Tribhuvan University

Institute of Science and Technology

An Internship Report on

"Front End Development using React Js"

at

"Sipalaya Info Tech"

Submitted to

Department of Computer Science

and Information Technology

Swastik College

In partial fulfillment of the requirements for the Bachelors of Science in Computer Science and Information Technology

Submitted by

Dev Raj Basnet (24370/076)

Swastik College

Chardobato, Bhaktapur

Under the Supervision

of **Mr. Ribenz Rijal**

June, 2024

Sipalaya Info Tech Pvt. Ltd.

June 10, 2024

To,

The HOD,

Swastik College,

Chardobato, Bhaktapur, Nepal

TO WHOM IT MAY CONCERN

It is our pleasure to confirm **Mr. Dev Raj Basnet**, student of BSc CSIT 8th semester program from your institution, completed an internship in **Frontend Development with React JS** with Sipalaya Info Tech. His duties, assignment and reporting for the position was specified under the mentorship of **Himal Rawal** beginning from March 03, 2024. The internship period for our program was 3 months which was ended on May 31, 2024.

The working days are from Sunday through Friday for each week. If you have any questions, please feel free to contact us. Your kind co-operation in this regard will be highly appreciated.
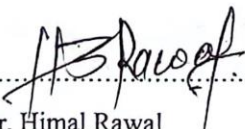
Er. Himal Rawal

Chief Executive Officer

Sipalaya Info Tech

MENTOR'S RECOMMENDATION

I am delighted to provide my endorsement for the document titled **"Internship Report on Frontend development with React JS "**, which has been skillfully crafted under the mentorship of **Himal Rawal** student **Mr. Dev Raj Basnet** currently enrolled in the **Bachelor in Computer Science and Information Technology** program at **Swastik College Chardobato , Bhaktapur , Nepal.**

This report stands as the partial fulfillment of the requirement for the completion of his bachelor's degree at Tribhuvan University.

I strongly recommend the submission of this report for comprehensive evaluation.

Er. Himal Rawal

Chief Executive Officer

Sipalaya Info Tech

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Tribhuvan University

Institute of Science and Technology

Swastik College

SUPERVISOR'S RECOMMENDATION

I hereby recommended that the report prepared under my supervision by **Dev Raj Basnet** (TU Symbol No. **24370/076**) entitled **"Front-end Development using React JS"** in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Information Technology be processed for evaluation.

_____

Mr.Ribenz Rijal

Supervisior

Swastik College

Department of Computer Science and Information Technology

Tribhuvan University

Institute of Science and Technology

Swastik College

LETTER OF APPROVAL

This is to certify that this report prepared by **Dev Raj Basnet** entitled "**Front-end Development using React Js**" in partial fulfillment of the requirements for the degree of Bachelor of Science in Computer Science and Information Technology has been evaluated. In our opinion, it is satisfactory in the scope and quality as an internship report for the required degree.

External Examiner

Tribhuvan University   Signature   Date

Sristi Khatiwoda

Coordinator   Signature   Date

Swastik Collge

Mr. Ribenz Rijal

Supervisor   Signature   Date

Swastik Collge

ACKNOWLEDGEMENT

ABSTRACT

This abstract presents a concise overview of my internship at **Sipalaya Infotech,** where I served as a Front-end Developer (React Js). The primary objective of my internship was to develop a website of different company and my mentor help a lot and I have develop the receipe finder website. My responsibilities included designing, implementing and maintaining various features of the platform, such as developing user interfaces, managing databases and smooth communication between front-end components.

Throughout the internship, I mastered my skills in Html, Css, Javascript and React gaining practical experience in front-end development. I faced and overcame challenges related to optimizing website performance and resolving compatibility issues, which enhanced my problem-solving and debugging abilities. The immersive learning environment allowed me to apply theoretical knowledge from my academic studies to real-world scenarios, significantly promoting my understanding of web development practices.

This internship had a positive impact on my personal and professional growth. It promoted a keen interest in front-end development and solidified my aspiration to become a proficient front-end developer. The exposure to collaborative teamwork and project management provided me with essential skills for my future career. In conclusion, my internship at Sipalaya Info Tech was a transformative experience that increased my technical expertise in the React, offering a dynamic platform for skill enhancement, overcoming challenges, and shaping my career goals.

