address or add new address before checkout.
11. Order history- Customer can check the status of their ordered products from order history.
12. Payment- Customer can make payment from SSLCOMMERZ.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

- **CSE 203, Data Structures:** This is the most basic course that helped with the ideas of several data structures and their applications.
- **CSE 213, Object-Oriented Programming:** In the developing industry most of the data is represented as an object. It also taught how to write modular programs which made codes less repetitive and more reusable.
- **CSE 303, Database Management:** This was the first course that taught me how to design and plan a project. It covered popular planning and strategy practices such as System Development Life Cycle, Rich Picture, Requirement Analysis, Entity Relationship Diagram, Business Process Model and Notation Diagram, and many more.
- **CSE 307, System Analysis and Design:** This course gives an overview of different SDLCs and how to adopt each one of them to the project.
- **CSE 309, Web Application and Internet:** This is the course where the development of web applications was taught. It covered very important technologies that are highly in demand in the industry, such as HTML, CSS, JavaScript, jQuery, Node.js, Express.js, MongoDB.

2.2 Related works

E-valy: E-valy is one of the most well-known names in the field of e-commerce, and it is currently one of the most prestigious and leading e-commerce sites in Bangladesh. Their website accurately portrays the company's true identity.

Alesha Mart: Aleshamart.com is a new generation e-commerce site with customized facilities and services to meet all human needs. They say, they have the best technology and the best plan to serve each and every member. They have created their own delivery system, which is the first and only 24 hour delivery system in Bangladesh. They are dedicated to exceeding customers expectations and making them smile with delight. They have introduced some cutting-edge technology to help one find what they're looking for, as well as search tools that meet ones needs.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

WBS is a hierarchical structure which demonstrates a project's breakdown into smaller segments. For our project, we have produced a WBS so that our work is coordinated. WBS offers a visual of all the scopes, risks, points of communication, responsibilities, costs and guarantees that it does not skip essential deliverables. For brainstorming and collaboration, it is the ideal tool for the team. In our WBS, we have used the top-down approach.

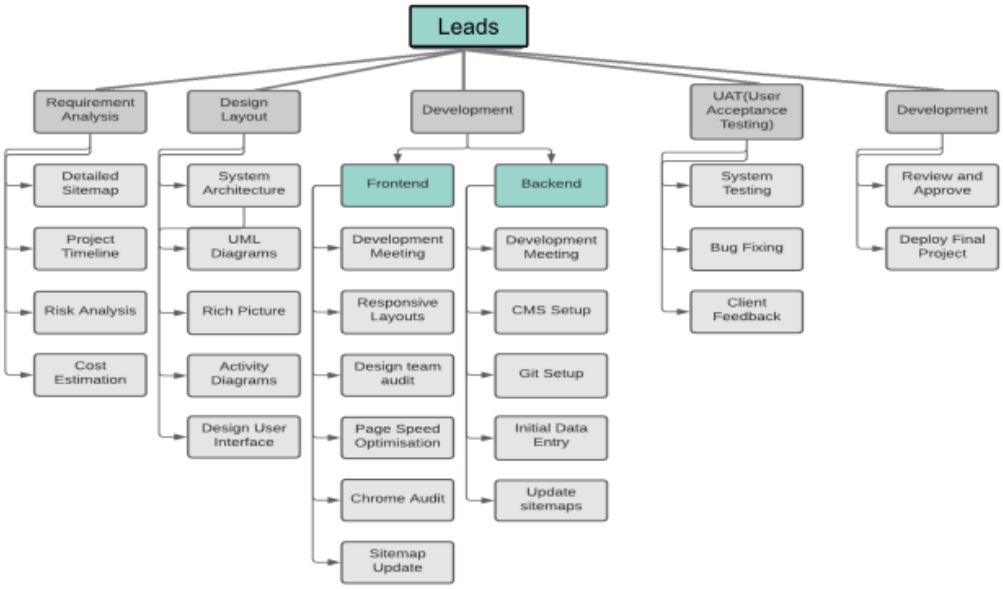

Figure 3.1: Work breakdown structure

3.2 Process/Activity wise Time Distribution

For each section that I have mentioned in my Work Breakdown Structure, time was allocated so that the project completes on time. This table below shows the time allocation of the work

Task	Days	Work Percentage
Requirement Analysis	10	7
Design Layout	10	20
Development	25	47
User Acceptance Testing (UAT)	10	15
Deployment	7	10
Total	60	100

3.1:Time distribution table

3.3 Gantt Chart

We have used the Gantt Chart to plan and schedule all the activities that were needed to be done to complete the project successfully.

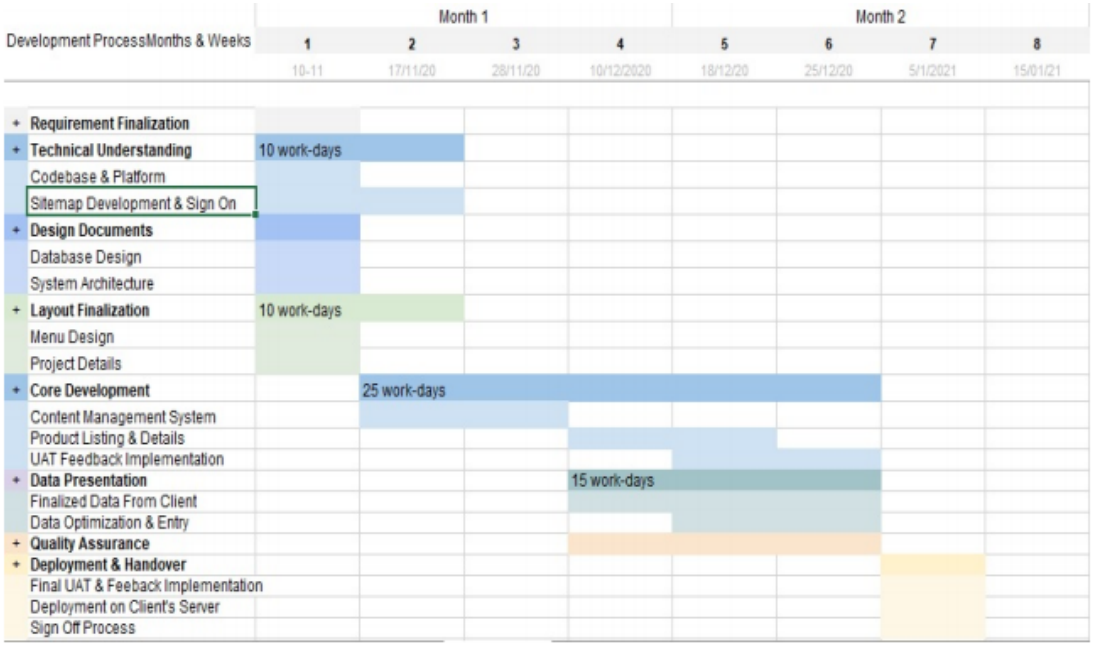

Figure 3.2: Gantt Chart

3.4 Process/Activity wise Resource Allocation

The following is a list of activities and the resources required by those activities, taking both resource availability and project time into account:

