Cloud Tech: Online Electronics Retail Store

by

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A thesis submitted to the Department of Computer Science and Engineering
in partial fulfillment of the requirements for the degree of
B.Sc. in Computer Science

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Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at Brac University.

2. The thesis 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 thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.

4. We have acknowledged all main sources of help.

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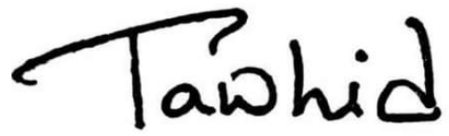
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Abstract

One of the most significant expanding and prospering categories of online retailing is ecommerce websites. It has grown quicker in recent years and is likely to continue developing at a rapid pace. Ecommerce websites allow organizations, entrepreneurs to develop more quickly, conveniently, and affordably. To make these sites more user-friendly, several templates have been developed for building their organizations in an online arena where anybody may create their own websites by using these templates with significant changes. This project is an ecommerce site that incorporates basic features to make it more user-friendly. In this project, I worked on the backend using JavaScript, PHP, Laravel, and REST APIs testing with Postman and I utilized ReactJS to link the frontend to the backend. For this project, I have worked on API routing, learning how to test the API routes using Postman and ReactJS for frontend connectivity with the support of my supervisor and other team members as well as through research. This was a challenging experience for me because I was not familiar with the API routings as well as the frontend connection with the backend. I learned new things throughout my internship training period also from the project I have worked. Working in such environment is not only challenging but it also taught me how to operate in a group and manage my time. Learning via projects offers many more advantages, including the ability for students to acquire problem-solving abilities through research.

Dedication

I want to dedicate my parents for supporting me in my hardship and for helping me to overcome this. Because of their struggles and effort, I am now able to complete my graduation. Also, I dedicate this internship report to my respected co-supervisor Md. Ekhlas Uddin, for his kindness and support towards me and always encouraged me to learning through work.

Acknowledgement

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Chapter 1

Introduction

1.1 Preamble

Internship is a place where we can showcase our skills in the corporate world. It is a chance for students to put their education into practice in the real world and earn experience in preparation for future employment prospects in their desired areas. We may work and learn here through actual applications, which differs from the traditional learning style.
Individuals may gain information during this internship period by attending corporate meetings, working experience with professional groups. Internships that allow students to interact with specialists from whom they may learn are in great demand among students.

I found the circular for my internship program on a social media platform, after sending my CV, the HR department of the organization scheduled an interview session. Md. Ekhlas Uddin (Chief Technical Officer of Shopnir Bangladesh Limited.) interviewed me for the internship program and was assigned as my supervisor. I approached Dr. Md. Golam Rabiul Alam sir for acceptance of the Internship Program after being recruited as a project management intern in this organization. After submitting the company's information, projects, and a consent letter, he confirmed my continuance of my internship with this corporation, and he assigned a supervisor, Md. Tawhid Anwar sir, to oversee my internship's progress. BRAC University provides This internship opportunity as an alternative to the thesis or project, both of which are required for graduation.
The internship program and study's goal is to provide students with structured depth information on job duties. This enables a student to assess the compatibility of the real-world scenario with the knowledge obtained in BRAC University. From this internship I get some of the professional skills, when combined with my technical skills, will certainly be useful in my future job.

1.2 Purpose of the Documentation

This report is the outcome of a six-month long internship program at Shopnir Bangladesh Ltd. and was written as part of the Computer Science and Engineering (CSE) program at BRAC University. This internship report is being written for my required internship program as part of my bachelor's degree. And this report is necessary in order to evaluate my internship program. The aim of the report is to provide information on my internship program that is relevant to my work. Here, I discuss my abilities as a result of this internship, which I gained while working in the corporate sector. I also discuss the effort

I have done on my project and my accomplishments. In addition, this paper contains information on my employment and experiences at Shopnir Bangladesh Ltd, which will serve as a brief overview for students interested in doing an internship with this company.

1.3 Information Sources

I have provided the information that is accessible to me in this report. I divided the information into two categories: primary and secondary data sources. The primary data source has been supplemented with data from my internship experiences and observations. I also put the information I collected from the internet under the secondary data source. The majority of the information regarding the organization came from various websites, media, and Shopnir employees. I got the information from the following data source, which I've specified explicitly:

1.3.1 Primary Data Source

- Inspection and interaction with coworkers
- Team meetings with the clients
- Direct observation at the workplace

1.3.2 Secondary Data Source

- Websites of Shopnior Bangladesh Limited.
- Internet

1.4 Document Overview

The purpose of this report is to share some of my internship experiences with this company. I have talked about some of the difficulties that I encountered while working. In addition, I talked about the changes I had gone through and the skills I acquired throughout that period. I briefly explained the project, I worked on in my internship program. This paper contains thorough information about my work and the progress I have achieved from this internship also can get a quick analysis of the company as well.

Chapter 2

Company's Profile

2.1 Overview

Shopnir Bangladesh Lid. is a subscription-based online platform that enables anyone to open an online store and sell it. This is a one-stop E-commerce business solution that includes e-commerce website development, mobile application development, business growth consultancy, and digital marketing. Shopnir Bangladesh Ltd. was founded in 2020 with the goal of creating integrated digital solutions that would improve ecommerce. Subscribers can easily construct or modify their store and start selling to customers all around the world using the Shopnir App Store and APIs. The Shopnir E-commerce system provides online retailers with services such as payments, marketing, shipping, and customer engagement tools, making it easier for small businesses to open an online store. This software is simple to use and link to any additional tools you may require for development.

Shopnir Bangladesh Ltd. located in Mirpur DOHS but for the COVID situations the provided the opportunity work from home.

