An Undergraduate Internship/Ticket Management System

By

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Spring, 2022

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May 11, 2022

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

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Attestation

This is to confirm that the report has been completed by me, Golam Rabbanie Tanhid (ID:1710475), and that it has been submitted in partial fulfillment of the requirements for the degree of Computer Science and Engineering from Independent University, Bangladesh (IUB). It has been successful. Md. Fahad Monir supervised the completion of the project. I also attest to the fact that all of my authentic work is something I discovered during my internship. All of the information sources this project has made use of it, and the report has been properly recognized.

Signature	Date
Golam Rabbanie Tanhid	
Name	

Acknowledgement

I would like to thank Almighty Allah for keeping me and my family safe during this COVID-19 situation. I would like to again thank him for giving me an opportunity to complete my graduation from a reputed University in Bangladesh and complete my internship from a well-known software farm. I would like to express my gratitude to my honorable supervisor Md. Fahad Monir, Internship Supervisor Lecturer, Department of Computer Science Engineering, Independent University, Bangladesh, for his helpful assistance, tolerance, time, constructive criticism, and careful counsel on several elements of my internship and report preparation. The knowledge and experiences I've gained here have greatly aided me in my work as a Developer, and it will undoubtedly aid me in my future endeavors. I would also like to thank my teammates, my friends and family for always helping me through the hard times while working on this project. Without them this journey would have not been easy.

Letter of Transmittal

April 21, 2022
Md. Fahad Monir
Lecturer
School of Engineering, Technology and Sciences Independent University Bangladesh.
Subject: Submission of Internship Report, Spring 2022. Dear Sir, I, Golam Rabbanie Tanhid, from Spring 2022, Section 10, would like to submit my Internship report with due dignity and respect. This report is produced to inform you that my internship program and report have been finished. My internship began on Jan 20, 2022. Spade Digital was where I finished my internship. This report is based on my internship experience and the work I completed at Spade Digital. My main goal for the internship was to obtain experience in all of the company's technology-related disciplines, such as research and development, documentation, content writing, and software development, as well as to learn about software development processes and practices.
Over the period of my internship at Spade Digital, I found out that I learned and applied a lot of new skills and technologies. The company comprises of a small team for developers, 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 fills all the requirements and is up to your expectations.
Sincerely,
Golam Rabbanie Tanhid
ID: 1710475
Student, SECS

Evaluation Committee

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Signature

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Name

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Supervisor

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Signature

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Internal Examiner

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External Examiner

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Convener

Abstract

The experienced I gathered from the internship program conducted at Spade digital is written in this report. Spade Digital is a Bangladesh based company offering solutions by using technology as just a platform to mobilize the world around us. Spades offer's products and solutions to enhance not just businesses but also assist in improving your daily activities. Main services provided by Spade digital are:- Digital Marketing, Websites, Software Solutions. I was selected at Spade Digital as a web developer to build them a Ticket Management System which will complete my internship program as a web developer under the company. The aim of the project was to develop a system which will be a dynamic modular based fully customizable system which can be integrated with any bus services. The system will allow a bus company to transform their services into a digital platform where customers will be able to buy directly from their website. It will also allow the bus owner to monitor and manage their internal system, update and track their ticket system.

Before working on any project, I had to gather initial requirements for the system and submit an action plan for the Ticket management system which consists a documentation. Of all the functionalities the system will have after development.

Keywords— solution, digital, website

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Chapter 1

Introduction

1.1 Overview/Background of the Work

All the ticket counter currently providing are still using physical labor and interactions to manage the overall system of the tickets rather than implementing a digital system which can make the processes faster, easier and efficient. Although people are more comfortable and used to physical interactions this pandemic has taught us that sometimes we need to live by with as little physical interactions as possible while still going out. This has made us realize and directed is to take a new approach.

Nowadays, people are opting for more online services than ever.Applications like foodpanda, shohoz, uber eats are one of the most used services in the country. This shows us that people are now slowly moving to the digital era by using these services.

1.2 Objectives

- The main objective is to enable users to buy tickets on a reliable platform.
- Prevent data being tampered or duplicated by other users.
- Enable users from all over the country to buy tickets on our platform.

1.3 Scopes

- Dashboard - A customize dashboard for users where they can see the tickets schedule.
- Admin Page - This page will only be accessed by the admin to manage and track the system
- Edit Information: Users can edit their personal information .
- • Rewards: For multiple purchases users will get free points/gift cards which will get them discounts for their next purchase

*** Mention all the scopes of your work. ***

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

The fundamentals of understanding how real-world applications operate in general were taught throughout undergraduate courses. Starting from CSE 203, Data structure course helped me building the basic building blocks of programing such as linked list, stack, queue, graph, pointers etc. In CSE 213, Object oriented programing I learned about representing data as objects and how to interact with other objects. In CSE 303, database management system I learned how to work with databases. How to push or pull data from databases and represent it to the frontend users as they want it which was helpful in this project. CSE 307, System Analysis and Design: This course covers the Use Case Diagram, Use Case Scenario, and SDLCs, as well as how to apply them to a project. CSE 309, Web Application and Internet which taught students how to create web applications. HTML, CSS, PHP, JavaScript and jQuery were among the technologies studied, and they are all in great demand in the market. Finally courses like CSE 416, Distributed database systems gave me a knowledge of how to work with unstructured and huge datasets.

