Technical Career Education Private Limited

5th floor, Sahyadri Campus, Adyar, Mangalore 575007

Full Stack Development Skill Lab Course

PROJECT REPORT

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Project Title: ‘Name of the project’

Submitted by:

Dimply Kundar	4SF23CI054
Poorna Ganesh Kollya	4SF23CI106
Dhwani Shrikar	4SF23CI052
Thrisha Rai A	4SF23CI176
Shivani L N	4SF23CI148

Institution:

Sahyadri College of Engineering and Management

Adyar Mangalore 575007

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Project Overview

Problem Statement	Design and develop a frontend, responsive, and user-friendly website for a food business.	
Solution Proposed *(video Link)*		
Link to the final Challenge presentation	https://drive.google.com/drive/folders/1-Qz-RVHWe_hA8ShHgJDFn5vA4jiVFmzp?usp=gmail	
Link to photos/ videos drive		
Class/ Section	3C (AIML)	
Team Name	Team Aura	
Team Members	Name	USN
	Dimply Kundar	4SF23CI054
	Shivani L N	4SF23CI48
	Poorna Ganesh Kollya	4SF23CI106
	Dhwani Shrikar	4SF23CI052
	Thrisha Rai A	4SF23CI176

1. Introduction

The final challenge of the project was to conceptualize, design, and develop a fully functional, responsive, and user-friendly website tailored for a food business. This platform aimed to address the dual needs of customers and business administrators by offering seamless menu browsing, customized order placements, and feedback collection, alongside robust administrative tools for menu and order management through CRUD operations.

This challenge was not merely about building a website but about crafting an engaging digital experience. By utilizing **React.js**, the project embraced modern web development practices, ensuring high performance and responsiveness across devices. The implementation of features such as dynamic menu filtering, real-time price calculations, drag-and-drop interactivity, and dark mode enhanced the usability and appeal of the platform. The focus was on delivering a solution that catered to diverse user needs while maintaining an intuitive interface.

Beyond technical implementation, this project encouraged a deeper understanding of how technology can transform the food industry. The emphasis was on creating a system that not only streamlined operations but also elevated customer satisfaction through innovative features like personalized orders and user feedback integration. Additionally, advanced functionalities such as localStorage for cart persistence and Google Maps integration for dynamic location services added layers of utility and sophistication.

The challenge served as a culmination of teamwork, technical expertise, and creative problem-solving. It provided a real-world application of frontend development skills while fostering collaboration and innovation. This platform bridged the gap between traditional food service methods and modern technological advancements, showcasing how well-crafted digital solutions can transform user experiences and business efficiency.

2. Problem Statement

The problem at hand was to design and develop a responsive, interactive, and user-friendly website for a food business. The primary objective was to create a digital platform that not only catered to customer needs for browsing and customizing orders but also empowered business administrators with tools for effective menu management and streamlined operations.

In today's fast-paced world, the food industry heavily relies on digital transformation to improve customer experience and operational efficiency. Customers demand seamless interfaces where they can explore menus, customize their orders, and receive instant feedback. Simultaneously, businesses require robust systems that enable them to manage menus, handle orders, and perform CRUD (Create, Read, Update, Delete) operations with ease. This duality of requirements formed the core challenge of the project.

Key Aspects of the Problem:

1. **Customer-Centric Features**:
   - Customers needed an intuitive interface to explore a diverse menu categorized by food types (e.g., starters, main courses, desserts).
   - Interactive features like filters for dietary preferences (vegan, gluten-free), real-time price calculations, and order customization enhanced the user experience.
   - The ability to save cart state across sessions and provide feedback via a star-based rating system further personalized the platform.

2. **Administrator-Centric Features**:
   - Business owners needed tools for menu management, allowing them to add, edit, delete, or update menu items.
   - Efficient order tracking and processing were essential to streamline the workflow.

    - CRUD functionalities ensured scalability and adaptability to changing business needs.

3. **Responsiveness and Accessibility**:
    - The platform needed to function seamlessly on all devices, ensuring a smooth experience for mobile, tablet, and desktop users.
    - Features like dark mode toggling and accessibility enhancements made the website more inclusive and visually appealing.

4. **Real-Time and Dynamic Features**:
    - Implementing dynamic search and filtering to help users quickly locate menu items.
    - Real-time updates for prices and cart adjustments provided immediate feedback to the users.
    - Advanced functionalities like drag-and-drop for cart management and Google Maps integration added a layer of interactivity and utility.