Keywords: Internship, Javascript, React,Front-End, Front-End Developer

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LIST OF ABBREVIATION

API	**Application Programming Interface**
CSS	**Cascading Style Sheet**
DOM	**Document Object Model**
ERP	**Enterprise Resources Planning**
JSX	**JavaScript Xml**
SEO	**Search Engine Optimization**
UI/UX	**User Interface/User Experience**

CHAPTER 1: INTRODUCTION

1.1: Introduction

During my internship at Sipalaya Infotech, This internship undertook a significant project involving the development of website named "recipe finder". This platform was designed to create a robust and user-friendly application where users can search for recipes based on ingredients, cuisine, preparation time, Instructions and Youtube videos. Users can search for recipes by keyword, meal name etc. The Forkify APIs for accessing a vast database of recipes.

The recipe finder project was tailored to meet the specific needs of its users, ensuring a seamless and efficient experience. For the development, we utilize HTML, CSS, JavaScript and React Js was chosen for its component-based architecture which allows for the creation of reusable UI components enhancing development efficiency and maintainability.

Throughout the development process, I was involved in designing, implementing and maintaining various features of the application. This included creating user friendly interfaces, managing data-flow between front-end and ensuring the overall performance and security of the platform. The choice of technology was driven by the need for a responsive, scalable and maintainable solution that could efficiently handle the complexities of an environment.

 This Internship at Sipalaya Infotech provided a comprehensive learning experience in front-end development. The "Recipe Finder" project not only enhanced my technical skills but also offered practical insights into the challenges and solution involved in developing a sophisticated web application.

1.2: Problem Statement

In today's fast-paced word, many individuals and families struggle with the daily challenge of deciding what to cook, often with limited ingredients at hand. This challenge is made more difficult by special diets, such as avoiding meat, avoiding all animal products or avoiding gluten-free diets. There is a pressing need for solution that helps user make the most of their available ingredients while considering these dietary needs, ultimately simplifying meal planning, reducing food waste and catering to various food preferences.

The proposed solution is a Recipe Finder application that allows users to input the recipe name or keywords and find suitable recipes that use those ingredients, minimizing the need for additional purchases. The application will feature dietary filters to accommodate various preferences and restrictions, a user friendly interface for easy navigation, personalized profiles to store user preferences, and display nutritional information for informed meal choices. This will help users spend less time planning meals, reduce food waste, and streamline grocery shopping, ultimately making cooking easier, more enjoyable and efficients.

1.3: Objective

The objectives of this internship project are listed below:

a. To create a visually appealing and intuitive user interface that allows users to easily navigate through the application and search for recipes based on keywords or specific meal names.

b. To utilize React JS to develop the front-end of the application, leveraging its component-based architecture for efficient and maintainable code. Ensure the application follows best practices in state management, component lifecycle, and hooks.

c. To implement a robust search functionality that allows users to input ingredients and retrieve a list of recipes that can be made with those ingredients, helping users to minimize additional purchases.

d. To utilize external APIs, such as Forkify API, to access a comprehensive database of recipes. Ensure seamless integration for fetching and displaying recipe data including ingredients, instructions, and related YouTube videos.

1.4: Scope and Limitation

The Scopes of Recipe Finder project encompasses the following key aspect:

a. This website allow user to input the recipe name or keyword and search for recipes and found the recipe with ingredients, instructions and youtube videos.

b. This website will provide detailed nutritional information for each recipe to help users make informed meal choices.

c. This website allows feature an intuitive and easy-to-navigate interface for seamless user experiences.

It has certain limitations that should be considered:

a. The effectiveness of the ingredient-based search depends on the completeness and accuracy of the ingredient database, which may initially have limitations.

b. While the website will cover common dietary preferences, it may not accommodate all possible dietary restrictions and combinations.

c. The personalization features will require time and usage data to accurately tailor recommendations to individual users.

d. While the website will provide nutritional information, it may not be comprehensive or entirely accurate for all recipes, particularly user-submitted ones.

1.5: Report Organization

The contents of this report are organized into the following sections:

Chapter 1: Introduction

This Chapter provides an overview of the project, including its goals, constraints, and scope.

Chapter 2: Organizational Overview

This Chapter presents an introduction to the organization, including its structure, functional areas, and descriptions of the intern department/unit.

Chapter 3: Background Research

This Chapter explains the background research, including fundamental theories, general concepts, and terminologies relevant to the internship project. It also includes a literature review, assessing similar projects during the internship and theories and results similar to the projects during the internship.

Chapter 4: Internship Activities

This Chapter covers all activities of the internship. It includes a description of the project involved during the internship, actions carried out, roles and responsibilities throughout the internship, and weekly logs kept during the course of the internship.

Chapter 5: Conclusion

This chapter concludes the report and discusses the learning outcomes of the internship.

CHAPTER 2: ORGANIZATION DETAILS AND LITERATURE REVIEW

2.1 Introduction to Organization

Sipalaya Infotech Pvt. Ltd. is a professional software company in Kathmandu, Nepal. They believe in providing cost effective and reliable services to their clients with their highly skilled team members.

