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A PROJECT REPORT ON

The Last Slice

(Pizza Ordering Web Application)

(Front End Technologies, SUBJECT CODE: 24CAH-655)

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in partial fulfilment for the award of the degree of

MASTER OF COMPUTER APPLICATION

CHANDIGARH UNIVERSITY
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Project Overview

This is a modern web application built for a pizza delivery service using React, Redux Toolkit, and Tailwind CSS. The application provides a seamless experience for users to order pizzas online with features like real-time cart management, order tracking, and location-based delivery.

Technical Stack

- React (v18.2.0)
- Redux Toolkit for state management
- React Router DOM (v6.11.0) for routing
- Tailwind CSS for styling
- Vite as the build tool
- Various modern React patterns and hooks

Key Features

1. User Management

- Users can enter their name to start ordering
- User information is managed through Redux state
- Persistent user session across the application
- Username display in header when logged in

2. Menu System

- Dynamic menu loading from API
- Detailed pizza listings with:

- Name
- Ingredients o Price o Image
- Availability status (sold out indication)

- Interactive "Add to Cart" functionality

3. Shopping Cart

- Comprehensive cart management with Redux
- Features include:
  - o Add/remove items
  - o Adjust quantities
  - o Clear cart
  - o Real-time price calculations
  - o Cart overview with total items and price
- Persistent cart state across sessions

4. Order Management

- Create new orders with:
  - o Customer details
  - o Delivery address
  - o Priority option
  - o Phone number validation
- Order tracking system

- Priority order upgrades
- Order status updates
- Estimated delivery time calculation

5. Geolocation Features

- Automatic address detection
- Reverse geocoding integration
- GPS position tracking
- Address verification system

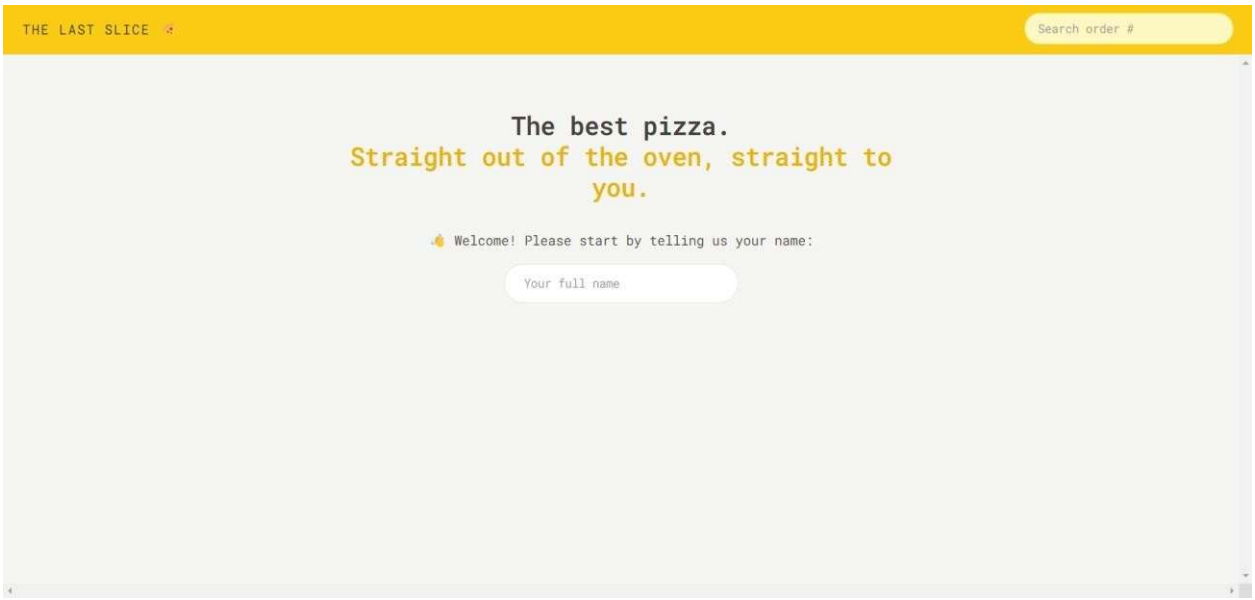
6. UI/UX Features

- Responsive design for all screen sizes
- Loading states and indicators
- Error handling and display
- Form validation
- Interactive buttons and inputs
- Clean and modern interface
- Toast notifications for actions

