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Courier Service Management System for a Travel Agency

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An Undergraduate Internship on Courier Service Management System for a Travel Agency

By

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Summer, 2022

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September 14, 2022

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, Md Navidul Islam (ID:1821952), submitted in partial fulfillment of the requirement for the Degree of Computer Science and Engineering from Independent University, Bangladesh (IUB). Any resources used are mentioned in the bibliography section of the report. The report has been constructed to serve the documentation for the professional internship experience that I was engaged in at Khan International Express during the Summer 2022 session. There was no assistance taken from any third party organization during the completion of my report, except for the contribution in guidance of constructing this report are my internship supervisor at my firm, Khan International Express. For further queries, please contact Md Tanzil Ahmed Khan, my internship supervisor at Khan International Express.

14th September 2022

Signature Date

Md Navidul Islam

Name

Acknowledgement

I would like to firstly like to thank the Almighty Allah for giving me the endurance and the ability to work hard, and for giving me the ability to write this report and for giving me the chance to be able to do my internship at Khan International Express. Additionally, I would like to thank my parents for their unconditional love and support, which have nourished, fostered, and prepared me for this task.

The success and outcome of this project were possible by the guidance and support from many people. I am incredibly privileged to have got this all along with the achievement of my project. It required a lot of effort from each individual involved in this project with me and I would like to thank them.

I appreciate and thank Ms. Ajmiri Sabrina Khan, Internship Supervisor & Lecturer, Independent University, Bangladesh, for providing us with all the support and leadership , which made me finish my project duly. I am really thankful to her for presenting such excellence support and guidance, despite having a busy schedule enduring corporate affairs.

It has been an incredible experience working as an intern at Khan International Express. I would like to show my thanks to the firm for providing me with the opportunity to work from home and for making the transition from student to an web application developer considerably simpler during this COVID-19 pandemic. I am thankful for and lucky enough to get consistent encouragement, support and supervision from my external supervisor, Mr Md Tanjil Ahmed Khan, which helped me in completing my internship project.

Finally, I would want to express my heartfelt appreciation to Independent University, Bangladesh for offering a student internship program that truly shapes and prepares us for the corporate world.

Md Navidul Islam

1821952

September 2022

Dhaka, Bangladesh

Letter of Transmittal

14th September, 2022

Ajmiri Sabrina Khan

Internship Supervisor & Lecturer

Department of Computer Science and Engineering

Independent University, Bangladesh

Subject: Internship report on ‘Courier Express’, a product for Khan International Express.

Dear Ma’am,

I am extremely grateful for the chance to submit an internship report to you on 'Courier Express,' a web application developed for Khan International Express. This report is based on my three-month internship at the firm and the project on which I worked. This report is based on my experiences and the work I completed during my internship at Khan International Express. Throughout my internship with the organization, I discovered that I acquired and used a variety of new skills and technology. I would be delighted if the report I have written serves its intended purpose. I am indebted to you for your time, knowledge, direction, and support. I have attempted to complete the report as accurately as feasible. I genuinely hope and pray that you will accept the report.

Thank you for your co-operation and assistance throughout the semester

Yours sincerely,

Md Navidul Islam

ID: 1821952

Evaluation Committee

Signature

Md Alam Sayed

Name

Supervisor

Ajmiri Sabrina

Signature

Name

Internal Examiner

Signature

Name

Sazzad Adnan Alam

External Examiner

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Name

Convener

Dr. Mahady Hasan
Head, Department of CSE
School of Engineering & Computer Science
Independent University, Bangladesh (IUB)

Abstract

Courier Express is a web-based application that eliminates the need for users and clients to physically deliver parcels to courier companies. The program was created to make the procedure of sending parcels easier. The application will allow the customer to send a pickup request for their shipment to be picked up and delivered to the warehouse of the appropriate courier provider. The shipment will then be delivered to the destination from that warehouse. The application saves all client and order information. This system can link to a database to retrieve data, which will undoubtedly assist users in sending parcels from home via delivery personnel without personally visiting the office to drop off the product. The system will also assist staff in maintaining all order and client information in the database and altering the order as desired using the application. Since the application prevents the customer from personally delivering the package to the office of Khan International Express, both the customers and the office personnel will be protected from covid-19 infection and virus.

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Chapter 1

Introduction

1.1 Overview/Background of the Work

Khan International Express works as a leading courier companies. They serve as a third party for parcel delivery through their recognized courier companies. Customers rely on their services because they provide maximum service at minimal cost. Previously their service was offline, but due to the pandemic they have switched to an online mode. In offline mode, their profit margin was going down as companies like them are moving towards an online platform. So, to stay on top in the market they decided to switch to the online platform. Due to the ongoing demand for courier services and in light of the current situation, Khan International Express are developing a website to ease the entire courier service process.

Courier express is a web application that the company has developed to eliminate the hassle of customers and clients physically delivering parcels to the courier company. This service requires the sender to use the website to send a request for parcel pick up. Once the customer selects the service and requests parcel pickup from their current location, the company receives it. An employee of the company then dispatches delivery personnel to pick up the package from the customer's location and deliver it to the office for further inspection and packaging. The application is currently covering the entire area of Dhaka city for parcel pick up.

1.2 Objectives

- Customers can send parcels using their preferred courier company.
- Customers will get an estimation of the delivery cost.
- Payment can be made online.
- Same day pickup service.
- Provide customer support to answer all the queries.

1.3 Scopes

- Login Page – This page will be used by registered users to log into their account.

- Registration Page – This page will be used by new users to register their account.
- Forget Password Page – Users will be redirected to this page to enter their phone number if they forget their password and they can change their password.
- OTP Page – One Time Password will be sent to the phone number given by the user in the forget password page. The user will have to enter the OTP to be able to change their password.
- Change Password Page – This page will allow the user to change their password.
- Dashboard – There will be a Dashboard for Customers.
- Request Pickup Page – Customers will visit this page to fill up a form and request parcel pickup.
- Past Orders Page – This page will be viewed by the customers to check their previous orders.
- User Profile Page – Customers can view their profile and change their information from this page.
- Contact Us Page – Customers will be able to contact the support team through social media, email, and mobile phone.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

The application was developed using HTML, CSS, PHP and Javascript. The front-end was built with HTML CSS Javascript, while the backend was written with PHP to connect with the database. The topics covered in the course CSE309 (Web Application & Internet) is directly related to the application's backend and frontend. Since the Web Development course was project-based, and numerous web-based projects were completed as part of it, the topics covered in that course were very helpful in this project. Apart from project development, the mockup of the application and the relevant diagrams was required such as Rich Picture, Six Element Analysis, UML Diagrams etc, as taught in the CSE307 (System Analysis and Design) course.

2.2 Related Works

Courier Express has similar functionalities to Fedex and DHL. Fedex/DHL allows customers to send packages or parcels from the customer's location to any destination throughout the world. Courier Express will function similarly, except customers will send packages/parcels to different countries via their preferred courier company. Fedex and DHL allow the customer to track the delivery progress. Similarly, the customer will be able to track the progress of their delivery using the Courier Express application.

Chapter 3

Project Management and Financing

3.1 Work Breakdown Structure

Breakdown of Work Structure or WBS can be defined as a deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverable. It organizes and defines the total scope of the project.