2.2 First day of joining Shopnir Ltd.

Due to the COVID situation, I did not have the option to work in a corporate atmosphere when I first joined this organization as an intern, but they did provide the possibility to work from home because the Maximus firm now functions remotely. I was both nervous and excited on my first day of work because it was my first time attending a professional meeting. They planned a meeting for my introductory sessions, where I met some of the company's leaders, including Mosharof Sabu (Shopnir's Chief Executive Officer), Zarif Alam (Shopnir's Business Development Executive), and my supervisor, Md. Ekhlas Uddin (Chief Technical Officer at Shopnir). Everyone was incredibly nice to me and welcomed me as an intern with such humility and generosity. They asked me a few questions about my education and personal interest. They discussed the company's profile as well. During this session, the authority described how they function and interact with one another. They comforted me with their welcoming gesture. The meeting lasted approximately two and a half hours. In the meantime, my supervisor introduced me to the members of my team with whom I will be working during my internship.

Following the conclusion of the introductory classes, my team members and supervisor described our working approach as well as the obligations I must fulfill in order to complete this internship program. My coworkers described how they operate while on the job and what I should do during my working hours.

This was a wonderful experience for me because I did not expect such high

praise and such humble and caring attitudes toward an intern. They offer me to take leave on my first day at work after explaining everything. I had a lot of fun talking to these wonderful people who were so friendly and treated me so well.

2.3   Products and Services

Shopnir is a provider of interactive solutions for businesses looking to create a unique online presence. They are knowledgeable about the industry, specialty, terminology, and the mechanics of how a retailer operates. Because of their well-known WordPress plugins, their top brand has a global reach. They improve people's perceptions of retail and deliver innovative software solutions, allowing businesses to focus on what they do best: developing and marketing their products, making e-commerce more user-friendly.

Shopnir's expert staff is well-versed in landing page design and can come up with some extremely unique ideas. We know what works and what's required to present your practice in a visually appealing light.

Shopnir believes that by creating a good website that showcases all of the specific services a shop offers as well as the exact location of their presence, where they can better support their clients. They offer better services by establishing their own online store, which would help them to achieve their goal of servicing people whenever they want. In order to improve and expand the value of its products, the company is continually experimenting with new technologies.

Chapter 3

Work Place Details

3.1   My Responsibility

The first two months were dedicated to my training, during which I learnt various languages and frameworks in order to progress my career. I was not assigned any specific assignments at this time. Md. Ekhlas Uddin, my supervisor, suggested that I need to learn through projects so that I could connect with real work in this field and learn more quickly. During my internship, I was able to know about new technology that can help me to work more efficiently. My supervisor set me some tasks after the training phase to check my comprehension of the project that I had learned throughout the training phase. For a better understanding, I completed two projects using diverse frameworks such as Laravel and React JS, as well as languages such as php, JavaScript, jQuery, Rest APIs etc.

I had to work 48 hours a week, but the hours are flexible so that I can complete my studies without facing any pressure. My teammates assisted me whenever I was confused about my work. My supervisor also helped me by providing me with materials that I required for my work.

3.2 Communication

The organization uses a social media chat system to communicate as a shared platform for all employees. When starting our work, all workers and interns must notify the platform. This is our common communication platform, where colleagues can express their difficulties or confusion during the workday. We must attend an obligatory online meeting during our working day at a certain time where we report on our work and discuss any confusion we have while working and try to solve our problems.

My supervisor assisted me anytime I encountered problems while working on my projects via Google Meet and provided me with anything pertinent to my work.

Whenever we require leave for an emergency, we can email HR, who keeps track of our leave days, as we have fixed days for leave.

3.3 Remote Office

In this COVID situation, the corporation was run remotely. Employees were required to work from home for their own safety. I didn't get an opportunity to visit my office because I started here as a remote worker. Full-time employees, on the other hand, can physically return to their office following the lockdown. Employees who operate remotely must report while starting also their daily activities in our common platform.

3.4 Conclusion

Shopnir Bangladesh Ltd. is a fun and welcoming workplace where employees are encouraged to work independently. They offer time flexibility, which is something that most companies do not. The people are extremely humble and generous to each and every one of their employees so people are satisfied working here.

Chapter 4

My Contributions

4.1 Project Overview

The project on which I worked is a "Cloud Technology" website for online retailers who wants to customize their websites without having to write any coding. Because online purchase is growing increasingly popular for running any business and introducing them to customers, it is much easier to do so than in a physical store. A physical store is no longer sufficient to run a business. That is why business owners and entrepreneurs rely on websites which help them operate their businesses efficiently. This website was built using simple designs to make it more user-friendly for the owners and allowing them to easily establish accounts and control it. This website is for admin purpose only and the goal of this project is to make the site user-friendly for admins, so that they can easily operate with this website using basic and significant feature.
The project has the following requirements:

- Users can register to make an account, and each username should be unique for maintenance purposes.

- Individuals can log in by providing correct credentials for access their dashboard panel.

- Authenticated users can add products to each category by providing required field with proper input values.

- Authenticate users can choose to update their products.

- Users can decide whether they want to have this item or not, and they can even remove the product from their product list.

- Users can search for products via the Admin Panel.

- Authorized users can browse their product list, from which they can Update or Delete any of their products.

- After completing their service, users can log out.

4.2 System Analysis and Design

The main purpose of the analysis is to gather specific needs and reduce ambiguity in functionalities in order to make the website as user-friendly as possible. Based on the needs of common consumers, we built a number of unique features for our website.