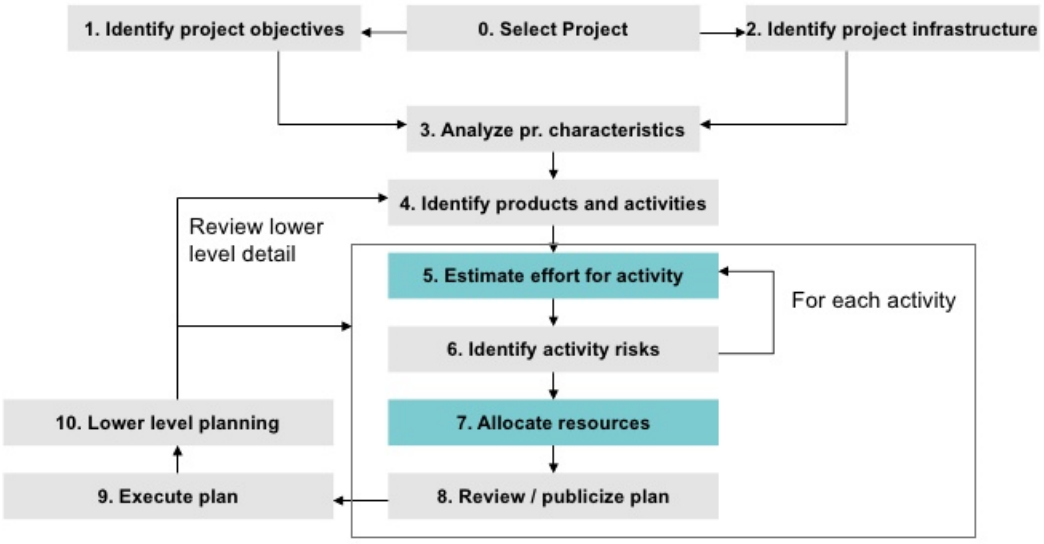

Figure 3.3: Resource Allocation

3.5 Estimated Costing

The cost was calculated on the basis of the features the client demanded for the website. It depends on the size, requirements, functionalities and design of the website. This includes pre-designed themes, logo design cost, the cost for home page sliders, search engine optimization, chat option, social media connection, SSL certificates and many other tools that were used to build this website. The cost of developer and resources used were also taken into account. The approximate cost estimated was Tk.2,50,000. If any additional service support is required within 1 year of deployment, then some additional charges will be taken for hosting and domain.

Work Distribution	Costing
Design	3,00,000
Programming	1,60,000
Integrations	40,000
Domain and Hosting(Annual)	45,000
SEO(Annual)	1,00,000
Total	6,45,000

3.2: Estimated Costing Table

Chapter 4

Methodology

A website is a collection of interconnected, publicly accessible Web pages with a single domain name. Individuals, groups, businesses, and organizations can create and maintain websites for a variety of purposes. The World Wide Web is made up of all publicly accessible websites.
We are surrounded by new technologies on all sides, which help in the development of even more advanced technologies. One such development is the Agile methodology, which was created specifically for e-Commerce websites, apps, and software.

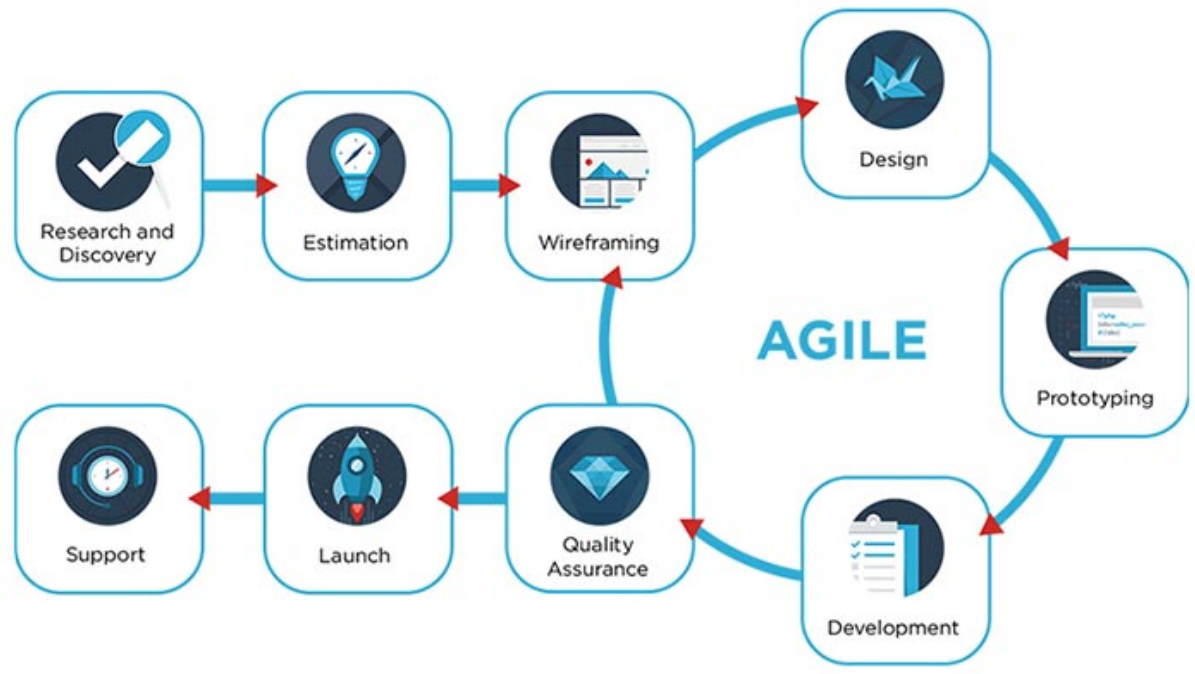

Figure 4.1: Agile methodology

In my project I have used Agile methodology. Its goal is to promote automation and quick delivery, as well as coordination between development and operations and product quality improvement through quality control testing.[1] My project's Agile methodology is concerned with the flow and performance of the entire e-Commerce system by utilizing development and operations to create value streams within the business.[2] The model also gives clients a real behind-the-scenes look at the project, which helps developers learn about the clients' likes and dislikes. It enabled me to make the changes I needed at the time and reallocate my resources as needed. Agile methodology and e-Commerce have long been thought to be a perfect match, and there are numerous examples to back this up, including the following advantages that I have come across

- Increased speed
- Keeping track of market sentiment
- Product quality that is higher
- Adaptability
- Risks are reduced.
- Testing is done on a regular basis and is very thorough.
- Customers who are happier

Chapter 5

Body of the Project

5.1 Work Description

The purpose of Leads is to facilitate online trade easily for both sellers and buyers. My work was to build an e-commerce website for Leads from the scratch. I have 10 used HTML, CSS, JavaScript, Node.js, React.js, express to build the website. I have used MongoDB as the database of the system. For the back-end work I have used Postman software and for the database I have used Robo3t.

5.2 System Analysis

5.2.1 Six Element Analysis

	Human	Non-computing hardware	Computing hardware	Software	Database	Communication
Create Products & Offers	Admin	N/A	Computer, Mobile	Web browser	RDBMS	WAN/LAN
View Products & Offers	User	N/A	Computer, Mobile	Web browser	RDBMS	WAN/LAN
Update Products & Offers	Admin	N/A	Computer, Mobile	Web browser	RDBMS	WAN/LAN
Delete Products & Offers	Admin	N/A	Computer, Mobile	Web browser	RDBMS	WAN/LAN
Place order	User	N/A	Computer, Mobile	Web browser	RDBMS	Internet
Manage Order	Admin	Record books	Computer, Mobile	Web browser	RDBMS	WAN/LAN

Figure-5.1: Six Element Analysis

5.2.2 Feasibility Analysis

Because a feasibility analysis assesses a project's chances of success, perceived objectivity is a critical factor in the study's authenticity with potential investors and lenders. It determines whether the project is morally, theoretically, and financially viable, as well as whether it is worthwhile to invest in. For this project, four feasibility studies are being considered.