2.2 Related works

2.2.1 Shohoz

They started their journey back in 2014 with one goal in mind- to make lives easier! As a technology-first company, they develop tech-driven solutions for the everyday challenges of Bangladeshi people. Shohoz, a pioneer in Bangladesh's travel industry is now the largest online ticket destination in the country. They put customers first and facilitate them with the freedom to choose from hundreds of operators and routes, compare prices, offer the best deals and safeguards- all within a few minutes and with just a few taps on their phone.

Figure 2.1: Shohoz

2.2.2 Jatri

Jatri is a public transportation journey planner, digital ticketing, fleet management, and mobility marketplace that boosts productivity by assisting drivers in providing dependable transportation to commuters. For many years, transportation has been a major source of frustration for the people of Bangladesh, and we hope to eliminate these problems using cutting-edge technology.

Figure 2.2: Shohoz

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

The work breakdown structure (WBS) is a method that breaks a project down into a hierarchy of deliverables, tasks, and sub-tasks. For our project we used the work break down structure in project management because WBS visually defines manageable chunks of a project so that our team can understand, as each part of the work breakdown structure gives further detail. In our WBS, we have used the top-down approach.[1].

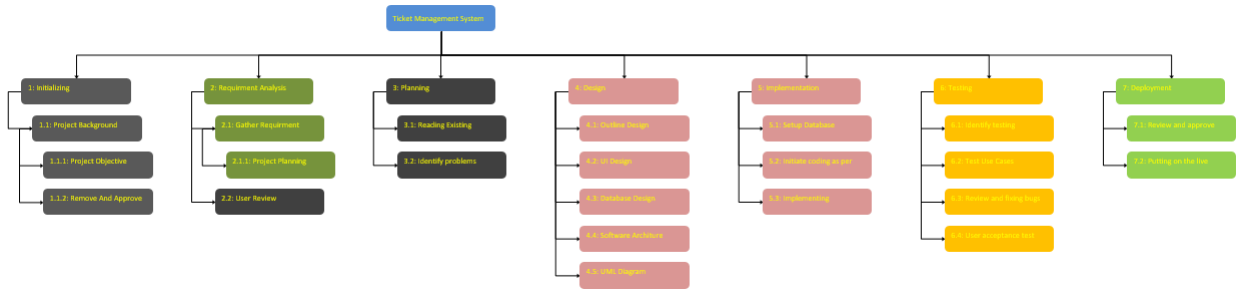

Figure 3.1: Work Breakdown Structure

3.2 Process/Activity wise Time Distribution

for each of the sub-tasks in the Work Breakdown Structure time was allotted to ensure that the project was completed on schedule. A table will be constructed to display the project's time allocations and work percentages for the sub tasks.

Activity	Duration (Days)	Work Percentage
Evaluation	10	5
Planning	20	20
Design	15	40
Development	35	15
Test	14	15
Deployment	7	5

Figure 3.2: Critical path model

3.3 Gantt Chart

One of the most common and useful ways to show activities (tasks or events) versus time is the Gantt chart, which is frequently used in project management. On the left side of the chart, there is a list of the activities, and at the top, there is a suitable time scale. Each action is represented by a bar, the length and location of which reflect the start, duration, and finish dates of the activity. This allows you to rapidly see numerous activities, their start and end times, duration's, and so on.[2]

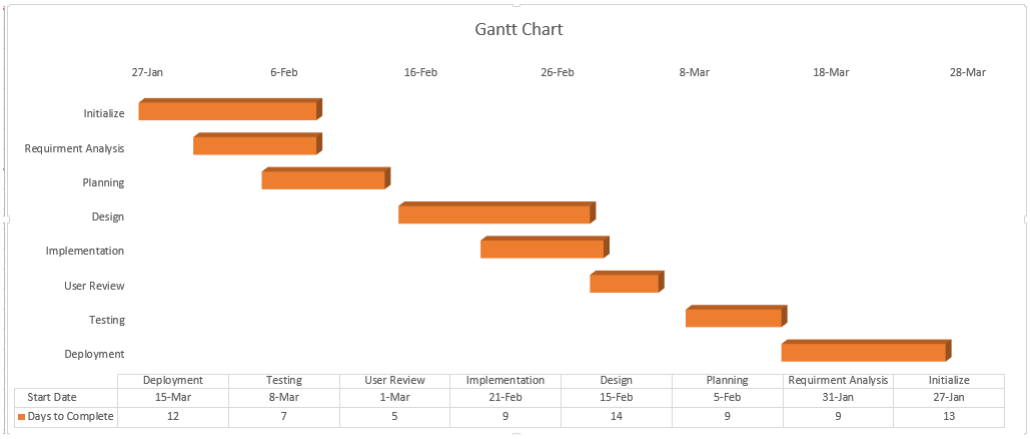

Figure 3.3: Gantt Chart

3.4 Process/Activity wise Resource Allocation

*** Draw a chart and briefly Explain ***

3.5 Estimated Costing

The price was computed based on one of the web application's features that the client requested. The size, requirements, features, functionalities, and design of the web application were the most important factors. It entails creating the website's design layout, making the system fully dynamic for adaptable capabilities, social network connections via api's, SSLCOMMERZ

integration for online payment service, and many more tools used to construct the web application. The cost of the developer and the resources employed were also considered. Tk.2,50,000 was considered to be the approximate cost.