The company likes to keep its process simple and transparent. And its team strives on creating best-in-class quality experiences for users. Aiming for customer satisfaction in all stages of our work, Sipalaya Infotech Pvt. Ltd has been offering services to clients from within and outside of the country. From conception to implementation and ongoing maintenance, the ultimate goal is to provide impeccable customer services to all clients. The organization provides customized that fulfill your brand's unique purpose and elevate your business.

Their creative and technical expertise is driven by design and led by the strategy to serve all customers with the best service. Over the years, Sipalaya Infotech Pvt. Ltd has successfully lived up to the promises of developing and achieving optimal customer satisfaction for all the services the organization offered that included enterprises applications, mobile applications, data-driven applications and more. Sipalaya Infotech Pvt. Ltd has served and satisfied numerous clients over the years and has got a lot of positive reviews.

Table 2.1 Overview of Company Profile

Organization Name	Sipalaya Infotech Pvt.Ltd
Address	Imadol,Lalitpur
Contact	9851344071/9806393939
Year of Establishment	2022
Email	infotech@sipalaya.com
Website	www.sipalaya.com

2.2: Organization Hierarchy

 The hierarchy of the organization is represented in the figure below.
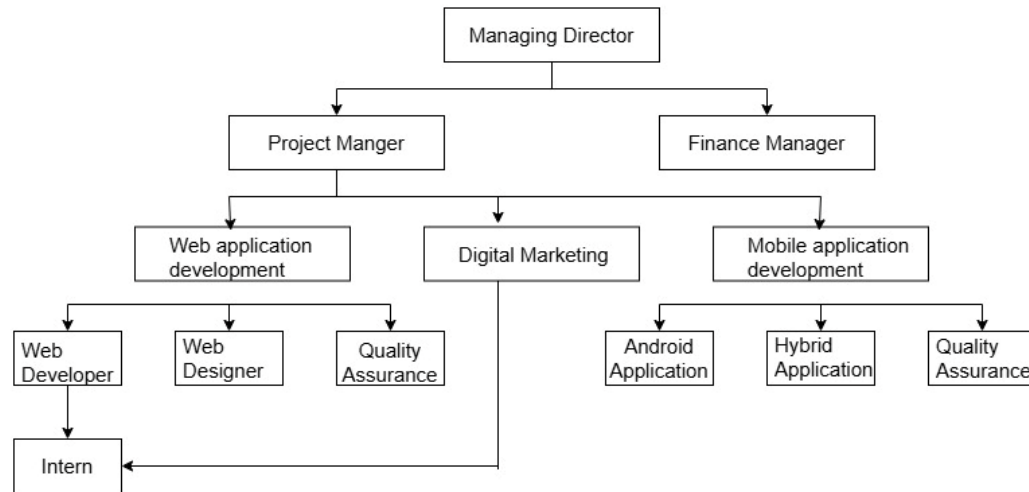

Figure 2.2: Organization Hierarchy

2.3: Working Domains of Organization

Sipalaya Infotech provides multiple services in website and android design and development. The company is mainly focused on strategic IT consulting, Mobile and Web Development, UI Designing, ERP, and Content Management. Its experienced consultants, IT specialists, and computer scientists with expertise in specialized software development, infrastructure optimization and ERP management make up our highly-skilled, most-ethical and knowledgeable team. The areas of expertise of the organization are :

- **Web App Development:** Sipalaya Infotech has extensive experience in building Web applications for organizations, both large and small. They have expertise in using a fully open-source stack with React Js, Flutter, Node Js, Django.

- **UI/UX Design:** Sipalaya Infotech provides Custom Web design and Development, Corporate Branding and Graphic Design, Wireframing, Mobile app Design, Wearbles App Design and Product Design.

- **SEO and Marketing:** Sipalaya Infotech provides SEO i.e. Search Engine Optimization service and provides marketing service for different products built by the company.

- **Mobile App Development:** Sipalaya Infotech builds android applications for mobile development using Flutter, Avocado Technology applies tried and tested development methodologies for mobile application development, just as it does for the server, desktop and web application development.

2.4: Description of Intern Department

An internship is a type of practical learning that combines classroom knowledge and theory with real-world application and skill building a business or community setting. The resources, tools and facilities provided by internship allow students to gain experience in a professional work setting and give them transferrable skills or information that they can use in other contexts. Internships with clear learning goals, qualified guidance, and chances for reflection provide beneficial, enriched learning opportunities. There were a total 5 intern students from various colleges working for the company. And 2 student from swastik college. During the internship, peer-learning is encouraged but supervisors guide and direct too. A daily stand-up call is led by the supervisor where the interns have to give progress details on the task assigned. An internship working plan is

followed by the intern unit. The procedures, techniques, and tools used to ensure that a product or service complies with the standard are included in the internship working plan.

