

Mobile Computing

E-Commerce-Mobile-App Project

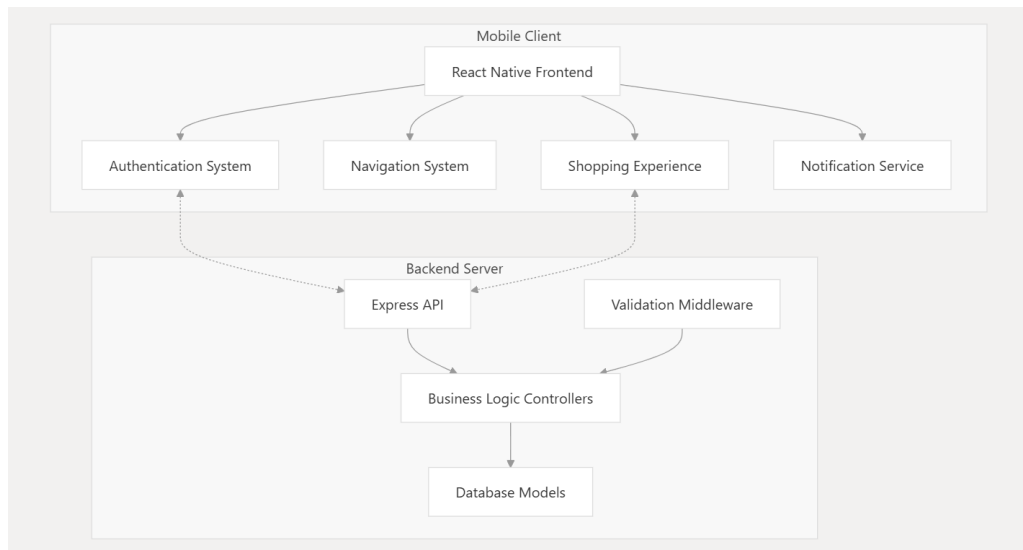
TEAM

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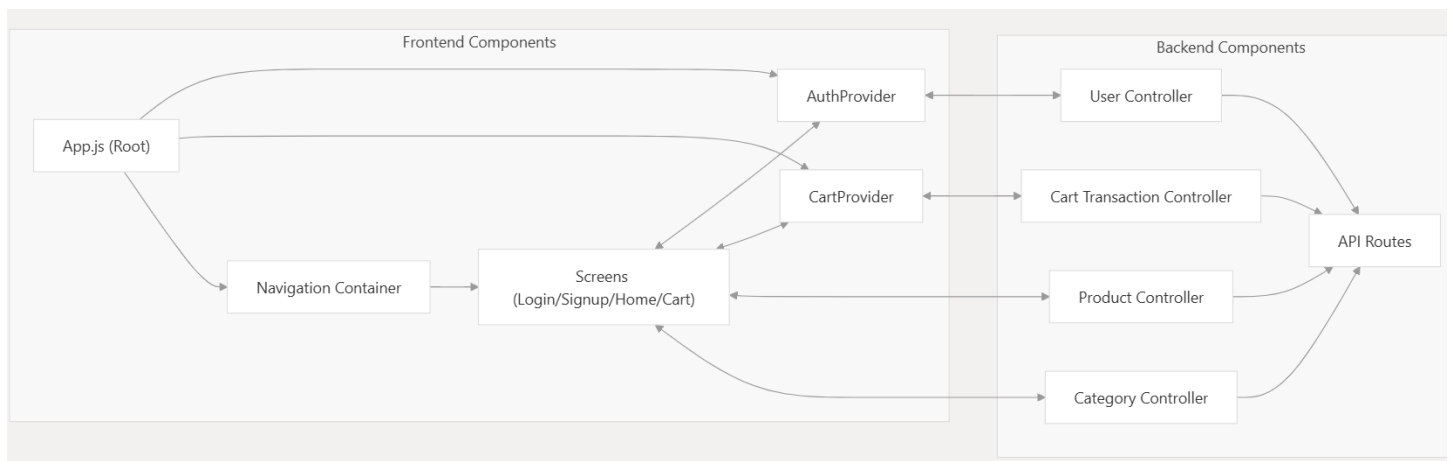
This E-Commerce Mobile Application is a comprehensive shopping platform designed to provide users with a seamless and intuitive shopping experience. Built using modern technologies including React Native for the frontend and Node.js/Express for the backend, the application combines robust functionality with an elegant user interface. The project aims to bridge the gap between traditional retail and digital shopping by offering a mobile-first approach to e-commerce. Detailed Features and Implementation

System Architecture

The application follows a client-server architecture with a clear separation between frontend and backend components.



