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An Undergraduate Internship/Project on "UltraShop"

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An Undergraduate Internship/Project on Topic

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

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Attestation

I, Anshara Chowdhury, am certifying that nothing written in this project is plagiarized. Any resources used here are mentioned in the bibliography section of the report. This report is required for the fulfillment of the internship course for the Bachelor of Science in Computer Science degree at the Independent University, Bangladesh. This document shows the work I did and the whole experience gathered during my time as an intern at ADN Diginet.

19 October, 2023

Signature   Date

Anshara Chowdhury

Name

Acknowledgement

First of all, I want to express my gratitude to Allah for keeping me well and for me the capacity to work hard and maintain my strength through these trying times. Next, I want to thank my parents for shaping who I am today and for their unwavering love and support through both good and difficult times. The lecturers who really helped me learn a lot when I was earning my CSC degree are the next people I want to thank since their expertise has helped and will continue to benefit me in my work. IUB in particular deserves my gratitude for giving us a taste of corporate life before we fully immersed ourselves in the business world since this experience offers us a sound foundation. I also want to thank my coworkers and supervisors for being there for me when I needed them and for helping me through this internship. Finally, I want to thank myself from the bottom of my heart for getting through it all.

Anshara Chowdhury

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Dhaka, Bangladesh

Letter of Transmittal

September 30, 2023

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Subject: Documentation of my work progression on "UltraShop" during my time at ADN Diginet.

Greetings,

It gives me great pleasure to offer this documentation, which serves as a record of my work and involvement in the "UltraShop" project with ADN Diginet. This report's aim is to go over the activities I took part in, during the internship requirement for the Bachelor's degree, throughout the internship time, for Independent University, Bangladesh. I want to take this chance to thank you for your time, knowledge, assistance, help and direction. I put forth a significant amount of effort in creating this report and I sincerely hope that this report's goal has been achieved.
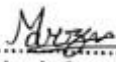
Thanks & Best Regards,
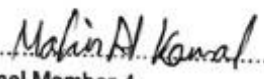
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Evaluation Committee

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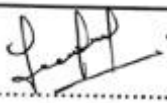Panel Members

Panel Member-1 Name: Sanzar Adnan Alam	Panel Member-2 Name: Mohammad Motiur Rahman

Panel Members

Panel Member-3 Name: Md. Mahmudul Peyal	Panel Member-4 Name: Mahir Al Kamal

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Abstract

My internship journey started with ADN Diginet, where I worked as a trainee under the Data Analyst division where I worked with another team mate. There I worked on one project named "UltraShop" where we were mainly assigned as the backend team. In this file, I will mainly talk about the overall view of this project.

UltraShop is an e-commerce website which will open a lot of opportunities for business that want to operate online and also customers that want to shop services and goods without stepping outside of the house. This modern e-commerce shop website aims to deliver a seamless and intuitive online shopping experience to customers. The website provides a diverse array of products and services, supported by secure payment options and efficient delivery methods. With a user-friendly interface and personalized features, the platform aims to cater to a broad customer base and create a reliable and engaging online marketplace. The website will also have product recommendations for easier shopping. The Model-View-Template framework from Django is used to build the system's architecture. The front end and validation use HTML, CSS, JavaScript, and bootstrap. We have utilized a SQLite database as the backend. The project's successful completion will help both the buyers and sellers perform a hassle-free experience of shopping.

During my time at the internship, I have worked on projects concerning data analysis as well as software developing and I actively applied these skills to this project and consistently demonstrated my ability to leverage Django to build a dynamic web application. This hands-on experience allowed me to develop a strong foundation and practical proficiency in these technologies.

Keywords: Django, Data Analyst, UltraShop

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Chapter 1

Introduction

1.1   Overview/Background of the Work

As technology is advancing, humans are trying to make every single work as less human dependent as possible. At the same time, businesses having been trying to incorporate technology with marketing as there have been fruitful results in doing so. The first step to it is automating a business and that starts with introducing the business to the online world, so that it is available to anyone and everyone who wants to access the services it provides even after office hours. And for me, it started with the "UltraShop". In this chapter, I have talked about the problem statement.

1.2   Objectives

Customers deserve a hassle-free and effective online purchasing experience in today's fast-paced environment. There aren't many Bangladeshi online stores that offer a wide variety of goods and services. This is exactly what we hope to offer with our initiative. The issues that we had to deal with in order to develop this solution are given below:

-Provide a Vast and Diverse Product Catalogue: Ultrashop strives to offer a vast and varied product catalogue with categories and sub-categories of each product for simpler browsing and a quicker purchasing experience.

-Improve User Experience: In order to keep current clients and draw in new ones, we want to design a user experience that is simple to navigate through, quick to find what you're looking for, and safe.

-Streamline Order Management: Effective order processing, order monitoring, and customer communication are crucial because they help buyers manage their businesses.

The significance of this project resides in its ability to be adaptable enough to serve as the source code for any online e-shop that the corporation chooses to use.

1.3   Scopes

The scope of the project was to fulfill the assigned duties within my internship period as this was a very distributed project.   After all the requirements are met, it will be passed to the ADN Diginet to check before deployment.

The project was broken down into many modules but I will just mention the ones I have worked on below.

1.3.1 Cart

When customers find a product they want to buy, they can put it in their cart, like a virtual cart, to keep track of all the items they want to buy. I have used the shopping-cart package in Django to implement the cart system. In this module, products can be added to cart using "Add to cart" button and when the user goes to check the cart, they can see the product they added with the total quantity,

total price and the unit price. The cart can only be checked if the user is logged in. User can increment, decrement, delete or completely clear the car if they want.

1.3.2 Order History

The user can check what orders have been placed using the "Your Order" button. For every single user, the order list will be different as the data fetched from the database will be specific to the user that is logged in.

1.3.3 Product List

There will be a product page where products along with categories and brands will be shown. In this page, the user can also investigate the details of a specific product by tapping the product detail button and then if the product is desired, they can add to cart.

1.3.4 Checkout Information

If the user wants to buy the products in the cart, then the user can do so by clicking on the "checkout" button and filling out the necessary information.

1.3.5 Contact Us page

In the contact us page, the user can find the google map location along with the address and text boxes to send any queries which the user is curious or interested to know about.

1.3.6 Search Bar

The search bar will filter products from the database and only return products that matches with the query (name of the product) that is searched for.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

Some of the notable courses I have done so far in IUB that aided me in my journey throughout ADN and this internship project was:

- Web Application and Internet: The projects done in this course helped me build a web application using Django when developing "UltraShop" e-commerce website.
- Database management: The concepts and techniques used in this course covered in this course proved useful when creating a mind-map for how to go on with this project and how to design the ideas in the head and make use of ERD's to make meaningful relation.
- Probability and Statistics: Other than this project, the small projects that we worked on during our internship heavily used concepts of statistics for numerous data analysis like standard deviation, mean, median, mode, z-value, and significance of all these terms.

