

Report On Internship as a Software Developer Engineer

by

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19201135

An internship report submitted to the School of Data and Science
in partial fulfillment of the requirements for the degree of
B.Sc. in Computer Science and Engineering

School of Data and Science
Brac University
January 2023

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Declaration

It is hereby declared that

1. The report submitted is my own original work while completing degree at Brac University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

Student's Full Name & Signature:

MD. Imtious Bari
19201135

Approval

The report titled “Internship as a Software Developer Engineer” submitted by

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Of Spring, 2023 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of B.Sc. in Computer Science on January 26, 2023.

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Abstract

This report summarizes my six-month internship as an intern at CIS Tech Ltd. My main objective throughout the internship was to create a software application by using the waterfall and agile methodologies to follow every stage of the software development life cycle. As a result of my previous six months of internship, I am developing and testing several web applications. I have learned how to use React to build the front end of a web application.

Software is a set of instructions or a program that tells a computer how to perform specific tasks in the broadest sense. Software is a catch-all phrase for computer applications. The software makes life easier. Software will continue to assist us in overcoming a variety of life issues as it is integrated into more tools and gadgets. In the business environment, software provides opportunities for improving present systems, generating new solutions, and allowing for faster expansion. In this report, I will also cover my work on software development and the challenges I faced during the development process.

Acknowledgement

First and foremost, I want to express my appreciation to the Great Allah for allowing my internship to be completed without any significant setbacks.

Second, I would like to thank my internship supervisor, Sanjoy Kumar Saha, Sr. Software Engineer, CIS Tech Ltd., for his kind assistance and guidance. When I needed help, he was there to assist.

Thirdly, during my internship, Md. Tawhid Anwar Sir was a constant mentor to me with his guidance.

Lastly, without my parents' unwavering support, it might not have been possible. With their kind support and prayer, I am now on the verge of my graduation.

Letter of Transmittal

Md. Tawhid Anwar
Lecturer,
School of Data and Science
BRAC University
66 Mohakhali, Dhaka-1212

Subject: Submission of Internship Report.

Dear Sir,

With due respect, it is my great pleasure to submit the report on internship at CIS Tech Ltd. from June 01, 2022 to November 30,2022.

The report contains my experience at CIS Tech Ltd. And attempts to describe my observation,gains and workings during the internship period in the company. This report briefs about the company as well as its working procedures.

I have attempted my best to finish the report with the essential data and recommended proposition in a significant compact and comprehensive manner as possible and I believe that you will find it in order.

Sincerely yours,

MD. Intious Bari
19201135
School of Data and Science
Brac University
leftlineDate: January 23, 2023

Non-Disclosure Agreement

This Nondisclosure Agreement (the “Agreement”) is made and entered into as of the **01 June, 2022**, by and between CIS Tech Ltd., and **MD. Imtious Bari**, the undersigned student at Brac University, hereby agree as follows:

1. ”Confidential Information” means any and all non-public information the Software Company has disclosed or may disclose to the Recipient. This includes but not limited to information related to legal materials, software development and design, business or software architecture, software not yet known to the public, clients or prospective clients.
2. The Recipient agrees not to disclose any Confidential Information or any information derived therefrom to any third person. The Recipient also agrees to take all the reasonable precautions to protect the confidentiality of such confidential Information with the same degree of care as the Software Company protects its own confidential information.
3. All rights, title, and interest in and to the Confidential Information shall remain with Software Company and/or its licensors. Nothing in this Agreement is intended to grant any rights to Recipient under any patents, copyrights, trademarks, or trade secrets of Software Company.
4. The Parties agree that the validity, construction and enforce ability of this Agreement shall be governed in all respects by the law of Bangladesh. The failure of either party to enforce its rights under this Agreement at any time for any period shall not be construed as a waiver of such rights.

In witness whereof, the Parties have executed this Agreement as of the date first above written.

CIS Tech Ltd.

Signature _____ Date _____

MD. Imtious Bari

Signature _____ Date _____

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Chapter 1

Introduction

1.1 About Internship

An internship is a time period of employment provided by a company to introduce students and recent graduates to the workplace, frequently within a particular area related to their subject of study. Soft skills including communication, personal effectiveness, presenting, creative problem-solving, and persuading will all be developed throughout an internship. Working experience can be just as beneficial as any academic knowledge. After all, you can't truly comprehend what a job entails unless you've worked there. Internships are excellent opportunities to connect with those who have experience in the related position. Their grasp of the position and the workplace will help gain a better picture of what it entails and what it needs to do to advance. Taking all of this into perspective, an internship also increases a student's work experience, which increases the intern's CV's value and ultimately opens up impressive career prospects in the future. I chose an internship as a BRAC University student instead of writing a thesis paper. I chose CIS Tech Ltd. as my internship company. CIS Tech Ltd. (CIS) is a custom software development company that offers Software as a Service (SaaS) and Software as a Product (SaaP) models (SaaP). For individuals, startups, and small-to-medium organizations, they specialize in the development of scalable and reliable software solutions for any operating system, browser, and device. IN order to facilitate, enhance, and give quantifiable business value to their clients through the most efficient use of Technology and Resources globally, they have a highly skilled team of employees who are professional, energetic, and have considerable industry expertise in varied sectors. I have received a real understanding of the working world throughout my internship, allowing me to expand on the theory I have learnt at university.

1.2 About This Report

This internship is considered to be a mandatory course to complete my bachelor's program, so I must submit a report in order to be evaluated by BRAC University. I've talked about the lessons I have gained from my experience at CIS Tech Ltd. in this report. I've been assigned to create the front-end of web applications. I was privileged to participate in a wide range of projects as CIS Tech Ltd. is now working on several projects. In addition to front-end development, I needed to be familiar

with additional JavaScript frameworks. This report will provide a detailed overview of the project I worked on and my efforts as an intern.

1.3 Objective

The following information is what this report aims to provide to its readers:

1.3.1 Aim

This report's main objective is to describe my professional experience and the knowledge I have gathered.

1.3.2 Specific Objectives

The precise purposes for this report are:

- Describe in detail the profile of the company.
- Summarize the working environment and all the services that CIS Tech Ltd. offers to its clients.
- Describe the kind of job that CIS Tech Ltd. does.
- Describe the working environment during the internship.
- To demonstrate what I have learned during the internship.
- To fully discuss all the work, I put into the project I was assigned.

1.4 Methodology

The following report focuses primarily on my work experience and the lessons I learned while working as an intern at CIS Tech Ltd. The majority of the information and details provided are based on my personal experience. In addition, specific information was gathered from specific websites. The majority of the information came from the following sources:

1.4.1 Primary Data

- My professional work experiences.
- Discussions and lessons learned from colleagues and team leaders.
- Team meetings and seminars.

1.4.2 Secondary Data

- CIS Tech Ltd. website.
- Internet.

Chapter 2

Company Profile

2.1 Overview

CIS Tech Ltd. has been a provider of custom software development services based on Software as a Service (SaaS) and Software as a Product (SaaS) since 2012. They transform businesses with affordable yet powerful and adaptable digital solutions that fulfill the needs of today and unleash the opportunities of tomorrow.

They focus on creating scalable and dependable software solutions for any device, browser, and operating system. In order to provide unique solutions and products for individuals, start-ups, and small-to-medium organizations, CIS combines extensive industry expertise with the most recent IT developments. Furthermore, it has established itself as a powerful innovation and technology development vendor over the years, as well as a well-established and reliable firm.

To facilitate, develop, and give measurable business value to their customers through the most efficient use of technology and resources globally to optimize customer satisfaction, CIS has a highly skilled team of individuals who are professional, energetic, and have tremendous industry experience in multiple areas.