Challenges of the Problem

The project posed several challenges, including ensuring a seamless blend of functionality and aesthetics. The team had to balance complex technical requirements, such as real-time updates and responsive design, with user-friendly interactions. Additionally, integrating diverse features like animations, dark mode, and localStorage persistence demanded a deep understanding of modern frontend technologies like React.js, HTML, CSS, and JavaScript.

The problem was chosen for its relevance and impact on real-world applications, offering a valuable learning opportunity in designing customer-centric digital platforms. By addressing these challenges, the project not only provided an efficient solution for food businesses but also demonstrated the transformative power of technology in enhancing user experience and operational efficiency.

3. Solution

3.1 System requirements for the project

To successfully design and develop a responsive and interactive website for the food business, the following tools and technologies were utilized:

Frontend Development Tools

1. HTML5:
   - Used for structuring the content of the website, ensuring a semantic and well-organized layout.
2. CSS3:
   - Applied for styling the website, including layout designs, colors, animations, and responsive adjustments for different screen sizes.
3. JavaScript:
   - Enabled interactivity on the website, such as dynamic updates, form validations, and user interactions.

Framework and Libraries

4. React.js:
   - The core framework used for building the user interface. React's component-based architecture ensured a modular and reusable design.
   - Enabled state management for dynamic features like cart updates and order customization.

Design and Prototyping Tools

5. Figma:
   - Used for creating wireframes, prototypes, and visual designs before actual development.
6. Adobe Photoshop/Canva:
   - Assisted in designing and editing images for the menu and promotional materials.

Version Control and Collaboration

7. Git and GitHub:
   - Git was used for version control to track changes during the development process.
   - GitHub was utilized for collaboration and storing the project repository, enabling seamless teamwork.

Package Management Tools

8. Node.js and npm:
   - Node.js provided the runtime environment for React development.
   - npm (Node Package Manager) was used for managing dependencies and installing libraries.

Deployment Tools

9. Netlify/Vercel:
   - Platforms for deploying the website, ensuring it was accessible to users and stakeholders.
   - Enabled quick updates and testing of live features.

Testing and Debugging Tools

10. Browser Developer Tools:
    - Used for debugging code, testing responsiveness, and identifying performance bottlenecks.
11. Postman (Optional):
    - If backend APIs were included, Postman was used to test and validate API functionality.

Interactive Features and Enhancements

12. Google Maps API:
    - Integrated for dynamic map features on the contact page.
13. Framer Motion/React Transition Group:
    - Libraries for implementing smooth animations and transitions.

Local Storage and State Management Tools

14. localStorage API:
    - Used to retain cart state and theme preferences across user sessions.
15. Redux (Optional):
    - For advanced state management and ensuring scalability.

Miscellaneous Tools

16. VS Code (Visual Studio Code):
    - The primary code editor for writing and debugging code.
17. ESLint and Prettier:
    - Tools for maintaining code quality and formatting consistency.

By leveraging these tools effectively, the team ensured the project met all functional and design requirements, delivering a user-friendly and efficient platform for the food business.

3.2 Flowchart of the project

The flow of the project was structured in a systematic and iterative manner, ensuring seamless development and integration of features. The process was divided into multiple stages to ensure the final product met all requirements.

1. Requirement Analysis and Problem Understanding

- Analyzed the problem statement to identify key functionalities for customers and administrators.
- Understood the scope, features, and technical requirements for developing a food business website.
- Gathered ideas on how to enhance user experience through interactive and dynamic features.

2. Wireframing and Prototyping

- Designed a **wireframe** to outline the layout of key pages such as the home page, menu page, order customization, and contact page.
- Created a visual prototype using **Figma** to finalize the design before starting development.
- Focused on responsive layouts, ensuring accessibility across mobile, tablet, and desktop devices.

3. Setting Up the Development Environment

- Installed necessary tools and libraries, including **React.js**, **Node.js**, and **npm**.
- Set up the project structure in React with modular components for easy scalability.
- Configured Git for version control and created a repository on GitHub for collaboration.

4. Frontend Development

- Developed individual pages as React components:
  - **Home Page**: Included a carousel for promotions, featured items, and a search bar.
  - **Menu Page**: Displayed a categorized menu with filters, pagination, and hover effects.
  - **Order Customization**: Implemented drag-and-drop cart functionality with real-time price calculations.
  - **Contact Page**: Added a dynamic map and contact form with validation.
  - **About Us**: Highlighted the business story with a timeline and team member profiles.
- Integrated responsive designs using **CSS** and ensured a consistent theme across pages.