Core Components and Data Flow



The features used in the project:

Key features include:

- User authentication (login and signup)
- Product browsing and searching
- Shopping cart management
- Location-based delivery selection
- Push notifications for user actions

User Authentication

- Secure login system with email and password validation
- Real-time form input validation with immediate user feedback
- Email format checking using regex
- Enforced password strength policies
- User registration with personal, address, and account details
- Secure password handling and encrypted storage
- Persistent login sessions using AsyncStorage
- Token-based authentication and secure session management
- Authentication-related notifications (welcome, login success/failure)

Navigation & Interface

- Clean and intuitive bottom tab navigation
- Dedicated tabs for Home, Search, and Cart
- Stack-based navigation for screen transitions (e.g., product details, checkout)
- Loading indicators and error message displays

Product Management

- Dynamic product display on the home screen
- Categorized product listings (e.g., electronics, clothing)
- Horizontal product carousels with visual indicators
- Detailed product views with ratings and descriptions
- Add-to-cart
- Search feature with real-time filtering and query validation

Shopping Cart

- Add, update, or remove items in the cart
- Real-time cart total updates
- Local cart data persistence
- Smooth checkout process with delivery address input
- Cart and checkout synchronization with backend

User Experience Enhancements

- User-friendly error messages and recovery options
- Form validation with live feedback
- Responsive and adaptive layouts across platforms

Backend Integration

- RESTful API integration for authentication, product, and cart management
- Secure and structured communication between frontend and backend
- Data synchronization for user sessions, order history, and cart items
- Robust error handling for API and network issues
- Comprehensive response validation and error messages

Performance Optimization

- Responsive and adaptive image rendering
- Efficient state management using Context API
- Minimized re-renders and performance-tuned components
- Clean, modular code with reusable component architecture

Security Features

- Strong authentication and password policies
- Input sanitization and data validation
- Privacy-focused data handling and compliance
- Secure storage and management of sensitive user information

Additional Features

- In-app and push notification system for updates and alerts
- Order status tracking and delivery updates
- Location services for address selection and validation
- Background data sync and cache management for improved UX

Pipeline that discusses the screens of the app and how they interact with each other:

User Flow

This outlines the journey a user takes through the application:

Signup Screen

User Inputs:

- Name
- Email
- Password
- Address
- City
- Country
- PIN Code

Flow: After signing up successfully, the user is redirected to the Login Screen.

Login Screen

User Inputs:

- Email
- Password

Flow: After a successful login, the user is redirected to the Home Screen.

Home Screen

User Sees:

- Product categories
- New products

Sections include:

- Electronics
- Clothing

User Actions:

- Tap on the search box → navigates to the Search Screen
- Tap on a product → navigates to the Product Detail Screen

Search Screen

User Inputs:

- Search query

User Sees:

- Search results

User Actions:

- Tap on a product → navigates to the Product Detail Screen

Product Detail Screen

User Sees:

- Full product information

User Actions:

- Tap Add to Cart → adds the product to the cart
- Tap the back arrow → returns to the Home or Search Screen

Cart Screen

User Sees:

- All added products

User Actions:

- Adjust product quantities
- Remove items
- Tap Checkout → navigates to the Location Picker Screen




Location Picker Screen

User Inputs:

- Delivery address

Flow: After confirming the order, the user is redirected to the Home Screen.