- Data Structure: For efficient algorithm development, we used concepts like trees, stacks, efficient searching algorithms during the other small projects and this project intensively to maximize the output and minimize running time.

2.2   Related works

There are a lot of e-commerce website around the world providing fantastic service to their customers. Alongside that, it has been proven that due to this development, both end parties had something positive to gain. To provide with the biggest success as an e-commerce website in Bangladesh, DARAZ is a prime example. It has taken full advantage of technology and even integrated AI technologies to manipulate its data into bringing the best outcome of the collected data. Example of this is virtual try-on in many websites that give buyers the experience of shopping offline as they can let oneself know how well the product suits them. Data Analysis has come into play in all this by maximizing profit by correct analysis of data. What sells best, what things people buy together, what pairs well with another, what type of users like what, all these questions have been answered using the help of data analysis and one example of that is Product Recommendation in many E-commerce websites.

Below is a paper very relevant to my project:

- Design and Development of an E-Commerce System in a Rapid Organized Way [1] :

  The paper discusses the design and development of a B2C e-commerce system using Django, a Python web framework. It emphasizes the importance of rapid development, security, and aesthetics in creating a successful e-commerce platform. The paper reviews key stakeholders, feasibility analysis, and requirements for the system. It highlights the choice of Django as the development framework due to its stability, security features, and support for machine learning tasks. The paper provides insights into the frontend design, emphasizing the need for visually appealing, responsive, and fast-loading web pages. It also touches on backend development, user authentication, cart management, and order tracking. The deployment, testing, ongoing support, and marketing aspects are discussed as essential elements in the development process. Overall, the paper outlines a comprehensive approach to creating a robust and efficient e-commerce system.

Chapter 3

Project Management & Financing

3.1   Work Breakdown Structure

A Work breakdown structure is way of distributing work based on the methodology that is chosen for the project. It helps to define the specific phases and the all the steps in those phase. A large chunk of work is broken down into smaller portions for easier definition.

For our WBS, we took the top-down approach. A short description of the how the stages are implemented is described below.

1. Requirement Analysis:

   For our requirement analysis, discussion was done with the supervisor of our respected company and all the requirements were listed down and then analyzed using various diagram aided analysis which helped to get the proper view of the end goal.

2. Code Development:

   Front-end was done before the backend as it the better way to move forward. After each update, meetings were done online to check the progress of the backend team as the work of the next person depended on a lot of the efficiency and success of the work of the previous person.

3. Testing:

   All the scopes that were mentioned above were the requirements specifically for me, so my part of testing was to check if all the features are working correctly and if data is being saved and fetched properly.

4. Deployment:

   After meeting all the requirements, the site will be deployed per company's wishes.

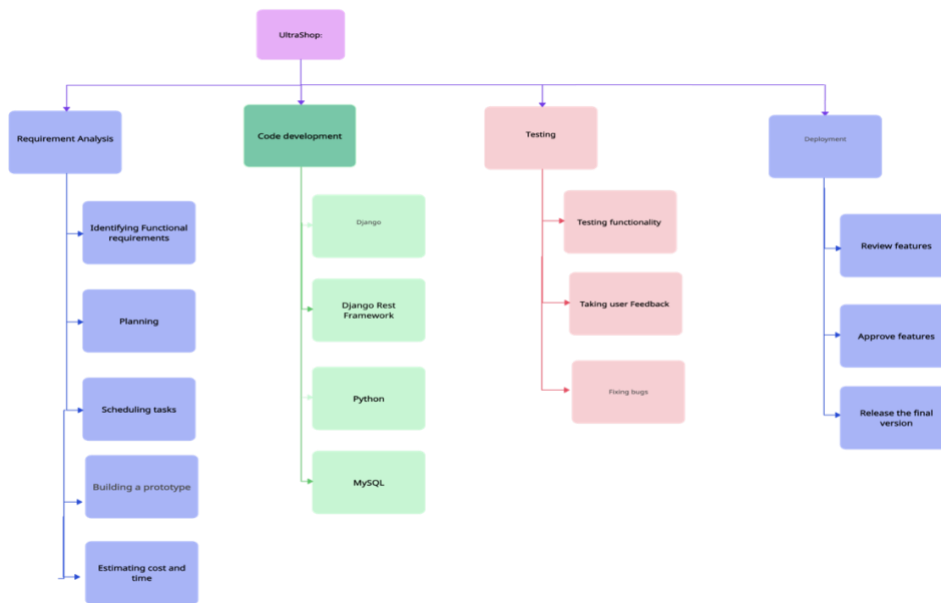The activities below were done in an incremental nature:

Fig 3.1: WBS for Ultrashop

3.2   Process/Activity wise Time Distribution

The time distributed to each work is given below:

1. Requirement Analysis – 4 days
2. Development - 15 days
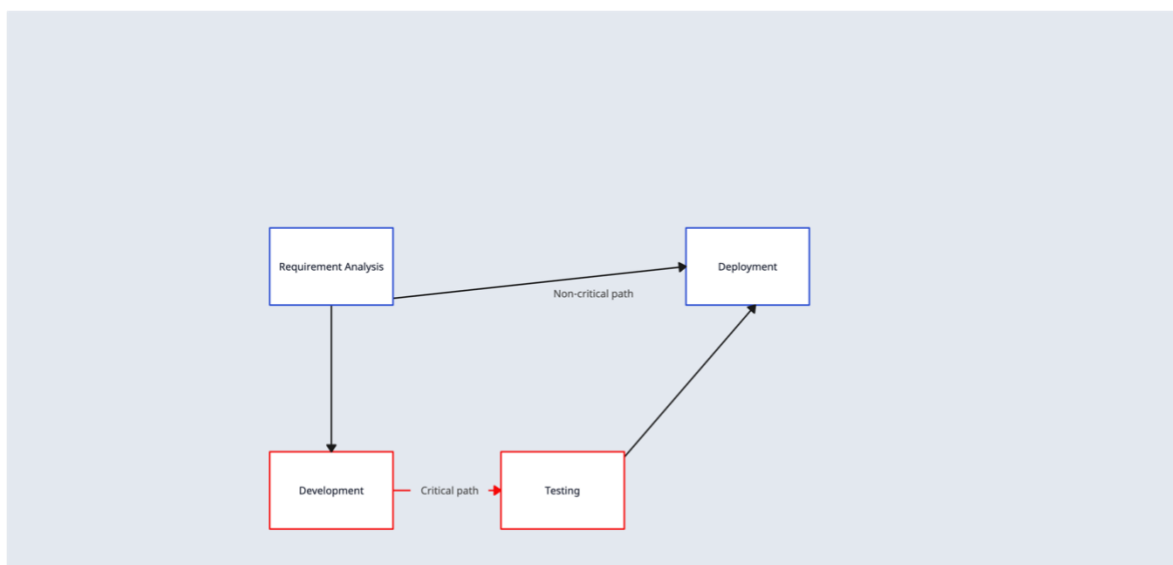3. Testing – 3 days
4. Deployment – 1 day