2.2 Vision and Mission

CIS Tech Ltd. has a mission centered on three pillars: customer satisfaction, transparency, and corporate responsibility, and it aspires to create, design, and build the most exquisite software development services that will contribute tangibly to our customers' total success. And their mission is to bring consumers with creative, high-quality, and cost-effective solutions that provide total value.

2.3 How Does CIS Tech Ltd. Work

CIS Tech Ltd. frequently concentrates on or specializes in particular software fields and software kinds, such as web development, mobile development. For a company to produce and offer the best, it needs to be set up properly. The accompanying diagrams will show how CIS Tech Ltd. operates as a result of the diligent effort and commitment of the team's gifted and knowledgeable developers and engineers.

2.3.1 Recognizing a Requirement

CIS Tech Ltd. will first try to understand the importance of the program they are going to create. What does that mean, exactly? What requirements must be met? How will this software impact users? After that, CIS will create and develop apps to meet both the requirements they have established and those of the users. They may work with desktop solutions, mobile applications, SaaS products, and other things.

2.3.2 Teamwork

CIS Tech Ltd. follows the traditional waterfall methodology, in which teams create a thorough project plan before beginning a straight-forward, step-by-step development process with predetermined deadlines and no deviations. There is no going back or starting over if the requirements change. Agile teams constantly plan throughout the project, adjusting as needed as new information becomes available, as opposed to planning the entire project in advance. Weekly project meetings among the team help the whole team to collaborate and stay updated with their tasks.

2.3.3 Testing and Deployment

Software testing and quality assurance are essential for the success of a software development organization. But be cautious when selecting a software development company that prioritizes software testing rather than treating it as an unnecessary distraction. Unit, integration, and system testing are the three most frequent types of testing used in software development. Typically, the tests at each level are run at various phases of the software development life cycle. The software is thoroughly tested by CIS Tech Ltd. before release. They deliver it to the clients after passing the testing phase.

2.3.4 Maintenance and Release

To make sure the product operates properly, CIS Tech Ltd. offers ongoing maintenance or support. They also use the knowledge they have gained from participating in various initiatives to improve and make their procedures user-friendly. Solutions from CIS Tech Ltd. are specialized to satisfy the requirements of their clients. They typically specialize in certain industries or business ventures and have a solid grasp of what their clients require to be successful.

2.4 What CIS Tech Ltd. Do

CIS Tech Ltd. operates with a single purpose in mind: to optimize client happiness. They ensure that the project's requirements, design, development, quality assurance, and delivery are all integrated and traceable. Their focused, sound, and inventive approach steps from the collective experience of our team members, as well as their combination of real business knowledge and excellent technical delivery capabilities. They can comprehend the client's business requirements, propose IT and creative strategies in line with the company's vision, and carry out the business plan by

designing or implementing high-quality scalable business solutions using cutting-edge technology. They provide world-class end-to-end software and IT solutions while also developing unique and creative goods and services. CIS's overarching goal is to develop and promote advanced information technologies for multi-user operations. Clients from all around the world have testified to the high quality of their work. CIS's business concept is dedicated to providing the finest quality product, absolute client satisfaction, on-time delivery, and the industry's greatest quality-to-price ratio.

2.5 Software Development Process

Software development is the life cycle of activities imposed for the creation of software that might be effective in the marketplace. Throughout the entire process of developing software, numerous processes take place. In order to really understand what software development is, we must be aware of all the steps that go into it. Regardless of the developer, the development process for software goes through a number of steps in a step-by-step manner. The "Software Development Life Cycle" is the name given to it. There are six distinct steps in it. Software that satisfies business needs can be designed with the help of the SDLC technique, often known as the Software Development Life Cycle method. Long-term software maintenance should always be supported by a well-segregated methodology. It should always be possible to maintain software over the long term with a well-segregated technique. In this software life cycle, each phase often results in the deliverable needed to carry out the subsequent stage. Eventually, the specifications are transformed into flawless designs. The development phase is the period from which codes are delivered in accordance with plans. A team of software development technicians, who are essential for each step, helped create all these stages. One stage cannot exist without the other.

2.5.1 Requirement Gathering and Analysis

The gathering of the requirements during this initial stage is crucial for the team of software developers before they can come up with the main idea for any program. The key objective of the project managers and stakeholders at this time is to identify the precise requirements for any software that is being considered. At this point, there are a number of inquiries to make, such as:

- Who really should use this software?
- After it is finished, how will the program be used?
- What kind of data ought to be included in the software?
- What information should this software output?

These fundamental inquiries are resolved, and then a broad outline is made for the software developers to concentrate on. The validity of the data is checked, and any potential for incorporation is examined after that. The final step of the software development process is the preparation of a document called a requirement specification that acts as a road map.

2.5.2 UI/UX Design and Prototyping

In this phase, the software's draft design is created using the requirement specifications. The system designs enable in defining the hardware and system requirements. Additionally, it assists in the definition of a software architect's overall system. The next stage of the software development paradigm is informed by the system's design specifications. By identifying the objects to test and the methods to check them, the testers design test strategies throughout this particular phase.

2.5.3 Implementation

The work that comes after the design stage is evenly divided into several units and modules after getting the design papers for the program that has to be developed. The actual coding process starts at this point. The developers' creation of flawless codes is the phase's primary goal. In the whole protocol, this particular phase is the longest.

2.5.4 Testing

The developers must be very careful throughout this stage. The coding procedure may need to be repeated if anything goes wrong during the testing phase or if an error in the codes is found. This cycle repeats itself until the coding process is complete. All types of functional testing, including integration, unit, system, acceptability, and non-functional testing, are completed at this stage.

2.5.5 Deployment

The next stage is known as the deployment stage once all coding issues have been fixed during the testing stage. As soon as the code is complete, it is integrated into the product and made available to the users, also known as deployment. In order to make sure the product will function properly on a big scale before it is offered to potential clients, beta testing is the first step taken. Any potential changes or potential defects discovered during implementation are instantly communicated to the team that designs the system's errors to function normally in real-time. The final distribution or deployment is initiated once the modifications are put into effect and all the bugs are fixed.

2.6 Recruitment Process

Applicants must submit a portfolio and a cover letter to Human Resources. Following acceptance of that, a brief virtual interview is conducted to establish a connection before a face-to-face interview is scheduled for a later date. I was interviewed by the senior vice president himself. The interview process at CIS Tech Ltd. is extraordinary in that it looks at the applicant's capabilities rather than just trying to fill a position. They asked me extensively about my area of interest and wanted to see projects I had worked on during my academic period before assigning me to the software development department, where they believed I would work best. In

addition to my academic background and professional experience, they were interested in learning about my personal interests and daily activities. The interview was incredibly engaging and informative.

2.7 Technology and Framework

The CIS Tech Ltd. development process makes use of the following programs, tools, and frameworks.

- **Frontend**
JavaScript, React, TypeScript
- **Backend**
Python, PHP, Laravel
- **Database**
MySQL, MongoDB, cPanel
- **Other framework**
Ant Design, Bootstrap
- **IDE**
PHPStorm, Microsoft Visual Studio, PyCharm, Android studio, XCode
- **Source control system:**
GitHub

2.8 Projects and Products

CIS Tech Ltd. is actively working on a variety of projects, some of which have previously been made public. The majority of their initiatives are built around enterprise and small company solutions. The majority of them are private and won't be made public without their permission. However, the public can access part of the project's information. Here are some of the following products released by the company:

2.8.1 Yotta Erp

Yotta Enterprise resource planning (Yotta ERP) is the name of a class of software that businesses use to oversee daily operations including accounting, purchasing, project management, portfolio management, and accountability. A complete ERP suite also includes enterprise-level performance management software, which helps with planning, budgeting, forecasting, and reporting an organization's financial results. Numerous businesses are currently receiving ERP solutions from CIS Tech Ltd.

