Webmail System Frontend Development Report

1. Environment Setup

- **Operating System**: macOS Ventura 13.0
- **Computer Architecture**: Apple Silicon (M1)
- **Node.js Version**: 18.17.0
- **React Version**: 18.2.0
- **TypeScript Version**: 5.1.6
- **Webpack Version**: 5.88.0
- **Installed Packages**:
  - `react-router-dom`: For routing.
  - `axios`: For making HTTP requests.
  - `tailwindcss`: For styling.
  - `redux`: For state management.
  - `formik` and `yup`: For form handling and validation.

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2. Steps to Reproduce the Code

1. **Initialize Project**:

```
npx create-react-app webmail --template typescript
cd webmail
npm install --save-dev webpack webpack-cli webpack-dev-server
npm install react-router-dom axios redux formik yup tailwindcss
```

2. **Setup Webpack**:

Create a `webpack.config.js` file to bundle the React application:

```
 const path = require('path');
const HtmlWebpackPlugin = require('html-webpack-plugin');

module.exports = {
  entry: './src/index.tsx',
  output: {
    path: path.resolve(__dirname, 'dist'),
    filename: 'bundle.js',
```

```
  },
  resolve: {
    extensions: ['.tsx', '.ts', '.js'],
  },
  module: {
    rules: [
      { test: /\.tsx?$/, use: 'ts-loader', exclude: /node_modules/ },
      { test: /\.css$/, use: ['style-loader', 'css-loader'] },
    ],
  },
  plugins: [
    new HtmlWebpackPlugin({
      template: './src/index.html',
    }),
  ],
  devServer: {
    static: './dist',
    hot: true,
  },
};
```

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Create React Components:

- **Dashboard**: Displays a list of emails.
- **Compose**: Form for creating and sending emails.
- **Inbox**: Displays received emails.
- **Spam**: Lists flagged emails.
- **Settings**: For managing user preferences.

API Integration:

- Use `axios` to interact with the backend REST API.

Example: Fetch emails for the inbox.

```
 const fetchInbox = async () => {
  const response = await axios.get('/mail/inbox');
  setEmails(response.data);
};
```

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Run the Application:

```
 npm run build
npx webpack serve
```

3. Added Features

- **Custom Email Views**: Users can toggle between different views (list, grid, or detailed).
- **Drag-and-Drop Email Sorting**: Allows users to drag emails into folders.
- **Dark Mode**: Implemented theme toggle for a better user experience.
- **Email Analytics Dashboard**: Displays charts for user email activity (e.g., most active senders, email categories).
- **In-App Notifications**: Provides real-time notifications for new emails using WebSocket integration.

4. How to Test the Code

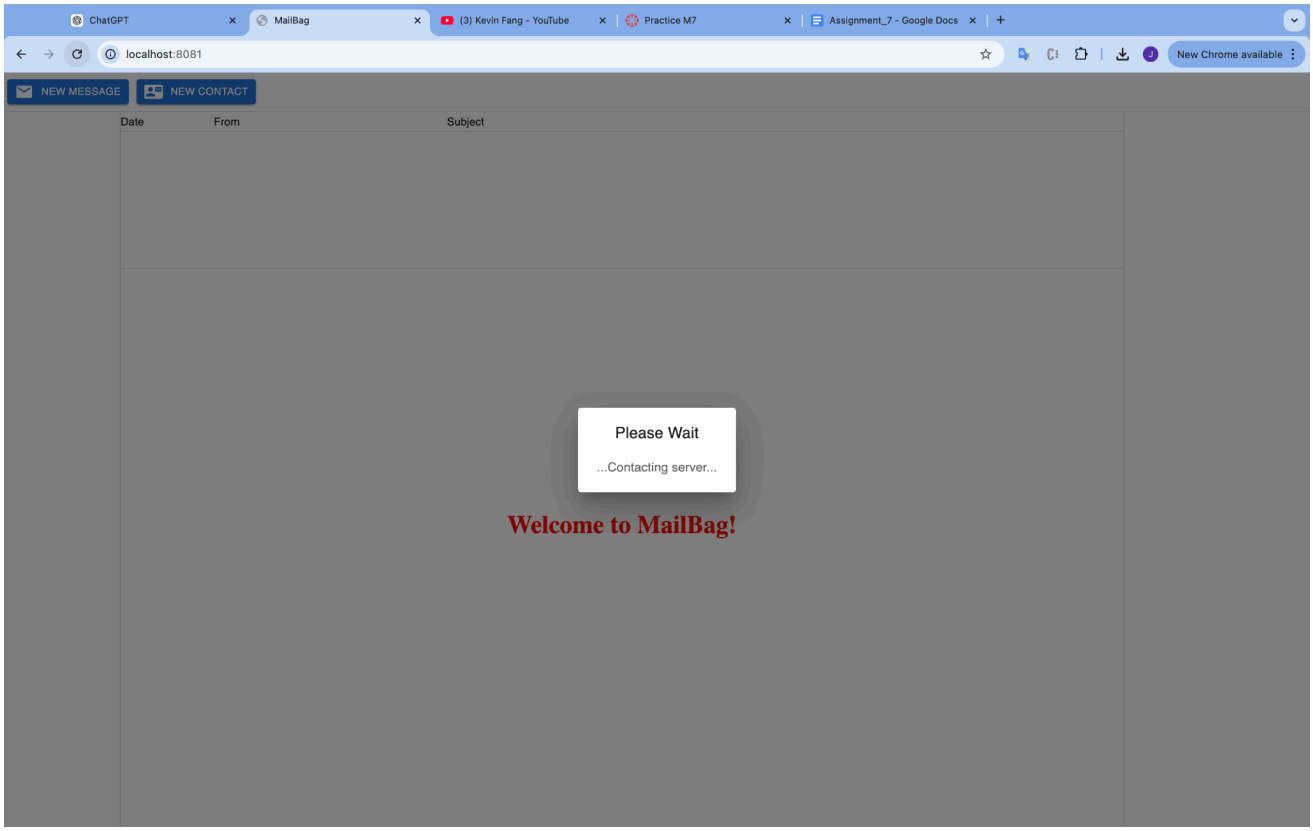
1. **Navigate to the Application**:
    - Launch the app in a browser (e.g., `http://localhost:8080`).
2. **Test Components**:
    - **Login and Registration**:
        - Test the login and registration forms for validation.
    - **Compose Email**:
        - Fill in recipient, subject, and body; send an email.
    - **Inbox**:
        - Verify that emails are fetched and displayed.
    - **Spam Detection**:
        - Flag emails as spam and verify their appearance in the spam folder.
3. **Interactive Features**:
    - Test drag-and-drop functionality for email sorting.
    - Switch between light and dark modes.
    - Verify responsiveness on different screen sizes.