It organizes and establishes the project's overall scope. Each WBS level denotes a more precise definition of the work required to finish the project. For our WBS A top- down approach and a phase-based WBS were used. Let me give a short description of how the stages are implemented:

1. Requirement Analysis : Requirements are gathered from the client, and a sitemap is formed accordingly. A work schedule is set, risk factors are evaluated, and a cost proposal is made.

2. Design Layout: UML diagrams, Rich Picture diagrams, and Activity diagrams are used to develop the design layout. A user interface is then designed, depending on the study.

3. Development: Starting with front end development and working our way to back- end development is a good place to start. Separate development sessions are held for each of these. There are additional phases after that, including several quality assurance audits. We work on making the site responsive, interactive, setting up the CMS and versioning it, and entering data, among other things.

4. User Acceptance Testing (UAT): This step begins once the site is up and running. The site is tested and improved before being shown to customers for feedback, and additional changes are being made. But small UAT sessions take place in every phase.

5. Deployment: After getting all the approval from the customer, the site finally goes live.

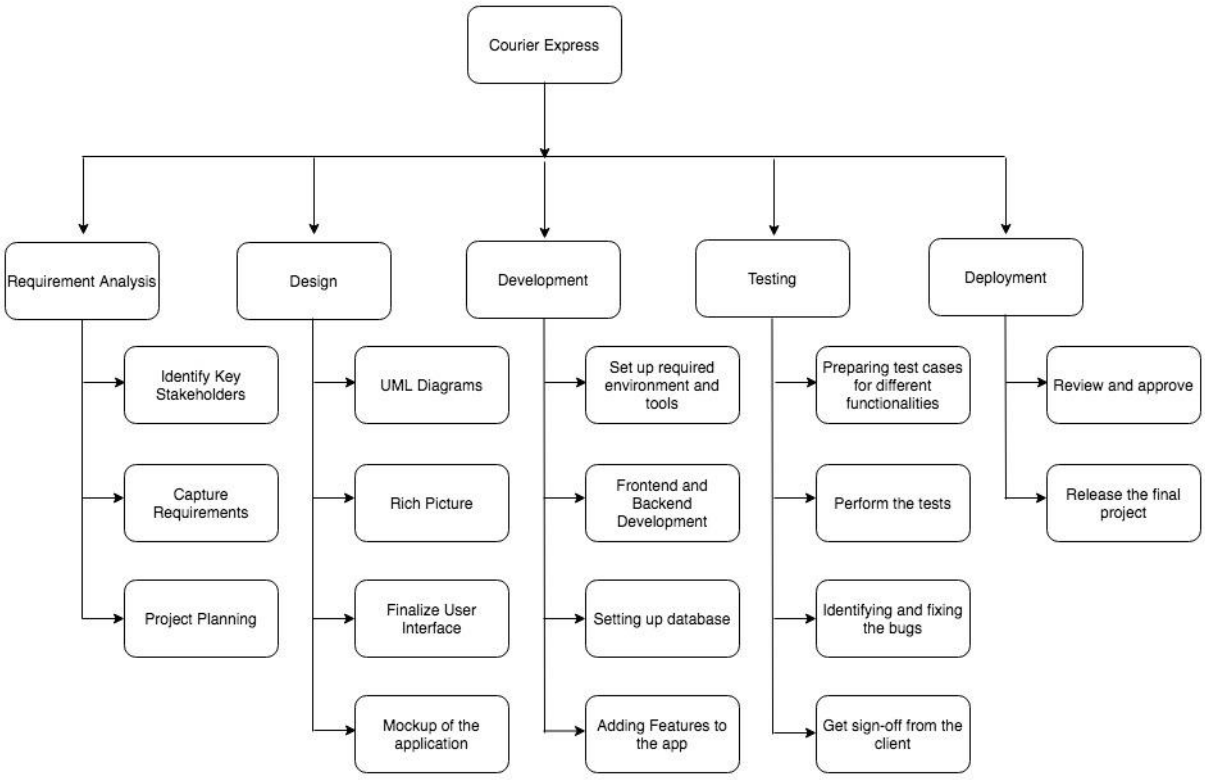

Figure-3.1: Work Breakdown Structure

3.2 Process/Activity wise Time Distribution

The time allocation for the three months project is as shown in the table. Any activity can be performed simultaneously with other activity or after the earlier one is completed.

Activity	Days	% of work
Requirement Analysis	12	8
Design	11	12
Development	55	50
Testing	12	20
Deployment	5	10
Total	95	100

Table-3.1: Activity Wise Time Distribution

3.3 Gantt Chart

A Gantt chart is a horizontal bar chart developed as a production control tool in 1917 by Henry L. Gantt, an American engineer and social scientist. Frequently used in project management, a Gantt chart provides a graphical illustration of a schedule that can be used to plan, coordinate and track tasks in a project.

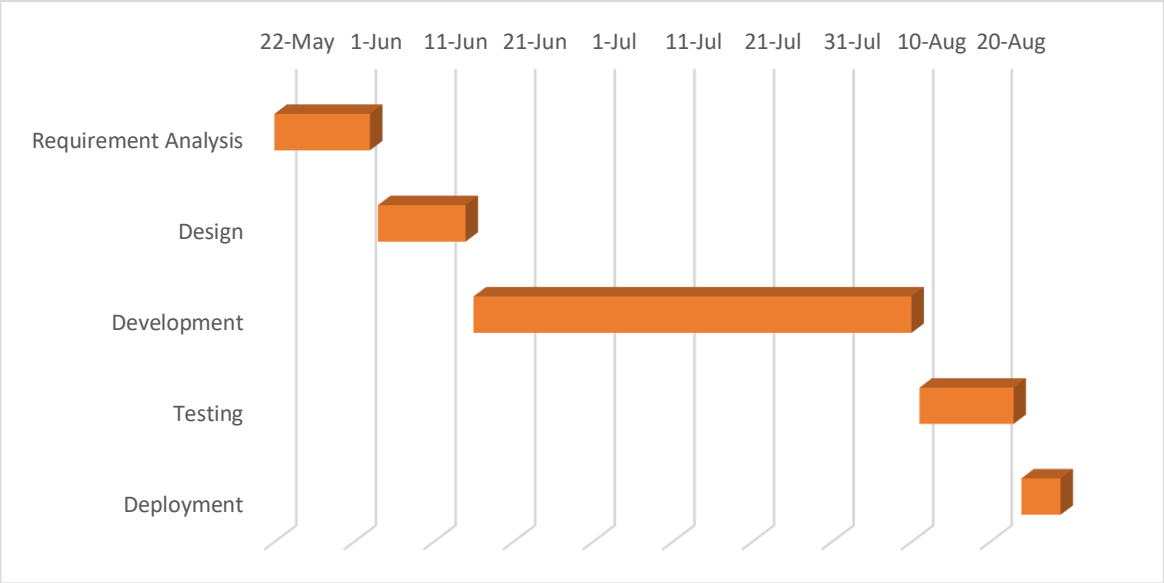

Figure-3.2: Gantt Chart

3.4 Process/Resource wise Resource Allocation

Requirement analysis: In order to complete this project, I was the sole one tasked to collect the requirements. The requirements were how the client wanted the website to look. With the requirements gathered, project planning took place with the stakeholders, and it was decided how the web application would look once completed.