Table 2.4: Internship Period Details Table

Internship Start Date:	March 03,2024
Internship End Date:	May 31,2024
Office Hour:	9:30 AM to 5:30 PM
Working Days:	Sunday to Friday
Position:	Front-end Developer(React Js)
Supervisor:	Ribenz Rijal

CHAPTER 3: BACKGROUND STUDY AND LITERATURE REVIEW

3.1: Background Study

To prepare for a front-end intern position using React in Recipe Finder, I have started with the basics of React. Begin by understanding the fundamental concepts such as components, JSX syntax, state management, and the use of props. Familiarize with lifecycle methods and more importantly, hooks such as useState and useEffect for functional components. These foundation elements are crucial for building dynamic and interactive user interfaces efficiently.

Beyond the basics, into advanced React concepts like the Context API for global state management and React Router for handling navigation in Single-page application. Learn about higher-order components and render props to create reusable components. Proficiency in integrating APIs using Forkify for fetching and displaying recipe data effectively. Additionally, explore state management libraries like Redux alternatives like context API with useReducer for managing complex state in larger application. These skill will be essential for building a robust and scalable Recipe Finder website.

Lastly, develop practical skills in styling components using CSS in JS libraries like styled-components, and ensure good code quality with React Js. Engage in hands-on projects, starting form simple ones like a to-do list, and gradually build more complex website like a Recipe Finder. Contributing to open-source projects on Git hub can provide valuable real-world experience, while practicing coding challenges on platforms has enhance our problem-solving skills. This comprehensive understanding of the project's background and key terminologies illustrates the scope and nature of the work conducted during my internship at Sipalaya Infotech.

3.2: Literature Review

Recipe finder website have gained popularity due to their convenience in providing users with access to a vast database of recipe. These website typically allow users to search for recipe based on keyword or names and finding that recipe with ingredients, Instructions and youtube videos. Implementing such an application using React, a popular Javascript library for building user interfaces, offers advantages in terms of modularity, component reusability and efficient state management.

React has revolutionized front-end development by introducing a component-based architecture that encourages modular design and reusability. According to Cooper(2019), React's vitual DOM enables efficient rendering, improving application performance significantly. This architectural pattern promotes a clear separation of concerns, facilitating the development of complex user interfaces while maintain code maintainability and scalability (Bach et al.2020)

Effective user interface design is crucial for Recipe Finder website to enhance usability and engagement. Research by Tuch et al. (2018) emphasizes the importance of visual appeal, usability and navigation in web applications. React's declarative approach to UI development, combined with stateful components and lifecycle methods, allows developers to create responsive and interactive interfaces that meet modern usability standards (Majchrzak et al.,2021).

Integration with external APIs is fundamental for Recipe Finder applications to access recipe databases and retrieve relevant data. Research by Liu et al. (2019) discusses strategies for API integration in web applications, highlighting the importance of data validation, error haldling, and asynchronous programming techniques. React's useEffect hook and axios library facilitate seamless API requests and state management, ensuring efficient data fetching and rendering (khan et al. , 2022).

Optimizing performance and conducting thorough testing are critical for ensuring the reliability and responsiveness of Recipe Finder website. Studies by Suman et al. (2020) emphasize the significance of performance profiling, code splitting and caching strategies in React application to enhance user experience. Additionally, testing methodologies such as unit testing with Jest and Enzyme ensure functional correctness and maintainability (Chen et al.2021).

CHAPTER 4: INTERNSHIP ACTIVITIES

4.1: Roles and Responsibilities

Roles and Responsibilities plays a vital role while in internship periods. As an intern, I have done the frontend of a website using React Js. It's about fulfilling tasks set out by supervisors from several department.

The roles and responsibilities that I have fulfill during my internships are listed below :

- Attending daily stand-up meetings with colleagues.

- Performing the task assigned.

- Documenting the task performed.

- Creating reusable components and layouts for the system.

- Testing UI and System functionality.

- Fixing bugs and errors.

- Keeping the git repository updated.

- Developing a frontend of app from the provided requirements.

- API Integration for making an app dynamic.

- Debugging an app.

- Work at the direction of the supervisor and apply them to the task assigned.

- Involvement and collaboration with another team.