Work Distribution	Costing
Web application Development	1,50,000
Domain and Hosting	50,000
Salary	50,000
Total	2,50,000

Figure 3.4: estimated cost

Chapter 4

Methodology

A web application, unlike computer-based software programs that run locally on the device's operating system (OS), is software that runs on a web server. The user uses a web browser with an active network link to access web applications.

The Scrum technique was used in the project development process for our project. Agile is an iterative process in which each unit of work should be completed in a limited amount of time (a couple of weeks is ideal). At the end of each iteration, the aim is to provide working functionality to the customer. And, after getting customer input, items are tweaked for the next version.

Each of these iterations is referred to as a sprint in Scrum. This is the most important principle in Scrum. Sprints are typically based on the backlog, which is a prioritized list of specifications provided by the product owner. Throughout the life of a project, the backlog may change.

A sprint preparation meeting is held after the backlog is formed to schedule the work to be completed during a sprint. The backlog is dissected and divided into logical units, which are distributed among development team members. To minimize the probability of changes in requirements or priorities, a sprint should last no more than one month. The Scrum master's job is to ensure that everyone on the team is focused and understands their position. A regular Scrum, which is essentially a 15-minute standup meeting to rapidly review current progress and answer any questions, is normally held after the sprint has begun.

The sprint analysis and sprint retrospective periods occur at the conclusion of a sprint and before the start of the next sprint. The first is more concerned with the client, while the other is more concerned with the production team.

The Scrum team meets with the product owner and any stakeholders during the sprint review to determine which backlog things have been completed and which are still outstanding. The backlog and goals for the next sprint are normally changed based on the team's success and exchange of ideas. The Scrum team then meets to discuss the previous sprint's strengths and challenges, and to use the knowledge to adjust and develop the work methodology for the next sprint.[3]

Chapter 5

Body of the Project

5.1 Work Description

Janbahon is a web-based platform that simplifies the process of purchasing and selling tickets. The CEO put together a core team of six people to work on this project. After researching existing systems on the market, the entire team came up with a plan for the project's overall concept and structure. The team leader gave us daily duties and took a daily report at the end of the day. We were able to divide the workload in this manner. My role in this project was to create both the frontend and backend of the system. I had to use HTML, CSS, and React-Bootstrap for the frontend. . Flow php was utilized for the backend. Other external applications, like as Notion, were utilized to keep track of daily activities and planning.

5.2 Requirement Analysis

Rich Picture

A rich image is a depiction of a situation that shows the main components and linkages that are required to change the situation. They are made up of images, phrases, symbols, and icons that all graphically portray the subject. It's called a rich shot because it depicts how complex and rich a situation is.[4].

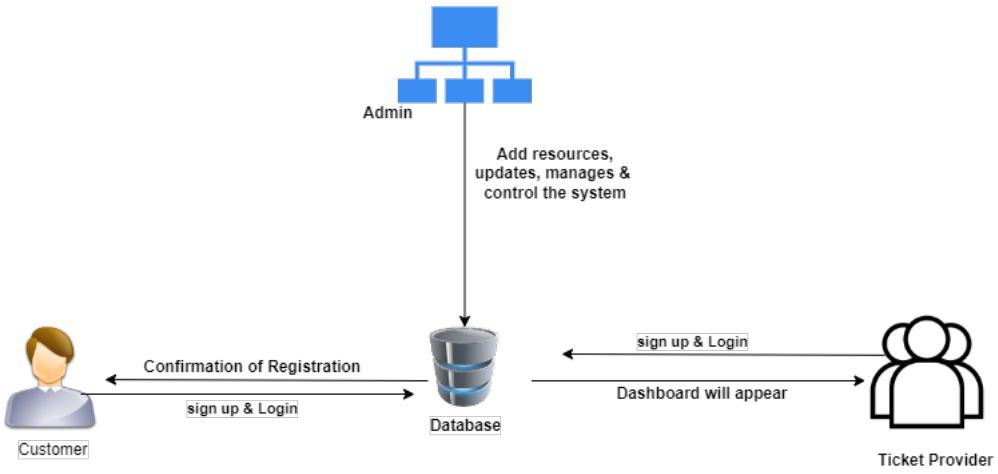

Figure 5.1: Rich Picture

Functional and Non-Functional Requirements

End users specifically request certain conditions as the system's essential capabilities, which are known as functional requirements. All of these functions must be included into the system as part of the contract. These are represented or indicated by the system input, operation, and desired outcome. They are essentially the user's requirements, as opposed to non-functional requirements, which can be seen in the finished product right away.