2.8.2 Yotta SME

Yotta small-to-medium enterprise (Yotta SME) is the name of a type of software that small businesses use to manage routine business operations like accounting, purchasing, project management, customer management, stock management, point-of-sale systems, and supply chain management. A comprehensive SME suite also contains enterprise performance management software, which aids in planning, budgeting, forecasting, and reporting financial outcomes for an organization. CIS Tech Ltd. now provides SME solutions to numerous businesses.

2.8.3 Shakib75

Shakib 75 health is an online medical consultation service developed by CIS Tech Ltd. in which doctors consult with patients via video chats via the Shakib 75 health app or website. Along with telemedicine coverage, SHAKIB 75 Healthcare also offers diagnostic test facilities for home use, digital blood donor matching services, and Covid-19 care facilities, including Covid-19 testing and plasma donation activities for important patients.

2.8.4 Easy2Manage

Easy2Manage is a hotel management online application created by CIS Tech Ltd. This program is a UK-based program for managing accommodation services. This application allows users to access a variety of services, including hotel booking, payment options, room management, and much more.

2.8.5 Yemeni Dukaan

Yemeni Dukaan is an e-commerce website developed by CIS Tech Ltd. This website was created for an online store in Yemen. Numerous features have been included into this program. Royalty points, payment options, and POS invoices are a few of them.

Chapter 3

Workplace Details

3.1 Work Environment

It has been a wonderful learning experience for me and has proven to be extremely intriguing for me to work at CIS Tech Ltd. Everyone has been incredibly helpful and supportive as I get to know a few new people, some of whom I have grown close to in a very short period of time. When I first started, I wasn't treated like a legitimate full-time employee, but more like an intern. I was able to adapt to their work culture more rapidly as a result. I enjoyed meeting with my coworkers on times during the month; they were productive. I enjoyed working collaboratively with my teammates to provide the best products possible.

3.2 Organization Structure

The company has 30 employees and is rapidly expanding. The current company structure is represented in the figure below.

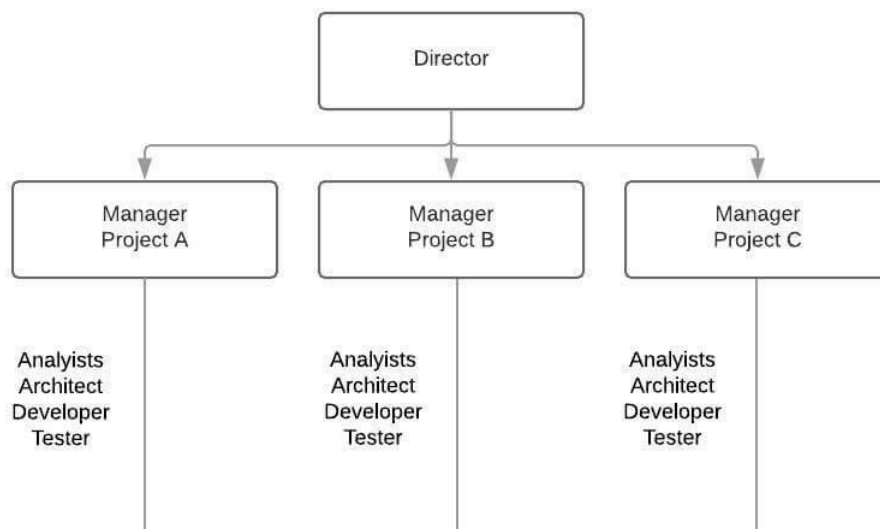


Figure 3.1: Organization Structure

3.3 Work-Hours

CIS Tech Ltd. offers a flexible work schedule. The office is open from 10:00 a.m. to 6:00 p.m. Anyone is free to enter or exit the office before or after the specified hour. Team members, on the other hand, must attend team meetings and present their tasks on time. If meetings are held online, anyone from outside the office can attend.

3.4 Dress Code

Employees are not required to wear a dress code. But it doesn't mean anyone can arrive at the office in something less than appropriate dress. The majority of employees wear business casual attire to work, however some maintain a formal dress code, and formal dress is required for everyone on Monday.

3.5 Facilities

CIS Tech Ltd. offers several facilities to its employees. Among the facilities are the following:

- Each developer and tester have a very restricted PC.
- High-speed internet access is available.
- Zoom is used for communication.
- Ornamental project management software.
- In-house training sessions are held on a regular basis to introduce new technology.
- Room for prayer.
- Snacks and coffee.
- Indoor sports.
- Celebrations of a birthday.
- Celebration of achievement.

It has been a wonderful learning experience for me and proven to be extremely intriguing for me. I was able to adapt to their work culture more rapidly as a result. I enjoyed working collaboratively with my teammates to provide the best products possible.

Chapter 4

Internship Phase & Growth

4.1 Overview

A significant advancement in one's academic and professional lives is being able to work as an intern for a company. Nowadays, with such intense competition on the job market, having work experience is a huge asset. It also enables students to transition effortlessly from school to the workplace once they have finished their studies. Even just using theoretical knowledge in the real world is an accomplishment. It's essential to take note of and learn the different industry practices because they vary. I started working with CIS Tech Ltd. as an intern, and now I'm assigned to the software development department. In addition to being a requirement for BRAC University's graduation, this internship is the ideal setting for me to master a variety of new skills and gain priceless experience. When I first began out, I knew very little about how workplaces operate. My CIS Tech Ltd. supervisor helped me through every stage of the procedure and made it seem extremely simple.

Since interns at CIS Tech Ltd. are immediately placed to work, there was no formal training period at this time. But throughout the duration of my internship, my supervisor guided me through several stages. Throughout the report, I have explained my experiences. But I won't be able to attach some of the panels I'm working on because of secrecy.

4.2 Getting to Know the Software Development Environment

Before starting work, I was instructed to research a few key concepts and approaches. I studied software and web development by taking a course from tutorialpoints.com and using the advice and pointers my supervisor gave me. To learn more about frontend and backend programming languages, other websites were also suggested to me. I had to become familiar with React in order to study front-end development. React is a declarative, effective, and adaptable JavaScript user interface library. It enables developers to build complex user interfaces out of discrete, little chunks of code known as "components." In order to better understand React, I had to work on various projects during the first two months of my internship.

4.2.1 Introducing Responsive Front-End Development

The front-end is the portion of a website or software program that we, as Internet users, can access and utilize. Front-end programming languages make it possible for a website to function without constantly "communicating" with the Internet when information is sent from a server to a browser. Front-end code allows users to interact with a website and play movies, expand or decrease photographs, highlight text, and more. Client-side development is done by web developers that specialize in front-end code.

There are numerous frameworks and libraries available for frontend development. Some of them are not extremely good. One of the most well-known and often used libraries for front-end development is React, which is not a framework. React is a frontend development tool that was created by Facebook and is available as an open-source JavaScript library. We can produce good web app user interfaces with its component-based library. This package works with Virtual DOM and lets us embed HTML code inside JavaScript.