Screenshots:

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Sign Up

Name

Email

Password




Confirm Password

Address

City

Country

PIN Code

7:29 PM   

Email

Password

Confirm Password

Address

City




Country

PIN Code

Sign Up

Already have an account? [Login](#)



7:29 PM   




Login

Email

Password

[Login](#)

Don't have an account? [Sign up](#)

7:30 PM   

Login

Email




Please enter a valid email

Password

Password must be at least 6 characters

[Login](#)

Don't have an account? [Sign up](#)

7:30 PM   

Sign Up

Name

Name is required

Email

Email is required

Password

Password is required

Confirm Password

Please confirm your password




Address

Address is required

City




City is required

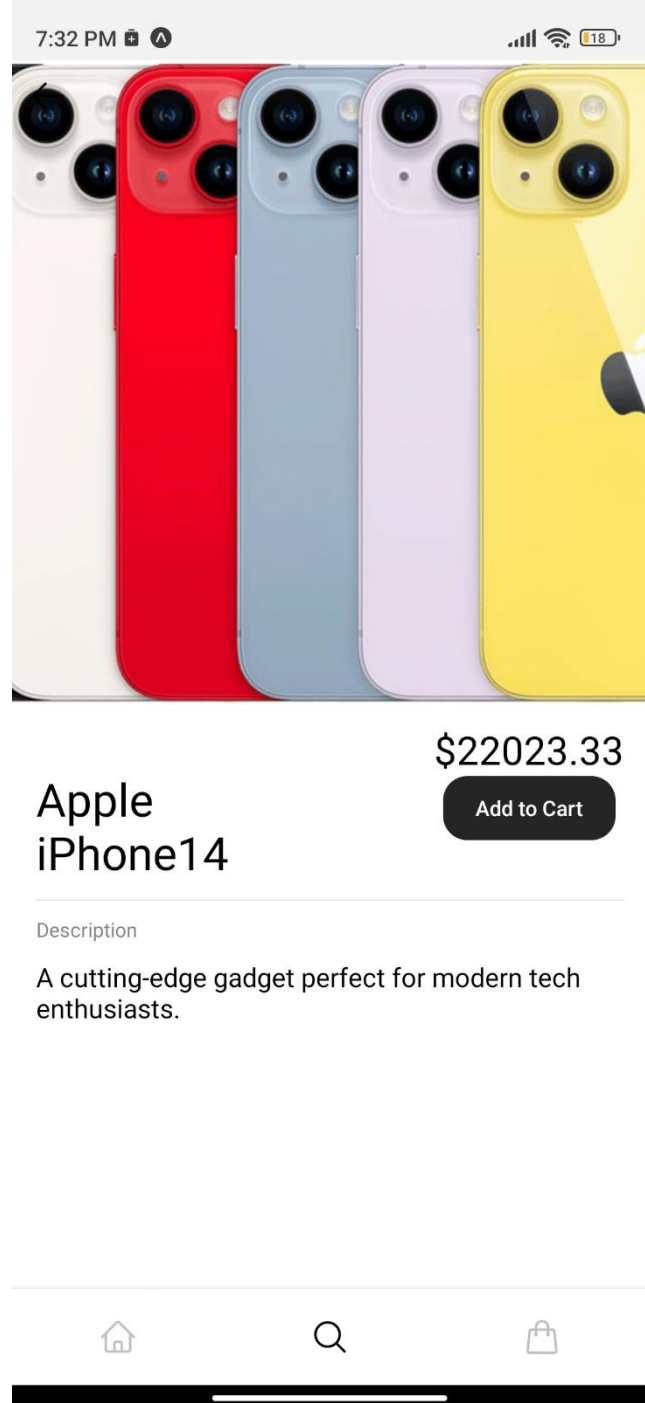
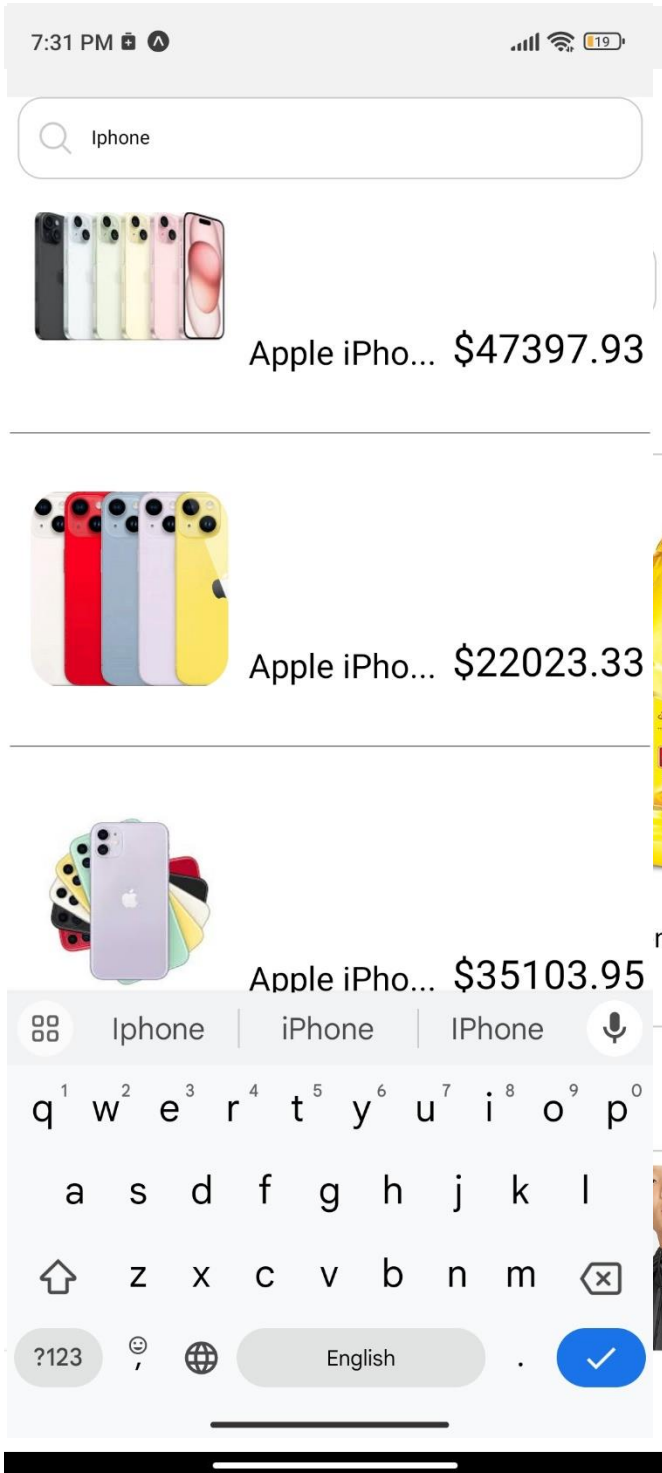
Country