- Economic Feasibility: In this section, the cost and benefits of this website have been considered. There are no hidden costs for users on the website. When a user visits the website and decides to place an order, they hope to profit from it.
- Feasibility: Before moving forward with this project, all legal constraints were considered, including data protection acts, social media laws, e-cab laws, and zoning laws, to ensure that it would not face any legal issues in the future..

- Operational Feasibility: The ongoing pandemic and current economic situation make the website very feasible, as purchasing any product from a market or shopping mall is now extremely risky. Visitors and potential buyers can now easily find all of the information they need to make an informed purchase with the help of this website. Furthermore, the product details meet all of the customer's requirements.
- Scheduling Feasibility: It is critical to complete a project on time in order for it to be successful. The project was completed on schedule, and all of the assigned tasks were completed on time.

5.2.3 Problem Solution Analysis

There were a number of problems that were encountered while completing the project and they were solved accordingly. Some of the problems were –

1. Login/Signup Authorization: Setting up unique key for signed up users and admins was a problem which was solved by using JWT token.
2. Hashing Password: Hashing password in the database was a challenge which was solved by using bcrypt hash password.
3. Responsive Website: Making the website responsive for all devices was a great challenge. This problem was solved by using Bootstrap5 and custom CSS.

5.2.4 Effect and Constraints Analysis

This website helps the user to buy and sell products and daily necessary needs remotely. Users are able to look at the various offers and campaigns, buy and sell products from campaign, offer regular shop. However, our system has some limitations. We are still thriving to bring out more changes and add more features to our website that would help and encourage more and more people to start this practice of buying products online, rather than going around from place to place to look for your desired product. This will not only make people's lives easier but will also be a big advantage during the ongoing pandemic.

5.3 System Design

5.3.1 Rich Picture

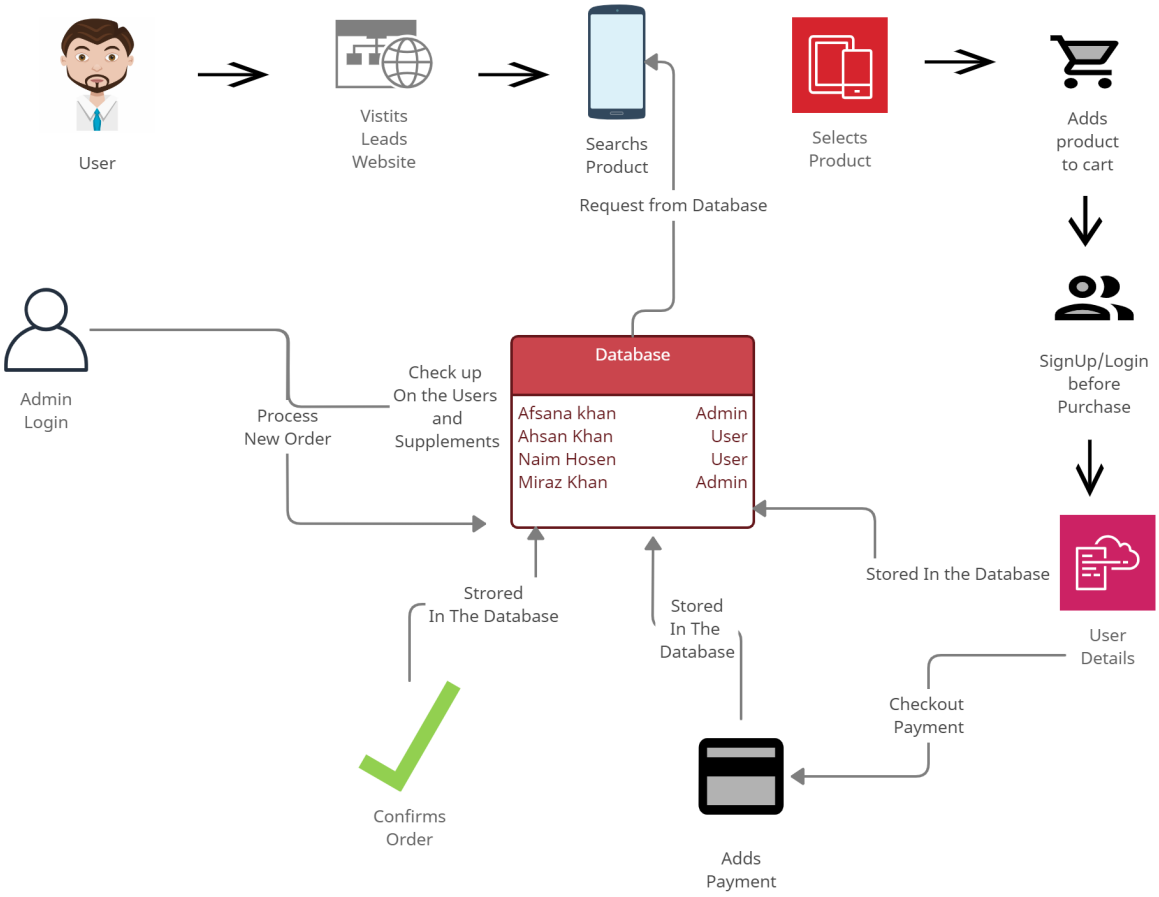

Figure-5.3: Rich Picture

5.3.2 UML Diagrams

The activity diagram is an important UML diagram that shows the ow of one activity to another. The activity diagram of the user and admin help to visualize the flow of their activity in graphical form.