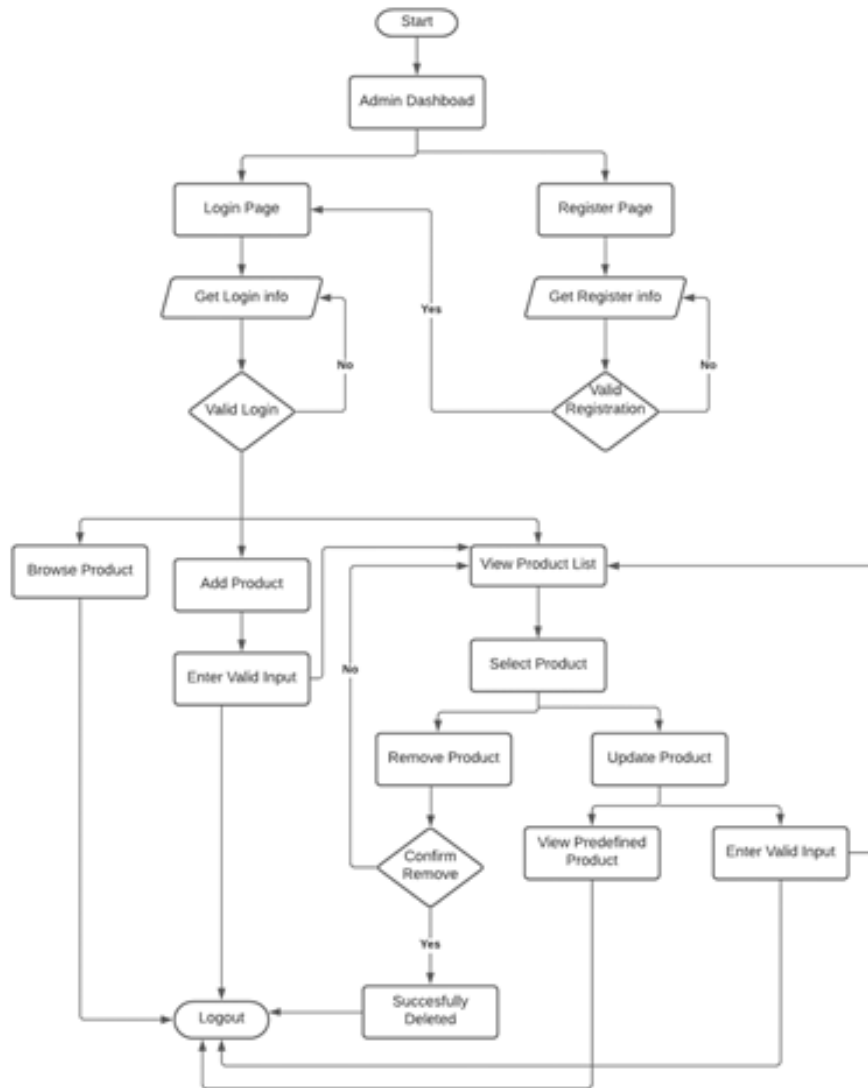For our website, we produced the flow chart below based on our analysis:

Fig. 4.1: Flow Chart of Cloud Tech.

We chose to implement the following functions after discussing with my supervisor:

- Users may quickly construct their profiles.

- Users can easily handle the product.

- Users can use the search function to find goods for their maintenance needs.

To demonstrate their usefulness, they used a Use Case Diagram:
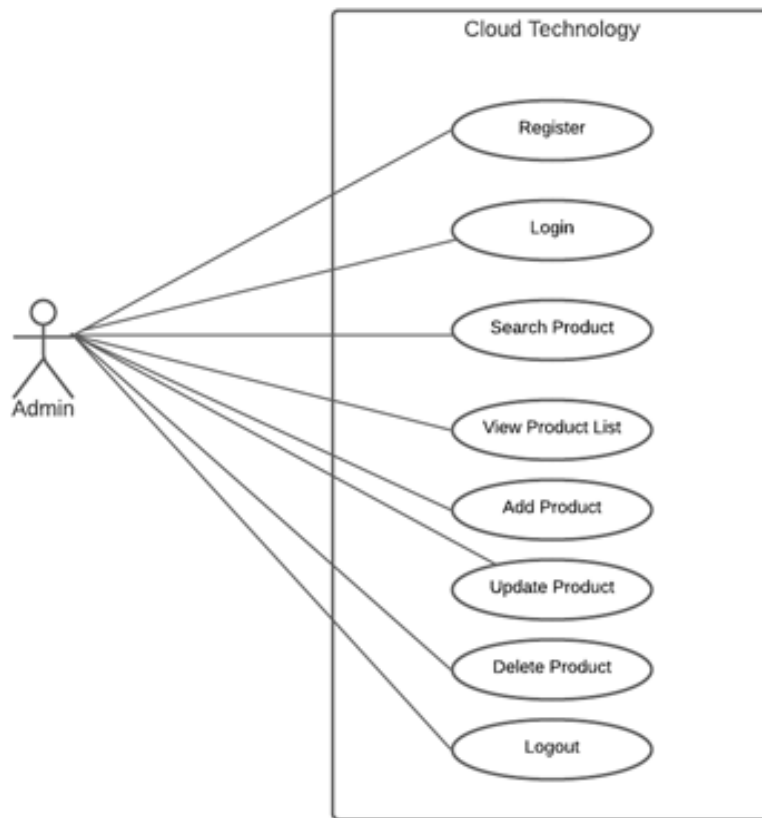

Fig. 4.2: Use Case Diagram of Cloud Tech.

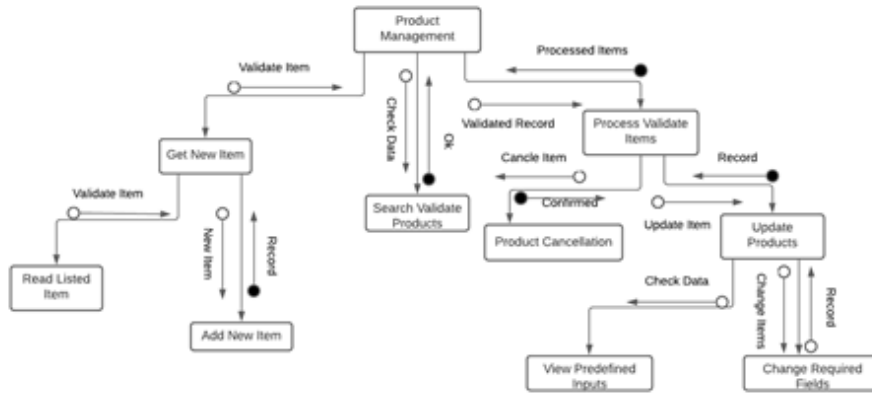The structural diagram of the project is given below:

Fig. 4.3: Structural Diagram of Cloud Tech.