5. Feature Implementation

- Implemented interactive features such as:
  - **Dark Mode Toggle**: Enabled users to switch between light and dark themes.
  - **Cart State Persistence**: Used localStorage to retain cart data across sessions.
  - **Star Rating System**: Designed a feedback form with real-time visual indicators.
  - **Animations**: Added smooth transitions and hover effects using **Framer Motion**.
- Ensured real-time updates on order customization and price calculations.

6. Testing and Debugging

- Tested individual components for responsiveness and functionality using browser developer tools.
- Conducted manual testing to verify features like form validation, cart operations, and animations.
- Resolved bugs and optimized performance for smooth user interactions.

7. Deployment

- Deployed the project on **Netlify** and **Vercel** to make it accessible to users and stakeholders.
- Shared the deployed link for feedback and evaluation.

8. Documentation and Report Creation

- Documented the entire development process, including tools, challenges, and solutions.
- Created a report summarizing the project and included links to the code repository and feature showcase video.

9. Submission

- Submitted the project report, GitHub link, and deployed link on the portal.
- Prepared for the viva by reviewing concepts like HTML, CSS, JavaScript, and React.js.

This structured flow ensured efficient development, robust functionality, and an engaging user experience for the food business website.

3.3 Frontend

1. Setting Up the Project

First, we initialize the React project using the following commands:

Code:

```
npx create-react-app food-business
cd food-business
npm start
```

2. Project Structure

We organized the project into folders:

- src/components: Contains reusable components like Navbar, Footer, and MenuItems.
- src/pages: Contains individual pages like Home, Menu, AboutUs, and Contact.
- src/styles: Contains CSS files for styling.

3. Navbar Component

The Navbar provides navigation links to different pages.

Code:

```
import React from 'react';
import { Link } from 'react-router-dom';
import './Navbar.css';
```

```
const Navbar = () => {
  return (
    <nav className="navbar">
      <div className="logo">Foodie</div>
      <ul className="nav-links">
        <li><Link to="/">Home</Link></li>
        <li><Link to="/menu">Menu</Link></li>
        <li><Link to="/about-us">About Us</Link></li>
        <li><Link to="/contact">Contact</Link></li>
      </ul>
    </nav>
  );
};

export default Navbar;
```

4. Home Page

The Home Page includes a carousel and a welcome message.

Code:

```
import React from 'react';
import './Home.css';

const Home = () => {
  return (
    <div className="home">
      <h1>Welcome to Foodie!</h1>
      <div className="carousel">
        <img src="/images/promo1.jpg" alt="Promo 1" />
        <img src="/images/promo2.jpg" alt="Promo 2" />
        <img src="/images/promo3.jpg" alt="Promo 3" />
      </div>
    </div>
```

```
 );
};

export default Home;
```

5. Menu Page

The Menu Page displays categorized menu items with hover effects.

Code:

```
import React, { useState } from 'react';
import './Menu.css';
const Menu = () => {
  const [menuItems, setMenuItems] = useState([
    { id: 1, category: 'Starters', name: 'Spring Rolls', price: 150 },
    { id: 2, category: 'Main Course', name: 'Grilled Chicken', price: 350 },
    { id: 3, category: 'Desserts', name: 'Chocolate Cake', price: 200 },
  ]);
  return (
    <div className="menu">
      <h1>Our Menu</h1>
      <div className="menu-grid">
        {menuItems.map((item) => (
          <div className="menu-item" key={item.id}>
            <h2>{item.name}</h2>
            <p>₹{item.price}</p>
            <button>Add to Cart</button>
          </div>
        ))}
      </div>
    </div>
  );
};
export default Menu;
```

7. Order Customization Page:

The Order Customization Page allows users to modify their orders.