Design: Here, software developers design a technical solution to the problems set out by the product requirements, including scenarios, layouts and data models. I have been working on diagrams like Rich Picture and UML Diagrams. I made a mockup to finalize the design of the actual application before beginning the development phase. This phase entails designing the application's features and functionality using necessary diagrams and mockups.

Development: Once the design is complete, technical implementation starts. This might be the shortest phase of the Waterfall process. The development phase is primarily concerned with the creation of the application. Every weekend, a meeting was held virtually with the supervisor of the company to discuss progress and future project planning.

Testing: During this phase, the application was tested at the same time as it was being developed. It was required for me to debug at every stage of the development process when the application was being tested. The final step in this phase was to show the client the final application and obtain his approval before the phase's deadline.

Deployment: As the application is almost ready, it will be deployed before the deadline.

3.5 Estimated Costing

The cost is an estimate based on the company's requirements for the web application system.

REQUIREMENTS	COSTING
SALARY	5000
DOMAIN AND HOSTING	3000
DATABASE	2000

Table-3.2: Estimate Costing of the Project

Chapter 4

Methodology

The Waterfall methodology—also known as the Waterfall model—is a sequential development process that flows like a waterfall through all phases of a project (analysis, design, development, and testing, for example), with each phase completely wrapping up before the next phase begins.
The waterfall methodology is a project management approach that emphasizes a linear progression from beginning to end of a project. This methodology, often used by engineers, is front-loaded to rely on careful planning, detailed documentation, and consecutive execution.
The stages of Waterfall project management generally follow this sequence:

- Requirements Analysis
- Design
- Construction
- Testing
- Deployment

Progress, like an actual waterfall, flows in only one direction.
However, just like a real waterfall, this can quickly become dangerous. Because everything is planned out at the start, there is a lot of room for error if expectations do not match reality. And once it's finished, there's no going back to a previous stage.

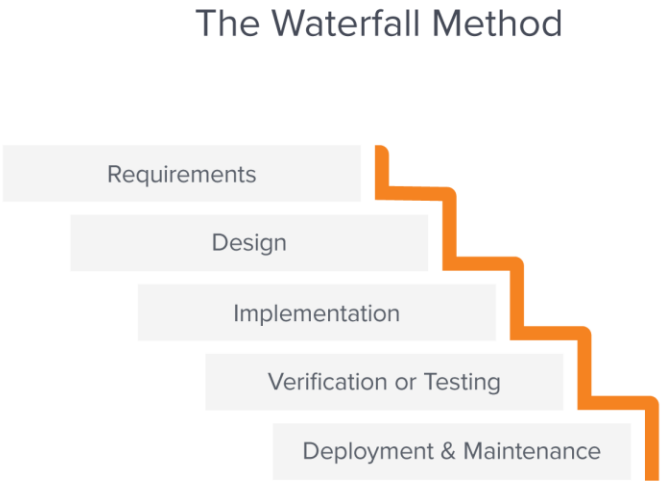

Figure-4.1: Waterfall Methodology

4.1 Why this methodology for this project?

The Waterfall methodology is used for this project because the requirements are clearly defined and easy to understand. The client had defined the scope and end-goal of our project were from the start, and this did not change. I had to proceed sequentially with each phase using this methodology. Furthermore, using waterfall methodology specifies what we are building at a very detailed level, which helped me meet deadlines. Since I did not have to consult with stakeholders repeatedly to determine the product requirements, I was able to focus more on writing code and test cases.

4.2 How did we use this methodology?

As soon as I began working on the project, I conducted a requirement analysis. Then I moved on to the next phase, which was the design phase. I worked on creating a mockup of the application's user interface as well as some diagrams. Following the design phase, I moved on to project development. I worked on the Front-End and Backend coding of the application. During this development phase, I simultaneously performed the test cases of the project. The project's deployment was the final stage. The project's steps were completed linearly and sequentially, with each stage completed before the next begins.

Chapter 5

Body of the Project

5.1 Work Description

As a developer for this project, I was responsible for both the front end and back end of the website. Since the application was developed in Visual Studio, the front-end was created using HTML, CSS and the backend was written in PHP. PhpMyAdmin was utilized to store the data for the entire project. All tasks were performed within a certain time frame, and after a task or portion of the project was completed, we were required to explain our work to the project's supervisor and work accordingly with their valuable feedback.

5.2 System Analysis

5.2.1 Six Element Analysis

Process	Human	Non-Hardware	Computing Hardware	Software	Database	Communication on Network
Register	Customer, Admin, Employee	N/A	Phone, Laptop, Personal Computer	Website	PhpMyAdmin	Internet
Login	Customer, Admin, Employee	N/A	Phone, Laptop, Personal Computer	Website	PhpMyAdmin	Internet
View Orders	Customer	N/A	Phone, Laptop, Personal Computer	Website	PhpMyAdmin	Internet
Update profile	Customer	N/A	Phone, Laptop, Personal Computer	Website	PhpMyAdmin	Internet
Send Pickup Request	Customer	N/A	Phone, Laptop, Personal Computer	Website	PhpMyAdmin	Internet

Table-5.1: Six Element Analysis

5.2.2 Feasibility Analysis

Feasibility Study is a study to evaluate feasibility of proposed project or system. Feasibility study is one of stage among important four stages of Software Project Management Process. As name suggests feasibility study is the feasibility analysis or it is a measure of the software product in terms of how much beneficial product development will be for the organization in a practical point of view. Feasibility study is carried out based on many purposes to analyze whether software product will be right in terms of development, implantation, contribution of project to the organization etc.

- **Technical Feasibility**

In Technical Feasibility current resources both hardware software along with required technology are analyzed/assessed to develop project. This technical feasibility study gives report whether there exists correct required resources and technologies which will be used for project development. Along with this, feasibility study also analyzes technical skills and capabilities of technical team, existing technology can be used or not, maintenance and up-gradation is easy or not for chosen technology etc.

- **Operational Feasibility**

In Operational Feasibility degree of providing service to requirements is analyzed along with how much easy product will be to operate and maintenance after deployment. Along with this other operational scopes are determining usability of product, Determining suggested solution by software development team is acceptable or not etc.

- **Economic Feasibility**

In Economic Feasibility study cost and benefit of the project is analyzed. Means under this feasibility study a detail analysis is carried out what will be cost of the project for development which includes all required cost for final development like hardware and software resource required, design and development cost and operational cost and so on. After that it is analyzed whether project will be beneficial in terms of finance for organization or not.

5.2.4 Effect and Constraint Analysis

During any website development there are a handful of constraints that need to be kept in mind. For example, budget, deadline, unique design and features etc. In this project it was deadline and design. When developing a website, considering the end-user in mind is the most important task. Each client is unique in their own way. Before we begin designing, we must do research and have a knowledge of our target audience. Our design should be a wonderful experience for the customer, not for us. That's why it takes almost 10 to 15 working days to finalize a design. The designer mockups may look astounding but what client wants is the top priority even if it does not go with the aesthetic of the original design. A final design and the first mockup for this project looked like two different websites.