Figure 3.2 : Critical path

3.3 Gantt Chart
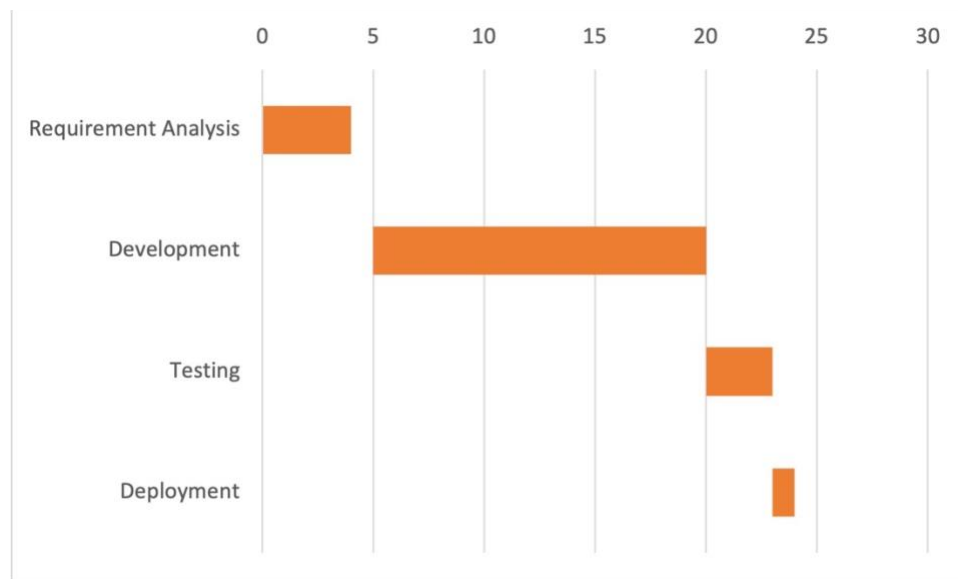
Fig 3.3 Gantt chart

3.4 Process/Activity wise Resource Allocation

- Requirement analysis: For this part, two people were assigned to get the full idea of how the product will be like. Questions were asked after the initial meeting if there was any confusion.
- Development: 3 web developers were assigned with this work as this big project was broken down and work was assigned individually for better results
- Testing: Testing will be done by the Quality assurance team after the whole product has been built.
- Deployment: Deployment will be done by the supervisors guiding us in the company we worked in.

3.5 Estimated Costing

This is the estimated costing for this project:

Requirements	Costing
Internet	6000
UI/UX designer	30000
Front-end developer	45000
Back-end developer	60000
Equipments	100000
Others	5000
Total	246000

Table 3.5: Estimated costing

Chapter 4

Methodology

There are several project management methodologies and software development methodologies that organizations and teams can choose from, depending on the nature of the project, the team's preferences, and the specific requirements. Here are some of the most common types of methodologies:

For our project, we have chosen the waterfall method. The basic principles behind it are:

- software development is done in a linear, sequential manner using the waterfall method.
- The project is divided into many phases, such as requirements, design, implementation, testing, deployment, and maintenance.
- Before proceeding to the next phase, each one must be finished.

This methodology was the best one to move forward with because our project best suited the idea of going forward one at a time. If we did all things at once, even if a demo project can be made faster that way, it is not the most effective way to move forward as any problem in the backend or frontend would require constant time of the developers. Completing one task at a time made the work hours much easier for the teams working on this project.
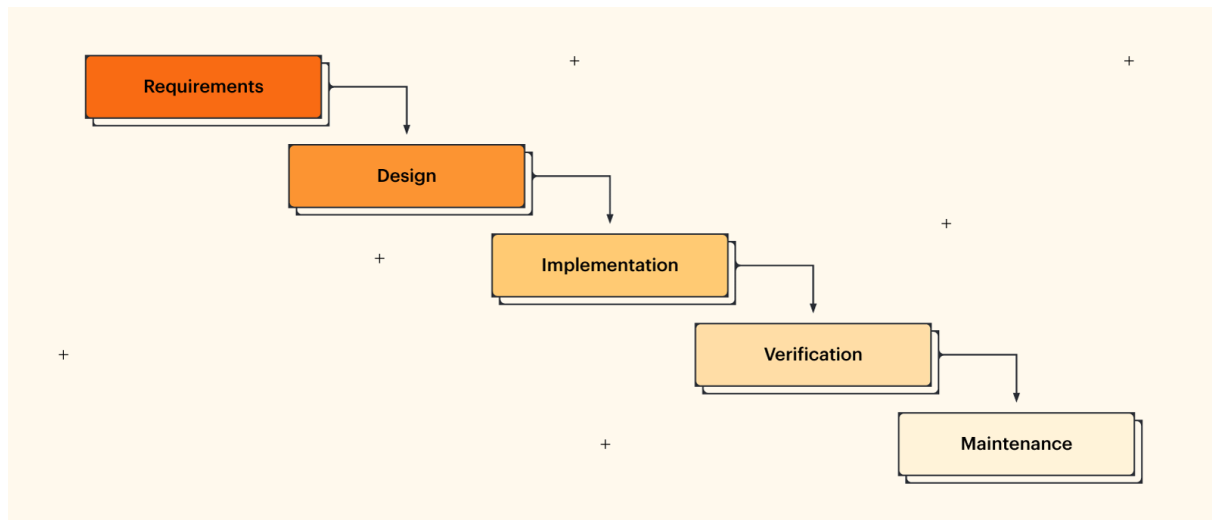

Fig 4.1 Waterfall Metho

Chapter 5

Body of the Project

5.1   Work Description

ADN Diginet is a company working mainly with software development. Besides learning a lot about Data Analytics and having completed a lot of small projects on it, we have been provided knowledge of web development too. I had the privilege to be a part of such an enlightening journey under developers of years of experience guiding us.