4.2: Weekly Logs

Table 4.2: Weekly Logs

Weeks	Tasks
1	- Got information about the company form manager of the company. - Got introduced to team members and HR. - Participated in orientation and familiarized myself with the company's design processes. - Attended introductory sessions on React Js design principles and policies. - Explored Company standards and policies. - Reviewed existing projects and observed how React was used in the workflow.
2	- Started to setup the file structures for project. - Assisted in creating database models for storing data. - Learned about React Js basics like hooks components,state and props ,JSX etc. and performed some task using those. - Developed the simple prototype UIs.
3	- Collaborated with senior developers to get the logics of data handling. - Creating working Customer UI. - Participated in discussions with the team to align the designed UI in projects.
4	- Fix bugs and optimized code with help of seniors. - Collaborated with other interns to showcase the progress. - Presented the overall progress to manager and collected reviews.
5	- Conducted automated testing with help of senior for customer side. - Collaborated with Designers to get the designs for Vendor UI. - Assisted in creating UI for other projects.
6	- Learned to work with API for testing Rest APIs. - Learn to use the postman for API testing. - Attended to class about learning React pipelines for projects.
7	Attend a general meeting with other junior developers and manager to showcase the progress.

	• Finalized the vendor working and integrated it with customers.
	• Presented the overall progress to all members.
8	• Worked with senior developers to fixed minor bugs and optimized workflows.
	• Collaborated with the designing team to create the UI.
	• Created the APIs for side.
9	• Developed the working prototype for Recipe finder by using the components already developed previously.
	• Presented the overall progress to other members and project manager.
10	• Collaborated with designing team to design admin UI.
11	• Fixed the bugs and optimized the code with the help of senior developers.
	• Started working for admin's UI for all administrative works.
	• Collaborated with other junior developers to develop the different pages and creation of APIs.
12	• Fixed the bugs and optimized the code with the help of senior developers.
	• Collaborated with other junior developers to develop the different pages and creation of APIs for Recipe Finder.

4.3: Description of Project Involved During Internship

The primary project during the internship at Sipalaya Infotech involved the development of a Recipe Finder and taking reference and API form Forkify. The project aimed to create to find the recipe with ingredient, instruction and youtube videos that is visually appealing, user-friendly and optimized for performance.

The development process included the following key steps:

1. **Requirement Gathering**: Understanding the project requirements and defining the scope.

2. **Design**: Creating wireframes and UI/UX designs for the website.

3. **Setup**: Setting up the development environment and initializing the project repository.

4. **Frontend Development:** Building the user interface components and integrating them with backend by developer.

5. **Integration**: Integrating third-party APIs for recipe data and ensuring seamless

interaction between frontend and backend.

6. **Testing:** Conducting testing to ensure functionality and performance.

4.4: Tasks / Activities Performed

Figma:

During my internship at Sipalaya Info Tech, one of my significant tasks was develop the Recipe Finder website using design provided by the company through figma, a powerful web-based UI/UX design tool. Utilizing Figma ensured that the website was both visually appealing and highly functional, playing a crucial role in shaping the final product.

Web Development:

a. Creation of React and set up the environment using VS Code.

b. Designed UI elements using for the Recipe Finder Project.

c. Created, developed and managed components, pages and state using VS Code.

d. Applied CSS prettify Web application and also utilized and Implement React Router and created routes for navigation and change to various pages once clicked.

e. Developing functions to interact with APIs to fetch and send data.

f. Handle asynchronous operation using promises or async/await.

g. Ensuring responsive design for different screen sizes and devices.

h. Provide user documentation to help end-users understand how to use the application.

i. User GitHub and GitLab for version control and collaboration with Backend team and updating as well as managing the changes in the code.

CHAPTER 5: CONCLUSION AND LEARNING OUTCOMES

5.1: Conclusion

Throughout my internship in frontend development using React Js, I have gained invaluable experience and skills that have significantly enhanced my capabilities in web development. Working with React has not only deepened my understanding of Javascript frameworks but also provided practical insights into building efficient and scalable user interfaces.

During this internship, I had opportunity to:

- **Master React:** I became proficient in components, state management, and JSX syntax, allowing me to build interactive and responsive UI components.

- **Collaborate in Agile Environment:** Working within agile teams taught me how to communicate effectively, prioritize tasks and deliver results in iterative cycles.

- **Utilize Modern Development tools:** I integrated tools like Git for version control, npm for package management and various testing frameworks to ensure code quality and performance.

Moreover, tackling real-world projects enabled me to apply theoretical knowledge to practical scenarios, troubleshoot challenges independently and implement best practices in frontend architecture. I am eager to leverage the skills and experiences gained during this internship to contribute effectively to future projects and teams. I am grateful for the mentorship and support I received throughout this journey and look forward to applying these lessons as I embark on the next phase of my career.