- After entering user email and password, the system authenticates if the user is valid or not. If the user doesn't exist, the system generates a user-friendly message
- For signing up process, the system sends verification codes to user defined email to confirm user validity
- If the user has forgotten his/her password, the system will send a confirmation email in their email address to allow users create a new password.
- After signing in the user will be able to post comments, talk about features.
- The admins can also check the new users and their information
- Admins can also check the bus schedule information and will be able to add new moderator

Non-Functional Requirements:

- Reliability, availability and maintainability
- Performance and Scalability
- Security
- Usability

5.3 System Analysis

5.3.1 Six Element Analysis

Process	Human	Non-Computing Hardware	Computing Hardware	Software	Builder Database	Database	Connectivity
Add employee	admin	Mouse, Keyboard, Monitor	PC/Laptop/Mobile	Web App	ANYDB	SQL	Internet
Manage	admin	Mouse, Keyboard, Monitor	PC/Laptop/Mobile	Web App	ANYDB	SQL	Internet
Update informatio n	admin	Mouse, Keyboard, Monitor	PC/Laptop/Mobile	Web App	ANYDB	SQL	Internet
Delete User	admin	Mouse, Keyboard, Monitor	PC/Laptop/Mobile	Web App	ANYDB	SQL	Internet
Updating bus schedule	admin	Mouse, Keyboard, Monitor	PC/Laptop/Mobile	Web App	ANYDB	SQL	Internet
Accept request	Admin	Mouse, Keyboard, Monitor	PC/Laptop/Mobile	Web App	ANYDB	SQL	Internet
Login/signu p	custome r	Mouse, Keyboard, Monitor	PC/Laptop/Mobile	Web App	ANYDB	SQL S	Internet

Figure 5.2: Six Element Analysis

5.3.2 Feasibility Analysis

6 A feasibility analysis evaluates the project's potential for success; therefore, perceived objectivity is an essential factor in the credibility of the study for potential investors and lending institutions. It decides whether the project is morally, theoretically, economically viable, and whether it is worth investing in the project.[5] Five feasibility studies are considered for this project: -

1. Operational feasibility: The ongoing pandemic and current economic situation make the website quite realistic, as physically traveling to the ticket counter to buy tickets which is now a very unsafe. Customers can buy tickets directly from this website.

2. Technical feasibility: Spade Digital is a well-known and well-established company that has worked with some of the industry's top names to deliver services like as web application development and AI integration with systems. This project is technically possible since all of the necessary hardware, software, and other technical requirements are available

3. Economic feasibility: In this part, the cost and advantages of this website have been assessed. The website does not have any hidden expenses for customers; instead, it allows them to purchase tickets straight from the website, book reservations, and choose their seating arrangements, which is the system's key selling point as it is the only application that offers these services.

4. Scheduling Feasibility: To make a project successful, it is very important to complete a project at the promised timeline. The project is already operational with all the modules

with only one developing module in the project pipeline. It will be completed ahead of project timeline.

5.Feasibility: All the legal constraints have been considered before proceeding with this project which includes data protection acts, social media laws, or zoning laws so that it does not face any legal constraints in the future.

5.3.3 Problem Solution Analysis

There were a number of development problems that were encountered while doing the project and they were solved accordingly. Some of the problems were:-

• Updating Views. • Integrating the full system

5.3.4 Effect and Constraints Analysis

Each project has its own set of constraints and risks that must be managed to ensure the project's ultimate success. Project managers have three major constraints: time, scope, and budget. The triangle of project management is often known as the three limits. Extending the project's scope, for example, will almost certainly require more time and money, but shortening the project's timetable can save money while also reducing the scope.

5.4 System Design

UML Diagrams

UML is an architecture, design, and implementation of large web application systems. It stands for Unified Modeling Language. When you write code, an application has a thousand lines and tracking the relations and hierarchies inside the web application system is tough. Divide UML diagrams into components and sub-components.[6]