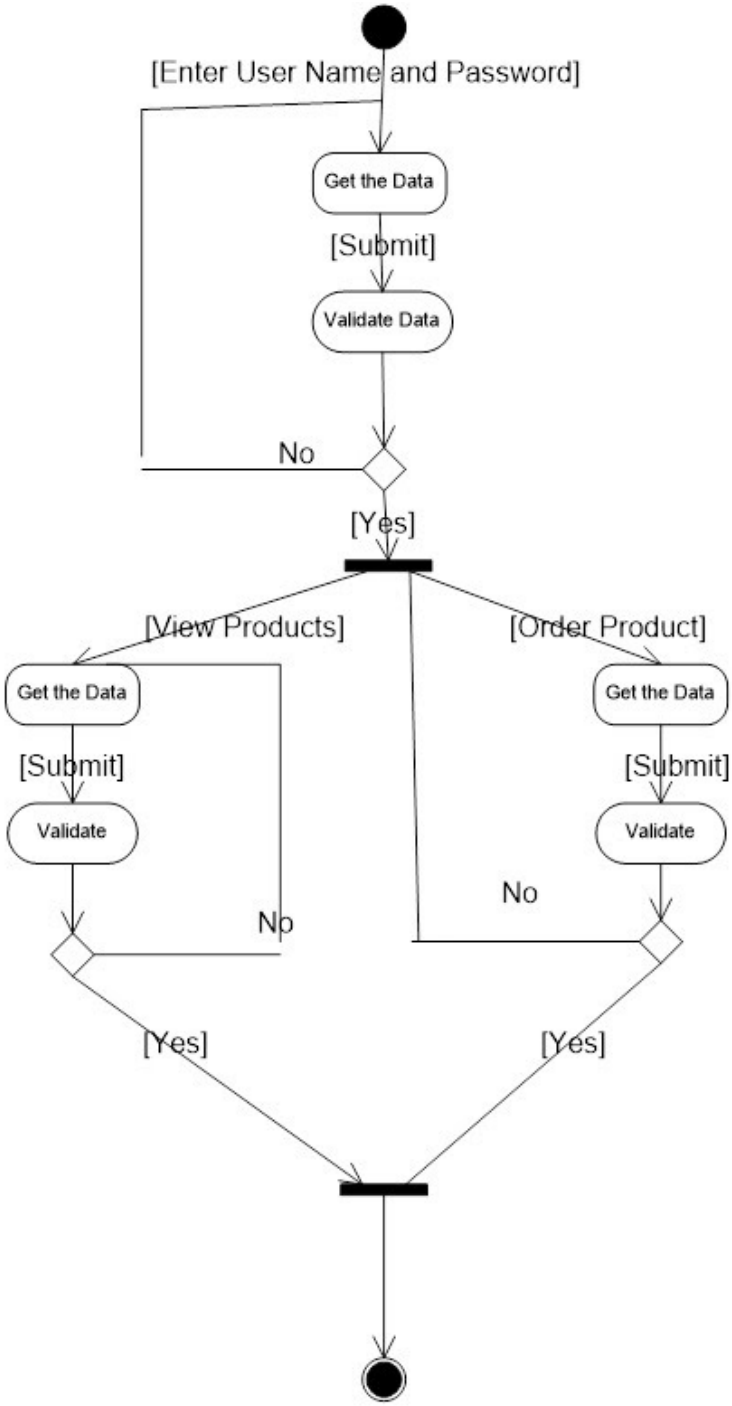

Figure-5.4: Activity Diagram of User

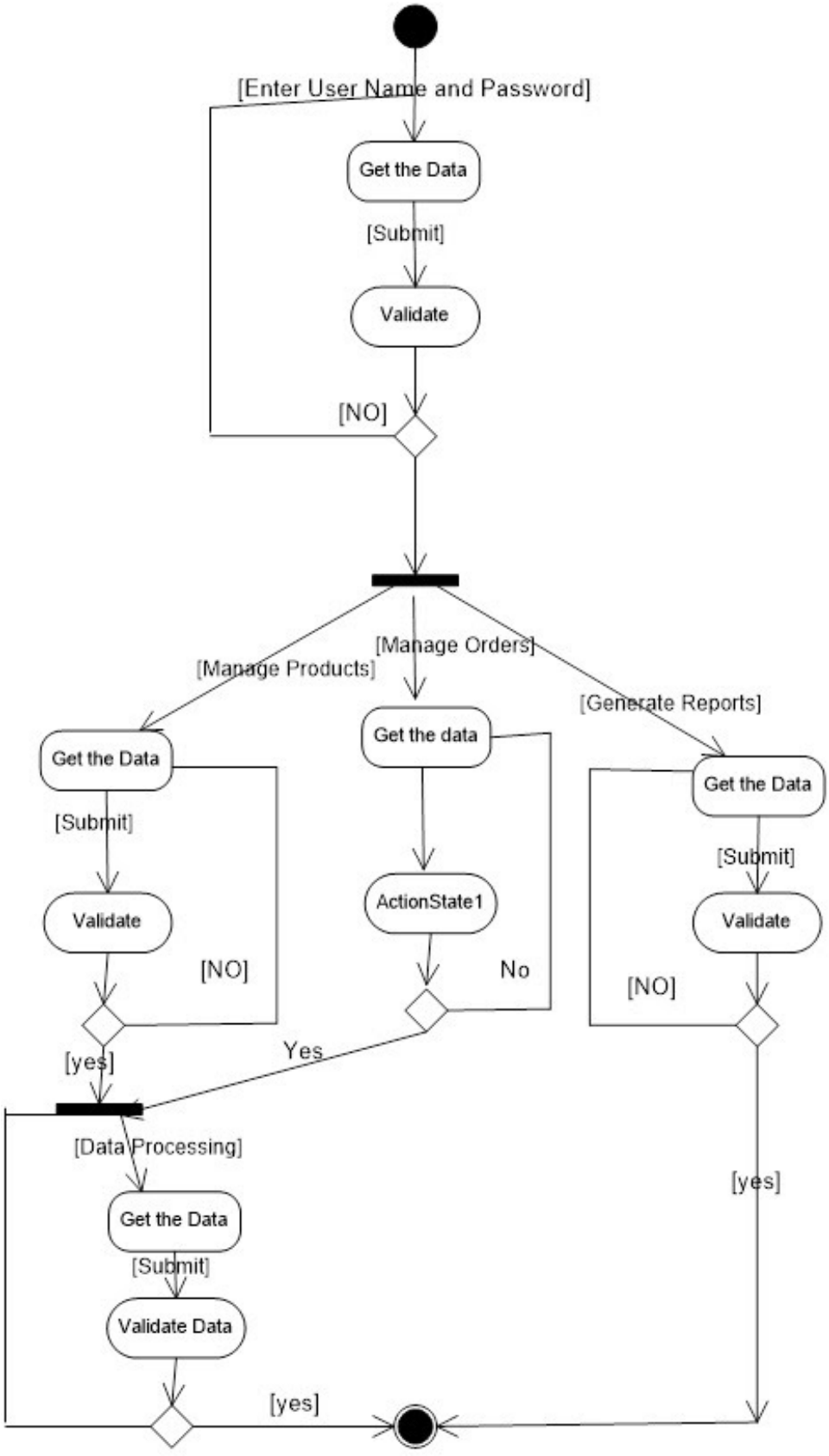

Figure-5.5: Activity Diagram of Admin

Use-case Diagram: The use case diagram represents the functional requirements of the system. It shows the actors, cases, communication links, system and relationship.