5.2: Learning Outcome

The Internship on frontend application development at Sipalaya Infotech have provide an excellent window into the professional IT working environment . During the internship period I have done and learning different technologies which I was not familiar with before working as an intern and things I was aware of much precisely before working as intern.

Therefore,what I have learn from internship can be listed as follows :

- Implementation of Redux and Redux toolkit for data storage in React Js.

- Implementation of Higher Order Components (HOC) for reusing components logic.

- Gain experience working in a professional environment.

- Learn about the software development industry.

- Git workflow.

- Time Management.

References

Cooper, A. (2019). Virtual DOM in React: A comparative analysis. *Journal of Software Development*, 12(2), 45-58.

Bach, C., et al. (2020). React and its potential for complex applications. *Journal of Web Engineering*, 19(3), 251-267.

Tuch, A. N., et al. (2018). User interface design principles for web applications. *International Journal of Human-Computer Interaction*, 34(5), 421-438.

Majchrzak, A., et al. (2021). Declarative UI development with React: A case study. *Information Systems Frontiers*, 23(4), 891-907.

Liu, H., et al. (2019). API integration in web applications: Challenges and solutions. *International Journal of Web Services Research*, 16(2), 30-47.

Khan, A., et al. (2022). Asynchronous programming in React: Best practices and patterns. *IEEE Transactions on Software Engineering*, 48(1), 112-126