Application Flow

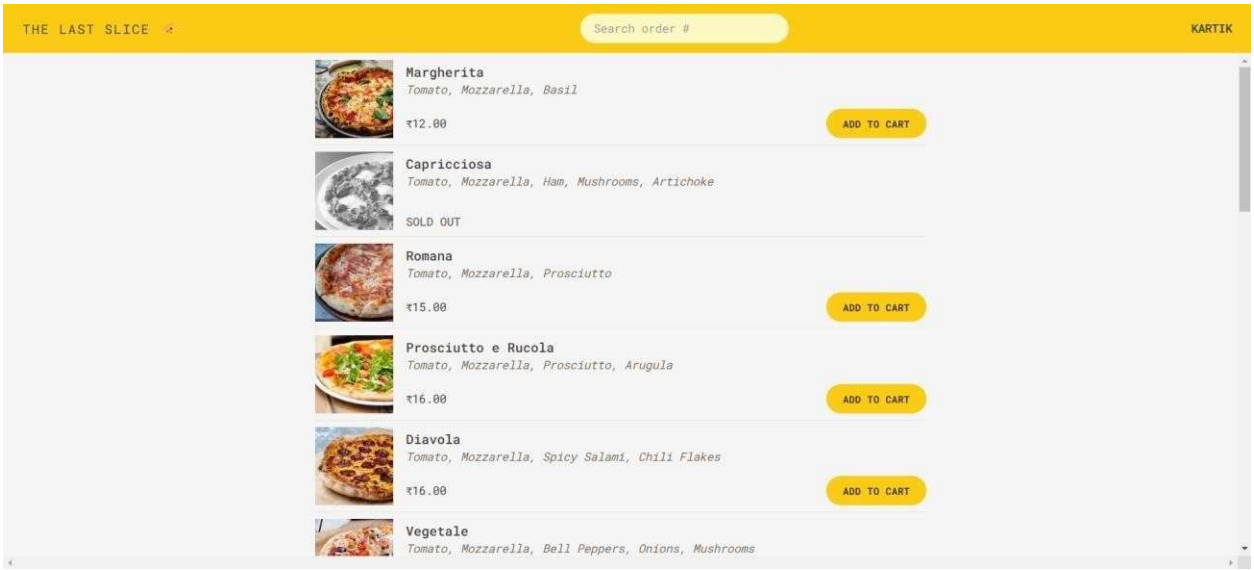
1. Initial Entry

a. Users land on home page



b. Required to enter name to proceed

c. Redirected to menu after name entry

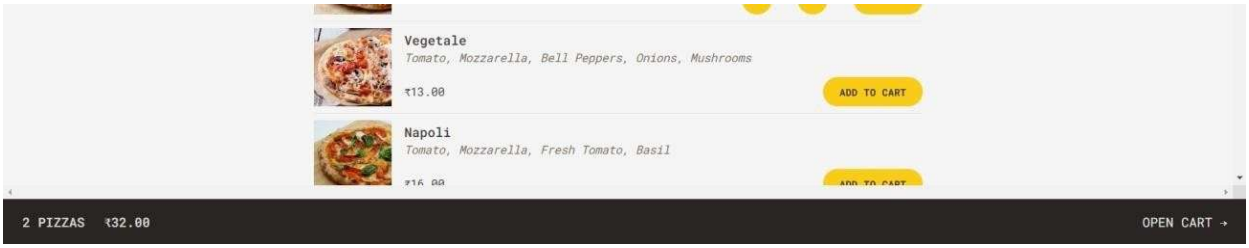


2. Menu Browsing

a. View available pizzas

b. See detailed information

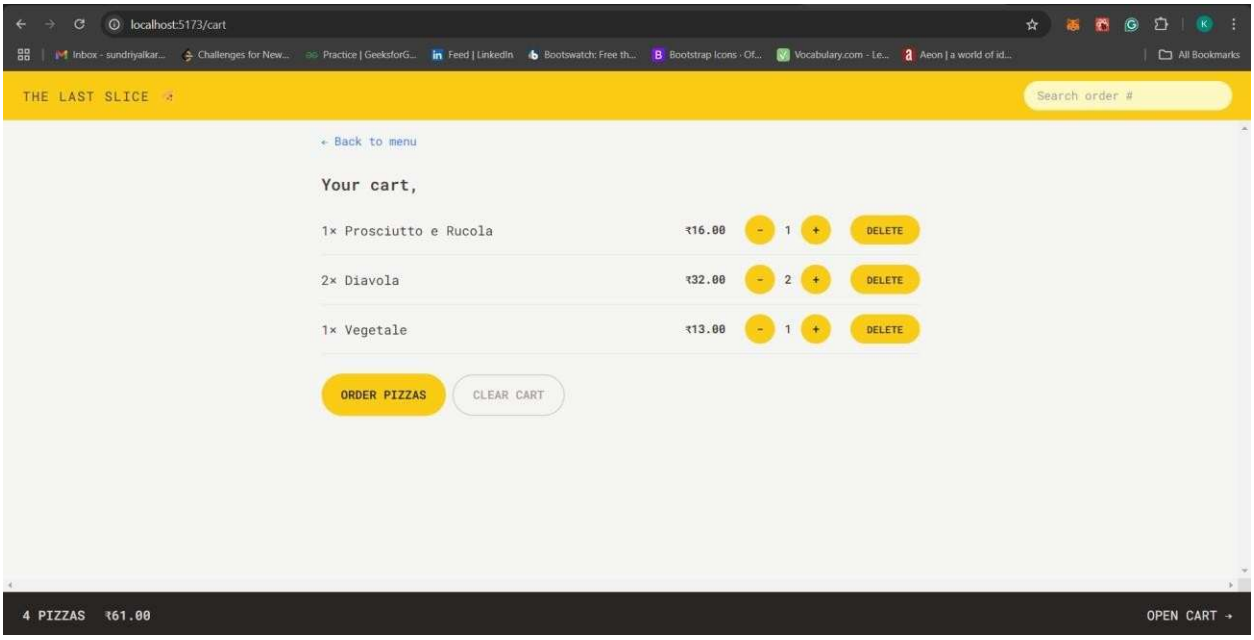
c. Add items to cart



d. Adjust quantities

3. Cart Management

a. Review selected items

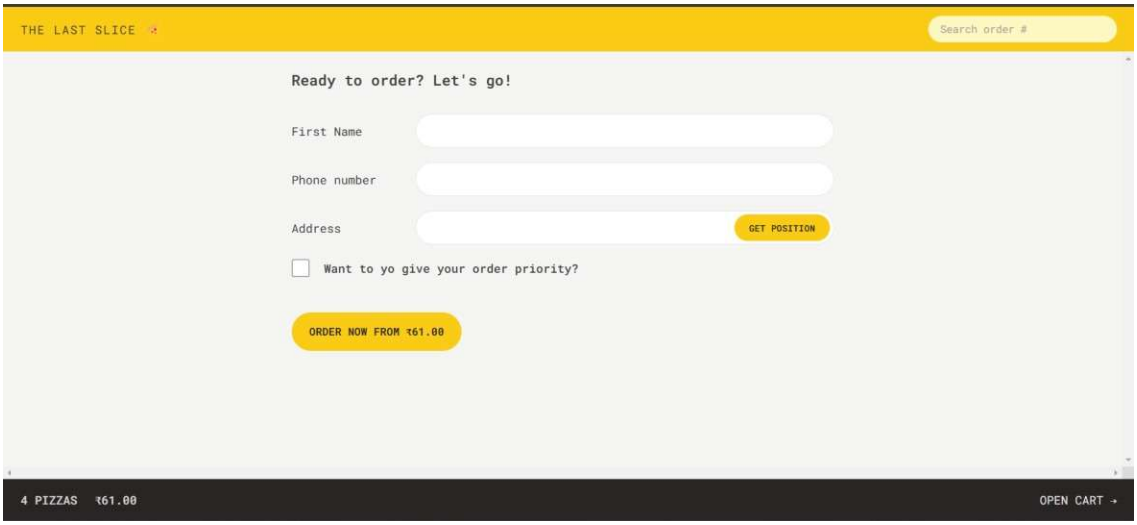


b. Modify quantities

c. Remove items

d. View total price

e. Proceed to checkout



4. Order Creation

a. Fill in delivery details

b. Optional priority selection

c. Phone number verification

d. Address confirmation

e. Order submission

5. Order Tracking

a. View order status

b. Check estimated delivery time

c. See order details

d. Option to upgrade to priority

Technical Implementation Details

State Management

• Redux store configuration with multiple slices:

- User slice for user data o Cart slice for cart management
- Complex state calculations with selectors

Routing System

- React Router implementation
- Protected routes

- Loader functions for data fetching
- Error boundaries
- Navigation guards

API Integration

- Restaurant API for menu and orders
- Geocoding API for address lookup
- Proper error handling
- Loading states management

Styling Architecture

- Tailwind CSS implementation
- Responsive design patterns
- Custom component styling
- Dynamic class applications

Functionality

1. User Interaction

a. Name input for personalized experience

b. Easy navigation through menu and cart

c. Real-time updates on cart and order status

2. Menu Exploration

a. Browse a variety of pizzas with detailed information

b. Visual indicators for sold-out items

c. Quick add-to-cart functionality

3. Cart Management

a. Dynamic cart updates

b. Quantity adjustments with immediate price recalculation

c. Cart summary with total items and price

4. Order Placement

a. Streamlined order form with automatic address detection

b. Priority order option

c. Phone number validation for accurate contact information

5. Order Tracking

a. Real-time order status updates

b. Estimated delivery time display

c. Option to upgrade to priority post-order

6. Geolocation Services

a. Automatic location detection for easier address input

b. Manual address entry option with validation

7. Responsive Design

a. Seamless experience across various device sizes

b. Adaptive layout for mobile, tablet, and desktop views

Working

The application's working can be broken down into several key components:

1. State Management

a. Redux store acts as a central hub for application state

b. User slice manages user information

c. Cart slice handles all cart-related operations

d. Actions and reducers handle state updates efficiently

2. Routing and Navigation

a. React Router manages different views and URL handling
b. Dynamic route loading with data fetching via loader functions

c. Error boundaries catch and display routing errors

3. API Integration

a. Asynchronous API calls to fetch menu items and manage orders

b. Geocoding API integration for address lookups

c. Error handling for failed API requests with user-friendly messages

4. User Interface

a. Tailwind CSS provides responsive and customizable styling

b. Custom components like buttons, loaders, and forms enhance UX
c. Real-time updates reflect state changes immediately

5. Form Handling

a. Controlled inputs for form fields

b. Validation logic for phone numbers and required fields

c. Submission handling with error checking and API integration

6. Cart Logic

a. Add, remove, and update items with Redux actions

b. Automatic price calculations based on quantity and item price

c. Persistent cart state across page reloads

7. Order Processing

a. Order creation with user details and cart items

b. Priority order handling with additional fee calculation
c. Order status updates and estimated delivery time computation

8. Geolocation Features

a. Browser's geolocation API to get user coordinates

b. Reverse geocoding to convert coordinates to readable address

c. Fallback to manual address entry if geolocation fails

9. Performance Optimization

a. Efficient state updates to minimize re-renders

b. Lazy loading of components for faster initial load

c. Memoization of expensive calculations with selectors

Conclusion

The Last Slice project demonstrates a well-architected, modern web application that effectively solves the problem of online pizza ordering. By leveraging React's component- based architecture, Redux for state management, and Tailwind CSS for styling, the application achieves a balance of functionality, performance, and user experience.

Key strengths of the project include:

- Intuitive user interface with responsive design
- Robust state management using Redux Toolkit
- Efficient routing with React Router
- Integration of geolocation services for enhanced user convenience
- Comprehensive order management system

The application successfully implements core e-commerce functionalities while maintaining a focus on user experience. The use of modern web technologies and best practices ensures that the application is maintainable, scalable, and performant.

Areas for potential improvement include:

- Implementation of user authentication for personalized experiences
- Integration of a payment gateway for online transactions
- Addition of a review and rating system for pizzas
- Expansion of menu options and customization features

In conclusion, the Last Slice project serves as an excellent example of a modern, feature- rich web application. It not only meets the immediate needs of online pizza ordering but also provides a solid foundation for future enhancements and scaling. The project showcases the power of React ecosystem in building complex, interactive web applications, and sets a high standard for similar e-commerce platforms.