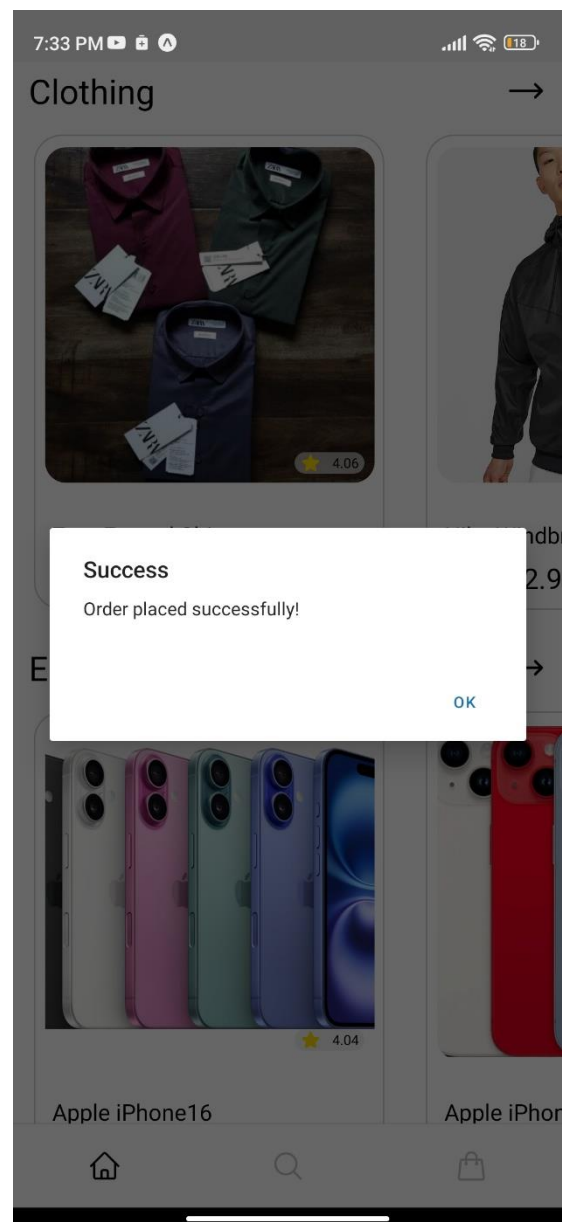
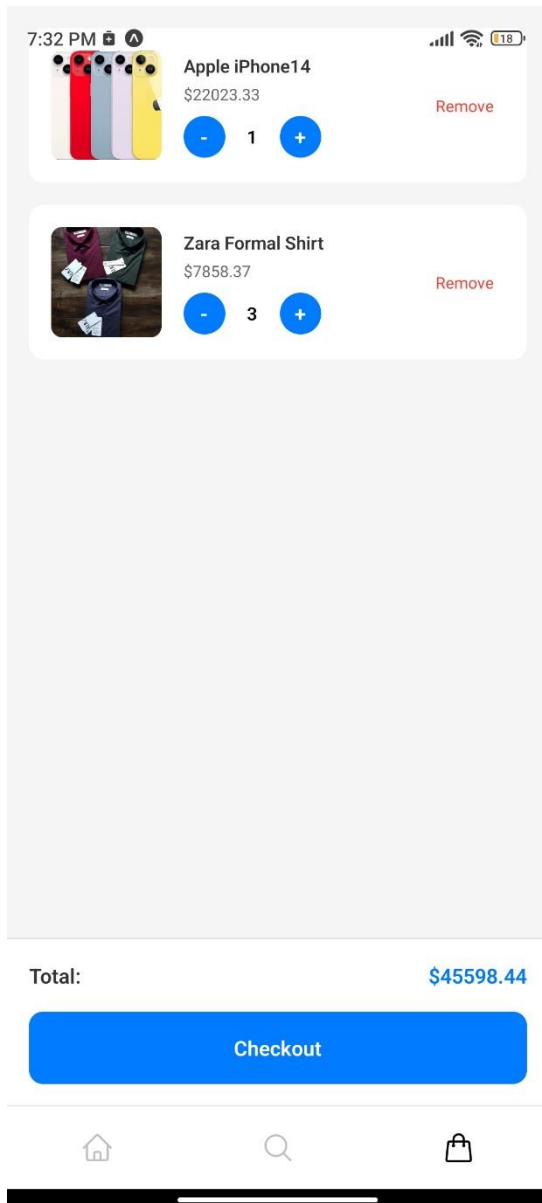
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