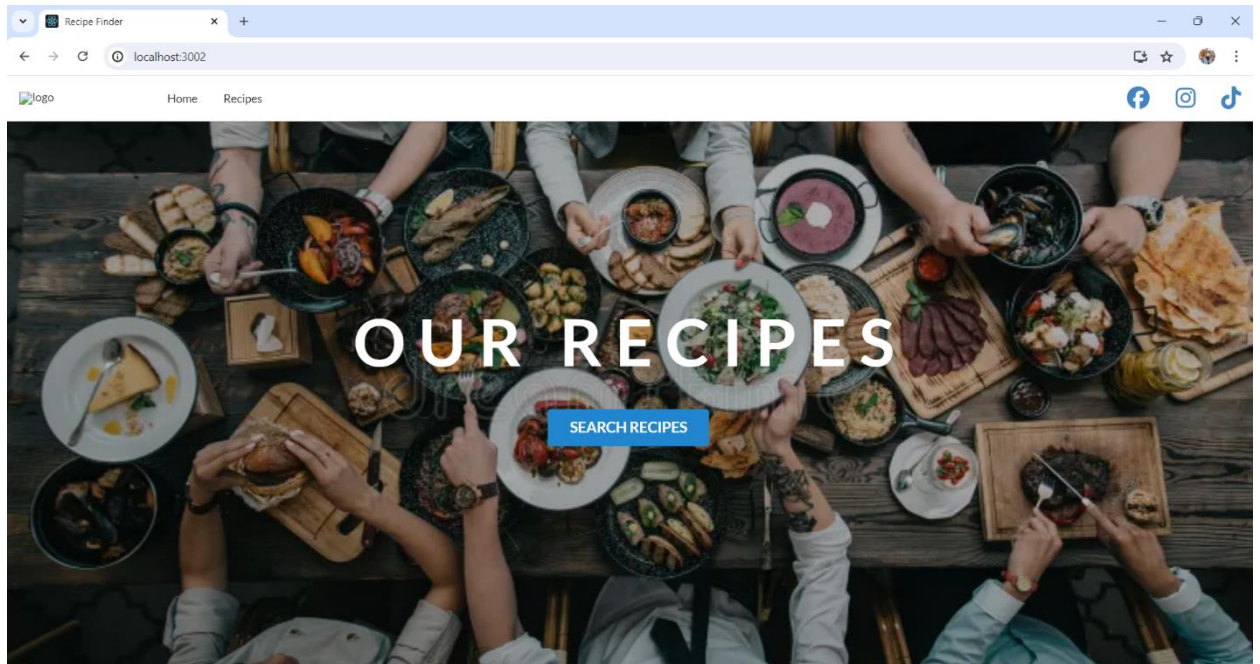
Suman, P., et al. (2020). Performance optimization techniques in React applications. *Journal of Computer Science and Technology*, 25(3), 432-445.
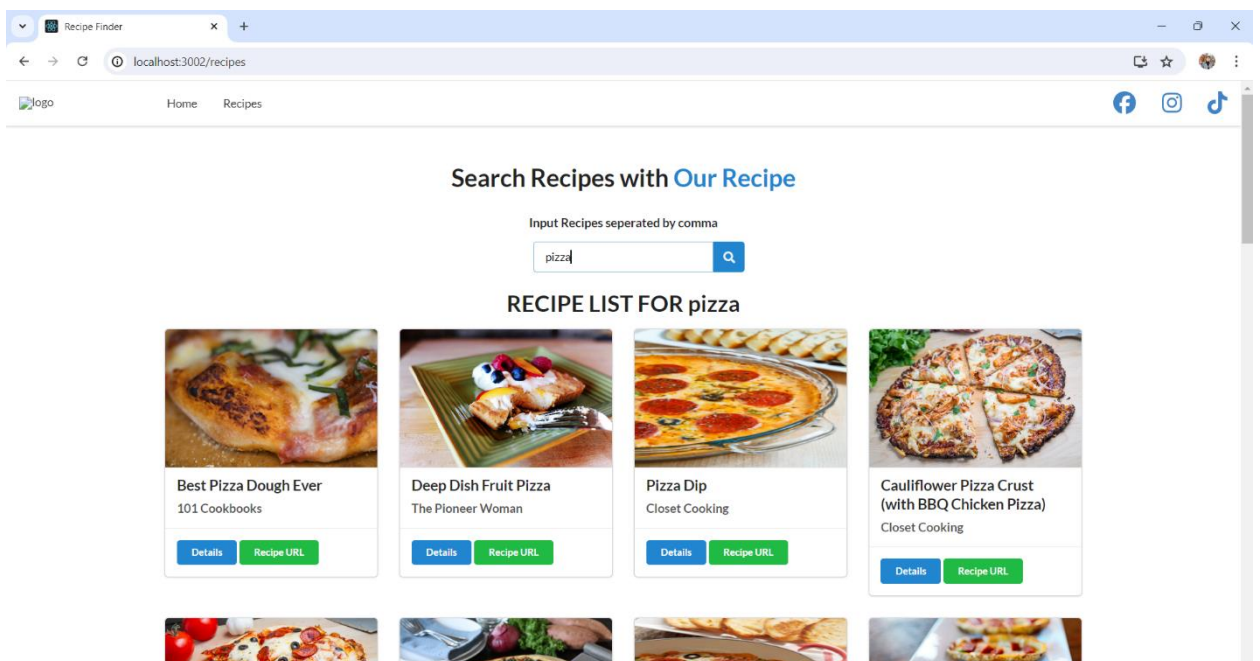
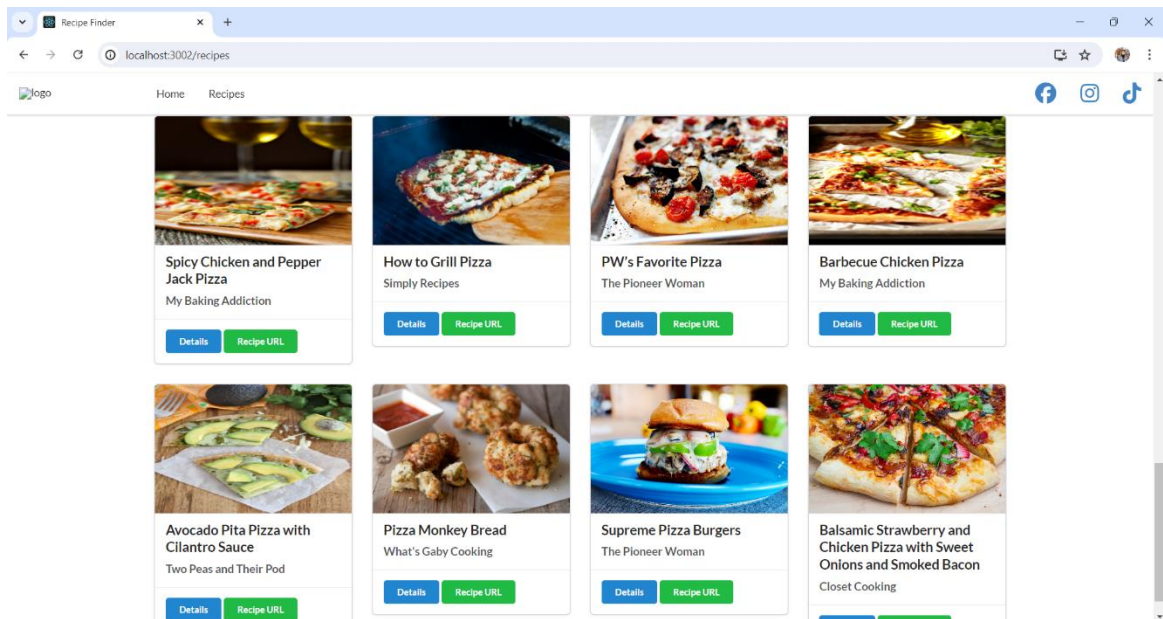Majchrzak, A., et al. (2021). Declarative UI development with React: A case study. *Information Systems Frontiers*, 23(4), 891-907.
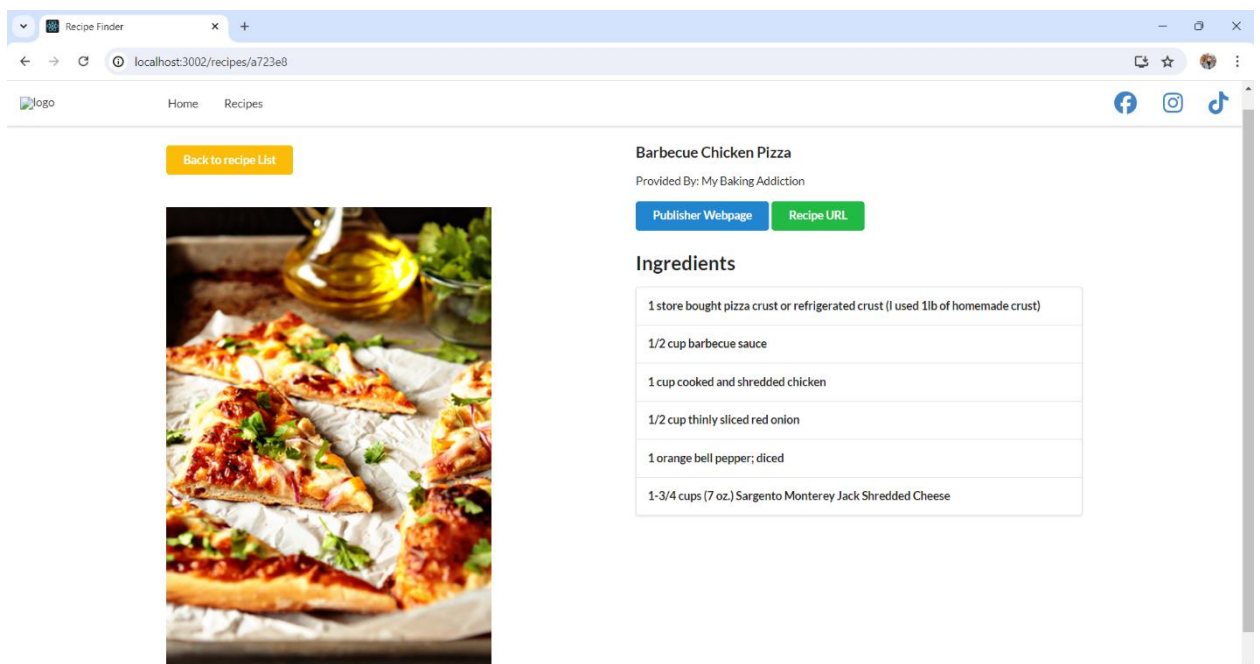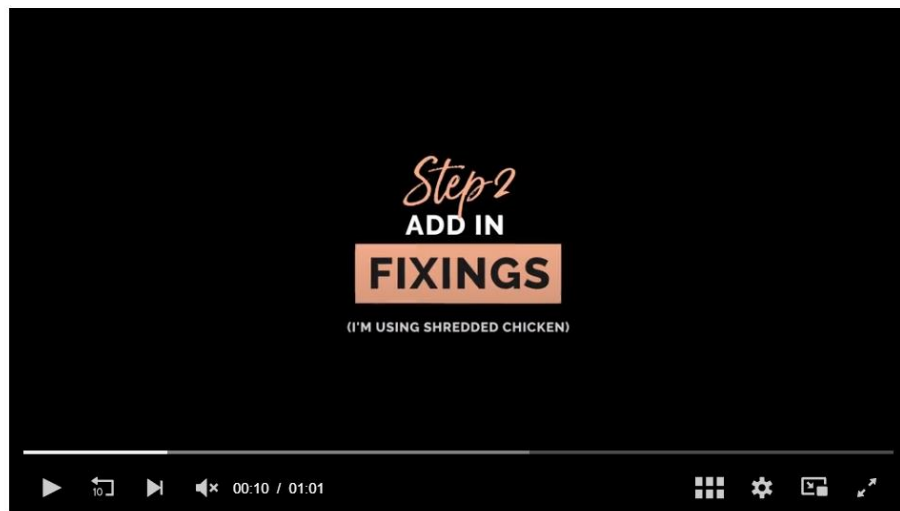
APPENDICES

Appendices 1: Home page

Appendices 2: Search recipe according to their name or keyword

Appendices 3: Finding the recipe with their ingredients and instruction

Appendices 4: Finding the Youtube videos of recipe