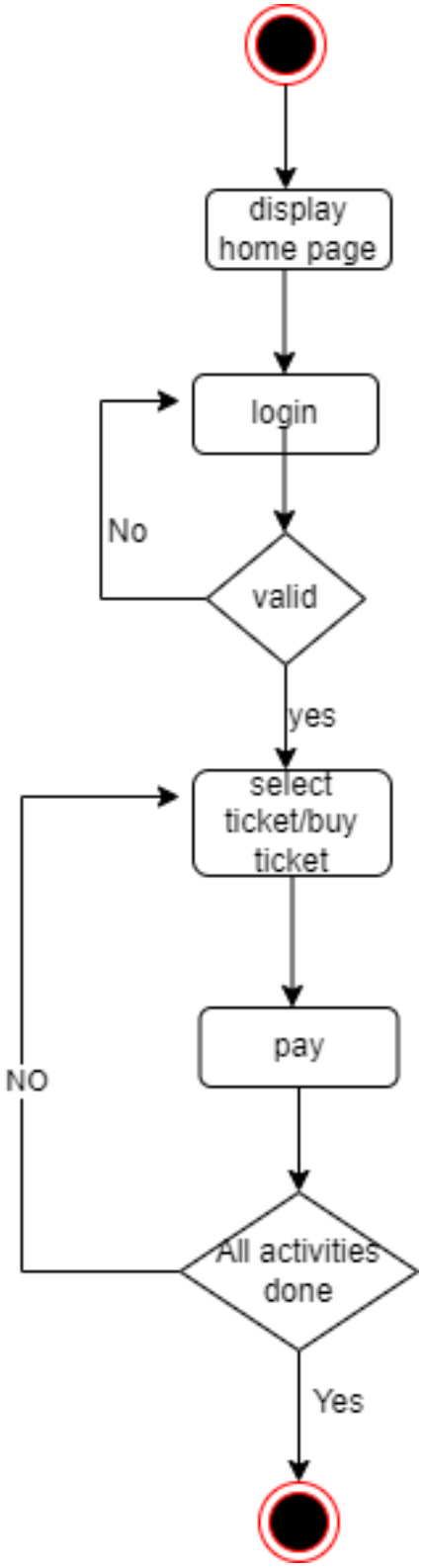

Figure 5.3: User Activity Diagram

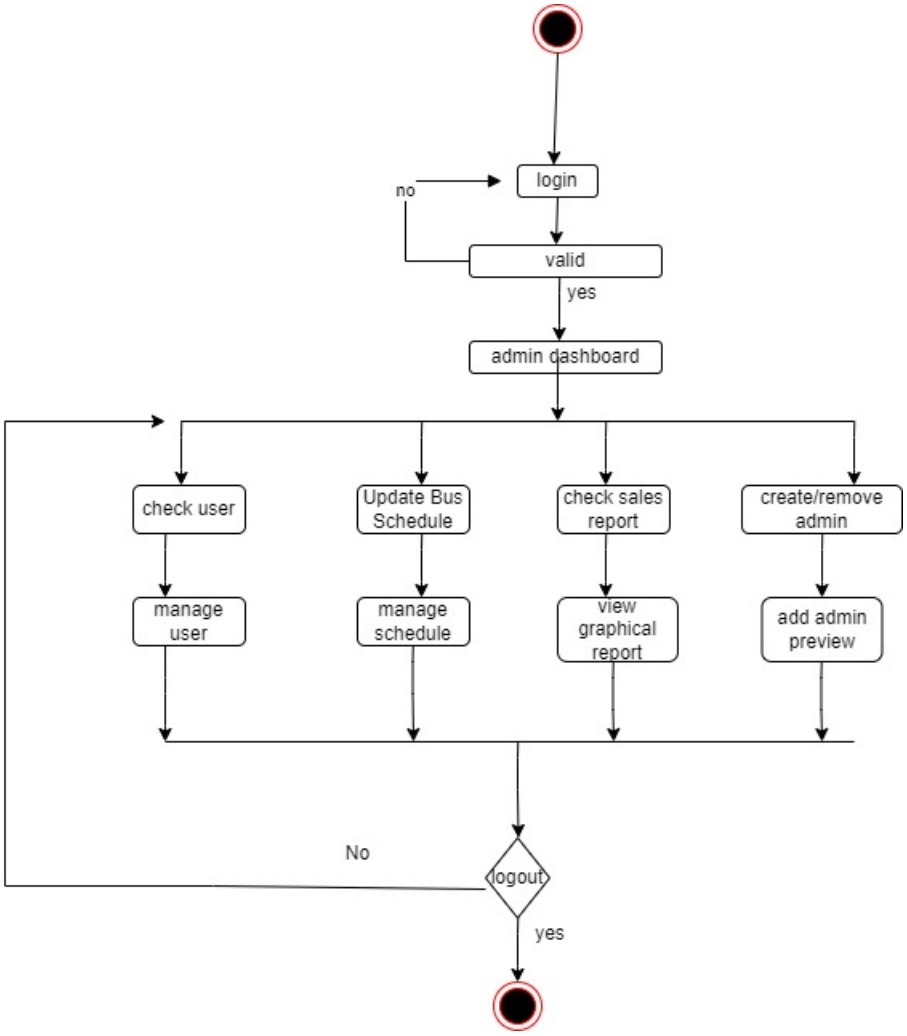

Figure 5.4: Admin Activity Diagram

Architecture

The architecture of a system depicts the system's organization and structure, as well as how it functions. A system is made up of a group of components that perform a specific function or set of functions. In other words, the program's architecture provides a solid foundation for the development of a web application. Several architectural choices and trade agreements are influenced by the system's quality, performance, and maintenance, as well as its overall success. The system may be jeopardized if normal concerns and long-term impacts are not considered. In today's systems, a variety of high-level architectural models and concepts are routinely used. These are commonly referred to as architectural styles. The architecture of a web application system is not limited to a single architectural style. Instead, the entire system is typically made up of a variety of styles.