5.3 System Design

5.3.1 Rich Picture

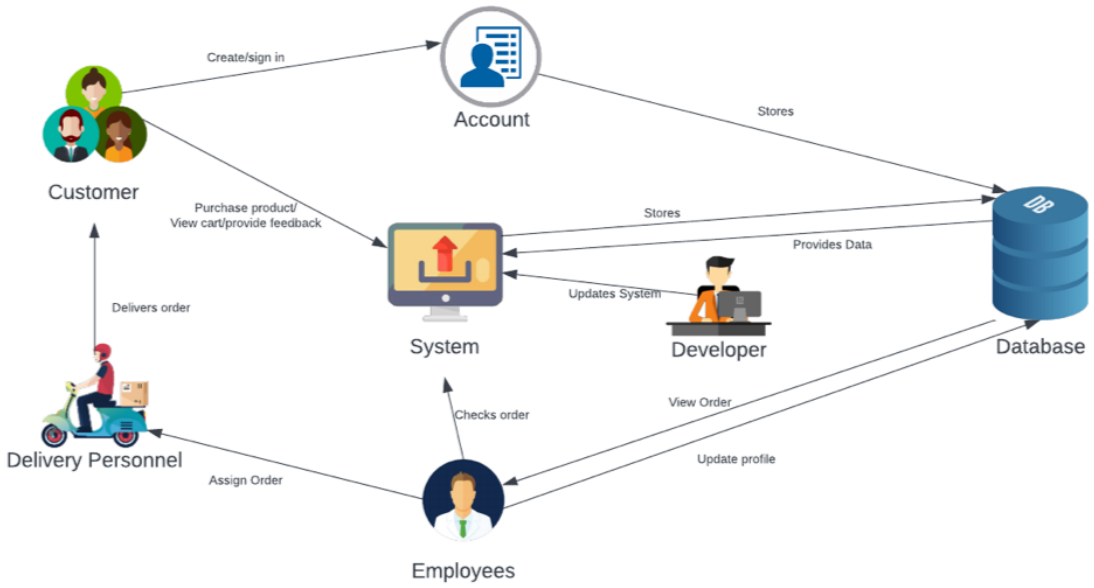

Figure-5.1: Rich Picture

5.3.2 UML Diagrams

Activity Diagram

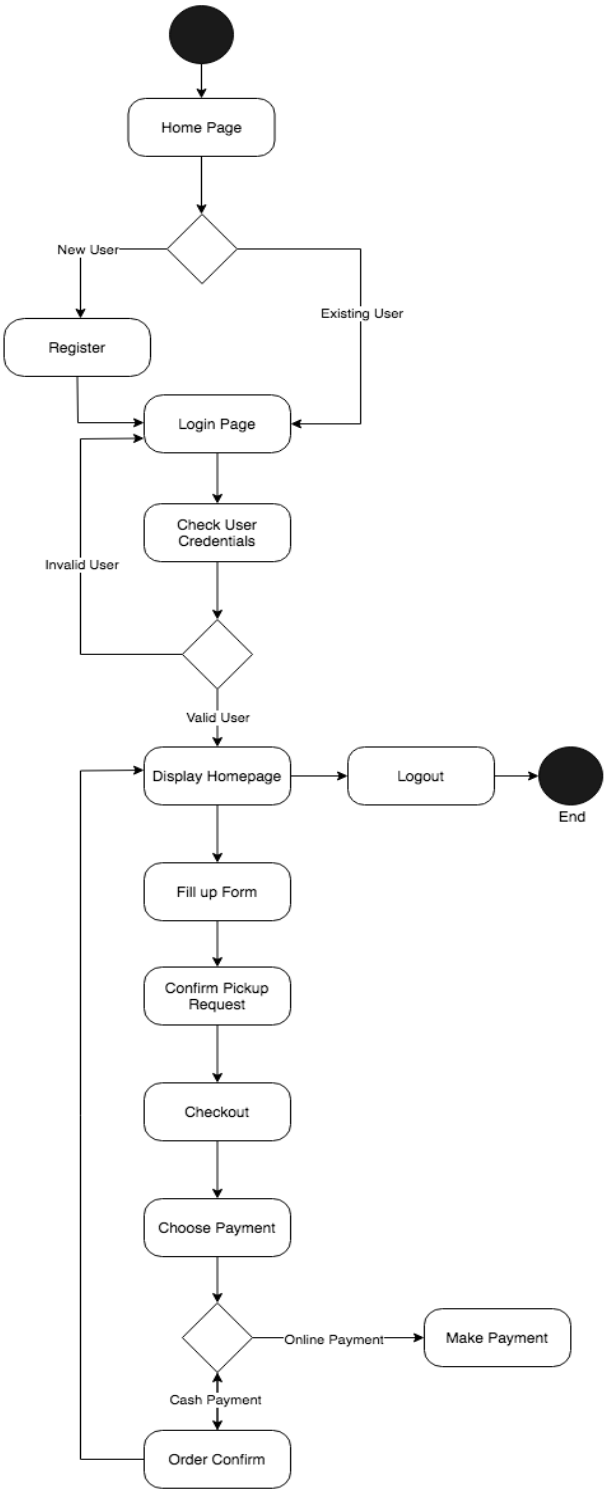

Figure-5.2: Activity Diagram

Class Diagram

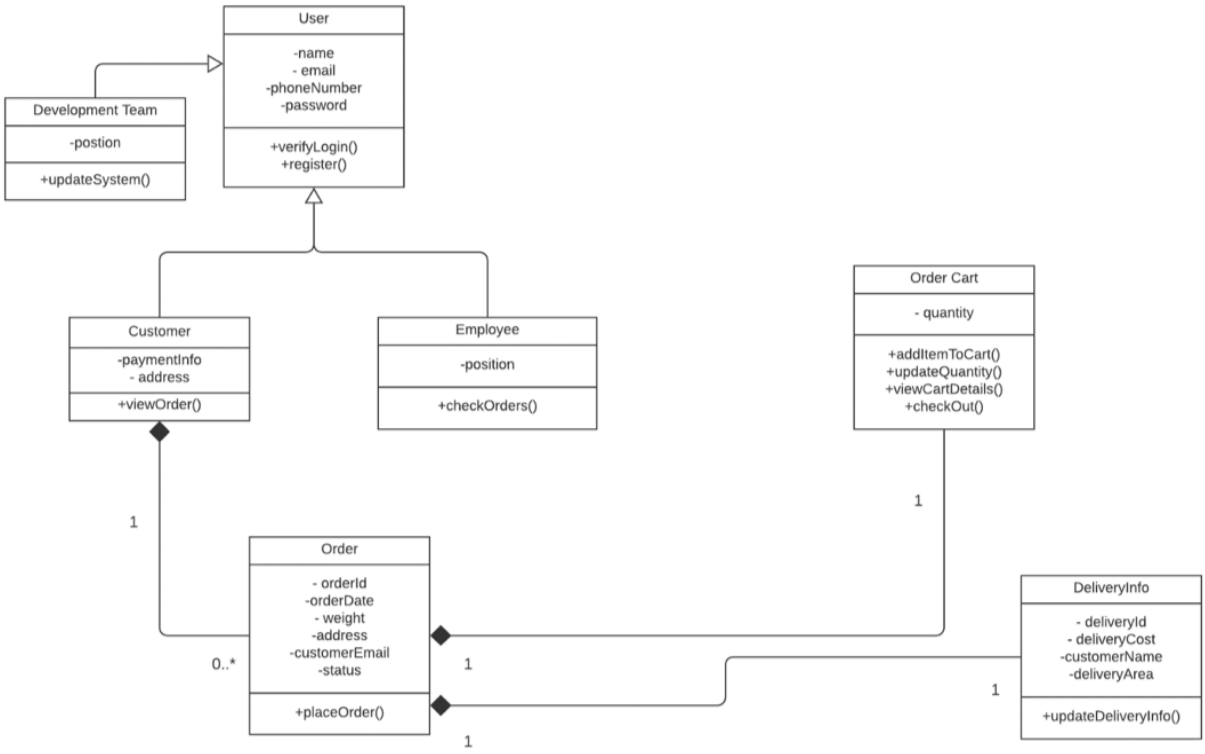

Figure-5.3: Class Diagram

Use Case Diagram

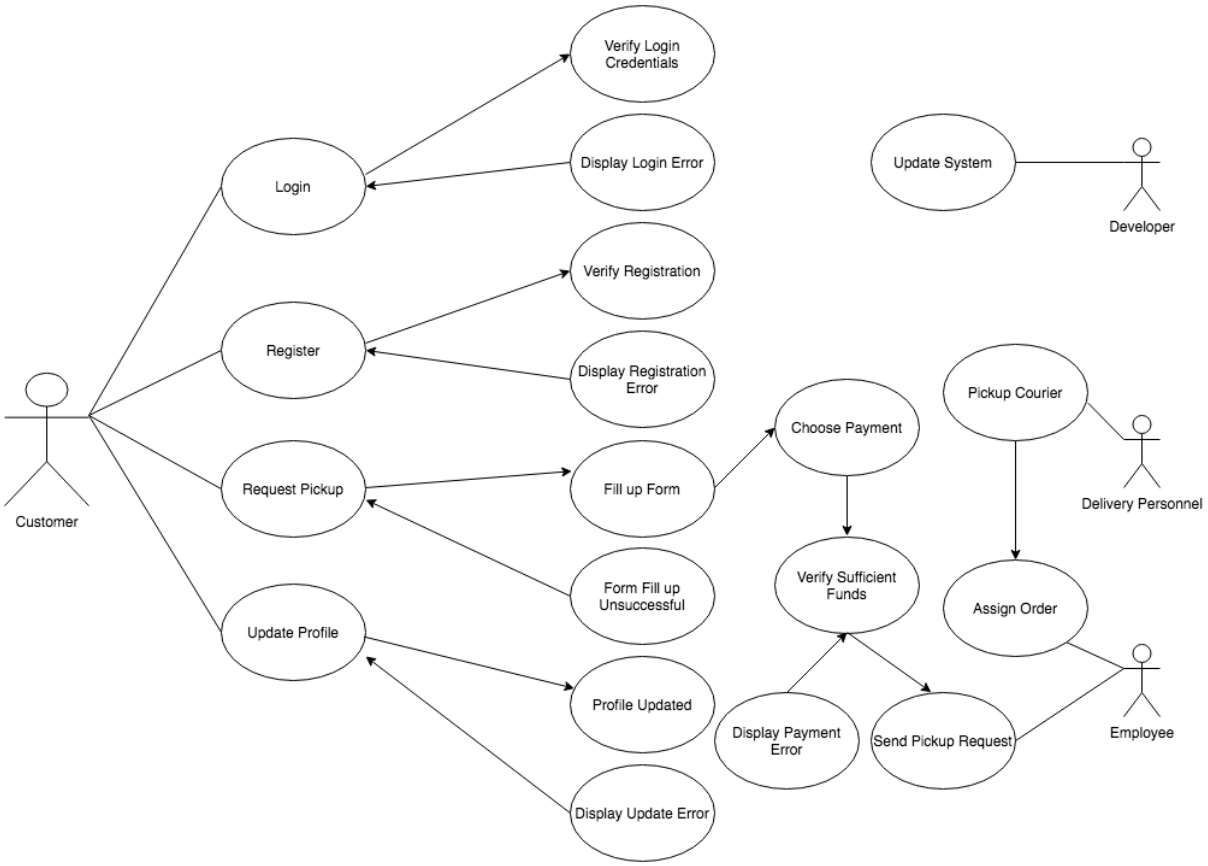

Figure-5.4: Use Case Diagram

5.3.3 Functional and Non-Functional Requirements

Functional Requirements

1. **Register for an account**

   A user can register their account with all the required information.

2. **Update customer profile**

   A user can update their account with all the correct information.

3. **Payment method**

   Customers will be able to pay using online methods as well as cash on delivery.

4. **Past orders**

   Customers will always have access to check the past orders.

Non-Functional Requirements

1. **Performance**

   The performance of the final product is expected to be top- notch. Even after meeting all the functional requirements, the system needs to load fast. There should be a certain acceptable delay after clicking any interactive section but that should not exceed too much.

2. **Security and Control**

   User login credentials and payment related information will be secured using TLS (Transport Layer Security).

3. **Availability**

   The website should be up and available online 24/7 without having any trouble like broken pages or server errors.

4. **Reliability**

   Any bugs that are detected in the system or reported by the user will be removed by the development team through update of the system.