Code:

```
import React, { useState } from 'react';
import './OrderCustomization.css';
const OrderCustomization = () => {
  const [order, setOrder] = useState({
    itemName: 'Grilled Chicken',
    quantity: 1,
    size: 'Medium',
    toppings: [],
    specialInstructions: '',
  });
  const handleQuantityChange = (e) => {
    setOrder({ ...order, quantity: parseInt(e.target.value) });
  };
  const handleSizeChange = (e) => {
    setOrder({ ...order, size: e.target.value });
  };
  const handleToppingChange = (topping) => {
    setOrder((prevOrder) => ({
      ...prevOrder,
      toppings: prevOrder.toppings.includes(topping)
        ? prevOrder.toppings.filter((t) => t !== topping)
        : [...prevOrder.toppings, topping],
    }));
  };

  const handleSpecialInstructionsChange = (e) => {
    setOrder({ ...order, specialInstructions: e.target.value });
  };
  const handleSubmit = (e) => {
  e.preventDefault();
  alert(`Order Confirmed: ${JSON.stringify(order, null, 2)}`);
};
  return (
  <div className="order-customization">
    <h1>Customize Your Order</h1>
    <form onSubmit={handleSubmit}>
      <div className="form-group">
        <label>Item Name:</label>
        <p>{order.itemName}</p>
      </div>
      <div className="form-group">
        <label>Quantity:</label>
        <input
          type="number"
          value={order.quantity}
          min="1"
          onChange={handleQuantityChange}
        />
      </div>
      <div className="form-group">
        <label>Size:</label>
        <select value={order.size} onChange={handleSizeChange}>
          <option value="Small">Small</option>
          <option value="Medium">Medium</option>
          <option value="Large">Large</option>
        </select>
      </div>
      <div className="form-group">
        <label>Toppings:</label>
        <div className="toppings">
          <label>
      <input
        type="checkbox"
        value="Cheese"
        checked={order.toppings.includes('Cheese')}
        onChange={() => handleToppingChange('Cheese')}
      />
      Cheese
    </label>
    <label>
      <input
        type="checkbox"
        value="Mushrooms"
        checked={order.toppings.includes('Mushrooms')}
        onChange={() => handleToppingChange('Mushrooms')}
      />
      Mushrooms
    </label>
    <label>
      <input
        type="checkbox"
        value="Onions"
        checked={order.toppings.includes('Onions')}
        onChange={() => handleToppingChange('Onions')}
      />
      Onions
    </label>
  </div>
</div>
<div className="form-group">
  <label>Special Instructions:</label>
  <textarea
    value={order.specialInstructions}
    onChange={handleSpecialInstructionsChange}
```

```
      placeholder="Add any special instructions here..."
     ></textarea>
    </div>
    <button type="submit">Confirm Order</button>
   </form>
  </div>
 );
};
export default OrderCustomization;
```

4. Conclusion/Outcome

The proposed solution effectively addresses the problem of creating a streamlined, user-friendly platform for a food business. Here's how the solution meets the project requirements:

1. Efficient Navigation and User Experience:
   - A well-structured **Navbar** ensures easy access to all essential pages like Home, Menu, About Us, and Contact.
   - The clear and visually appealing design of components enhances user engagement.
2. Interactive and Customizable Menu:
   - The **Menu Page** allows users to browse categorized food items with prices and descriptions.
   - Features like the "Add to Cart" button and hover effects ensure a seamless browsing experience.
3. Order Management and Personalization:
   - The **Cart Page** displays selected items with real-time price calculations.
   - The **Order Customization Page** enables users to modify their orders according to preferences, making the platform flexible and user-focused.
4. End-to-End Shopping Flow:
   - The inclusion of a **Checkout Page** with fields for shipping and payment ensures a complete order process, from selection to transaction.
5. Additional Functionalities:
   - **Authentication Pages** (Login/Signup) allow users to create accounts for personalized experiences.
   - The **Contact Page** facilitates customer communication, supporting queries and feedback.
   - The **About Us Page** builds trust by sharing the business's mission and values.

6. Responsive Design and Scalability:
    - The project structure and reusable components make the platform scalable for adding new features like reviews, loyalty programs, or more extensive customization options.
7. Alignment with the Problem Statement:
    - The solution provides a comprehensive platform tailored to food businesses by ensuring an intuitive and interactive customer experience.
    - It incorporates features that support browsing, selection, personalization, and seamless transactions, fulfilling the need for a modern and efficient food ordering system.

This solution combines usability, functionality, and scalability to meet the defined problem statement's requirements effectively.

5. References

- **"React - Up & Running: Building Web Applications" by Stoyan Stefanov**
  A comprehensive guide to understanding React.js for building responsive and dynamic web applications.

- **"Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics" by Jennifer Niederst Robbins**
  Great for understanding the basics and integrating advanced frontend development techniques.

- CSS-Tricks
  Guides and tips for advanced CSS styling and layout techniques.

- W3Schools
  Tutorials for HTML, CSS, and JavaScript with hands-on examples.

- **Visual Studio Code (VS Code):**
  Recommended IDE for editing and managing the project codebase.

- **GitHub:**
  For version control and collaboration during development.

- **The Net Ninja (YouTube)**
  React Tutorials

- **FreeCodeCamp Blog**
  A Guide to Build Frontend Projects in React

- PPT Link

  https://drive.google.com/drive/folders/1-Qz-RVHWe_hA8ShHgJDFn5vA4jiVFmzp?usp=gmail