In this project, I illustrate how a user can maintain their products on the Cloud Tech website from login to logout while keeping high security to keep the user credentials private. We documented the portion's analysis and design in the SRS (software requirement specification) document for future development.
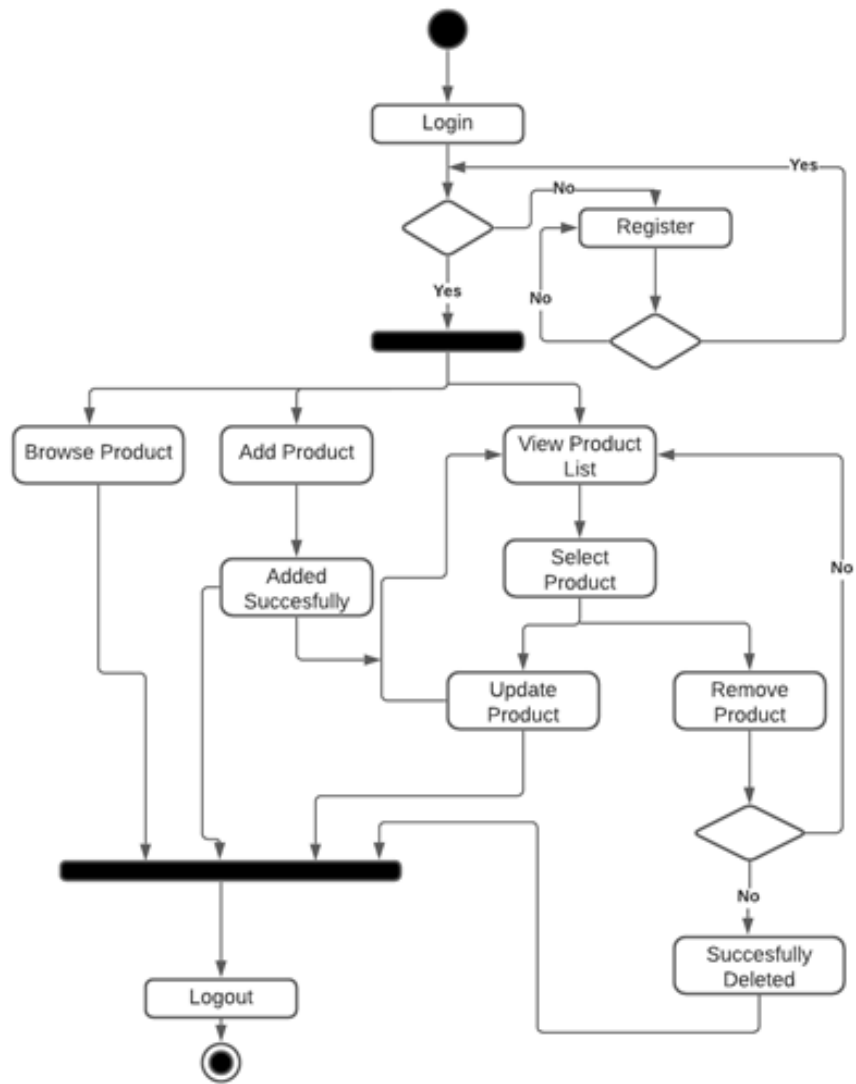
The project's Activity Diagram is as follows:

Fig. 4.4: Activity Diagram for Manage Products.

4.3   Project Responsibilities

As a backend engineer, I have some basic understanding. I joined this team to work on the backend of the project as well as the frontend. During my training, my supervisor tasked me to learn about API routing in order to properly operate the backend using Postman. Then he instructed me to learn React Js in order to connect the frontend to the backend APIs. After that, he provided me some ideas for a project with basic functionalities to keep track of the product's details. This is a one-person project to design an Admin Panel template. The project was built to demonstrate the relationship between the frontend, which uses the React Js framework, and the backend APIs, which uses Laravel. This project has given me a clear understanding of React Js and how it works in the frontend, besides get the opportunity to work with API routings in the backend part using Postman.

I needed to study React Js for this project so that I could understand the workings of the view layer and gain a sense of how a single page application for the web works. This was difficult for me, but it also helped me to improve my abilities that I learnt while working on the project.

```php
7    class ProductController extends Controller
8    {
9        function addProduct(Request $req)
10       {
11           //$path = $req->file('file')->store('products');
12           $product = new Product;
13           $product->name=$req->input('name');
14           $product->price=$req->input('price');
15           $product->description=$req->input('description');
16           $product->file_path=$req->file('file')->store('products');
17           $product->save();
18           return $product;
19       }
20
21       function update(Request $req,$id)
22       {
23           $product = Product::find($id);
24           $product->name=$req->name;
25           $product->price=$req->price;
26           $product->description=$req->description;
27
28           $product->save();
29           return $product;
30       }
```

Fig. 4.5: Cloud Tech backend view.

```
function AddProduct() {

    const [name, setName] = useState("");
    const [file, setFile] = useState("");
    const [price, setPrice] = useState("");
    const [description, setDescription] = useState("");

    async function addProduct() {
        console.warn(name, file, price, description)
        const formData = new FormData();
        formData.append('file', file);
        formData.append('name', name);
        formData.append('price', price);
        formData.append('description', description);


        let result = await fetch("http://127.0.0.1:8000/api/add", {
            method: "POST",
            body: formData
        });
        window.location.href="http://localhost:3000"
    }
}
```

Fig. 4.6: Cloud Tech frontend view.

