VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANASANGAMA, BELAGAVI-590018

INTERNSHIP REPORT

"Laptop Comparison Tool"

Submitted in Partial fulfilment of the Requirements for the V Semester of the Degree of

BACHELOR OF ENGINEERING

in

Information Science and Engineering

Submitted by

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DEPARTMENT OF INFORMATION SCIENCE& ENGINEERING

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DEPT. OF INFORMATION SCIENCE & ENGINEERING

Certificate

This is to certify that the Mern Stack Project work entitled **"Laptop Comparison Tool"** has been carried out by Amitha R (1CR21IS019), Amith S (1CR21IS018), Angelin Joby (1CR21IS020) bona fide students of **CMR Institute of Technology, Bengaluru** in partial fulfilment for the award of the Degree of Bachelor of Engineering in **Information Science and Engineering of the Visvesvaraya Technological University, Belagavi during the year 2023-2024.** It is certified that all corrections/suggestions indicated for the Internal Assessment have been incorporated in the report deposited in the departmental library. This Mern Stack Project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the said Degree.

Sign. of Internal Guide
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Assistant Professor
Department of ISE
CMRIT

Sign. of HOD
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Asso. Professor & HOD
Department of ISE
CMRIT

Viva

Name of the examiners

Signature with date

ACKNOWLEDGEMENT

Any work of significance requires a great deal of effort and time put into it. But a factor of even greater importance is efficient guidance and encouragement. In spite of all my dedicated work, this Project would not have been possible without continuous help and guidance provided by people who gave their unending support right from when this idea was conceived.

I would like to thank to **Dr Sanjay Jain,** Principal, CMRIT, Bangalore, for his constant cooperation and support throughout this project tenure.

I would like to thank **Dr Jagadishwari V, Associate Professor & HOD,** Department of Information Science and Engineering, CMRIT for her constant guidance and support during this Project period.

I would like to thank my guide, **Prof Komala Devi, Assistant Professor,** Department of Information Science and Engineering, CMRIT for her constant guidance that helped me in completing the Project work successfully.

Last but definitely not the least I would like to thank **Our Family** and **Friends** who have always supported me in every path of the Project work.

DECLARATION

We, the students of V semester from Department of Information Science and Engineering, CMR Institute of Technology, Bangalore declare that the “Laptop Comparison Tool” work entitled has been successfully completed under the guidance Prof Komala Devi, Assistant Professor, Dept. of Information Science and Engineering, **CMR Institute of technology**, Bengaluru.

This project work is submitted in partial fulfilment of the requirements for the award of the Degree of Bachelor of Engineering in Information Science and Engineering during the academic year 2023-2024. The matter embodied in the project report has not been submitted previously by anybody for the award of any degree or diploma to any university.

Place: Bangalore

Team Members:

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ABSTRACT

The "Laptop Comparison Tool" is a web-based application designed to simplify the process of selecting the optimal laptop by providing users with a streamlined comparison platform. Developed using React for the frontend and Firebase for data management, this project offers a user-friendly interface coupled with robust functionality.

Key features of the application include a secure login page powered by Firebase Authentication, enabling personalized experiences for users. The laptop list page dynamically fetches data from Firebase Database or Fire store, presenting users with a comprehensive selection of laptops to browse through. Users can easily compare multiple laptops side by side using the comparison table feature, allowing for informed decision-making based on specifications, features, and prices.

Through the seamless integration of React and Firebase, the "Laptop Comparison Tool" aims to empower users to make well-informed decisions when purchasing laptops, ultimately enhancing the overall user experience and simplifying the complex task of choosing the right device. This abstract encapsulates the essence of the project, highlighting its key features and the benefits it offers to users navigating the intricacies of laptop selection in today's digital landscape.

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CHAPTER 1

INTRODUCTION

In today's fast-paced world, laptops have become indispensable tools for both personal and professional use. With a myriad of options available in the market, choosing the right laptop can be a daunting task. Factors such as performance, battery life, design, and price all play a crucial role in making an informed decision.