Developers can create genuinely responsive designs in React projects by using the npm package. The developer can specify which DOM elements they wish to display and conceal using the combined capabilities of media queries and breakpoints. The advantages of using React to create responsive web applications are mentioned below:

- **Making Dynamic Web Applications is Getting Simple**

It was difficult to construct a dynamic web application with HTML strings primarily because it required extensive coding, but React JS has made it simpler. It offers more functionality with less coding. It employs JSX (JavaScript Extension), a specific syntax that enables HTML quotes and HTML tag syntax to generate certain subcomponents. Building machine-readable codes is also supported.

- **Reusable Components**

There are many different components that make up a ReactJS web application, and each one has its own logic and controls. These elements are in charge of producing a compact, reusable HTML code that may be used wherever you need it. Apps will be simpler to create and maintain thanks to the reused code. The ability to nest these components with other components enables the construction of complex applications from basic building blocks. To fill the HTML DOM with data, ReactJS uses a virtual DOM-based technique. Since just certain DOM elements are changed rather than the entire DOM being loaded each time, the virtual DOM operates quickly.

- **Performance Boosting of an application**

Performance is enhanced with ReactJS thanks to virtual DOM. With regard to HTML, XML, or XHTML, the DOM is a cross-platform programming API. The majority of developers encountered an issue whenever the DOM was modified, which decreased the application's speed. By introducing virtual DOM, ReactJS addressed this issue. The DOM of the web browser is represented by the React Virtual DOM, which is totally stored in memory. As a result, we didn't write directly to the DOM while creating a React component. Instead,

creating virtual components that when activated, transform into the DOM, resulting in a faster and more fluid performance.

4.2.2 Creating a React Application Environment

A few actions must be taken in order to build a React application. Any React application must be run on a computer with NodeJS installed. Installing NodeJS will therefore be the first step. After installing we need to create a React application by using create-react-app. The following steps are needed to run a React application.

- To create a React application called "my-react-app," enter the following command:

```
PS C:\Users\IMTIOUS-PC> npx create-react-app my-react-app
```

- It's now possible to launch your React application after generating it. To go to the directory for my React app, use the following command:

```
PS C:\Users\IMTIOUS-PC> cd my-react-app
```

- To launch the React program my-react-app, use the command below:

```
PS C:\Users\IMTIOUS-PC> npm start
```

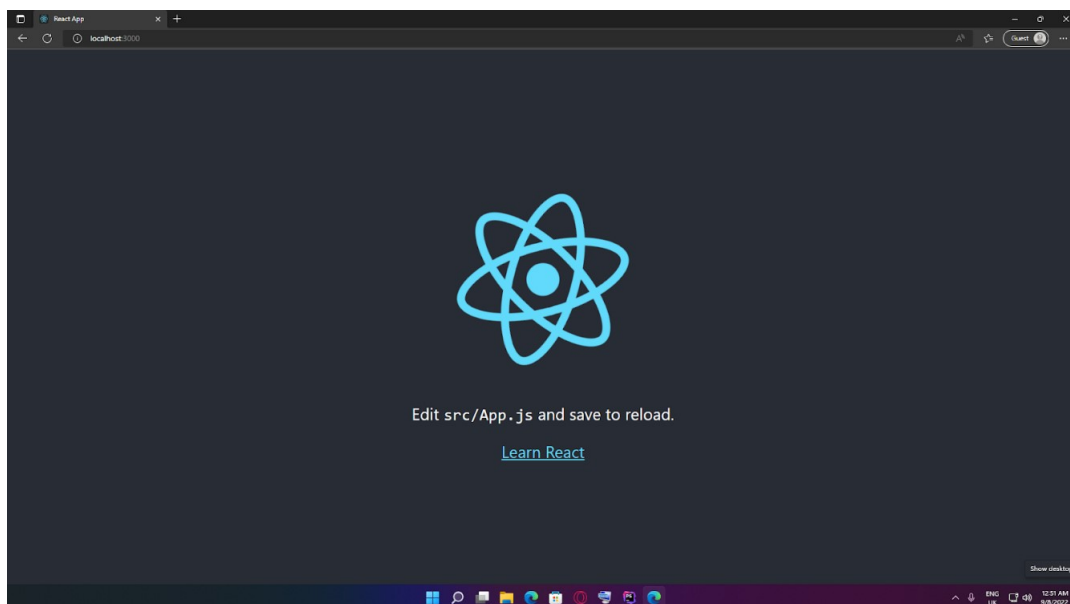


Figure 4.1: Running React Application on Localhost

- React App will open in a new browser tab. Alternatively, launch any browser and enter localhost:3000 in the address box.

- There is a src folder if we look in the my-react-app directory. To begin building our customizable React app, we must edit the code in the App.js file located in the src folder.

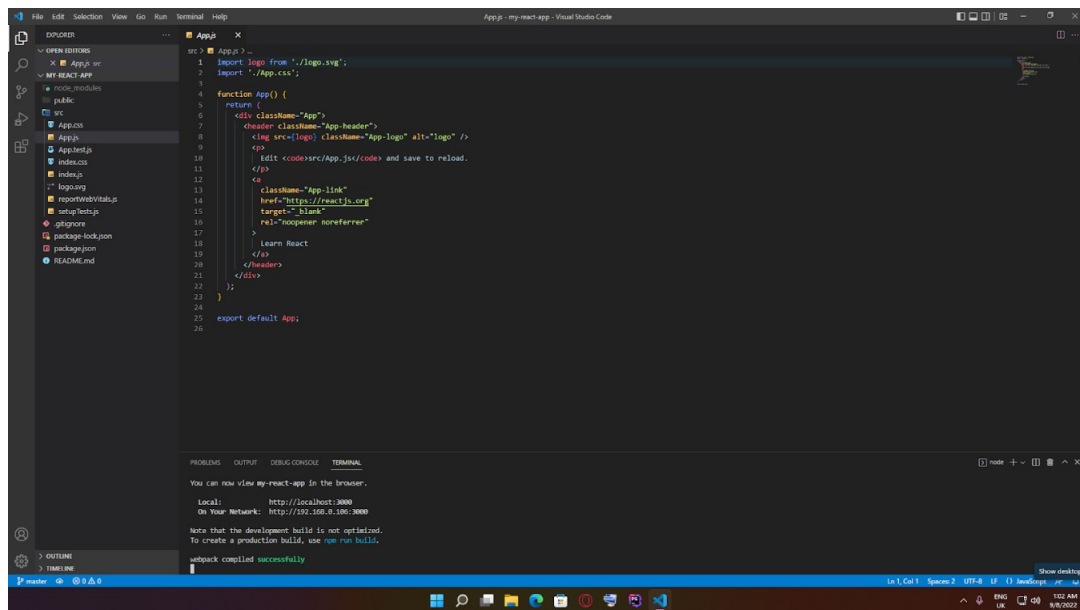


Figure 4.2: App.js page to edit

4.2.3 React Application using Typescript

One of the most widely used front-end JavaScript libraries for constructing user interfaces is React. React applications may have a more reliable codebase with fewer mistakes if you use TypeScript. In addition to supporting JSX, TypeScript can accurately describe patterns found in React codebases, such as use State. Prop types can be easily defined with TypeScript, which makes the code much easier to read and utilize. Additionally, Intelligence support and static type checking will be included. Together, these factors improve the development process and lessen the possibility of defects. Additionally, adding comments to prop types makes component definitions easier to read. To launch the React program with typescript, use the command below:

```
PS C:\Users\IMTIOUS-PC> npx create-react-app my-app --template typescript
```

4.3 Resources and Assistance

My supervisor was my primary source of guidance and instruction. He took the time to thoroughly explain everything to me and demonstrate how the majority of the work is carried out correctly. In addition, I had access to the internet, so I looked around numerous websites to obtain information on related topics.