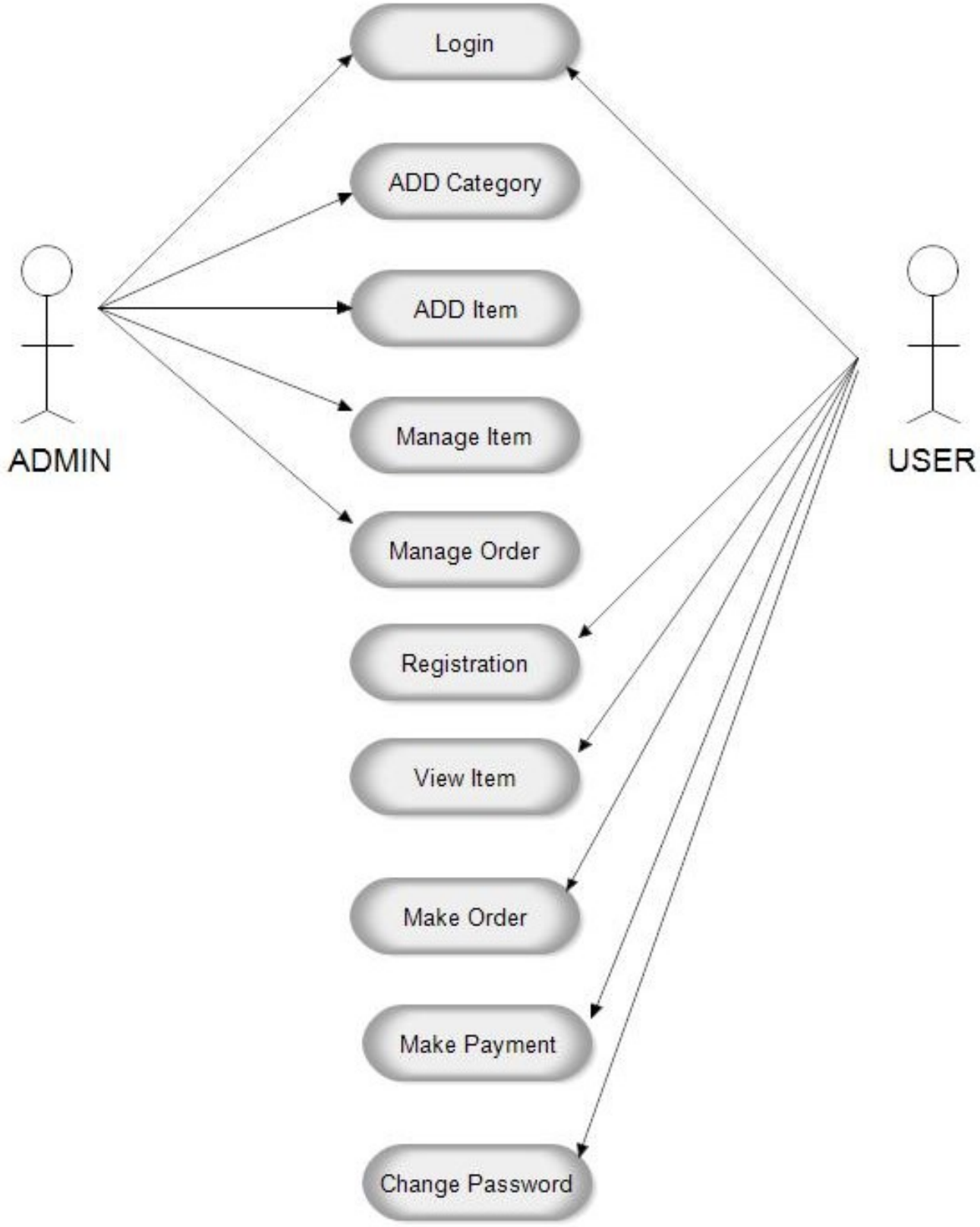

Figure-5.6: Use Case Diagram

5.3.3 Functional and Non-Functional Requirements

Functional Requirements

- Third-Party Integration: The website will be linked to the Odoo ERP system as well as the SSLCOMERZ payment system. In the store, Bkash, Nagad, Rocket, Net Banking, Master/Visa/American Express cards will be prioritized.
- Mobile Friendliness: PDP should be adapted to the screens of Apple 5s and above after researching the target audience and learning about their devices.
- Product Attributes:Simple and bundle product types will be supported on the website. Zooming in on product images on the product detail page should be possible.
- Order Checkout Flow: The following order statuses must be displayed on the website: pending, confirmed, processing, shipped, delivered, and cancelled.
- Social Sharing: Our product information should be shared on social media platforms such as Facebook, Instagram, Pinterest, and LinkedIn. Facebook user comments should appear in the "Customer Reviews" section of the product detail page.

Non-Functional Requirements

- Usability: Without contacting us, a customer should be able to find the right product for them, understand what problems it solves, and make a purchase.
  No multistep checkout: Users must go from PDP to the "add to cart" button in one step.
- Security: Only the Admin has the ability to assign roles and change the system's access permissions.
- Maintainability: The website will eliminate all back-end complexities, allowing in-house engineers to make system changes in the future.

5.4 Product Features

Here I have included all the input and output features a user will receive from this project.