4.4 Implementations

In this project, I have connected the frontend part with the backend APIs using React. At first, I have created a setup for backend part using Laravel and also created the setup for React. This project has some functions which are: Login, Register, Logout, Add Product, Product List, Search Product, Update Product and Delete Product. For each of these functions I had to do the Integration to connect with the backend to frontend. I have tested each of these functions using HTTP requests from Postman. Also, I can retrieve data from the frontend part.

I have shown some of my work below:

First, I have included some screenshots from the backend of my work, which was done with Laravel and Postman. Here, under ProductController, I have developed functions for each operations using valid names so that the features may be easily understood. Instead of using web routing, I used API routing and tested the APIs with Postman.

For each function Model, Controller, Routes etc. and specific operations must be conducted. For example, the POST operation for adding any product and sending it to the server. I have submitted HTTP request to the server from

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Postman using form-data. This testing is essential to determine whether there are any issues with the project's backend.
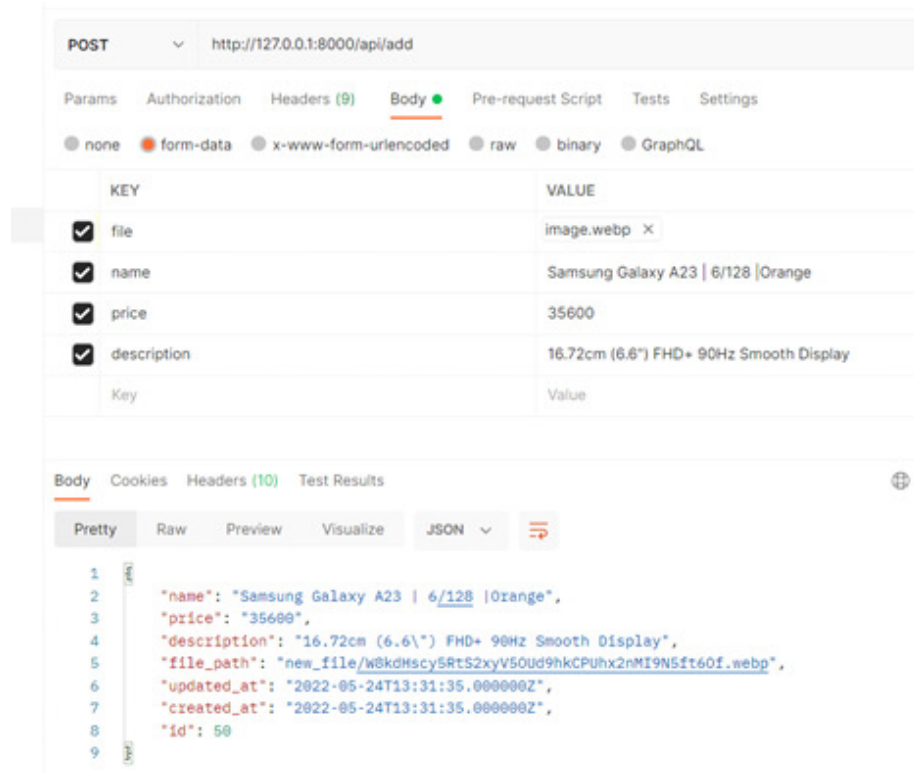

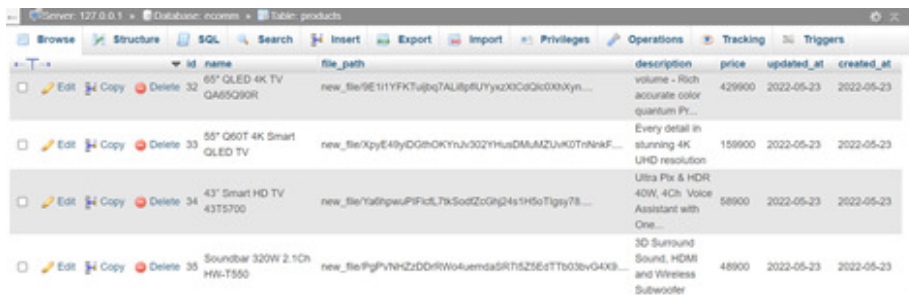Fig. 4.7: Add Product function from Postman.

Fig. 4.8: Product Database of Cloud Tech.

```
17
18    Route::middleware('auth:api')->get('/user', function (Request $request) {
19        return $request->user();
20    });
21
22    Route::post('register',[UserController::class,'register']);
23    Route::post('login',[UserController::class,'login']);
24    Route::post('add',[ProductController::class,'addProduct']);
25    Route::get('list',[ProductController::class,'list']);
26    Route::delete('delete/{id}',[ProductController::class,'delete']);
27    Route::get('product/{id}',[ProductController::class,'getProduct']);
28    Route::put('update/{id}',[ProductController::class,'update']);
29    Route::get('search/{key}',[ProductController::class,'search']);
```

Fig. 4.9: API routings code from Backend Part.

```
9     function addProduct(Request $req)
10    {
11        //$path = $req->file('file')->store('products');
12        $product = new Product;
13        $product->name=$req->input('name');
14        $product->price=$req->input('price');
15        $product->description=$req->input('description');
16        $product->file_path=$req->file('file')->store('products');
17        $product->save();
18        return $product;
19    }
20
21    function update(Request $req,$id)
22    {
23        $product = Product::find($id);
24        $product->name=$req->name;
25        $product->price=$req->price;
26        $product->description=$req->description;
27
28        $product->save();
29        return $product;
30    }
31
32
33    function list()
34    {
35        return Product::all();
36    }
37
```

Fig. 4.10: Product Controller codes from Backend Part.