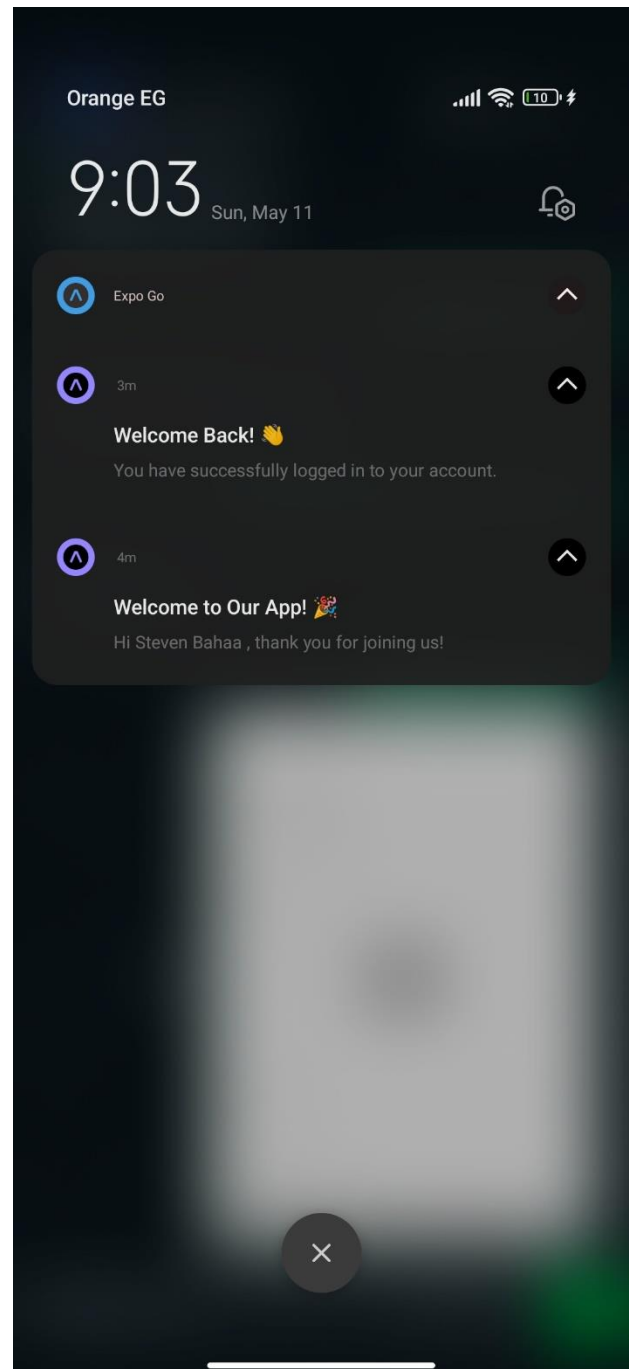
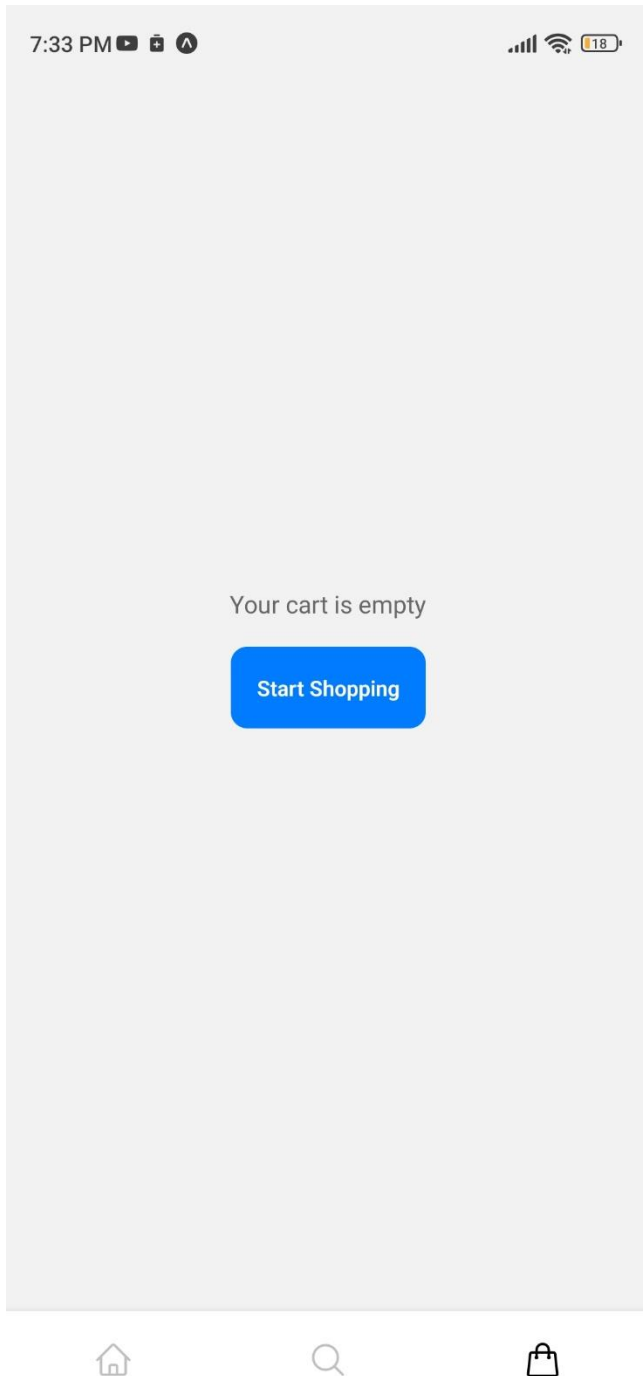
Search to show products