5.4.1 Input

Admin Sign In

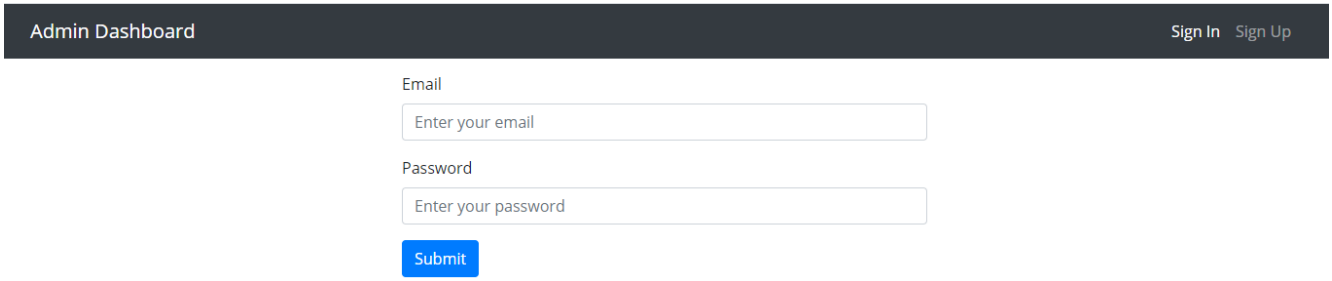

Figure 5.1: Admin Sign In

Admin Sign Up

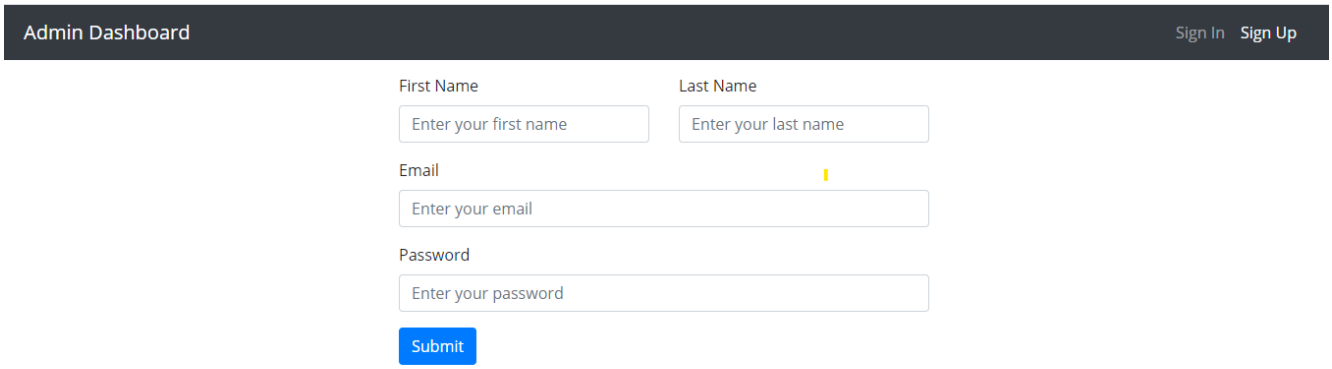

Figure 5.2: Admin Sign Up

5.4.2 Output

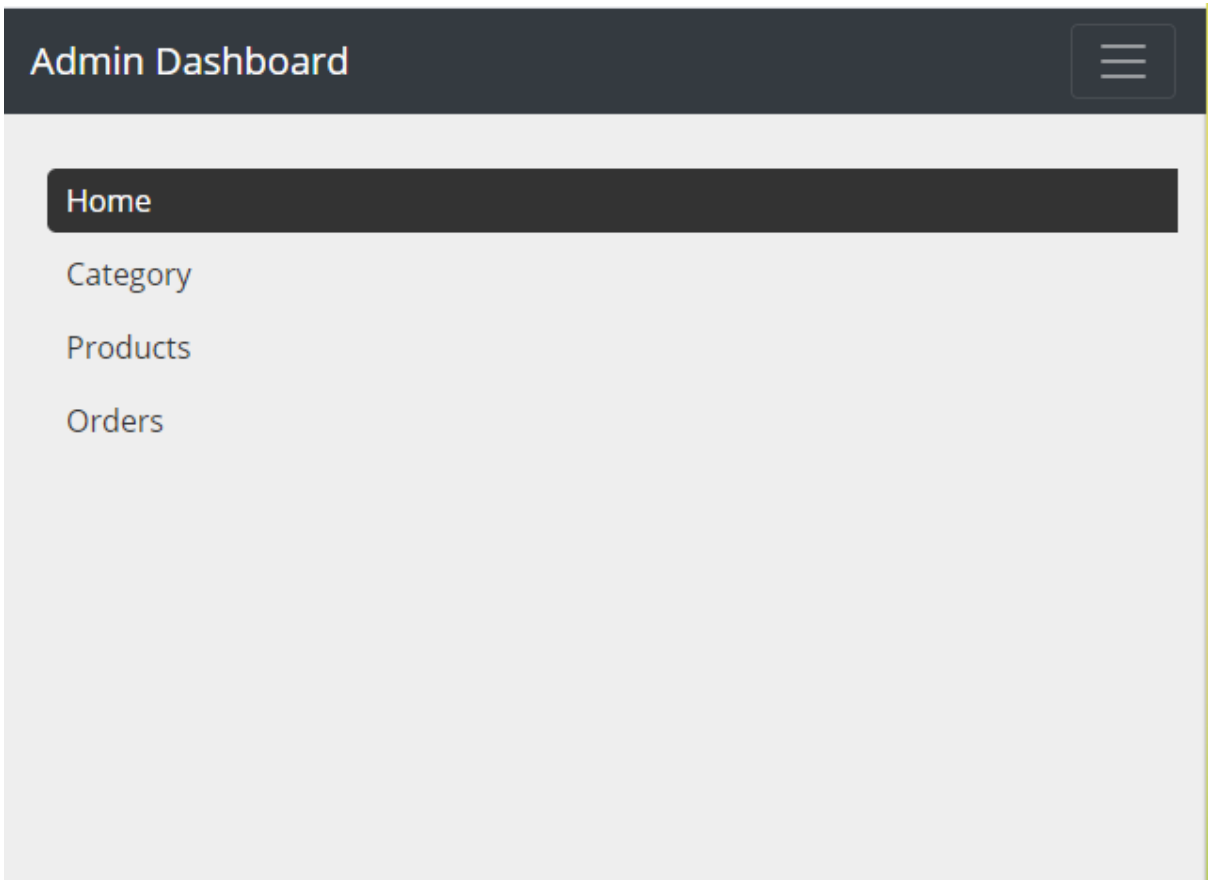

Figure 5.4: Admin Dashboard

5.4.3 Architecture

To develop this project, MVC pattern has been used.The model contains a function which is used to insert, retrieve and update information from the database. The view contains the data that is presented to the user. The controller is used to connect model and view to process HTTP access and this generates a web page. Controller receives all the requests and passes it to the model and view. When a user visits the website it views information.

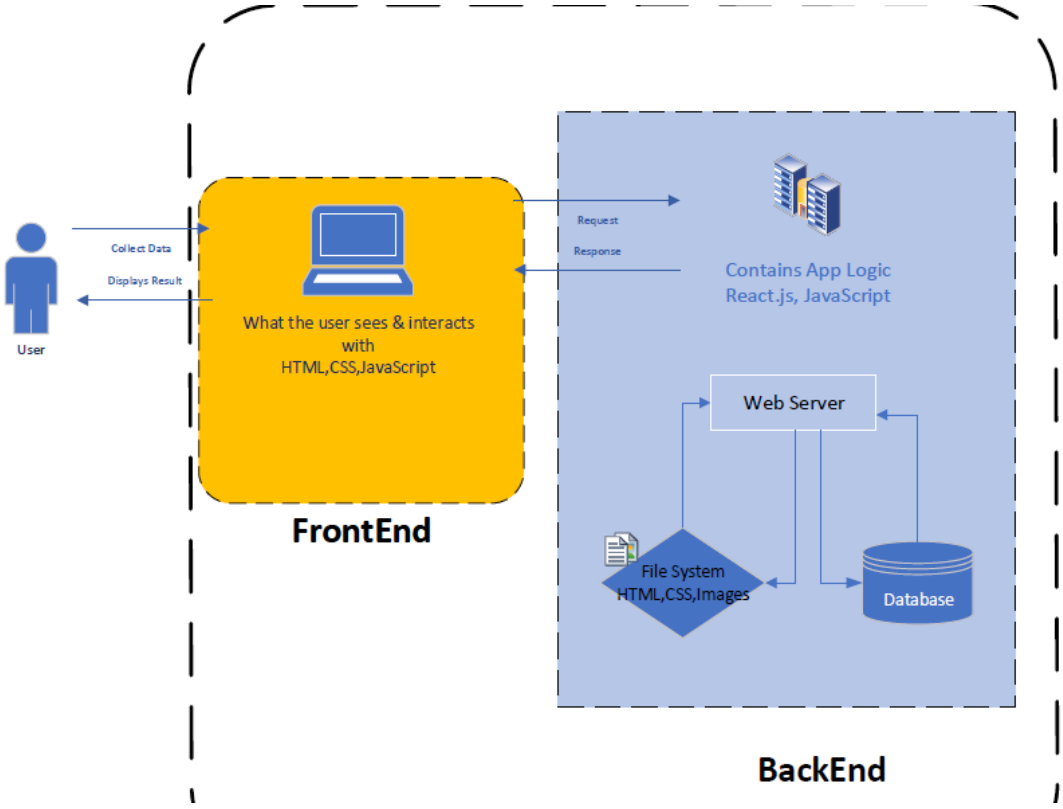

Figure 5.5: MVC architecture

Chapter 6

Results & Analysis

Leads website was solely made to make the whole purpose of buying daily products much more convenient for buyers. The main goal was to incorporate all products under one site so that prospective buyers can get all the necessary items easily without the hassle of personally going and buying from market. This chapter contains screenshots of the website so it can be seen about how the actual website looks like:

Admin Panel: After logging in this dashboard appears where admin can go to category, products and orders page.