I have included screenshots of my React-based frontend portion here. I need
to integrate APIs for each function while also creating backend functions to
see if there are any issues with testing APIs from the backend or frontend. So
that I can quickly identify the bug and pinpoint when and where it occurred.

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For example, after testing the entire API, I integrated the Add Product API in React Js by developing a form for adding products, defining a status to get filled data, appending from data, and sending data to the API. After that, test the API from the project's frontend. For each function, this approach was used.
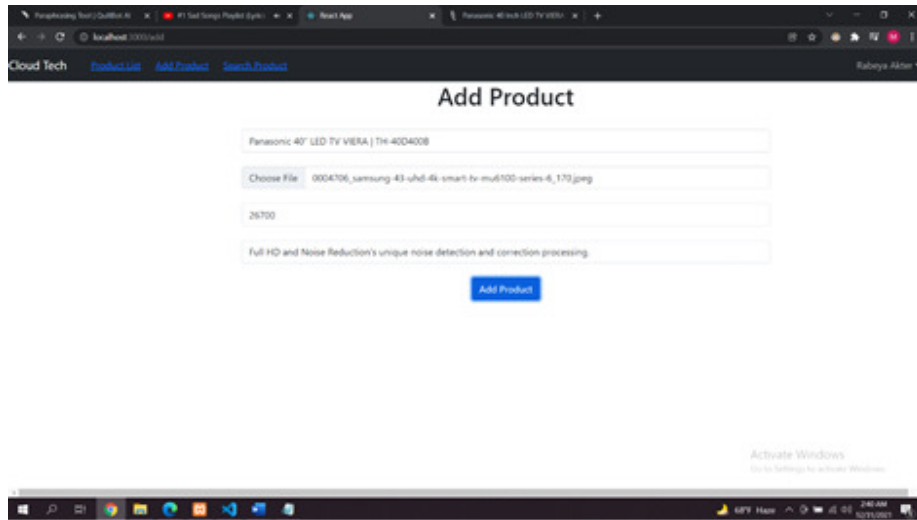

Fig. 4.11: Add Product Function of Cloud Tech.

```
1   import logo from './logo.svg';
2   import './App.css';
3   import { Button } from 'react-bootstrap'
4   import Header from './Header'
5
6   import { BrowserRouter, Route, Switch } from 'react-router-dom'
7
8   import Login from './Login'
9   import Register from './Register'
10  import AddProduct from './AddProduct'
11  import UpdateProduct from './UpdateProduct'
12  import Protected from './Protected'
13  import ProductList from './ProductList'
14  import SearchProduct from './SearchProduct'
15
16  function App() {
17    return (
18
19      <div className="App">
20
21        <BrowserRouter>
22          <Switch>
23
24
25            <Route path="/login">
26              <Login />
27            </Route>
28
29            <Route path="/register">
30              <Register />
31            </Route>
32
33            <Route path="/add">
34              <Protected Cmp={AddProduct} />
35              { /*<AddProduct />*/}
36            </Route>
```

Fig. 4.12: App js codes from Frontend Part.

4.5 Complete Project

After done with the coding part user can experience this website to manage their products where they can easily create their accounts to authenticate use.
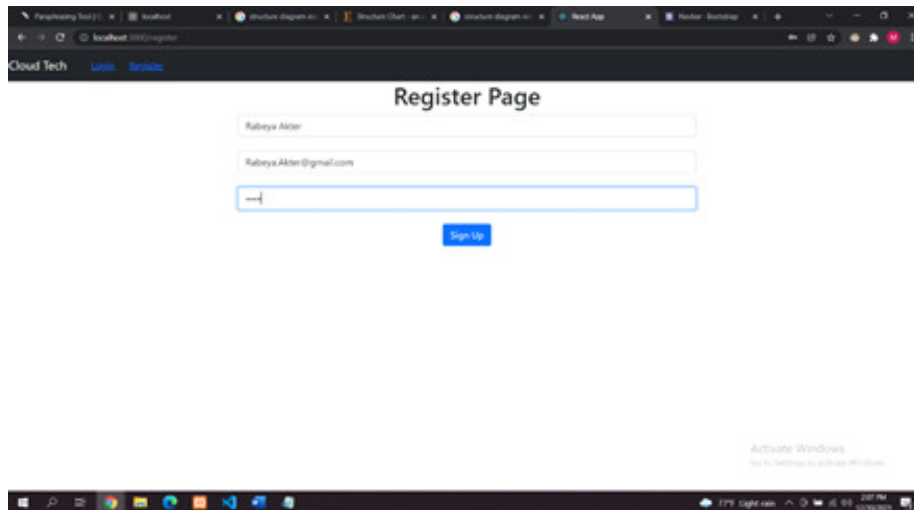
16

Fig. 4.13: Register Page of Cloud Tech.

After completing the registration process user have to login first with providing authenticate user credentials to get access into the website to manage products for maintaining their business.
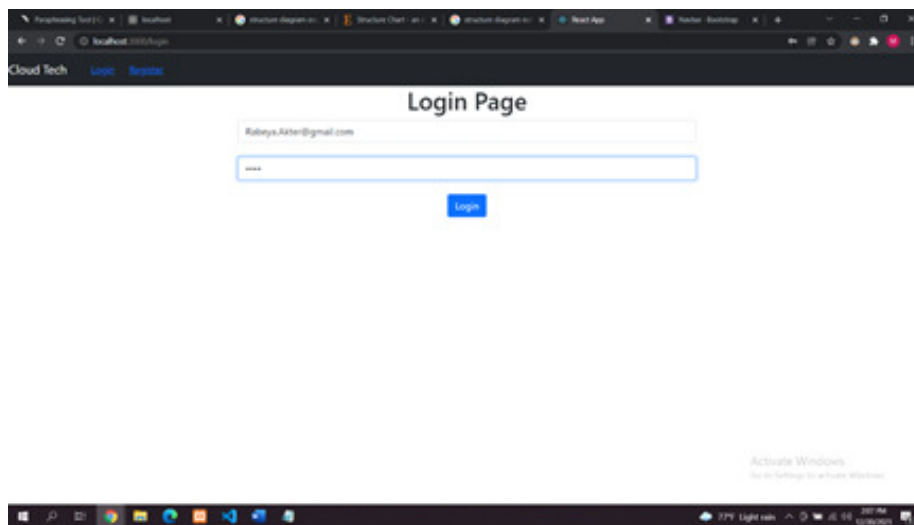

Fig. 4.14: Login Page of Cloud Tech.