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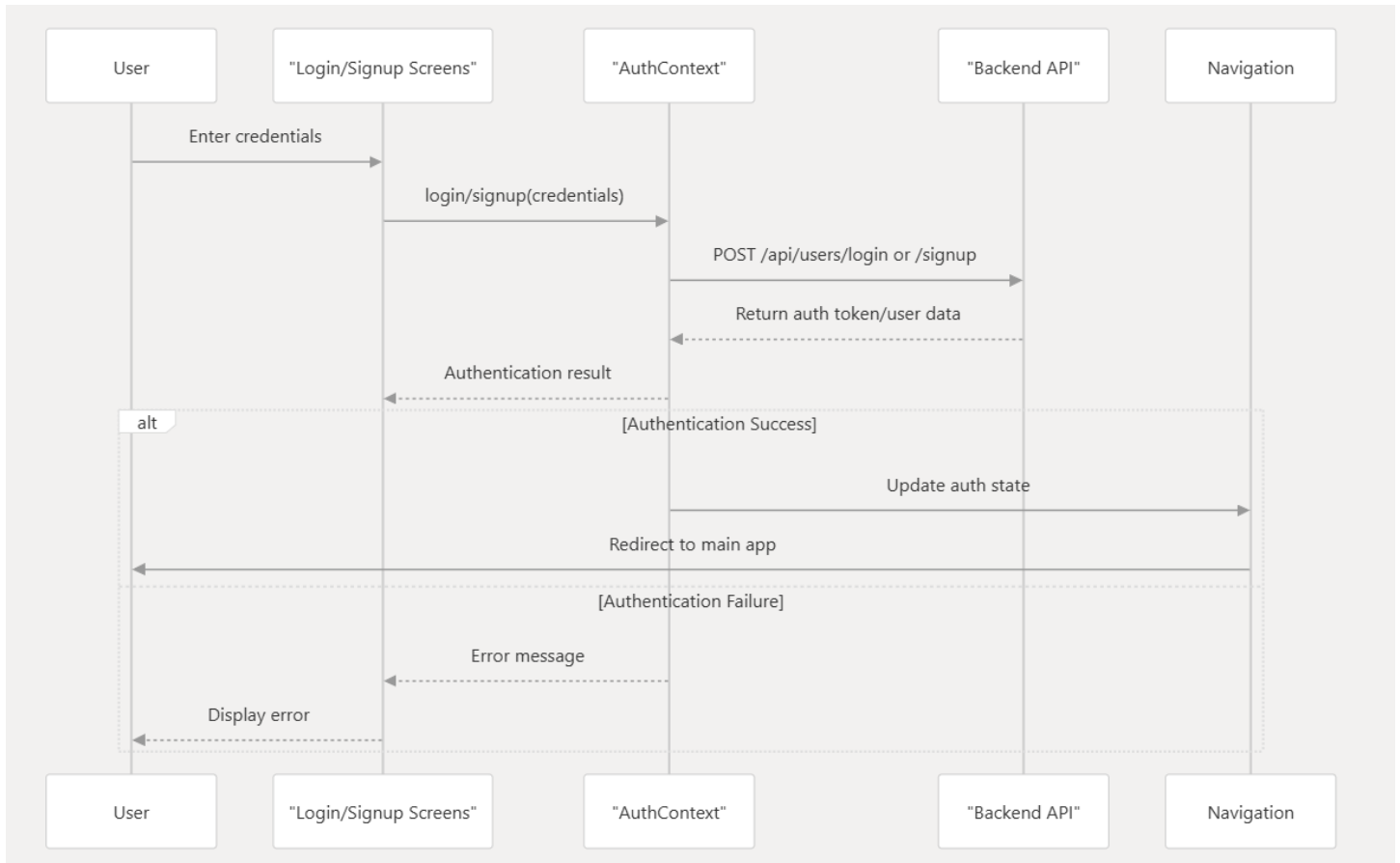
  







Complete Signup Sequence



Frontend Validation

The **LoginScreen** component performs essential validation before submitting credentials:

1. **Email Validation:** Ensures valid email format
2. **Password Validation:** Verifies minimum length of 6 characters

The component uses the **useAuth** hook to access the authentication context and perform the login operation.