4.4 Team Meetings

Every working day at CIS Tech Ltd., two meetings are required for everyone. To get ready and organize the day's tasks, I got up at one in the morning. Everyone is requested to share their daily responsibilities, and anything new may be discussed at this time. The second meeting takes place just before the workday concludes. At this meeting, we'll check to see if everyone was successful in completing their tasks and if anything, else was forgotten. Depending on how important the task is, if any is left undone, it may be finished later that day or transferred to the following day.

Chapter 5

My Contribution

I've been working on the front end of the web application for the past six months of my internship. The three main programming languages for front-end development are HTML, CSS, and JavaScript. Users can interact with the website using JavaScript. Some libraries and frameworks enhance the usability and interactivity of a website. React, Bootstrap, and Tailwind CSS, for example. I was given the task of working on the Easy2Manage property management project. I had to follow specific directions in order to work on my web application.

- User experience improvement
- To make ideas come to life, using Typescript, ReactJS and tailwind CSS.
- Developing and keeping up the user interface.
- The application of design to websites for both desktop and mobile.
- Following excellent SEO tactics.

Due to the six-month duration of my internship. I was given the task of working on a project called Easy2manage, which is a web-based hotel management system.

5.1 Project Overview

Easy2 Manage is a property management system based in the UK. This web application's primary function is to book hotel rooms. This application will display room data by accommodation type, and clients can book rooms according to their requirements. This is mostly a group project. As a result, designing the entire application utilizing the SDLC methodology fulfills the work plan. This program will be used indefinitely by the company, with plans to expand it with more advanced functionality. The application requirements are given below.

Customers as an end user

- Users can create their own account.
- Users can log in with their login credentials.
- Users can browse rooms or property as per their requirements.

- Rooms or Property will show as a card view with details. For example, 1 Bedroom, 2 Bed, 1 Washroom.
- Room or property will show by category.
- A booking module from where users can book rooms or property.
- A contact module from where customers can send messages to the management team.

Management team as an end user

- Users can create their accounts according to their roles.
- Users can log in with their login credentials.
- Users can add new rooms or properties.
- Users can update their web profiles.
- Users can approve bookings from customers.

5.2 Implementation

Easy2Manage is essentially a team project. To develop the entire application, a team was formed. This application will manage reservations for hotels and properties in accordance with the needs of the client, and there will be two different kinds of end users. Customers will use this program to book rooms according to their needs, and a system administrator will keep up-to-date records of bookings, maintain websites with room listings, and manage the content of websites using a CMS system. A front-end developer, a back-end developer, and an SQA were put on a team to build the entire system. Making the front-end was my responsibility in this project. Since it was a group project, the company also plans to provide long-term

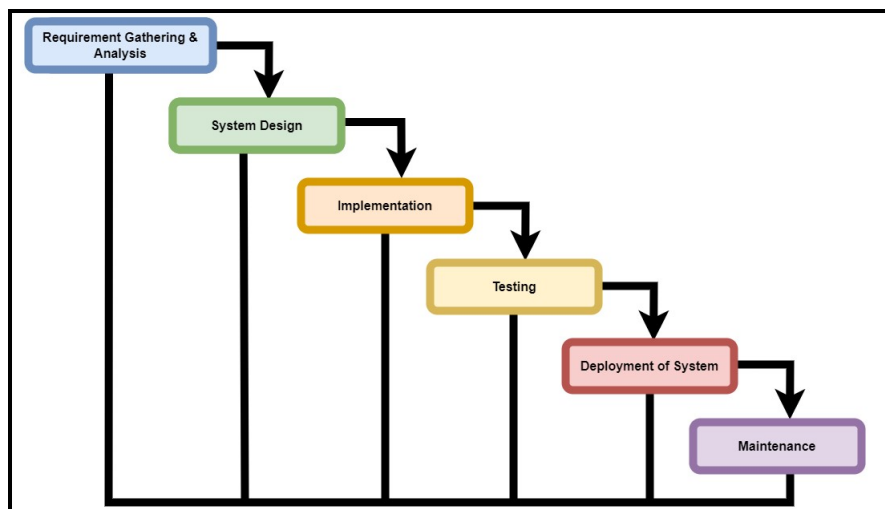


Figure 5.1: SDLC Waterfall model

maintenance of the application, while also having the plan to upgrade it to meet

future client requirements using the SDLC waterfall model. This model will help to maintain the workflow, fulfill the work plan, and aim to produce the best result. The Waterfall Approach was the first SDLC Model that was widely utilized in software engineering to guarantee project success. The entire software development process is broken down into distinct phases using "The Waterfall" technique. In this Waterfall approach, the results of one phase often serve as the sequential input for the following phase. The sequential phases of the Waterfall model are as follows:

5.2.1 Gathering and analyzing requirements

During this stage, all potential system needs are gathered and outlined in a document describing the requirements. Knowing the client's requirements is the first step because Easy2manage is a property and hotel management application. There are some requirements for this application. The primary goal was to develop an application that would allow users to search for properties and make reservations. The application will also include a CMS (content management system) and a booking management system, through which the system administrator will be able to access the booking system and keep track of reservations. Furthermore, the system must be usable by multiple users. Users can also create their own accounts, and depending on their role, different types of users can access data.

5.2.2 System Design of the application

In this phase, the required specifications from the first phase are examined, and the system design is created. The hardware and system requirements can be determined with the use of this system design, which also helps determine the overall system architecture. At first, we identified the functional and non-functional requirements. **Functional requirements** Functional requirements of the system are given below:

- **Reservation or booking:**
 - Maintain a reservation log.
 - Keep a record of the client's first name.
 - Keep a record of the client's last name.
 - Count the number of people who are inside.
 - Note the room number below.
 - Display the base hotel fee.
 - Take down the client's phone number.
 - Tell us if the room is guaranteed.
 - Each transaction should have its own confirmation number.
 - The expected check-in date and time should be noted on the calendar view.
 - The system will log customers in.
 - Without asking the customer to provide all of their information again, the system must permit changes to reservations.

- The checkout process for customers will be automated.
- Feedback from customers will be tracked by the system.

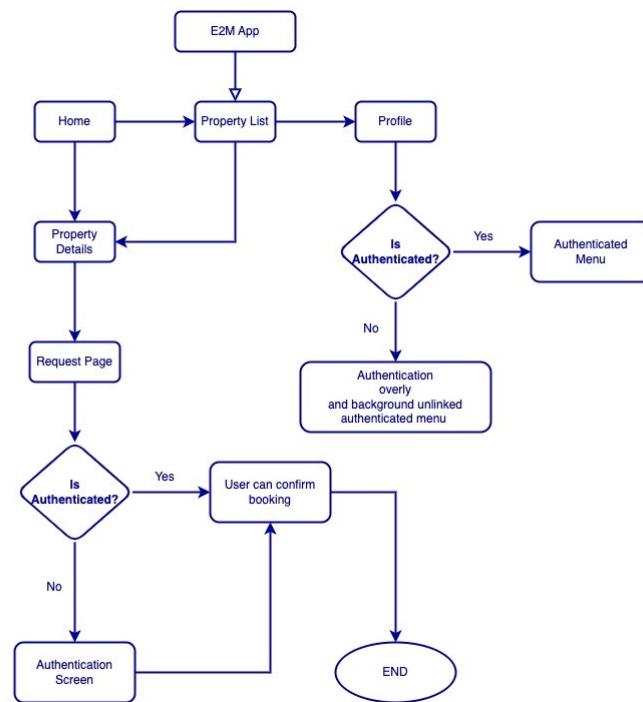


Figure 5.2: Flow Chart for E2M app

- **Management of administration:**

- For a specific period, show the hotel occupancy (days, including past, present, and future dates).
- Describe the projected occupancy for a specific period (days).
- For a predetermined time, the revenue from a showcase room (days).
- Permit the addition of information like user profiles, room or property information, and accommodation rates.
- Make it possible to delete information like user profiles, rooms or property, prices, and menu items.
- Permit alterations to data on lodging, rates, menu items, prices, and user profiles.
- Administrator passwords ought to be delegated to managers.