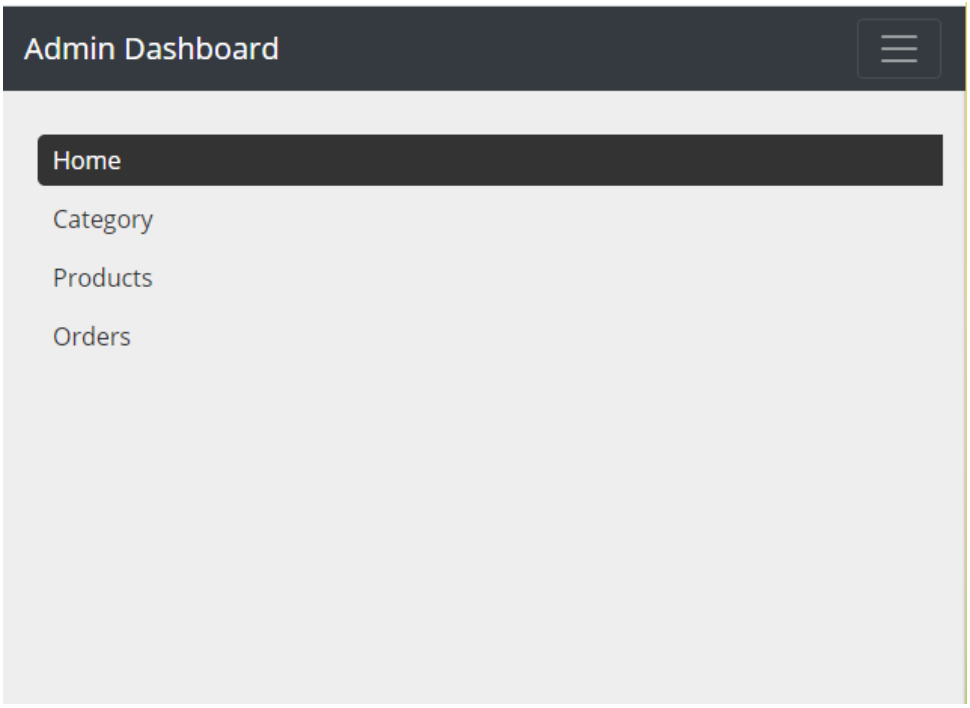

Figure 6.1: Admin Panel

Category: In this page Admin can see all the categorized products and make changes.

Figure 6.2: Category

Add Category: Admin can add new category by clicking on Add. After adding category it will be stored in database and admin can view it in category page.

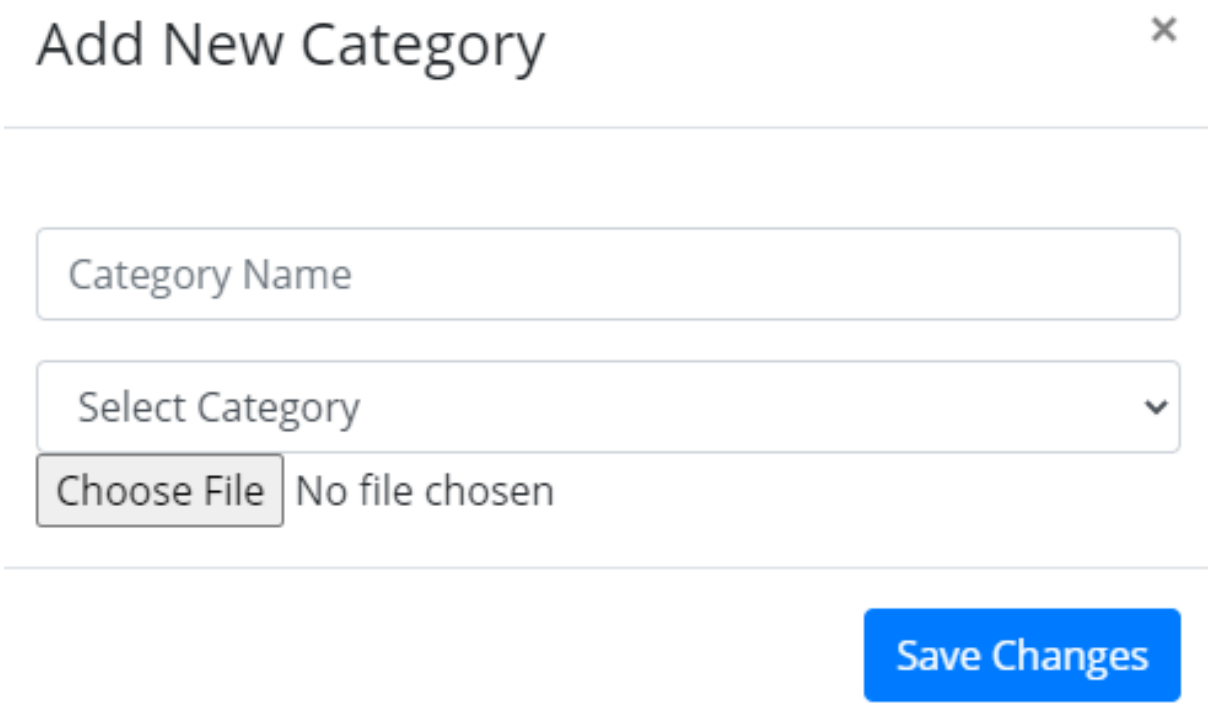

Figure 6.3: Category Modal

Products: In this page Admin can see all the product list with category, quantity and description.

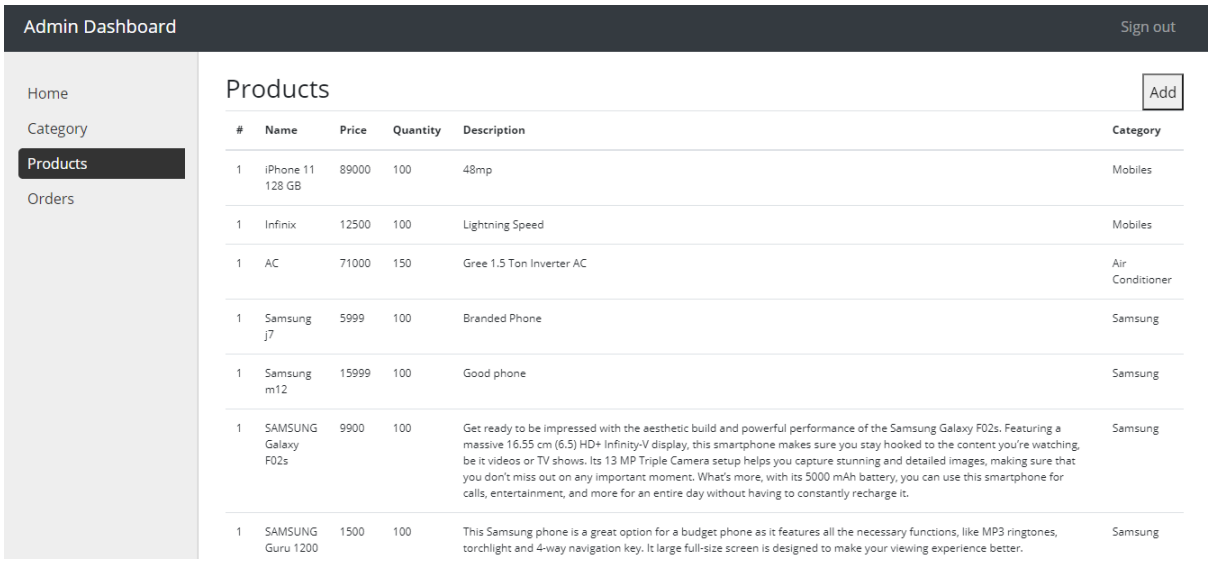

Figure 6.4: Products Page

Add Product: Admin can add new product by clicking on Add. After adding product it will be stored in database and admin can view it in products page.