To address this challenge, we introduce the "Laptop Comparison Tool," a project developed using React for the frontend, incorporating HTML and CSS for the user interface, and powered by the Firebase system for seamless data management and storage. This innovative tool aims to simplify the laptop selection process by providing users with a comprehensive comparison platform.

The "Laptop Comparison Tool" empowers users to compare various laptops side by side, allowing them to evaluate key specifications, features, and performance metrics effortlessly. By leveraging the capabilities of React, the tool delivers a responsive and intuitive user experience, ensuring accessibility across different devices and screen sizes.

Furthermore, the integration of Firebase enhances the functionality of the tool by enabling real-time updates and synchronization of data, providing users with the latest information on available laptops and pricing. This dynamic approach ensures that users can make informed decisions based on up-to-date and accurate data.

In this report, we delve into the design, development, and implementation of the "Laptop Comparison Tool." We explore the features and functionalities of the tool, highlighting its capabilities in simplifying the laptop selection process. Additionally, we discuss the technologies utilized, including React and Firebase, and their contributions to the project's success.

Overall, the "Laptop Comparison Tool" represents a significant advancement in streamlining the laptop purchasing journey. Whether you're a casual user or a tech enthusiast, this tool equips you with the resources needed to find the perfect laptop that meets your requirements and preferences. Join us as we embark on a journey to revolutionize the way laptops are compared and chosen.

CHAPTER 2

SOFTWARE AND HARDWARE REQUIREMENTS

Software Requirements for React.js:

1. Node.js:
   React.js requires Node.js, which is a JavaScript runtime, for development and building applications. It's recommended to have the latest LTS (Long Term Support) version installed.

2. Package Manager (npm or Yarn):
   React.js projects typically use npm (Node Package Manager) or Yarn for managing dependencies and scripts. Ensure that npm or Yarn is installed on your system.

3. Code Editor:
   You'll need a code editor for writing and editing React.js code. Popular choices include Visual Studio Code, Atom, Sublime Text, or WebStorm.

4. Web Browser:
   You'll need a web browser to run and test your React.js applications. Commonly used browsers include Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge.

5. React Developer Tools Extension:
   This browser extension helps inspect React component hierarchies and state. It's available for Chrome and Firefox.

Hardware Requirements for React.js:

1. Processor:
   A modern multi-core processor (e.g., Intel Core i5 or AMD Ryzen 5) is recommended for faster development and compilation of React.js applications.

2. RAM:
   At least 4GB of RAM is recommended, although having 8GB or more will improve performance, especially when working on larger projects.

3. Storage:
   React.js itself doesn't require much storage space. However, you'll need enough disk space for your operating system, code editor, Node.js, and any other development tools you use.

4. Display:
   A monitor with a resolution of 1280x800 or higher is sufficient for developing React.js applications. Higher resolutions may improve productivity and provide better clarity.

Software Requirements for Firebase Database:

1. Firebase Account:
   Sign up for a Firebase account on the Firebase website (https://firebase.google.com/) and create a new project to get started.

2. Firebase CLI (Command Line Interface):
   Install the Firebase CLI globally on your system using npm or Yarn. This allows you to interact with Firebase services from the command line.

3. Firebase SDK:
   Include the Firebase SDK in your React.js project to access Firebase services such as Realtime Database, Firestore, Authentication, and Cloud Functions.

Hardware Requirements for Firebase Database:

1. Internet Connection:
   A stable internet connection is necessary for accessing Firebase services, including database operations, authentication, and cloud functions.

2. Device Compatibility:
   Firebase services can be accessed from a variety of devices, including desktop computers, laptops, smartphones, and tablets. Ensure that your device supports modern web browsers for accessing Firebase Console and testing your applications.