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Authenticate user now have the access to view the admin panel where product list is showing from which they can view items which are available in their stock. And recently added product are listed in the top.
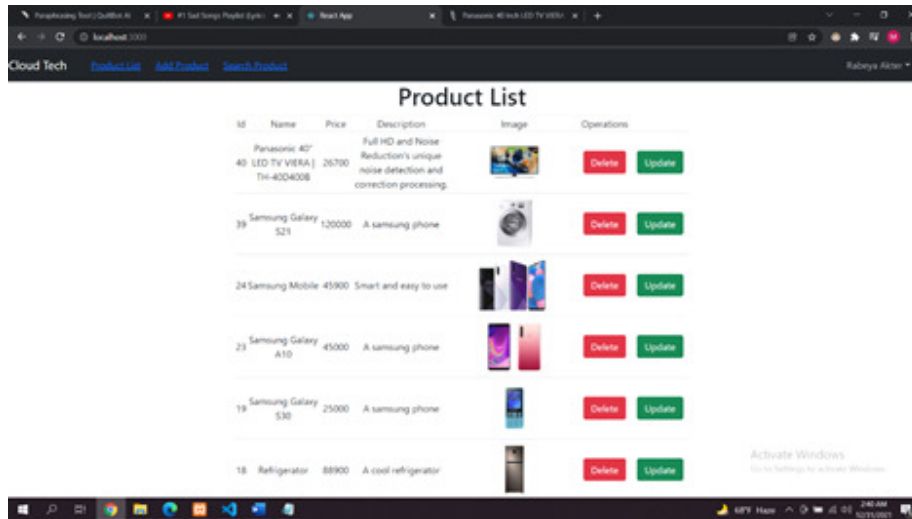

Fig. 4.15: Product List Page of Cloud Tech.

The user can add products to their stock by providing proper input; otherwise, the user will not be allowed to add any products to their list. Users are directed to the home page after adding a product to see if their things have been added to the product list or not. Figure:11 depicts the Product List page.

Users can manipulate their products or delete products from their listed things on the Product List which is shown in Page Figure: 15. When a user chooses the Update option, they are taken to the Update Page, where they can make necessary changes to the name, price, and description of the selected items by entering the appropriate information. The input fields have already been pre-populated, allowing the user to change the entire product information or a specific piece of it.
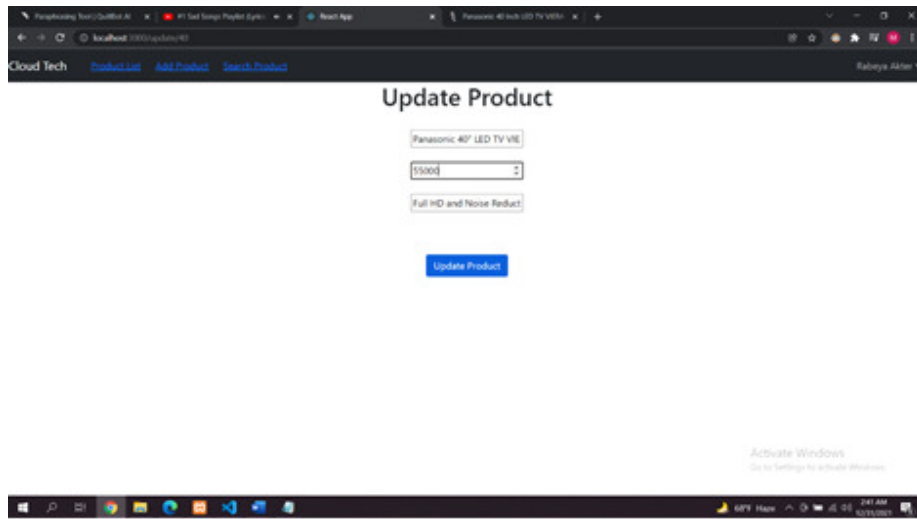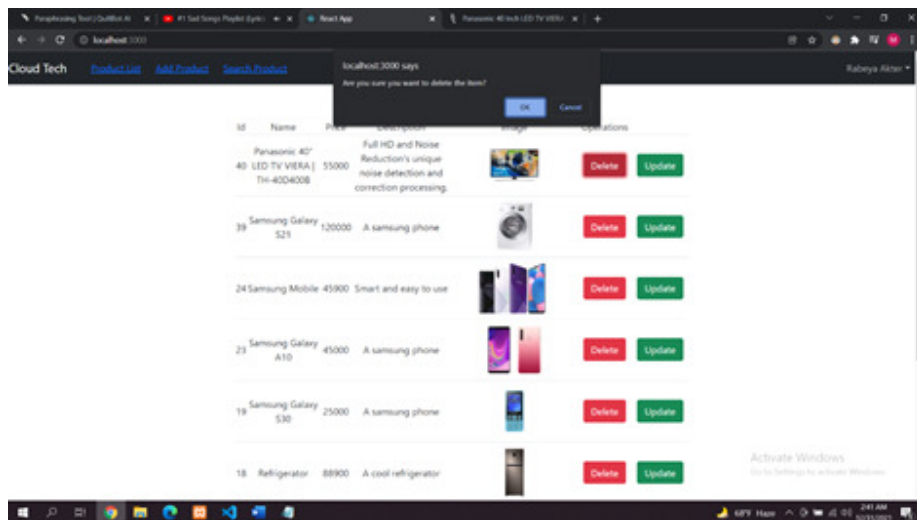
Fig. 4.16: Update Product Page of Cloud Tech.