5.4 Product Features

5.4.1 Input

Login / Registration

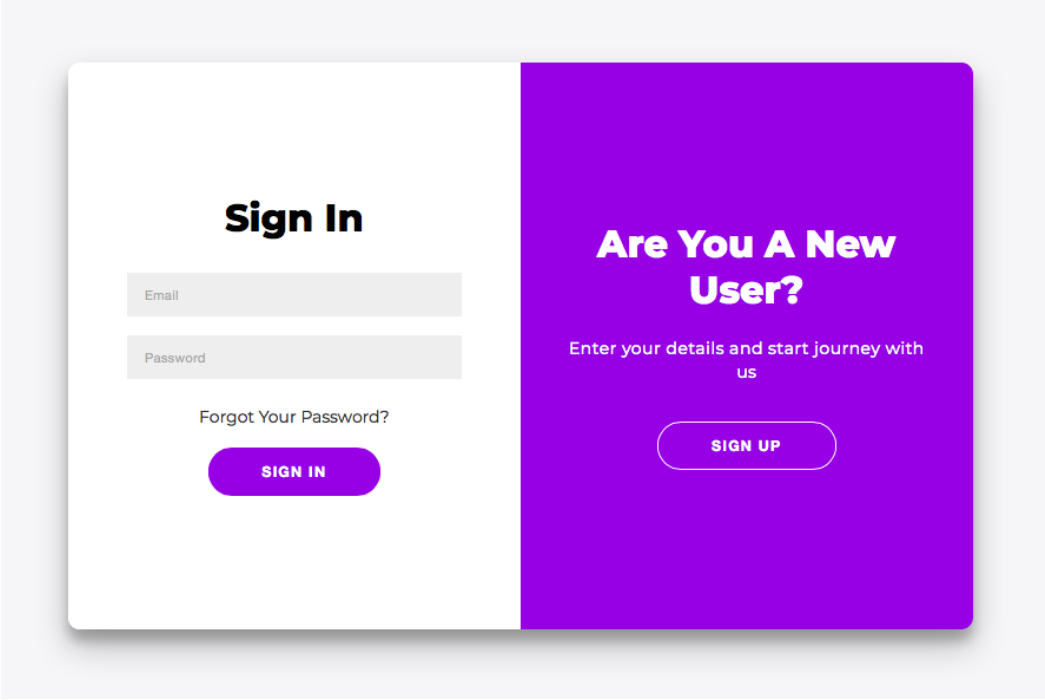

Figure-5.5: Login Page

Home Page

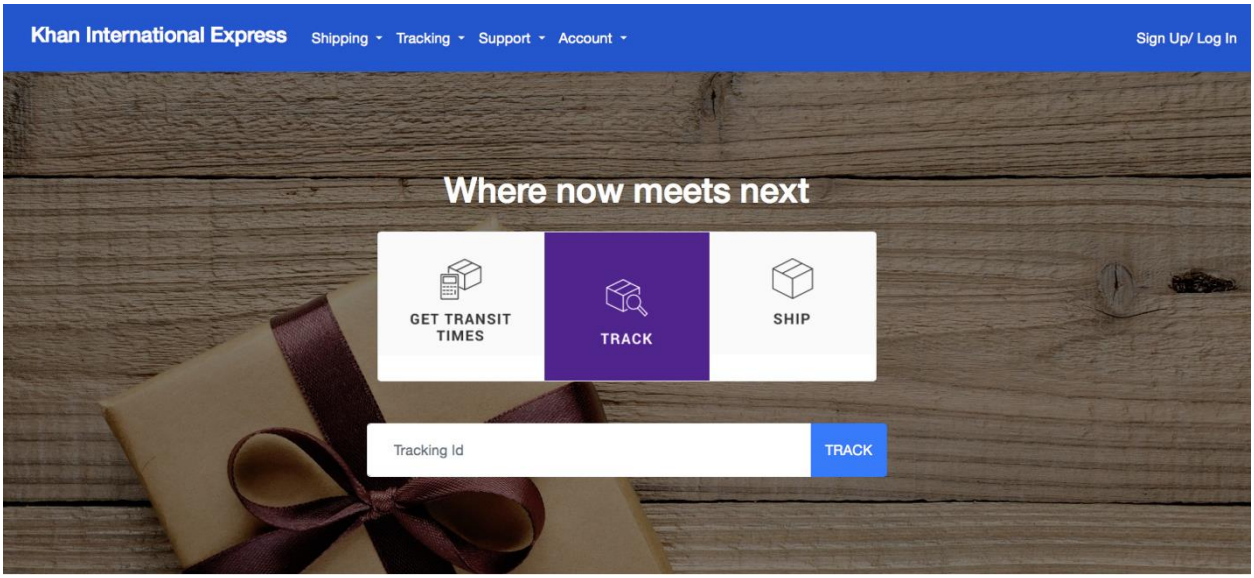

Figure-5.6: Home Page

User Dashboard

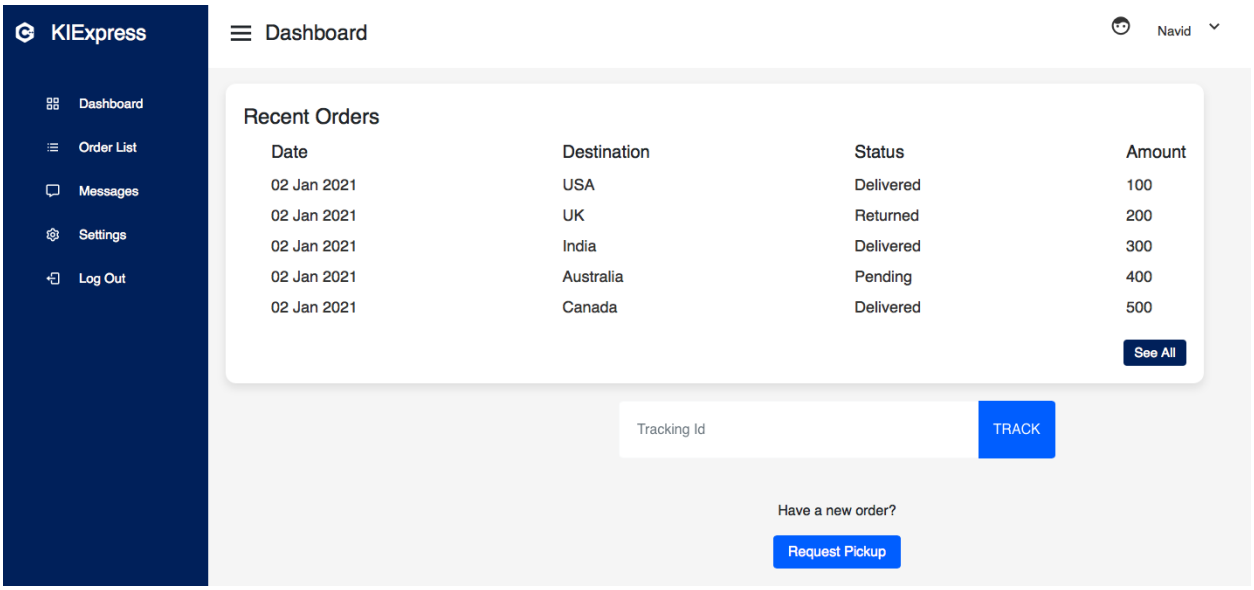

Figure-5.7: User Dashboard

Features

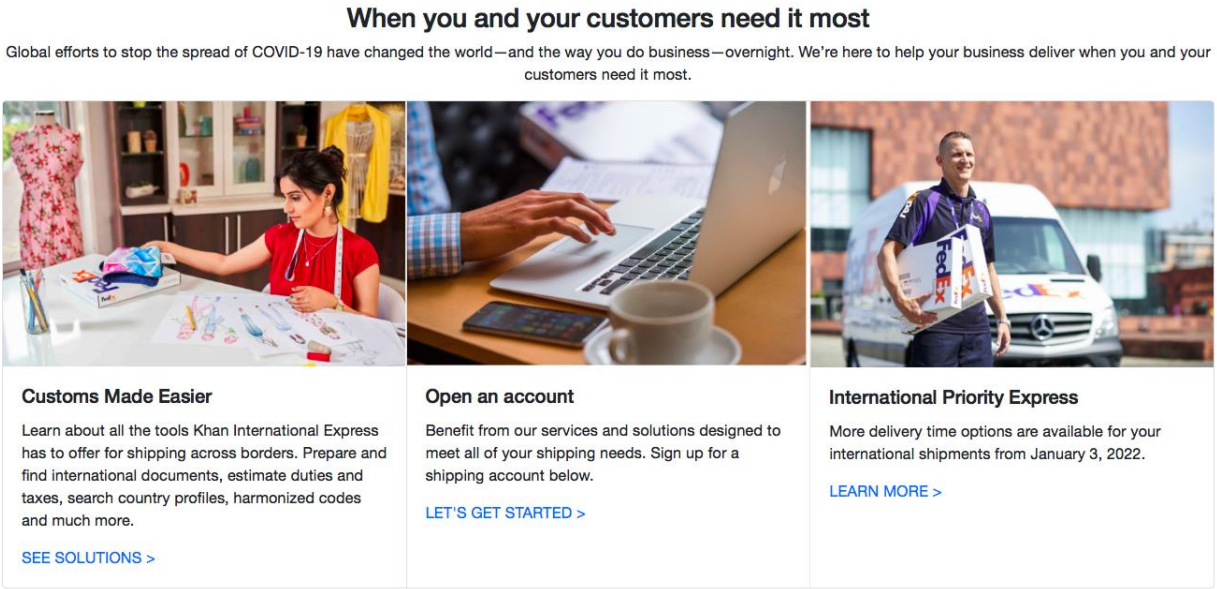

Figure-5.8: Features Page

Pickup Request

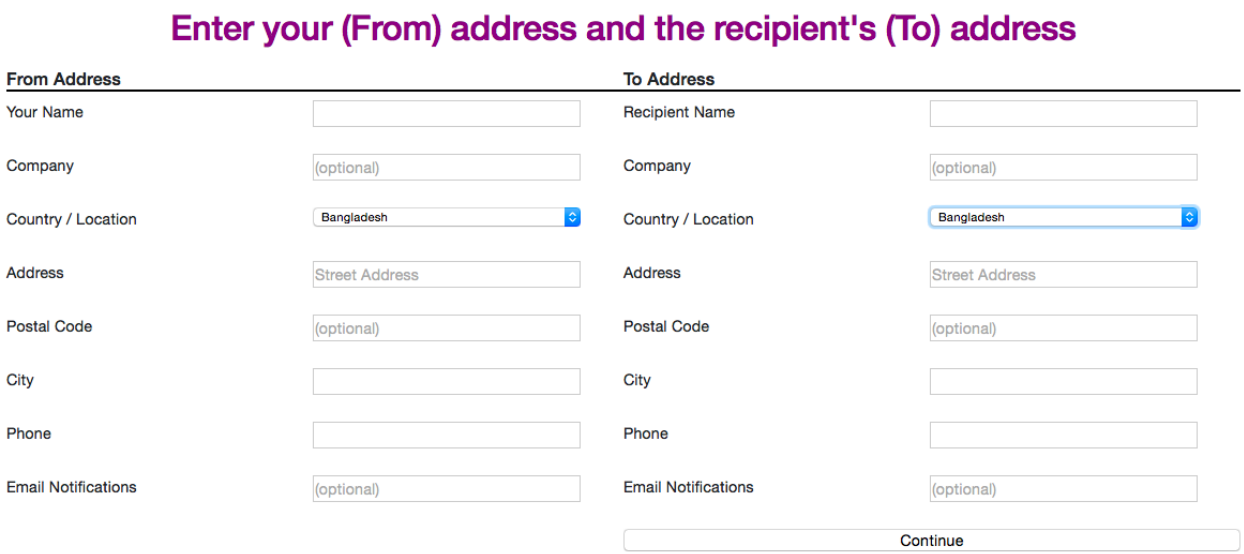

Figure-5.9: Request Pickup Page

Contact Us

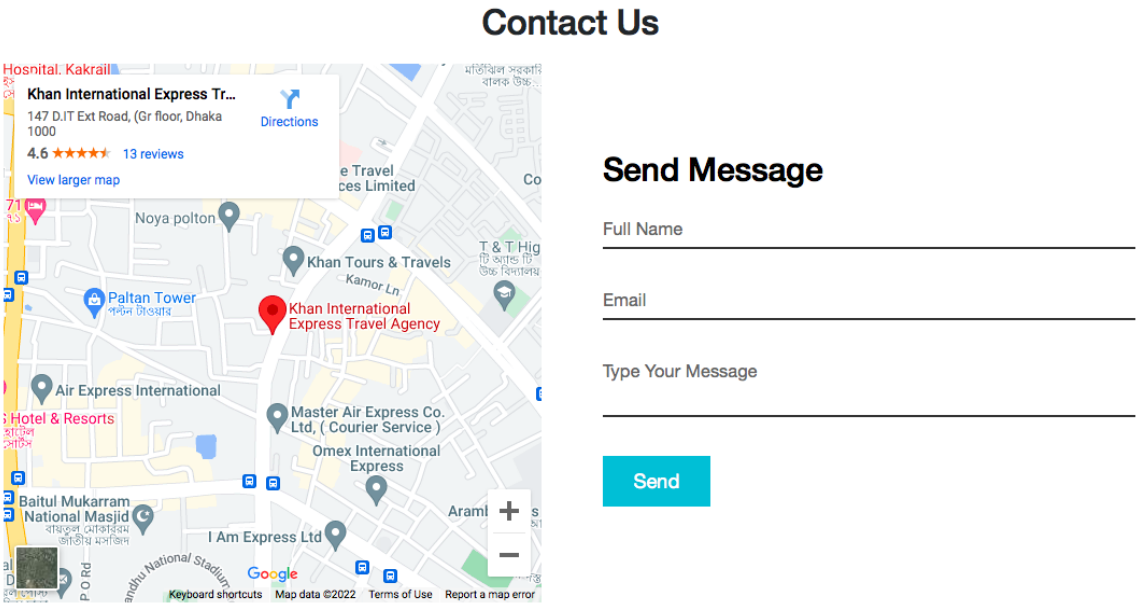

Figure-5.10: Contact Us Page

Footer

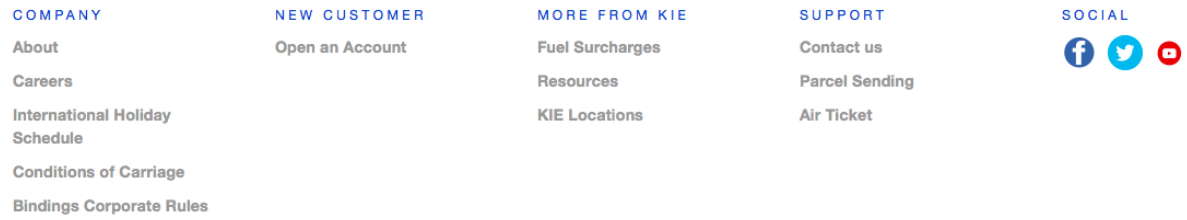

Figure-5.11: Footer Page

5.4.3 Architecture

Web application architecture defines the interactions between applications, middleware systems and databases to ensure multiple applications can work together. When a user types in a URL and taps "Go," the browser will find the Internet-facing computer the website lives on and requests that particular page.

The server then responds by sending files over to the browser. After that action, the browser executes those files to show the requested page to the user. Now, the user gets to interact with the website. Of course, all of these actions are executed within a matter of seconds. Otherwise, users wouldn't bother with websites.

What's important here is the code, which has been parsed by the browser. This very code may or may not have specific instructions telling the browser how to react to a wide swath of inputs. As a result, web application architecture includes all sub-components and external applications interchanges for an entire software application.

Of course, it is designed to function efficiently while meeting its specific needs and goals. Web application architecture is critical since the majority of global network traffic, and every single app and device uses web-based communication. It deals with scale, efficiency, robustness, and security.