My role in this project comprised of a lot of frontend and backend development. As mentioned before, I have used Django to do my assigned work and CSS, html and JavaScript for animation on the frontend. The database used was dbSqlite as one of the requirements of this project was to make it as versatile as possible.
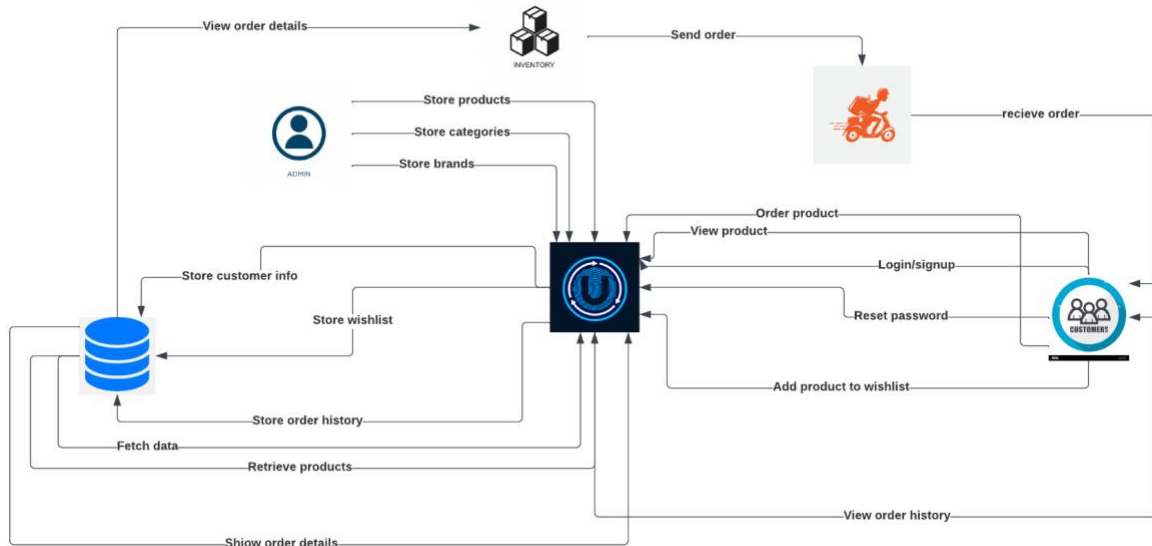
5.2   Requirement Analysis

5.2.1 Rich Picture

Fig 5.2 Rich picture

5.2.2 Functional and Non-Functional Requirements

Functional requirements:

- User Registration and Authentication:
    - Users can create accounts with email addresses or social media profiles.
    - User authentication ensures secure access to accounts and personal information.

- Product Catalog:
    - A comprehensive catalog of products and services is organized into categories.
    - Users can search, filter, and sort products based on various criteria.
    - Each product listing includes detailed information, images, and pricing.

- Shopping Cart and Checkout:
    - Users can add items to their shopping carts and review cart contents.
    - Secure and user-friendly checkout process with multiple payment options (credit card, PayPal, etc.).
    - Users can specify shipping addresses and delivery preferences.

- User Profiles and Account Management:

    - Users can manage their profiles, including personal information and addresses.

    - Order history and tracking information are accessible in user accounts.

    - Password reset and email preferences are available for account management.

- Search and Navigation:

    - A robust search engine allows users to find products quickly.

    - Browsing categories and subcategories is intuitive and user-friendly.

    - Filters and sorting options enhance search capabilities.

Non-functional requirements:

- Performance:

    - Response Time: Ensure that the website loads quickly, with pages rendering in a reasonable time frame, even during peak traffic.

    - Scalability: The system should scale horizontally and vertically to accommodate increasing user loads without significant performance degradation.

    9

- Availability:

    - Uptime: The website should be available 24/7, with minimal planned downtime for maintenance.

- Security:

    - User Authentication: Ensure robust user authentication and authorization mechanisms to prevent unauthorized access.

- Usability and User Experience:

    - User Interface Design: Create an intuitive and user-friendly interface for easy navigation and shopping.

5.3   System Analysis

5.3.1   Six Element Analysis

Process	Human	Non-Hardware	Computing Hardware	Software	Database	Communication on Network
Sign up	Customer, Seller	N/A	Desktop	Web Application	Sqlite	Internet
Reset password	Customer, Seller	N/A	Desktop	Web Application	Sqlite	Internet
View product	Customer	N/A	Desktop	Web Application	Sqlite	Internet
Add to cart	Customer	N/A	Desktop	Web Application	Sqlite	Internet
Check cart	Customer	N/A	Desktop	Web Application	Sqlite	Internet
Order History	Customer	N/A	Desktop	Web Application	Sqlite	Internet
Contact us	Customer	N/A	Desktop	Web Application	Sqlite	Internet
Search product	Customer	N/A	Desktop	Web Application	Sqlite	Internet

Table 5.3 Six-element analysis

5.3.2   Feasibility Analysis

When a project is first being planned, a feasibility study is a crucial step in determining if it is practical and worthwhile to move on with. It involves many different sectors worth mentioning below:

- Technical Feasibility:

Businesses carry out a technical feasibility study to ascertain the viability of a product or service before launching it. Organizations can determine if they have the required technical resources to transform the concept into a useful, fully functional system by conducting a technical feasibility study. It supports project troubleshooting prior to the commencement of work. Our product will be flexible enough to work with different electronic devices, broadening the user base.

- Operational Feasibility:

This web application is extremely easy to use as the buttons are very to the point and the system is very simple for which the users are expected to face no problems enjoying the experience of using UltraShop. Hence, from operational perspective, this project is very promising.

- Economic Feasibility:

Before assigning financial resources to a project, this evaluation frequently includes a cost-benefit analysis of the project to aid companies in analyzing its viability, expenses, and benefits. Additionally, it strengthens the legitimacy of the project and acts as an objective project evaluation, assisting decision-makers in recognizing the positive financial benefits that the proposed initiative would bring to the business. The conclusion reached after looking at the entire system is that this project is very much doable because no further costs are required after the budgeted cost because, once the website is up and operating, just upkeep is required.

5.3.3   Effect and Constraints Analysis

There were some constraints worth mentioning. One of the biggest constraints was time. As all the trainees had to work on many small projects during the internship, making time for a big project like this a tough task. There are still many incomplete features left which need extensive amount of hard work to be completed.
Another constraint was the database. As I worked with SQLite, it is not deployable and efficient. The database needs to be RDBMS for it to be more efficient, so the backend team needs to work on this constraint.