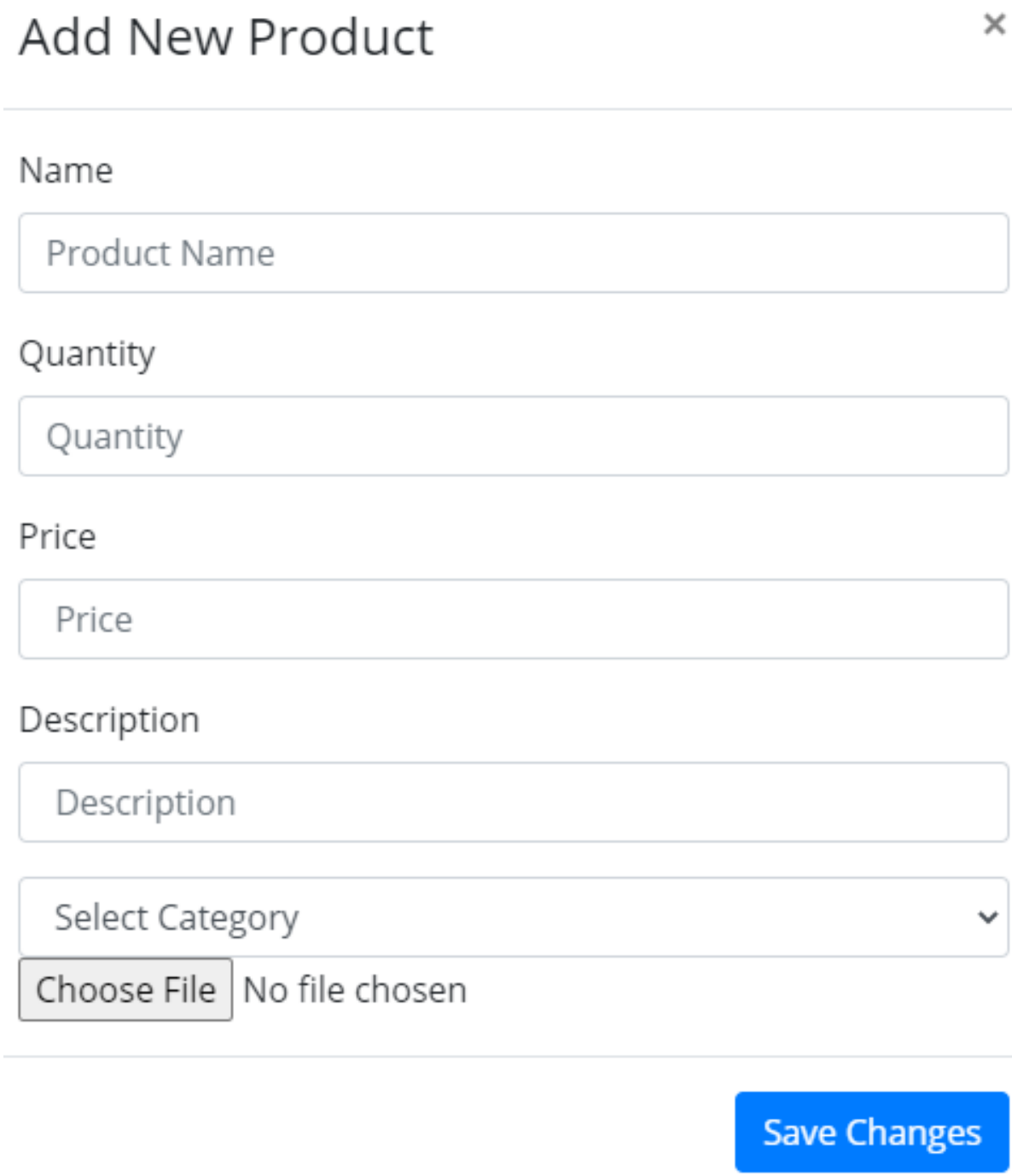

Figure 6.5: Products Modal

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

The sustainability of the product refers to its ability to be maintained and updated.In the modern world, every application or website being released needs to be maintained and continuously updated for its user base.

The website has been made sustainable by making these minor yet significant changes. Image optimization to reduce the file size: the maximum number of images per section has been kept constant to reduce load time. The size and resolution of the image have also been kept under consideration so that it does not burden load time and energy consumption. Easy navigation system- We have kept the navigation system as simple as possible so that users get the maximum ease while surfing through the website. All unnecessary data deleted- All the data that is not used by us anymore including all the unwanted themes and plugins, old post revisions, unused media, categories and tags, spam comments, broken links, etc. were deleted. We plan on carrying out this exercise once a year to free up the database.

7.2 Social and Environmental Effects and Analysis

Social Effect - The main goal of the website was to incorporate all the products of many companies under one site so that people could get all the information easily even before personally visiting the market. The website made the complicated task of going to market or shopping mall very easy.[3]

Environmental effect- The website has acted as a boon during the global pandemic as it's not safe to travel like before anymore. People need to be more careful and the website allows people to buy any items, from grocery to cars within the comfort of their homes rather than going out in this pandemic.

7.3 Addressing Ethics and Ethical Issues

In the world of smartphones with so much data collection, hacking, cybercrime, etc. there are some unspoken rules and ethics guidelines that need to be followed when working on creating and releasing an website.[4] The developers made sure there was no breach of conduct and all the points were taken into serious consideration. Some of them are as follows:

Collecting only relevant User data: The website only collects user data that is needful, like the name, email address, phone number. No other extra data is taken.

Data Storage Security: Only the lead developer has access to the backend server and database. Since they are hosted in the cloud and can only be accessed via the lead developer's login credentials; the data stored can be deemed safe and secure.

No Discrimination or Favoritism: The website does not discriminate of any kind based on race, sexuality, gender, religious beliefs, color, language, political or other opinions, national or social origin, property, birth, or another status.

Chapter 8

Lesson Learned

8.1 Problem faced during this period

It was extremely difficult for me to cope with all of the barriers and challenges that I encountered throughout my internship. First and foremost, getting an internship during this pandemic, when everyone has put their lives on the line, is not an easy task. After a few weeks of working under a tarp over there,I had to take a leave of absence due to some personal family issue. However, when I returned, when it came to the technical side, there were some obstacles I had to overcome in terms of learning and productivity, as this is not a typical project to build and takes a long time consuming. The information I needed from the internet was extremely difficult to come by. Because I was not given any data or a demo for the project, I was unable to do my job.

8.2 Solution of those problem

By God's grace, everything appears to be going swimmingly throughout this journey. I successfully completed my internship with a reputable and well-known company. As the day progressed, I gradually became more accustomed to the work's flow and the entire burden of responsibility During my illness, I worked solely at home to complete my tasks. In terms of learning, I've learned a lot. I'm learning a variety of programming languages to aid in my development as a Front-End Developer. On my own, I've tried harder to improve my project. That also reflected on my work, which appears to be extremely productive and valuable. And I successfully completed the project as well as the report to present to my internal supervisor within the time frame.

Chapter 9

Future Work & Conclusion

9.1 Future Works

As the project is still evolving, the company plans on adding a lot more features to the website to make it even more helpful for people and to make it look more appealing. In my opinion, some more backend developers can be hired for the project to add some more intrinsic features to the website.

9.2 Conclusion

It was a wonderful experience working with Star IT family as an intern. During the internship period, I have learned and applied a great deal. I was introduced to new cutting-edge technologies and I was pushed to do even better. I have also learned a great deal about different development styles. I was pushed to adapt to changes rapidly and come up with logical solutions. During my project, I cooperated with my mentors and seniors to solve the challenges faced. Despite their workload, my supervisors were always there to answer any queries and help me settle nicely. This internship opportunity has paved the way to investigate the development environment and marketplace. I would like to appreciate once again everyone who has made my life as an intern such a great experience.

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