Chapter 6

Result and Analysis

6.1 Overview

As previously stated, the application, Courier Express, is a PHP-based website with PhpMyAdmin as the database. The application is developed in Visual Studio, with the front interface designed with CSS and the backend written in PHP. The project's total work was centered on the needs of our company's stakeholders. The initial phase was to gather project needs from key stakeholders, which were then organized according to the project's requirements plan. Because this website will be utilized by users all over the country, we wanted to create a project that would meet their requirements. To ensure that the final UI meets the needs of the customer, we had to design mockups and modify them multiple times. Along with the UI, we had to make sure the project had functionalities that were identical to the application of similar companies as us. To put it another way, we wanted our software to be simple to use while having extensive features.

6.2 Testing Result

The application's development has been successfully completed. Each screen's backend functionality was written at the same time as its UI was being designed. Several new functionalities have been incorporated as a result of changes in specific requirements. I had tested the program whenever new functionalities were incorporated. I planned to finish the design and development process before moving on to testing, however owing to time constraints, I had to complete all 3 phases at the same time. Many test cases had failed, necessitating the efforts of me to correct the bugs and errors. Not only did I run into faults throughout the development and testing phases, but I also had a number of issues with storing data in our PhpMyAdmin database, which were eventually resolved.

Chapter 7

Engineering Problem Analysis

7.1 Sustainability of the project

Every system must emphasize sustainability to keep up with the race of modernization. It is a difficult undertaking, but in order to exist in the long term and ensure that the system's purpose is fulfilled to the customers, sustainability is crucial and plays a critical role. In the case of software and web development, systems are built to be sustainable so that they may be used continuously without causing difficulties for both the owners and the users. To ensure the long-term viability of our project, the website is built to be accessible independent of the user's machine's environment. The website we designed in a way so that it does not rely on the computer specifications, operating system, resolution, or internet speed of the user. The website will work on all desktops and devices using any browser.

The website's long-term sustainability will also be ensured through frequent maintenance of the website and its server which will be done by the maintenance team collaborating with developers. The website's HTML, CSS, JS, and backend code are all nicely optimized. It is ensured that the website works properly and is easily accessible by users regardless of the device's specification by minimizing repeated codes, minifying all the CSS and JS codes that are utilized, and keeping suitable coding standards. In terms of style and layout, the website is meant to be user-friendly, with a focus on the User Experience. Visitors with less computer experience will be able to access and navigate the website with ease. The media files, such as photographs, videos, symbols, and logos, have all been optimized to guarantee that the pages load quickly, allowing individuals with low-end devices and sluggish connections to visit the website.

7.2 Social and Environmental Effects and Analysis

Socials Effects

Courier Express intends to simplify the process of customers delivering items to courier firms by automating the procedure previously performed manually by consumers. The application will save consumers time and money used to deliver the parcel. Additionally, it will enable employees to

manipulate the pickup request submitted by the customer with a few clicks. To complete CRUD operations, staff will require an internet connection and a smartphone. The task will be made easier for the employees and the customers as it will become just a matter of few clicks of the mouse button.

Environmental Effects

People are finding it impossible to move from one place to another as the world faces a critical period due to the global pandemic of Covid-19. This system will play a significant part in this situation since it will allow most employees to operate from home and prevent customers from physically visiting the firm's warehouse to deliver the parcel. Only the delivery personnel are required to bring the parcel to the warehouse so that the packaging staff can pack it. As a result, a substantial amount of human contact is reduced, limiting the possibility of the virus spreading.

7.3 Addressing Ethics and Ethical Issues

In the world of smartphones with so much data collection, hacking, cyber-crime, etc. There are some unspoken rules and ethics guidelines that need to be followed when working on creating and releasing an website. 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:

Data Security: The Firebase Database stores data on the cloud. When compared to on-premises security, cloud services provide more robust data security; as a result, there is a low risk of data exposure to the public. Firebase Security Rules act as a barrier between users' data and malevolent users. Complex rules have been written in Courier Express to ensure the best security for the app's data.

Data Storage: Since all our application data is stored in the Firebase database, which is hosted in the cloud, there is essentially no risk of data loss or leakage due to system failure. If the data were retained on-premises, there would be the risk of data loss due to system failure or other disasters. However, because our application data is stored in the cloud, there is virtually little risk of data loss.

Collecting user data: The system will collect only user data relevant to the business. The user's data will be gathered only if the user gives permission to collect the data or willingly provides their data on our application.

Chapter 8

Lessons Learned

8.1 Problems Faced During this Period

Working on a real-life project during my internship at Khan International Express was really beneficial in terms of learning and knowledge growth. I had the opportunity to learn from highly skilled engineers with extensive expertise. Despite the amazing experience, there were certain constraints throughout my internship term. The primary constraint for me was the ongoing global epidemic of COVID-19 which some might think is over, and working in a team with almost new code structure. Although I was not doing a full time physical office, I had to have online meetings at least once a week. It was also difficult to master so many new technologies in such a short period of time and get with the flow of the other developers and working as a team. Every project here has very tight scheduling and each section has deadlines. Meeting those deadlines as well as learning the new features was very challenging. Also, It was really difficult to study and apply the knowledge in such a short period of time. It was exhausting for me to keep up with the team's experienced developers' fast pace.

8.2 Solutions of those Problems

Even though I was required to work from home, I was expected to attend meetings and discuss what I created, which resolved the issue of communication breakdown. Despite the fact that designing a professional application was new to me, I overcame obstacles and accomplished my goals through dedication to my job and hard effort. I had to continue learning and practicing the technology in greater depth because what I have seen in these three months is that even seniors are learning new technologies every month because new features are coming every day and we have to keep up with the web trend. But surely, after stirring a bit more with these technologies I see myself in the position of an expert like the other skilled developers in my team. Working alone on the project was initially challenging since all of the responsibilities that should have been carried out by a team were instead handed to me to fulfill on my own.

Chapter 9

Future Works & Conclusion

9.1 Future Works

This project, Courier Express, is still evolving, and we intend to add additional features to it. Some of the features that we have plan to add in the upcoming future are:

- ➢ Adding a chatbot for customers to communicate with support team
- ➢ Enable users to add their own photo and NID
- ➢ Adding an extra feature for customers to use promo code
- ➢ Including the option to choose multiple languages
- ➢ Adding cashless payment option for customers

9.2 Conclusion

Working as an intern on the project Courier Express was a wonderful experience. During my internship, I learned and applied a lot about Visual Studio and web development. I have also learned how to work within tight deadlines and under pressure. I learned a great deal about one of the most popular programming languages, PHP, as well as PhpMyAdmin. I was challenged to quickly adjust to changes and come up with rational answers. Throughout my project, I discovered how to collaborate with my supervisor to overcome obstacles. Despite the great strain of producing a professional application on my own, I did not give up and succeeded in completing my aim of developing the application in accordance with the specifications. I will undoubtedly learn and seek a career in this field. I would like to thank everyone who has made my stay as an intern so wonderful, boost my self-confidence and help me prepare to step into my professional career .

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An Undergraduate Internship on Courier Service Management System for a Travel Agency

By

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Summer, 2022

Consent Form

The student modified the internship final report as per the recommendations made by his academic supervisor during final viva, and the department can use this version for archiving.

(Signature of the Supervisor)

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