5.4   System Design

5.4.1   UML Diagrams
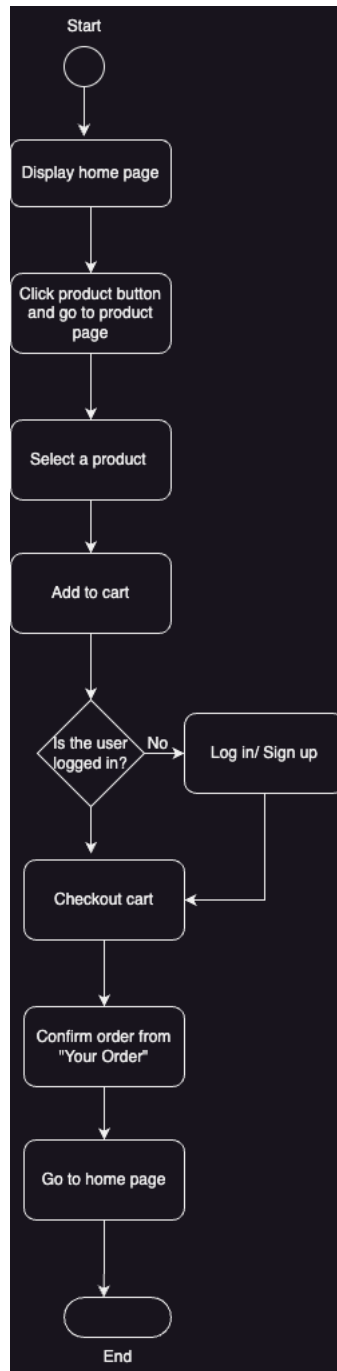
Activity diagram

Fig 5.4.1 Activity diagram for customer for ordering
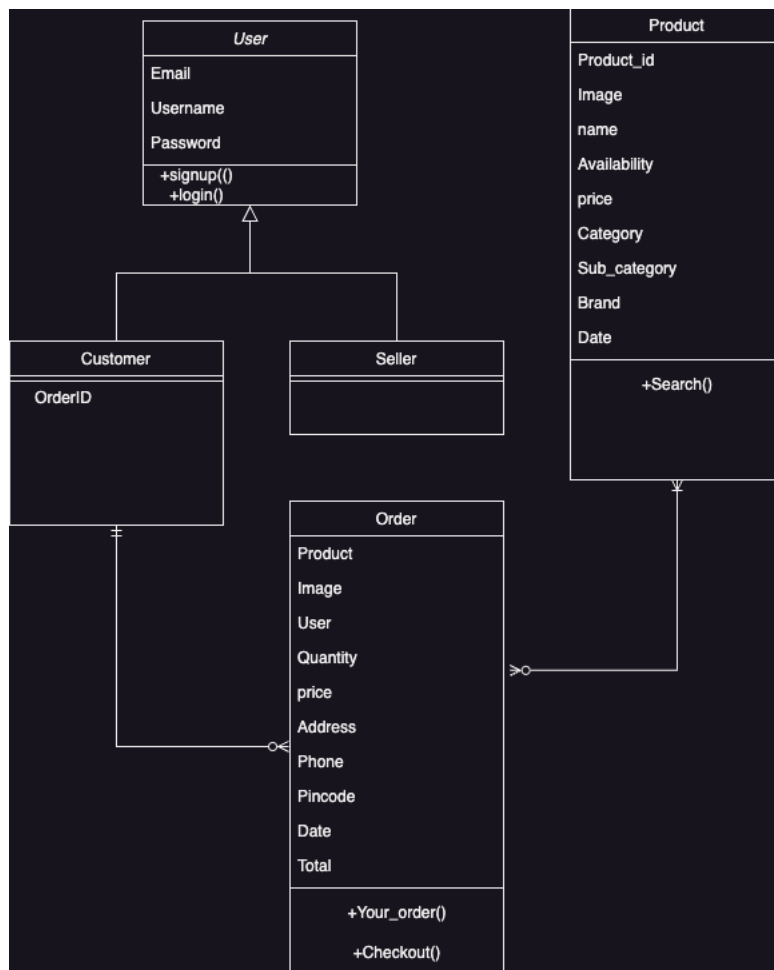
Class diagram

Fig 5.4.2 Class diagram

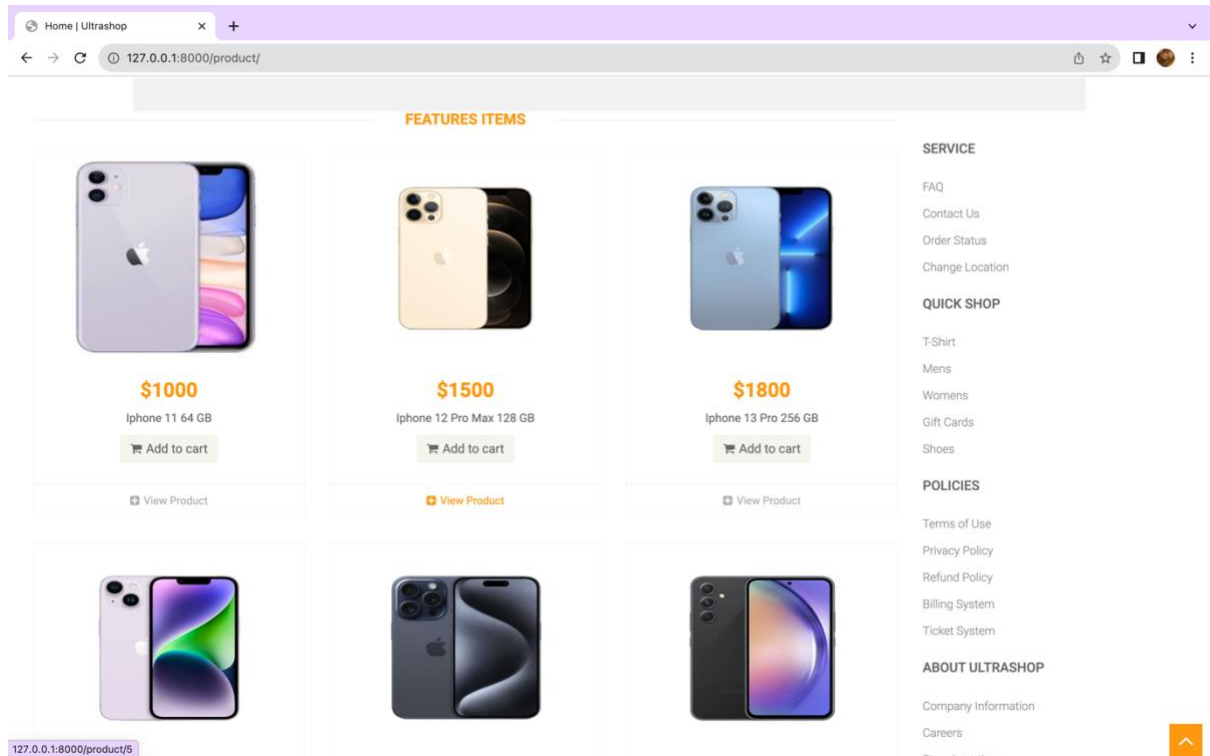# 5.5 Product feature

This is the product page of the UltraShop:

Fig 5.5.1 Product page

This is where specific category and specific brands can be selected:

CATEGORY

ELECTRONIC DEVICES   **+**

BEAUTY AND HEALTH   **+**

ACCESSORIES   **+**

BRANDS

APPLE

SAMSUNG

RARE BEAUTY

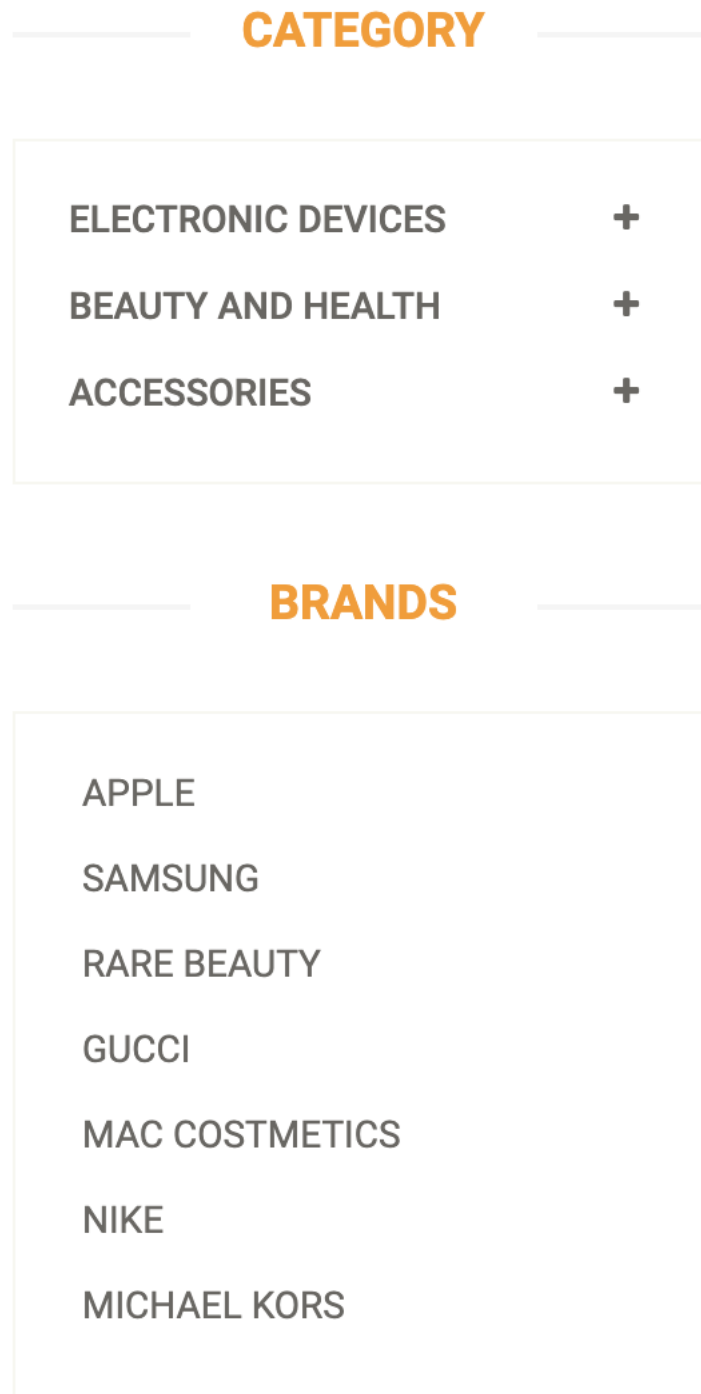GUCCI

MAC COSTMETICS

NIKE

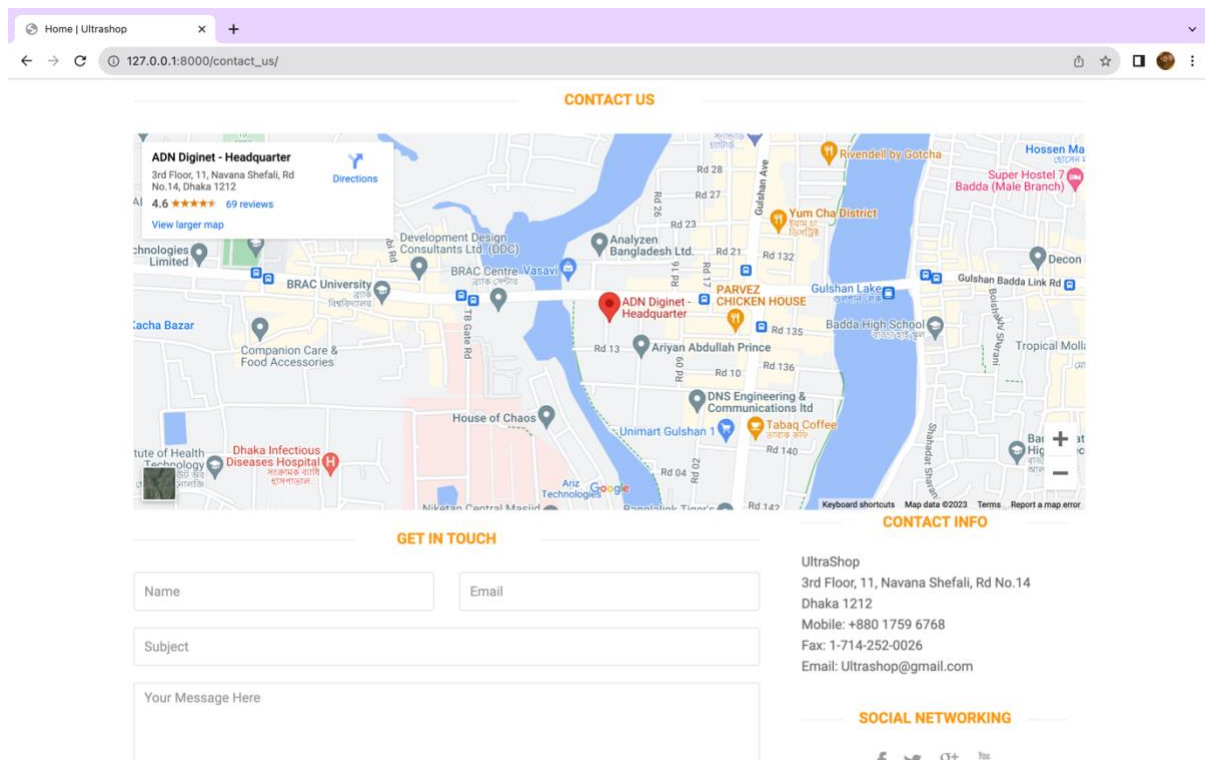MICHAEL KORS

Fig 5.5.2 Brand and category tab

This is the contact us page:

Fig 5.5.3 Contact Us page

This is the cart page:

Fig 5.5.4 Cart page

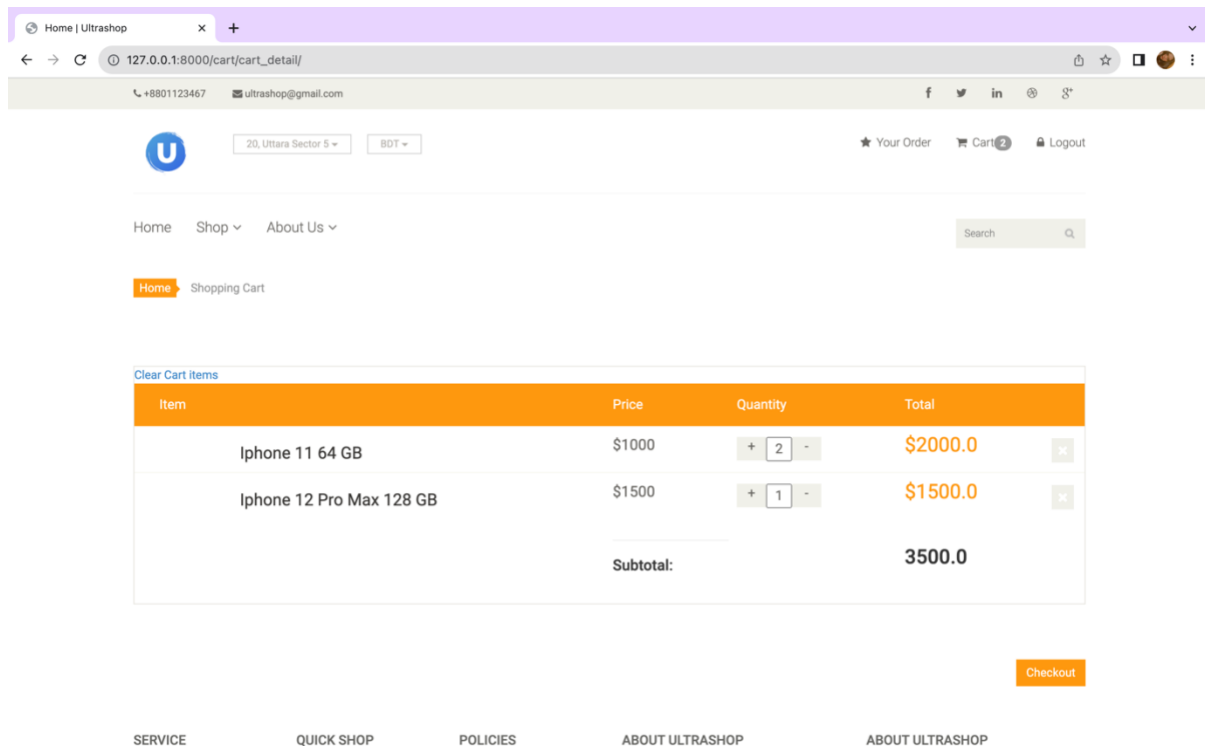This is the page where the confirmed orders are shown:

Fig 5.5.5 Your order page

This is the product detail page. Details about a specific product can be viewed here:

Fig 5.5.6 Product detail page

This is the result of the search bar. iPhone was searched and all the products whose name has iPhone in it is displayed:
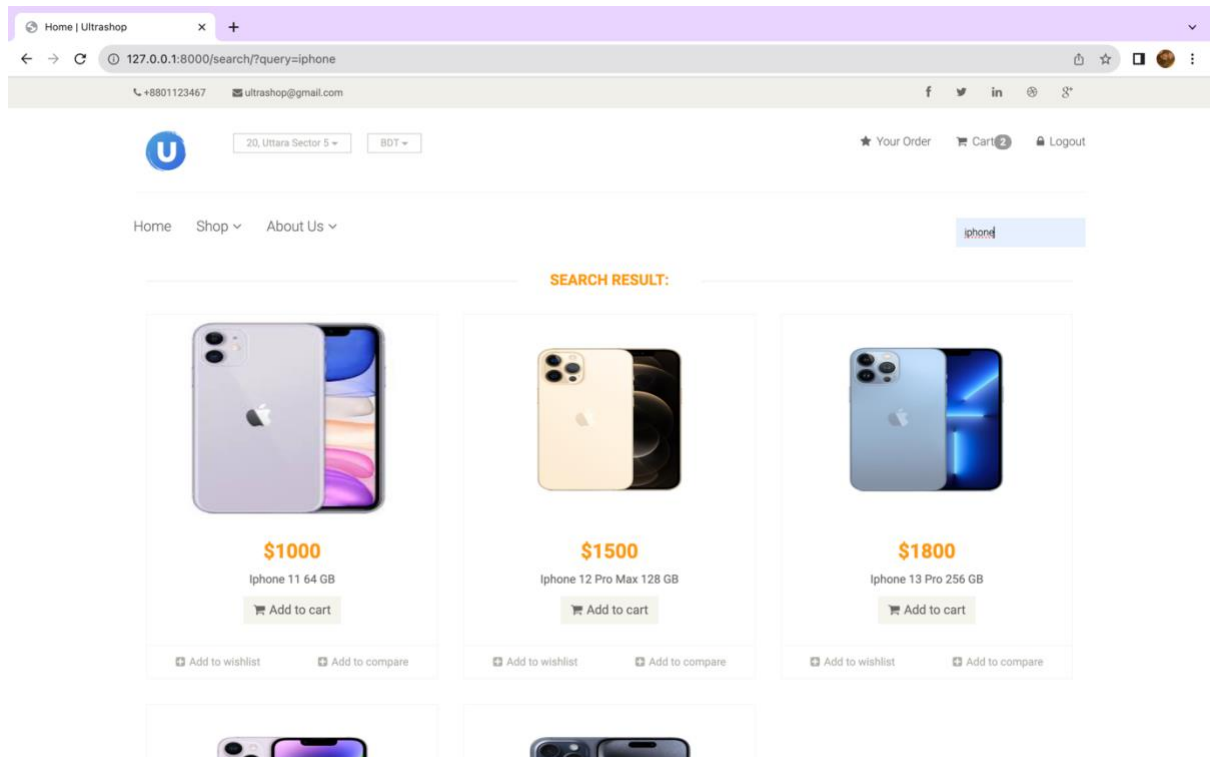
Fig 5.5.7 Search bar

Chapter 6

Results & Analysis

6.1 Results

As expected, the website showed fruitful results. The website has functional buttons which fetch and post data to the backend. The website also has user friendly interface which helps with the navigation which is what the end requirement was. All the required pages work fine.