Non-Functional requirements Non-Functional requirements of the system are given below:

- Avoid booking bots by using encryption.
- Within reasonable time frames, search results should appear.

- When users fail to fill out the required fields, they should receive suitable assistance.
- The system ought to accept payments made using a variety of payment methods.
- Efficient, accessible, and simple application to use
- Keep records of all actions, documentation, and reactions.
- Users should be able to see available dates for bookings.

5.2.3 Implement the Easy2Manage requirements

Following the system design, the programming process begins in this phase. During this phase, everything required will be produced and tested for functionality. We developed a booking system that allows users to search for properties or rooms based on their preferred time and date. The booking feature was the application's key feature. So, we are therefore developing the system in accordance with the system's design. Users must also have accounts in order to make bookings. Creating the

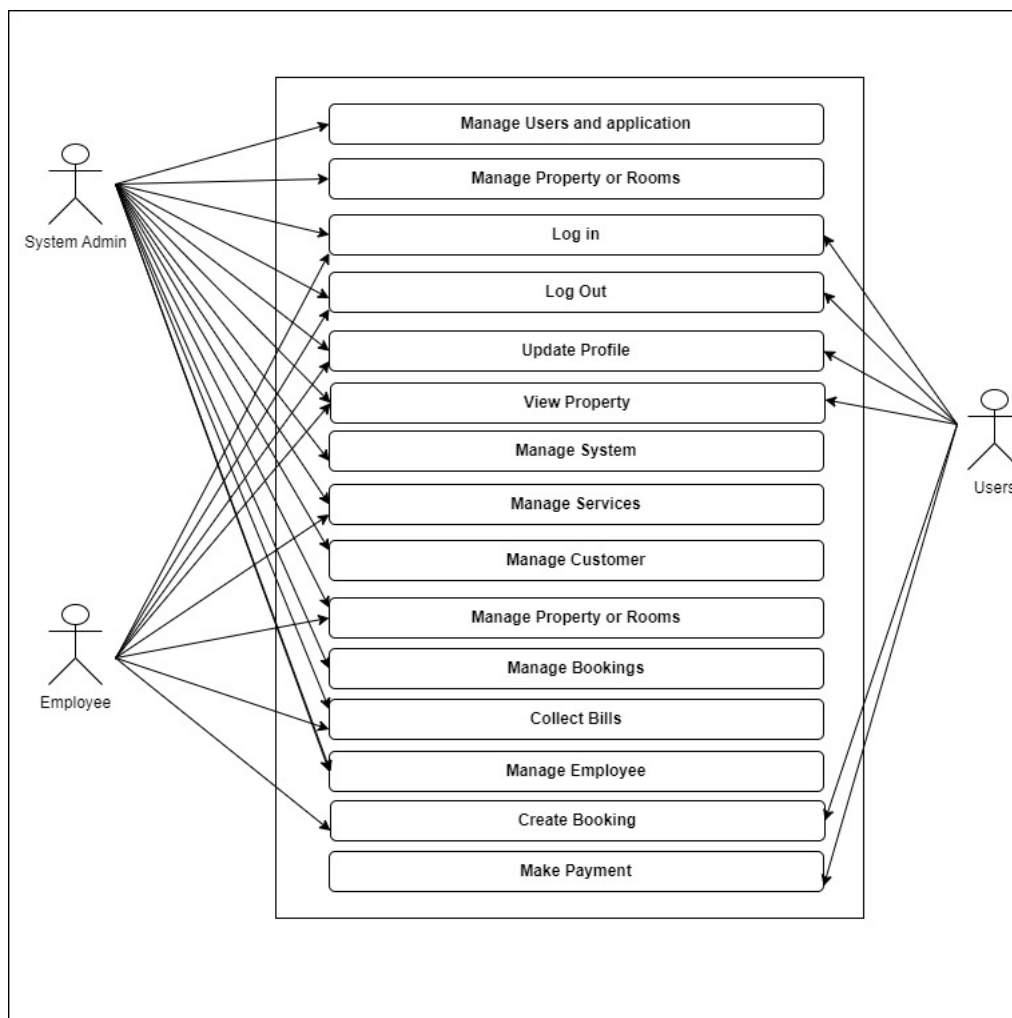


Figure 5.3: Use case diagram for E2M app.

authentication module, which includes the log in and sign up modules, was part of this process. The system will be created in discrete programs called units, with input from the system design, and then combined in the following step. Each unit is produced and evaluated for functioning, which is referred to as "unit testing."

5.2.4 Testing of the application

Following the integration of the system's initial implementation, the functionality was tested. In this step, we tested our system in various scenarios. We performed API testing with Postman, which allows us to send requests to the system via post/get methods and see if the based-on relevance the expected result.

5.2.5 Deployment of the application

After functional and non-functional testing, the product is deployed on web servers, where customers can access their requested applications. Our property management system will go live for users at this point. After the website is launched, customers can book their desired properties, and clients can access their web application, manage incoming bookings, and so on.

5.2.6 Maintenance of the application

There are some issues that arise in the client environment during this step. Patches are released to address these issues. Furthermore, improved versions of the application have been released in order to improve it. Maintenance is performed in order to implement these changes in the customer environment.

5.3 My Introduction to Web-Application development

CIS Tech Ltd. has hired me to work primarily on the software development process. Since my first day at CIS Tech Ltd, I've been tasked with some problem solutions. However, as time went on, I became more acquainted with the software development architecture. Throughout the report, I will go through my experience, how I progressed, and what the outcome was.

5.3.1 How it Started

After learning most of the fundamentals of creating web applications, I had to set up my own workspace. I have to set up my IDE in order to work on projects. For the first two months of my internship, I had to work on an existing project. I was introduced to React, a very new library to work with, for front-end development. As a result, I had to go through the reactjs.org documentation.

5.3.2 Creating My Own Development Environment

After learning the fundamentals of the React framework, I was given an existing project to research how to implement a web application using React. I needed to set up my code editor for the React environment in order to set up my working environment. To run projects, I had to first install NodeJS from the official website. Following that, I needed to install "npm" in order to run projects on localhost. I need to learn about different libraries and frameworks in order to continue with the project. The libraries and frameworks used were Typescript and Tailwind CSS. I had to read through the material and examples from Tailwind CSS's official website. I had to set up GitHub for source control. After establishing my working environment, I was assigned to develop a few web pages related to responsive design on that project.

- **Setting up IDE**

After configuring my working environment, I had to clone the project from GitHub into my IDE, as CIS Tech Ltd. uses GitHub as their source control system. I've set up PHPStorm as an IDE. After that, I opened the existing project that had been assigned to me to analyze.

I needed to install npm in order to run my project. NPM, or "Node Package Manager," is the default package manager for JavaScript's runtime Node.js. Npm is known as the world's largest software registry. npm is used by open-source developers all around the world to publish and exchange source code. I have to enter the following command in my terminal to install npm on my current project. The project is now live on my localhost after successfully installing npm. On my local host, I can see all of the changes and modifications.