5.5 Testing

Input

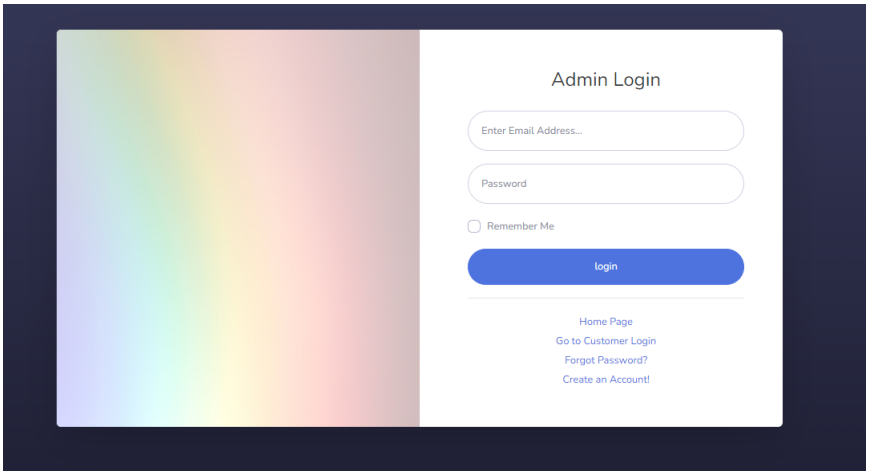

Figure 5.5: Admin login

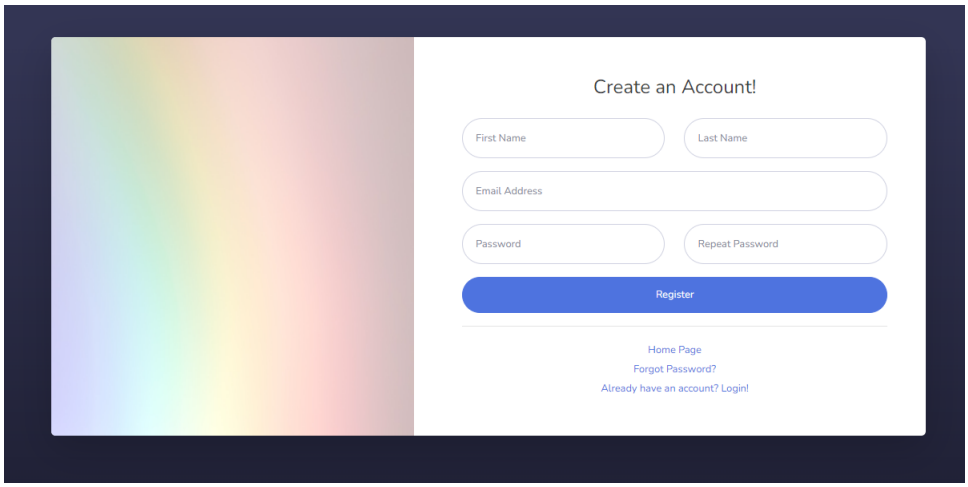

Figure 5.6: User Signup

Output

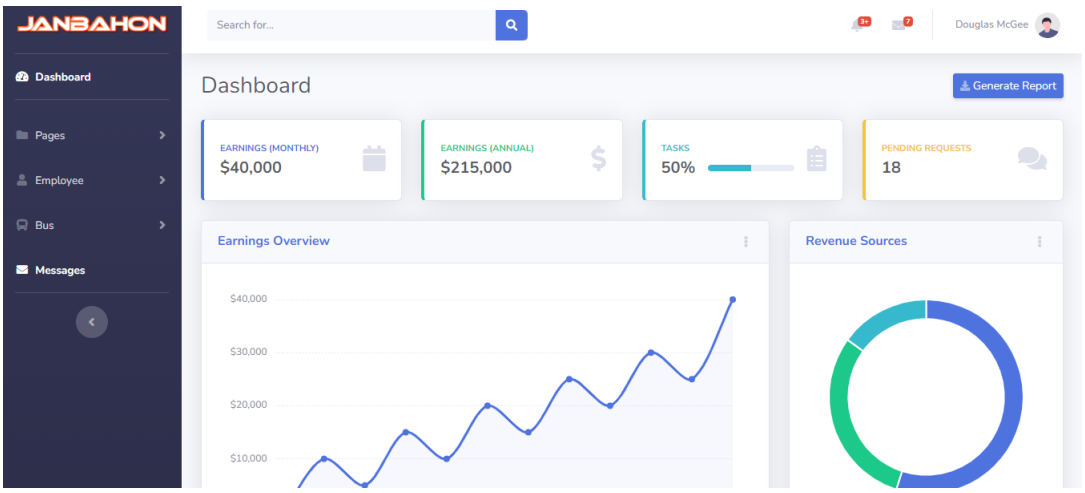

Figure 5.7: Admin Dashboard

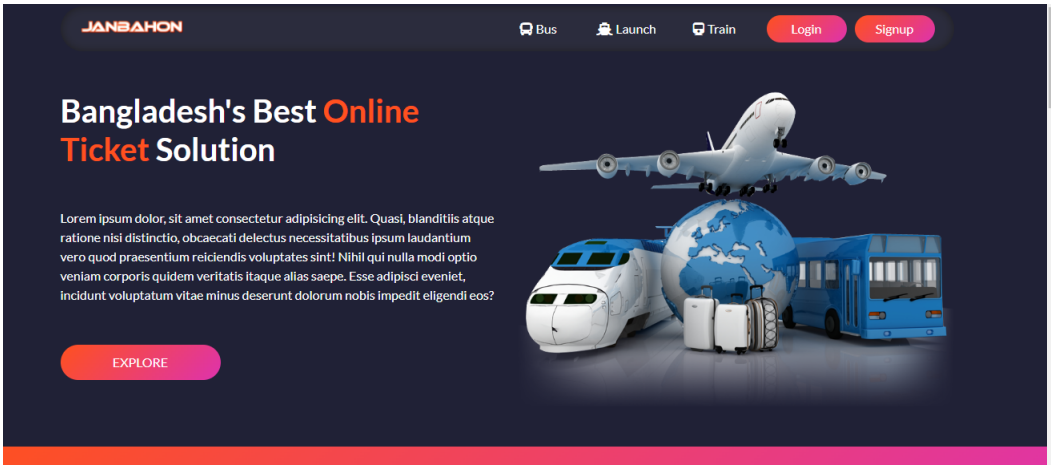

Figure 5.8: Landing Page

*** Add more sections according to your project/work. ***

Chapter 6

Results & Analysis