3. Storage:
   Firebase itself handles the storage and management of data, so no additional storage space is required on your local machine. However, ensure that you have sufficient cloud storage capacity as per your Firebase plan for storing data and media files.

CHAPTER 3

IMPLEMENTATION AND SETUP

1. **Set Up React Project:**
   - Install Node.js if you haven't already.
   - Create a new React project using Create React App by running `npx create-react-app laptop-comparison-tool`.
   - Navigate to the project directory: `cd laptop-comparison-tool`.

2. **Create Firebase Project:**
   - Go to the Firebase website and create a new project.
   - Set up Firebase Authentication to allow users to log in.
   - Set up Firebase Realtime Database or Firestore to store laptop data.

3. **Set Up Firebase in React Project:**
   - Install Firebase SDK: `npm install firebase`.
   - Set up Firebase configuration in your React project.

4. **Implement Login Page:**
   - Create a login component (`Login.js`) with fields for email and password.
   - Implement Firebase authentication methods to handle user login (`signInWithEmailAndPassword`).

5. **Implement Laptop List Page:**
   - Create a component (`LaptopList.js`) to display a list of laptops fetched from Firebase Database or Firestore.
   - Fetch laptop data from Firebase and display it in a list format.
   - Include a button on each laptop item to add it to the comparison table.

6. **Implement Comparison Table:**
   - Create a component (`ComparisonTable.js`) to display the selected laptops for comparison.
   - When the user clicks the "Compare" button on a laptop in the list, add that laptop to the comparison table.
   - Display the selected laptops in a table format with relevant specifications.

7. **Routing:**
   - Use React Router to navigate between different pages (login page, laptop list page, and comparison table).
   - Set up routes in `App.js` to handle navigation based on user actions.

8. **Authentication Guards:**
   - Implement authentication guards to restrict access to certain pages (e.g., laptop list page and comparison table) unless the user is logged in.
   - Redirect users to the login page if they try to access protected pages without authentication.

9. **Styling:**
   - Style the components using CSS or a CSS preprocessor like Sass to enhance the visual appeal and user experience.

10. **Testing and Debugging:**
   - Test the application thoroughly to ensure all features work as expected.
   - Debug any issues encountered during testing.

11. **Deployment:**
   - Deploy the React application to a hosting service like Firebase Hosting or Netlify for public access.

12. **Continuous Improvement:**
   - Gather user feedback and make necessary improvements to enhance the functionality and usability of the application.
   - Stay updated with React and Firebase updates and incorporate new features or optimizations as needed.

CHAPTER 4

CODE AND OUTPUT SNIPPETS

Code Git Link: Link
Output:

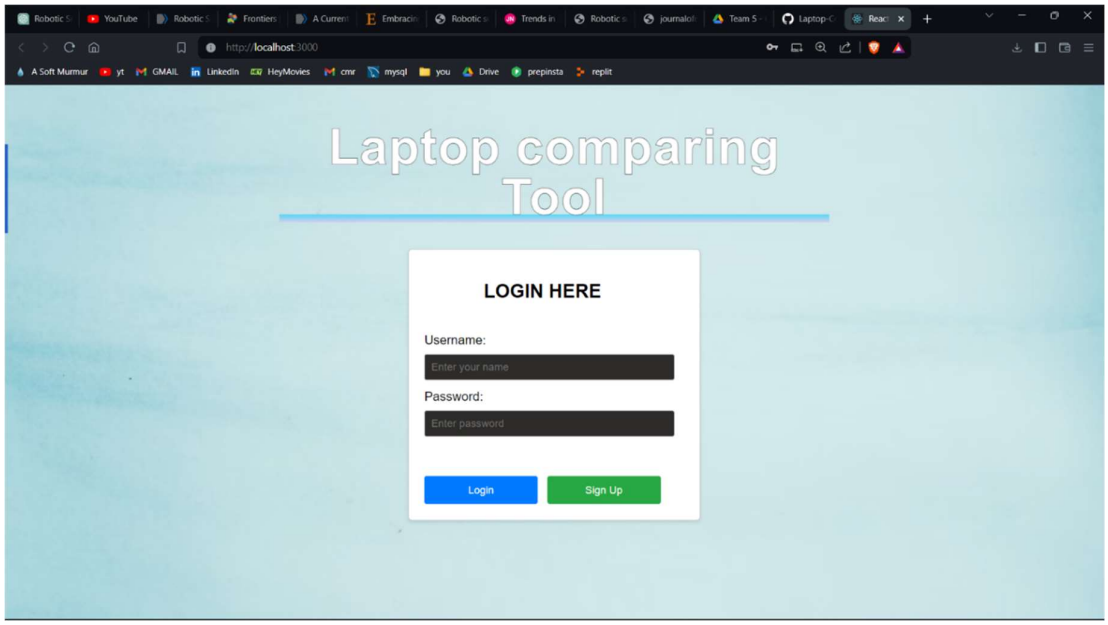

Fig. Login Page

Fig. Home Page

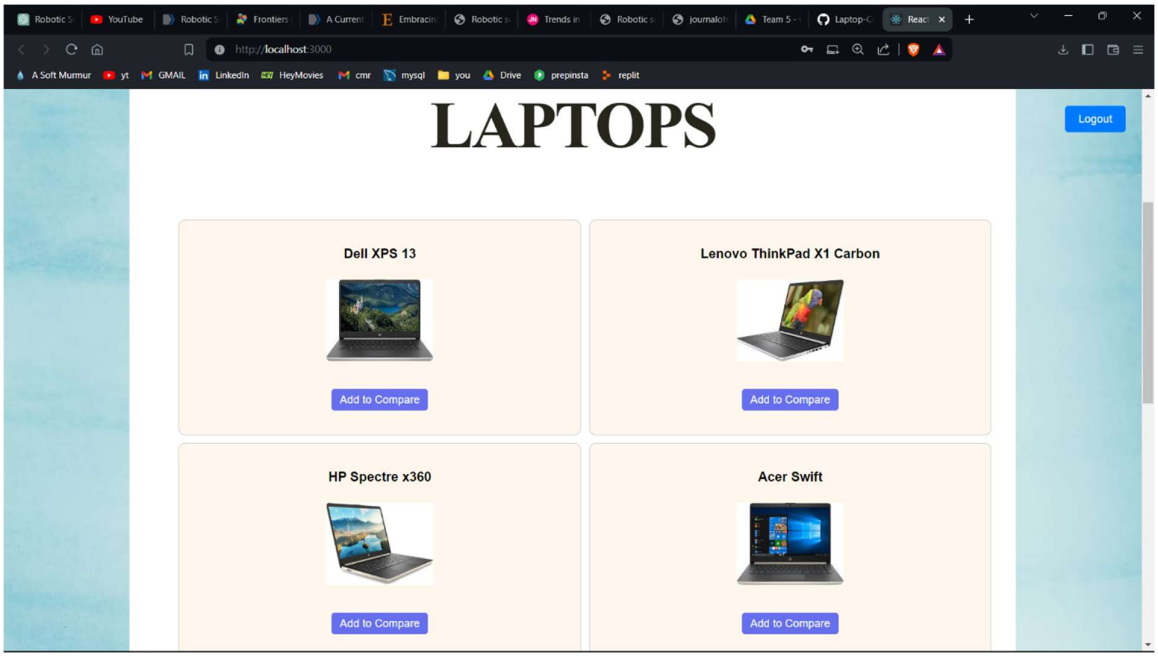

Fig. Laptops List

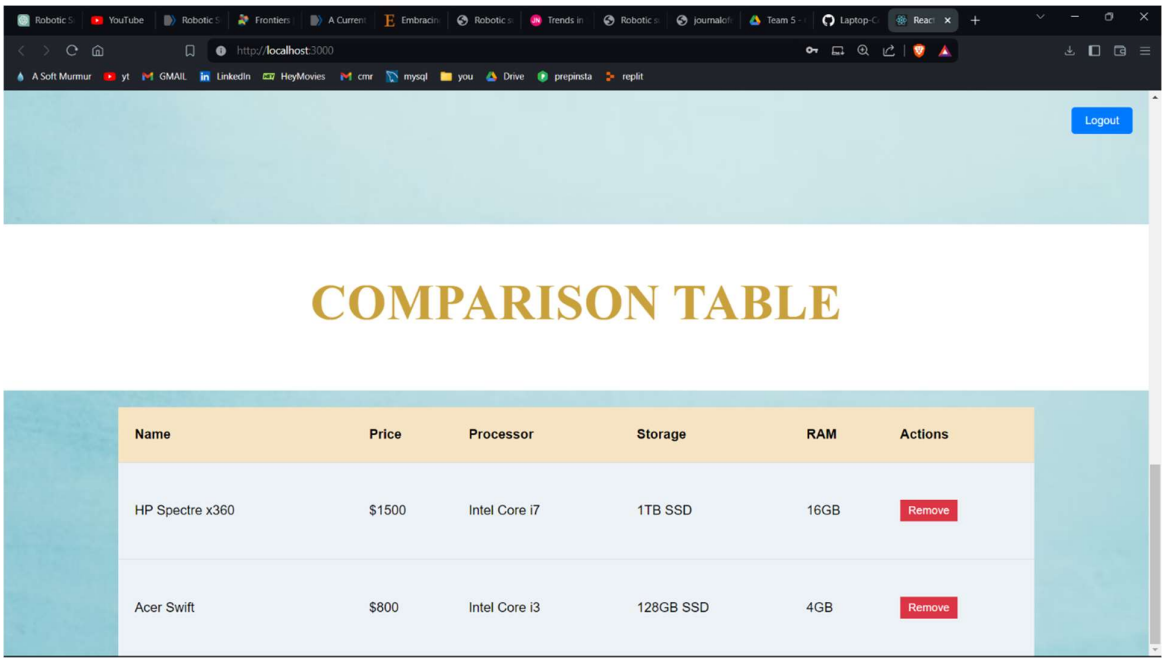

Fig. Comparison Table

CHAPTER 5

CONCLUSION

In conclusion, the development of the "Laptop Comparison Tool" marks a significant advancement in simplifying the process of selecting the right laptop for users. Through the integration of React for the frontend and Firebase for seamless data management, this project offers a user-friendly interface coupled with robust functionality.

The implementation of a login page ensures secure access to the tool, providing users with personalized experiences and allowing them to save their preferences. By leveraging Firebase Authentication, users can log in securely and access their saved data across multiple devices.

The laptop list page presents users with a comprehensive selection of laptops, fetched from Firebase Database or Firestore, enabling them to browse through various models and specifications. The addition of a comparison button on each laptop item enhances user convenience, allowing them to add laptops of interest to the comparison table seamlessly.

The comparison table feature empowers users to evaluate multiple laptops side by side, facilitating informed decision-making. Through dynamic updates and real-time synchronization of data, users can compare specifications, features, and prices effortlessly, thereby streamlining the laptop selection process.

Overall, the "Laptop Comparison Tool" exemplifies the power of modern web technologies in enhancing user experiences and addressing complex decision-making tasks. As technology continues to evolve, there is ample opportunity to further refine and expand upon this project, incorporating additional features and optimizations to meet the evolving needs of users in the ever-changing landscape of laptop technology.

We envision the "Laptop Comparison Tool" to serve as a valuable resource for individuals seeking to make informed decisions when purchasing laptops, ultimately empowering them to find the perfect device that aligns with their requirements and preferences. Through continued development and refinement, we remain committed to delivering a superior user experience and driving innovation in the realm of laptop comparison tools.

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