- **Working on Projects**

My supervisor assigned me to work on an existing project named "Easy2manage." CIS Tech Ltd created Easy2Manage, an online property management application. This program is based in the United Kingdom and is used to manage accommodation services. This app gives users access to a variety of services, such as property reservations, payment options, room management, and much more. I was given the task of designing a few web pages in accordance with the client's specifications. I learned more about React while developing this. I've included a few screenshots of my work on this project. According to company policy, I am not permitted to show everything. I've included some screenshots of my work on this project here. My contribution to this project was the development of a few pages utilizing React components, props and state methods.


```

import BackgroundSection from "components/BackgroundSection/BackgroundSection";
import BgGlassmorphism from "components/BgGlassmorphism/BgGlassmorphism";
// import SectionGridAuthorBox from "components/SectionGridAuthorBox/SectionGridAuthorBox";
import SectionHeroArchivePage from "components/SectionHeroArchivePage/SectionHeroArchivePage";
// import SectionSliderNewCategories from "components/SectionSliderNewCategories/SectionSliderNewCategories";
// import SectionSubscribe2 from "components/SectionSubscribe2/SectionSubscribe2";
import React, {FC, useEffect, useState} from "react";
// import SectionGridFilterCard from "../SectionGridFilterCard";
import {Helmet} from "react-helmet";
import SectionHowItWork from "../../components/SectionHowItWork/SectionHowItWork";

import HIW1img from "images/icons/HIW-1.png";
import HIW2img from "images/icons/HIW-2.png";
import HIW3img from "images/icons/HIW-3.png";
import HIW1imgDark from "images/icons/HIW-1-dark.png";
import HIW2imgDark from "images/icons/HIW-2-dark.png";
import HIW3imgDark from "images/icons/HIW-3-dark.png";
// import Heading from "../../components/Heading/Heading";
import SectionOurFeatures from "../../components/SectionOurFeatures/SectionOurFeatures";
import rightImgPng from "../../images/Image template-01.png";
import rightImgPng2 from "../../images/accommodation.jpg";
// import {TaxonomyType} from "data/types";...
import SectionSliderNewCategories from "../../components/SectionSliderNewCategories/SectionSliderNewCategories";
import axios from "axios";
import config from "../../utils/config";
import {heroInterface} from "../../components/SectionHero2/SectionHero2";
// @ts-ignore
import DOMPurify from 'dompurify';
import Loading from "../../components/Loading/Loading";
// import Heading from "components/Heading/Heading";
export interface ListingStayPageProps {
  className?: string;
}

```

Figure 5.4: Importing components.

```

<SectionHeroArchivePage
  currentPage="Stay"
  currentTab="Stay"
  className="pt-10 pb-2 lg:pb-10 lg:pt-16"
  coverTitle="Serviced Accommodation"
  subTitle="Easy 2 manage is one of the best companies who offers services of property management and serviced accommodation. PropertyInfo management by easy 2 manage is done by well-trained property managers who take responsibility of your properties. PropertyInfo management by easy 2 manage is done on both domestic and commercial level and it includes apartments as well."
  subTitle2="Easy 2 manage is here to secure and manage your property and it has gained a reputation among the other competitors. Serviced accommodation and property management is not more a stressful thing due to the existence of Easy 2 Manage. As the name of the company shows that we can manage your property very easily and in a more precise and good way."
  imagePng={rightImgPng2}
/>

```

Figure 5.5: Props to keep static data.

```

heroAllData();
}, deps: []);

const heroAllData = () =>{
  setLoading( value: true)
  axios.get( url: config.apiserver + 'widgets?page_name=Accommodation') Promise<AxiosResponse<any>>
    .then(function (response : AxiosResponse<any> ) {
      const allData = response.data.data;
      console.log( "Look " , response.data.data);
      setHero(allData[0]);
      setLoading( value: false)
    }) Promise<void>
    .catch(function (error) {
      // handle error
      console.log(error);
      setLoading( value: false)
    })
}

const createMarkup = (html: any) => {
  return {
    __html: DOMPurify.sanitize(html)
  }
}

return (
  loading ? <Loading /> :
  <div
    className={ `nc-ListingStayPage relative overflow-hidden ${className}` }
    data-nc-id="Accommodation"
  >

```

Figure 5.6: Using axios setstate() method to get data from api

```

return (
  loading ? <Loading /> :
  <div
    className={ `nc-ListingStayPage relative overflow-hidden ${className}` }
    data-nc-id="Accommodation"
  >
    <Helmet>
      <title>Easy 2 Manage (E2M) || Service Accommodation Specialist</title>
    </Helmet>
    <BgGlassmorphism />
    <div className="container relative overflow-hidden">
      { /* SECTION HERO */ }
      <div
        className={ `nc-SectionHeroArchivePage flex flex-col relative` }
        data-nc-id="SectionHeroArchivePage"
      >
        <div className="flex flex-col lg:flex-row lg:items-center">
          <div
            className={ `pt-10 pb-2 lg:pb-10 lg:pt-16 flex-shrink-0 lg:w-1/2 flex flex-col items-start
              space-y-6 lg:space-y-10 pb-14 lg:pb-32 xl:pb-64 xl:pr-14 lg:mr-10 xl:mr-0` }
            >
            <h2 className="font-medium text-2xl md:text-3xl xl:text-4xl leading-[110%]">
              { /*{coverTitle}*/* }
              {hero?. name}
            </h2>
            <div className="flex items-center text-justify md:text-lg text-neutral-500 dark:text-neutral-400">
              <span className="ml-2.5" dangerouslySetInnerHTML={createMarkup(hero?. body)}>
                { /*{subTitle}*/* }
              </span>
            </div>
          </div>
          <div className="flex items-center text-justify md:text-lg text-neutral-500 dark:text-neutral-400">
            <span className="ml-2.5">