This section offers screenshots of some of the application's primary features so you can see how the system works.

The landing page is the first page a user sees when they open the website. A user's account can be used to log in.

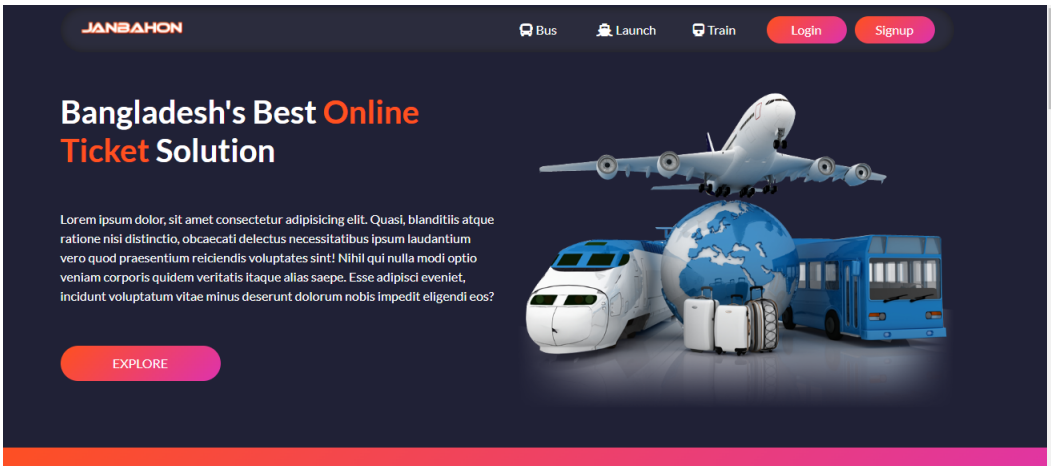

Figure 6.1: Landing Page

Admin Page- Only the administrator has access to this page. This dashboard allows the administrator complete control over the system, allowing them to conduct CRUD tasks.