6.2 Analysis

The main aim of this project was to make the shopping experience hassle free and to conclude, I think that is what was achieved. After repeatedly using it, no bugs have been faced and data reaches the database and data is also perfectly fetched from the database.

Every single time a new functionality was introduced, the whole team tested them out to gain perspective on the improvement of the project. Admin can save products from the admin dashboard and when the page is refreshed, the new products show in the product page. The foreign keys work as the product shows correct connection with category, subcategory and brands. I ran into some problem with absolute path of the URLs but then found the solution. Once some more functionalities are added, the product will be finally complete for the next stage.

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

The long-term viability and expansion of the e-commerce initiative UltraShop depend on its sustainability. If there is scope for growth, only then it will be proven sustainable.

Community Sustainability

After this project is launched, the effect of it on the community will be huge because the hassle-free shopping experience will surely attract more customers in the long run. With everyone having a lot of things to do and very less time to do it, this online marketplace also helps with the shopper's dilemma of not knowing what to buy. It is also easier to compare with the market price hence the overall time wasted behind shopping a product is greatly reduced.

Financial Sustainability

Relates to the project's capacity to efficiently create and manage financial resources throughout time. The production of income, cost management, return on investment (ROI), and financial stability are important issues. Financial sustainability depends on creating viable company models and financial strategies. As UltraShop will cater to business that want to have an online presence, partnerships with those businesses will be proven advantageous to both the parties as the business does not need to spend the money to have a physical shop and the company can profit at the same time keeping this app up and running. As this application needs to be constantly updated and maintained, the growth of the users can also help the company get sponsors.

Organizational sustainability

Focuses on guaranteeing the project organization's long-term survival and durability. Effective leadership, talent management, innovation, and risk reduction are important factors. It's crucial to have an enduring business culture and good governance procedures. As mentioned before, the constant improvement of the application and the introduction of new features to app will help keep this project idea in the market for a long time as with advancement of technology, the company also needs to be up to date.

7.2 Social and Environmental Effects and Analysis

7.2.1 Social effect

The introduction of anything new is bound to create a social effect as any kind of goods or services that is made for the people, used by the people are inevitably about to bring adverse change. For our project, new jobs can be created if there is any idea of expansion of this application. Alongside that, ethical sourcing is a key factor as the main idea of this application is to both be B2B and B2C business. Alongside that, due to this whole marketplace being online, there is no chance of discrimination of any kind.

7.2.2 Environmental effects

Environment needs to be considered because during this era, global warming and climate change is a very crucial matter. If it is not environmentally approved, people will be reluctant to use it and as this is all online based, it is very eco-friendly. Only an internet connection and a desktop are needed. Only a little energy is consumed during this process, so this project is very environmentally safe.

7.3   Addressing Ethics and Ethical Issues

Security of the customer and seller is very important for our project. It is of utmost importance that the address and the phone number of the customer stays strictly between the buyer and the seller. At the same time, if goods or services are bought with cash in advance, the successful delivery of the product should be ensured both by app and the seller as building trust with the client is very important for a successful business.

Chapter 8

Lesson Learned

8.1   Problems Faced During this Period

As the location of my workplace was in bashundhara and the office hours is 9 to 5, it was very hectic for me as my house is very far away, so I was really struggling. I also had classes at IUB after work, so it was overall a very exhausting journey for me.

Another problem I faced was I had to learn a lot of new things in a very short period. My internship consisted of both data analysis projects and software development project and doing both simultaneously was a big task. At the same time, slacking off was not an option for me at all as I was working in teams and my other teammate's work depended on my work too.

8.2   Solution of those Problems

A lot of people had to travel long distances to come to work so I was not alone in this situation. Even though it was very hard to cope up at first, by the end of second week, I started getting used to it and the work experience felt better after settling in. The solution to the second problem was just to work hard. The saying "when life throws lemons at you, make lemonade" was my motivation the whole period I was working because this new experience would be advantageous to me only if I make good use of it.

This is why I grabbed every opportunity I could to learn something new along the way. All the seniors above me and the trainers at the company, everyone had a lot to offer as they were very skilled. Self-study was also needed to keep up with all the new terms and technology so I took time learning at home too.

Chapter 9

Future Work & Conclusion

9.1   Future Works

There is a lot of room for improvement in this fast-paced world. For example:

- AI can be integrated I this project and virtual try-on feature can be added to UltraShop so people are more confident when buying a product. The return rate of products will also decrease as customers will fully know what suits them and not be confused about the purchase.
- Separate dashboards for sellers can be introduced so that they know which products are in most demand and which products need some working on. They will also have a good idea about annual sales, so they do not need to use any third party app for this type of data analysis
- Product recommendation will be a good improvement from the knowledge of data mining by gathering information of customers that buy specific pair of products.

9.2 Conclusion

This project was a very eye opening experience for me and wonderful at the same time as I got to meet a lot of new people and at the same time, learned many new things. When I was using Django, during research, I learned a great deal about new packages and many in-built functions that make Django a very efficient web developing framework.

Bibliography

[1] Yunus, Ahmed & Masum, Md. (2020). Design and Development of an E-Commerce System in a Rapid Organized Way. International Journal of Science and Research (IJSR). 9. 10.21275/SR20325195821.)1Yunus, Ahmed & Masum, Md. (2020). Design and Development of an E-Commerce System in a Rapid Organized Way. International Journal of Science and Research (IJSR). 9. 10.21275/SR20325195821.)

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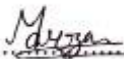
By

Anshara Chowdhury

Student ID: 2021768

Summer, 2023

Consent from Supervisor

The student modified the internship final report as per the recommendations made by his/her academic supervisor and/or panel members during and/or before final viva, and the department can use this version for archiving as well as the OBE course material for CSE499.

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