```

Figure 5.7: Calling components to create page section getting data

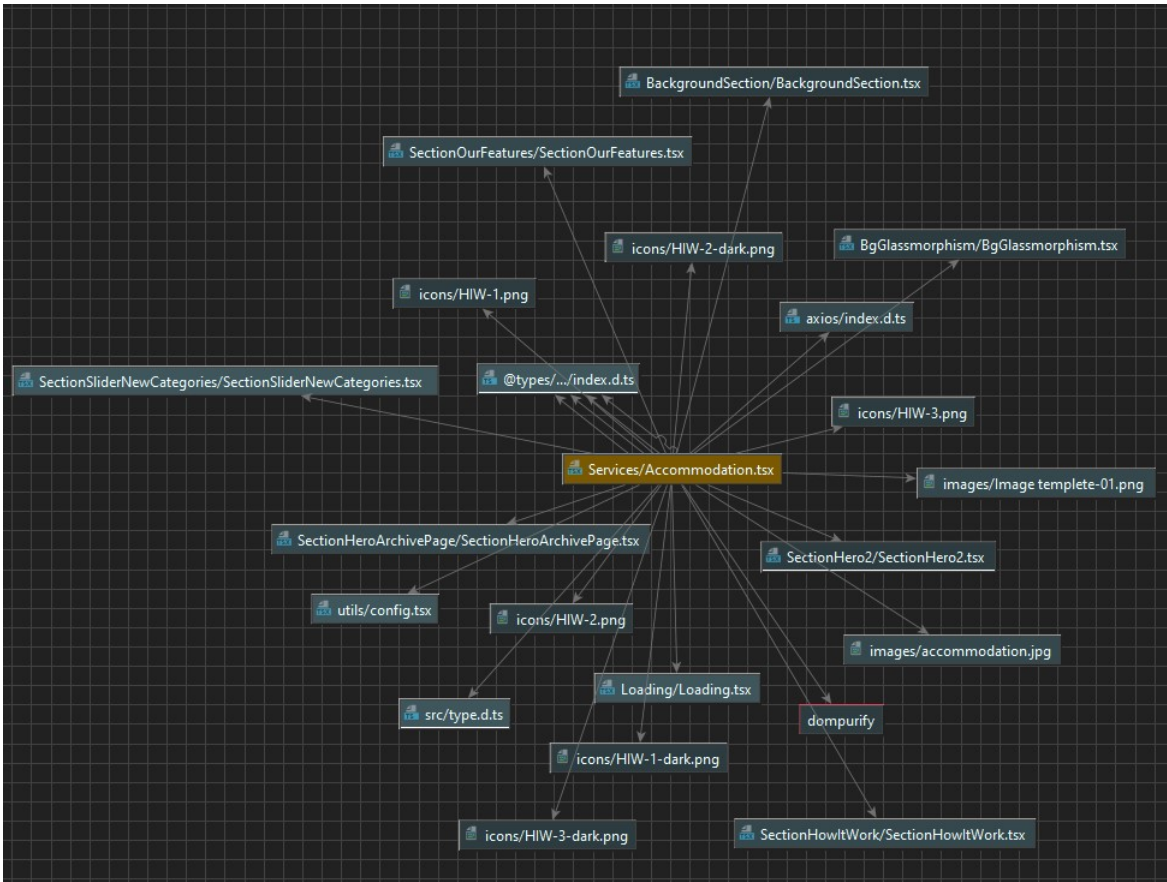


Figure 5.8: Calling components to create page section getting data

Here, I needed to import components in order to build a webpage. The use of React components enables them to divide the user interface into manageable, reusable sections. A React element that is rendered on the screen is returned along with an optional input. Props are used to transfer data between React components. Using props data transfer between components in React is one-way (from parent to child only). While states allow components to create and maintain their own data, props allow them to receive data from the outside world. State is a unique built-in object in React that enables components to build and maintain their own data. Therefore, unlike props, components cannot build or manage state themselves, but they can pass data with state. I have to install Axios on this project in order to access the api's data. An HTTP client library called Axios enables us to send requests to a specific endpoint. Any HTTP method can be matched by the function names in Axios. A GET request is sent using the.get() function.

5.4 Outcome of the project

The project's outcome was satisfactory when it was implemented. Every member of the team collaborates to complete the project and deliver it to the clients for their property management operations. This application's every module and page is visible, and the excellent UI provides the best user experience.

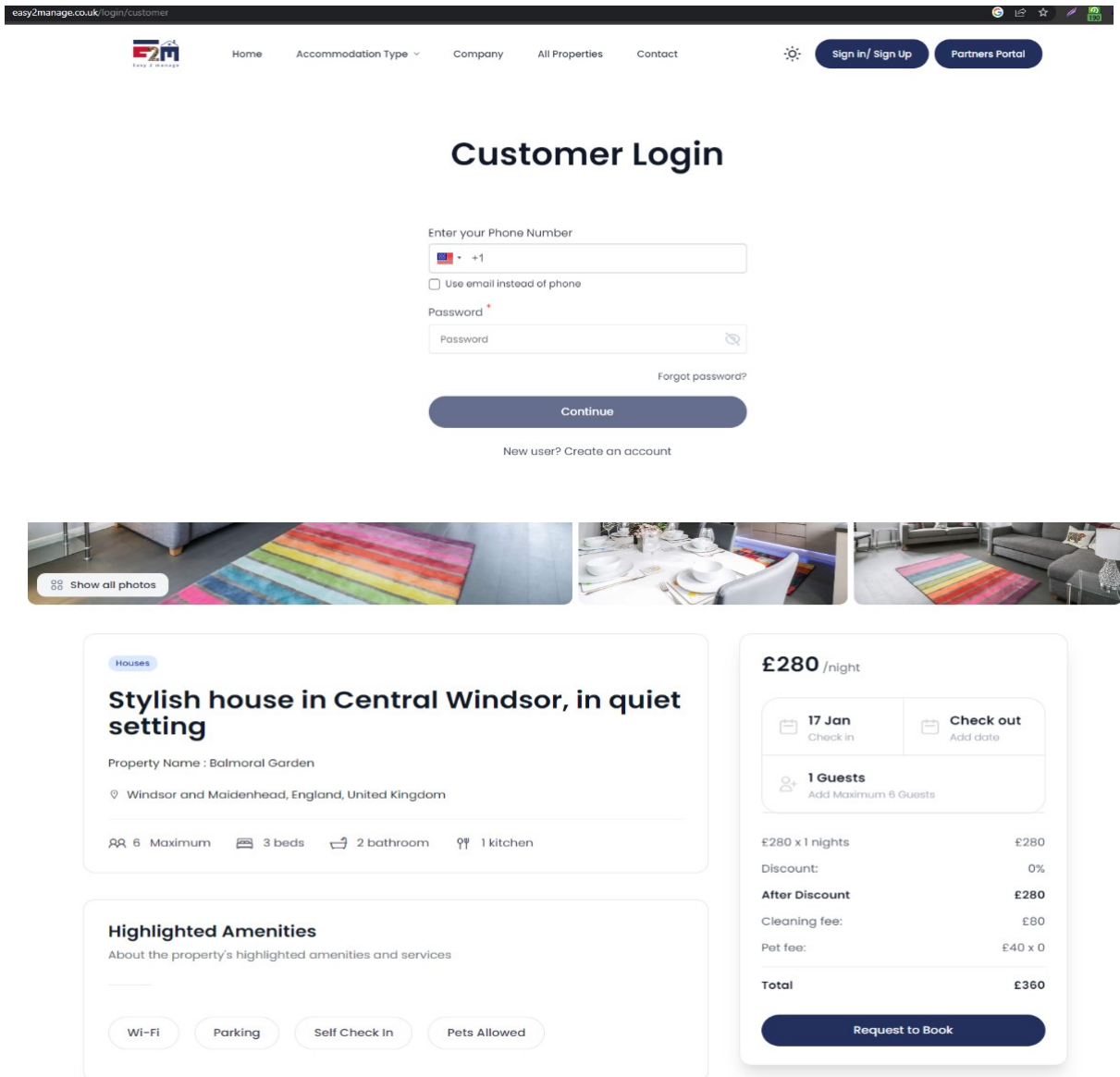


Figure 5.9: Outcome of the application

Chapter 6

CONCLUSION

During my internship, I learned a lot of crucial software development fundamentals. Before beginning the actual web application development, it is crucial to plan everything out beforehand, and it is advisable to make notes on crucial requirements. Nothing should be hurried, and patience is essential because even the simplest and most obvious errors are very easy to overlook.

I learned about web page development during the development process. The very first objective is to build a website while being aware of the requirements of the clients and understanding the development architecture is essential. In the months that followed, I encountered more complicated problems and worked closely with the development team to explain the problem and generate potential solutions. Following the SDLC waterfall model keeps the entire team organized and the development process manageable. The benefits of waterfall development include functional structure and control. A schedule with deadlines for each stage of development can be established, and a product can progress through the model phases of the development process one by one. Development starts with a concept and progresses through design, implementation, testing, installation, and troubleshooting before reaching operation and maintenance. Each stage of development follows a strict timeline. Working on a project with a team was a fantastic experience during my four-month internship. The work environment was extremely pleasant, and everyone was extremely helpful during the development process. Team meetings were really important to my improvement. CIS Teach Ltd. helped me the entire time and provided me with learning opportunities. This internship began on June 1, 2022. This was a six-month contract until November 30, 2022.