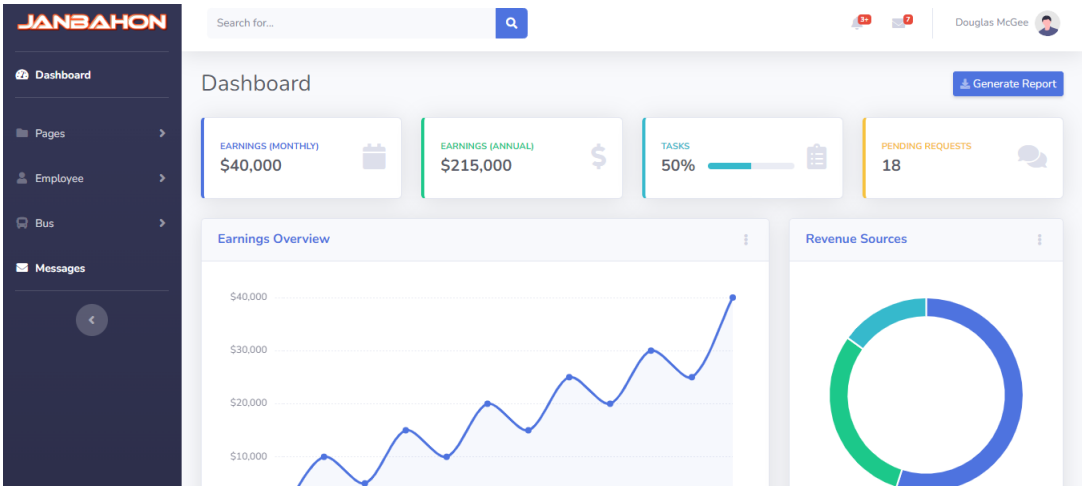

Figure 6.2: Admin Dashbord

Bus Transit Details Dashboard - Here admin can manage the bus timing

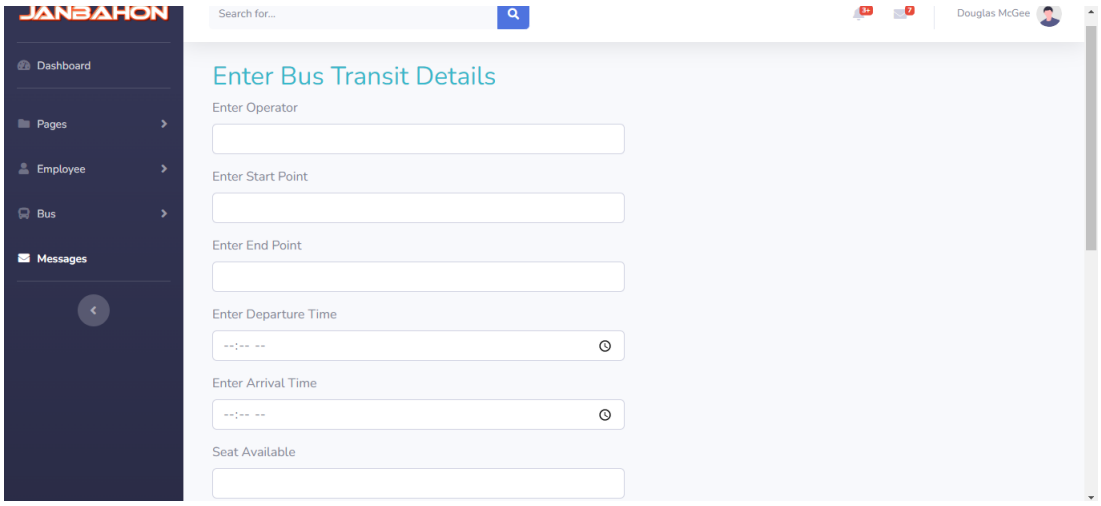

Figure 6.3: bus Transit Details Dashboard

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

Constant maintenance and considerable updates are required to keep the project's effects going. With more system improvements, the project's impact can be extended. Making it more user-friendly and appealing to the eye. The system administrator has complete authority over the system, allowing him to generate, manage, update, and delete any unwanted data.

7.2 Social and Environmental Effects and Analysis

Social Effects: Our system is a web-based platform that handles online ticket purchases. In today's environment, owning a rare digital format of amazing experiences or artwork is becoming a current craze. This also symbolizes a person's social standing. People do not have to leave their homes to purchase tickets. All of this can be accomplished with only a few mouse clicks, and because the transactions are completed instantly, there is no need to wait. People should also stay indoors during the COVID-19 outbreak. People can purchase and sell from the comfort of their own homes because this is an internet platform. This will protect them from becoming infected with the virus.

7.3 Addressing Ethics and Ethical Issues

Software now has a direct impact on our daily lives, and big data and data analytics have entered the scene. As a result, dealing with the ethical aspect of it has become a problem. This system has weak cyber security vulnerabilities, as well as a problem with protecting personally identifiable information. Security was a worry during the project's original development phase to deal with such issues. As a result, the system complies with secure development guidelines. Along with all of the other features, security is still a priority in the system's upkeep. The developers made certain that there were no violations of conduct and that all of the points were

seriously considered. The following are a few of them: 1) Only collecting relevant user data ii) Secure data storage iii) No discrimination

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

While working on any project it is very normal to face problems. I also had faced several problems while working on this project. As this project is still under development, problems arise now and then. The main problem we encountered was how to execute several smart contracts on a single button click. As there are transaction related features so a button click can start several events. Just like that, smart contracts are one of the most important parts of this project. They hold all the user data and are responsible for any kind of successful transactions. So, executing several smart contracts all at once was a big challenge for us as we had practiced only one smart contract at a time. There were also some design related problems such as some CSS properties not working properly after the page finished loading. We also faced problems with the payment gateway where the users could not connect their virtual wallets through our system

8.2 Solution of those Problems

As a newcomer to a language, I studied a lot of material and learned all the ins and outs of the language as I built the system. In this pandemic situation, I also had to handle extra time with my boss, and I had to visit the office multiple times despite the fact that we were all working from home. Being in this realistic setting, I can see how difficult and stressful my life will be after I finish my degree. One thing I've learned is that no matter what the situation is, we must overcome it in order to progress.

Chapter 9

Future Work & Conclusion

9.1 Future Works

In the current situation, there is much more that can be accomplished through the project in order to stay competitive. Many new features are being considered and tested for future projects. The company is working on a major update for the android and iOS versions of the program, which will be released soon.

9.2 Conclusion

A purposeful effort was made to create and develop a software package that would generate a suitable case system using available tools, processes, and resources while constructing the system. The system was created with the purpose of being as simple as feasible to use. As a result, it's reasonable to assume that the system will be acceptable to all users and will meet their needs adequately. There were flaws in the development of this system, just as there are in any system development process with several flaws.

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