When a user wants to delete an item from their list, they can do so manually. Before deleting, the user is asked whether they want to delete the item or cancel the operation.

Fig. 4.17: Delete Items from Product List.

4.6 Challenges

To connect my backend APIs and frontend operations, I used React. Previously, I obtained APIs for the backend using Postman. So, in order to connect with the backend program and obtain APIs for the frontend, I learned React. React is a JavaScript framework that creates interactive UIs using simple views for each state of any application. React will update and render based on the components when data changes. In the backend of the project, I utilized Laravel, which was simple for me because I already had some experience with Laravel. This allowed me to create the project without facing any major difficulty. On the other hand, I had some difficulties working with React Js, particularly when integrating two independent sites because I lacked of knowledge. While working, I encountered a few bugs. In the feedback section, my supervisor noted and suggested solutions to the following issues: The website needed to be responsive for every device, which I couldn't do because I was using basic Bootstrap. So, I used Media Query with CSS to create height and width for each device.

```html
<div>Device Test!</div>
<MediaQuery query="(min-device-width: 1224px)">
  <div>You are a desktop or laptop</div>
  <MediaQuery query="(min-device-width: 1824px)">
    <div>You also have a huge screen</div>
  </MediaQuery>
  <MediaQuery query="(max-width: 1224px)">
    <div>You are sized like a tablet or mobile phone though</div>
  </MediaQuery>
</MediaQuery>
<MediaQuery query="(max-device-width: 1224px)">
  <div>You are a tablet or mobile phone</div>
</MediaQuery>
<MediaQuery query="(orientation: portrait)">
  <div>You are portrait</div>
</MediaQuery>
<MediaQuery query="(orientation: landscape)">
  <div>You are landscape</div>
</MediaQuery>
<MediaQuery query="(min-resolution: 2dppx)">
  <div>You are retina</div>
</MediaQuery>
```

Fig. 4.18: : MediaQuery codes for Responsive Design.

I had no prior understanding of Media Query, so I learned from various internet sources and with the assistance of my supervisor. He provided some useful resources for a quick explanation of Media Query, which assisted me in debugging my issue. Then he suggested some minor changes, such as: I need

to redirect to the home page after adding any product; I need to restrict the inputs for Add Product so that it is more convenient; user should receive an alert message when deleting any item; sorting products in ascending order; and names should be unique for product and user to avoid redundancy. I have able to debug all these problem by some research and take helped from the other team members. I was able to debug all of these issues with the help of some research and other team members.

Chapter 5

Growth

5.1 Team Work

When working on a project, both in the corporate world and at university, teamwork is essential. Shopnir provided me with the opportunity to work with and learn from my coworkers. I gain insider knowledge on how teams work and collaborate with one another under pressure.

5.2 Time Management

Time management is vital in any industry so that we can complete our assigned tasks within the allotted time. Due to the workload, Shopnir is stick on time management. Every employee must keep this in mind so that we may make the most use of our time and avoid squandering it. This helped me improve my time management skills while working at Shopnir.

5.3 Technical Growth

I learn about a career field from the inside out and am able to increase my personal growth as a result of the internship. Working in a real-world setting allowed me to better understand the problems I faced in the corporate world. I learnt some new technology and used it to my project, which helped me expand my opportunities for learning new skills. Furthermore, when combined with my technical skills with professional skills I will get from this internship will undoubtedly be valuable in my future work.

5.3.1 API Authentication

I am getting familiar with APIs that employ authentication, such as Laravel Passport and Laravel Sanctum, are used to authenticate for API calls using API tokens and OAuth2 in Laravel applications. HTTP queries are encrypted with this method. To test the HTTP server's route, I used Postman.

5.3.2 ReactJs Framework

I get the opportunity to learn about React which is a JavaScript framework that creates interactive UIs using simple views for each state of any application. React will update and render based on the components when data changes.

5.3.3 GitHub

My supervisor encouraged me to use git while work on my project by committing my code to a git repository so that, I can obtain a more detailed idea. It was beneficial for me and helped me to learn about how to use git to save a project backup.

5.4 Interpersonal Growth

5.4.1 Self Confidence

My internship gave me the courage to talk and share my opinions about the project with coworkers, which helped me to improve my skills. In addition, I get the opportunity to handle matters professionally.

5.4.2 Positive Attitude

My colleagues and supervisor, in particular, have been so generous and helpful to me that it has changed my perspective on the corporate world. Everyone here was so humble and inviting that I felt inspired to work harder and pay more attention. This gives the office a cheerful feel and gives a nice impression of the corporate environment.

Chapter 6

Conclusion

6.1 Conclusion

In this report, I explain my work experiences with Shopnir Bangladesh Ltd during the last six months as a project management intern. When it comes to real-world application, learning is significantly more intriguing and fascinating in my opinion. Where I can study more effectively rather than accumulating theoretical knowledge. This internship is a great opportunity for me to learn new skills and gain clear and positive perspective on the business world. Working with Shopnir workers allowed me to discover new things every day.

While working for this company, I faced a number of obstacles and learned how to deal with them. My supervisor and team members pushed me to work on certain projects so that I could have a deeper understanding of the languages I had acquired in this program. This provided me with valuable work experience that I may apply to future positions while also enhancing my abilities. I am grateful to Md. Ekhlas Uddin, who assisted me during this internship program and guided me in choosing a professional path.

6.2 Recommendations

Shopnir Bangladesh Ltd is a great place to get hands-on experience and gain a solid understanding of the industry. The full-time employees are so knowledgeable and experienced that they are able to assist one another. This is a place where interns can learn new skills by putting them into practice while being supervised by specialists.

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