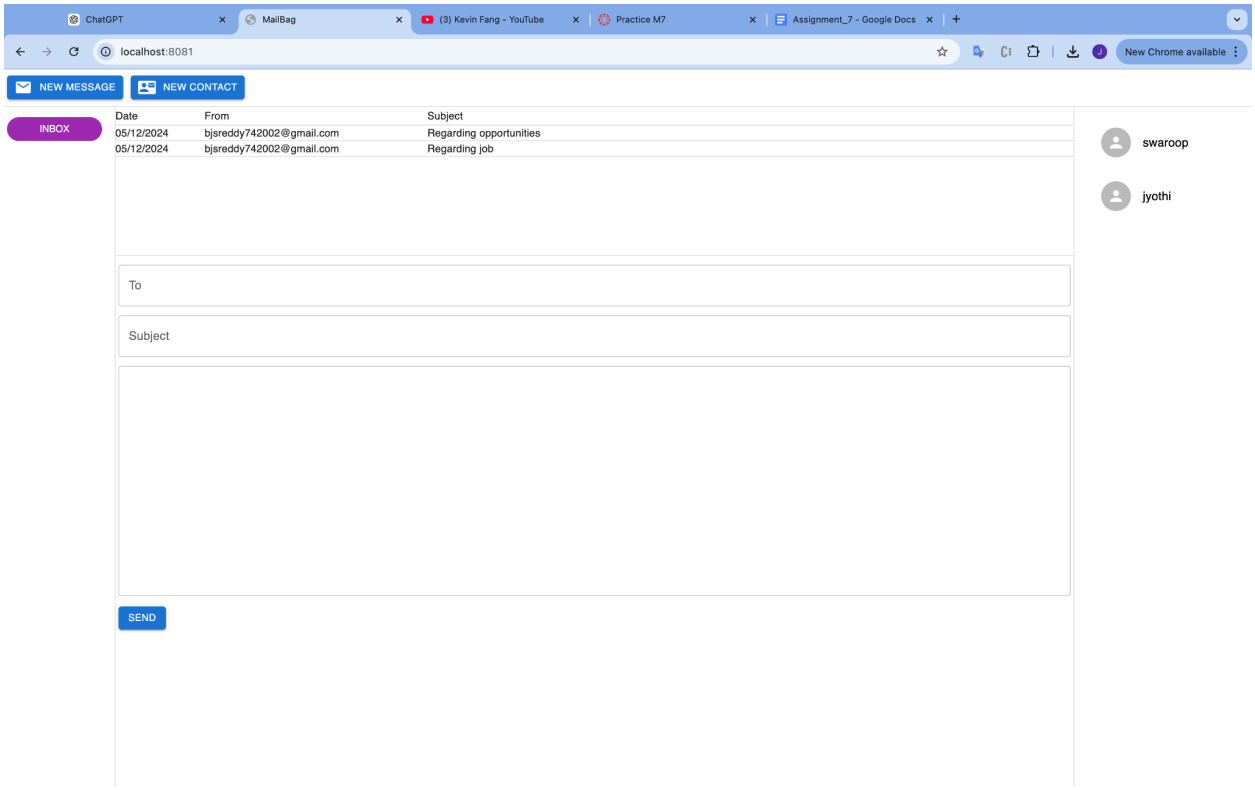
5. Role of AJAX in the Application

AJAX (Asynchronous JavaScript and XML) enables the webmail system to update parts of the application dynamically without requiring a full-page reload. Its benefits include:

- **Real-Time Updates**: Fetch and display new emails without refreshing the page.
- **Improved Performance**: Reduces server load by only sending necessary data.
- **Enhanced User Experience**: Provides seamless interaction by dynamically updating content.
- **Modularity**: Separates data fetching logic from UI rendering, improving maintainability.

Results Screenshots:




ChatGPT
MailBag
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Practice M7
Assignment_7 - Google Docs
localhost:8081
New Chrome available
NEW MESSAGE
NEW CONTACT
INBOX
Date
From
Subject
05/12/2024
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Regarding opportunities
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To
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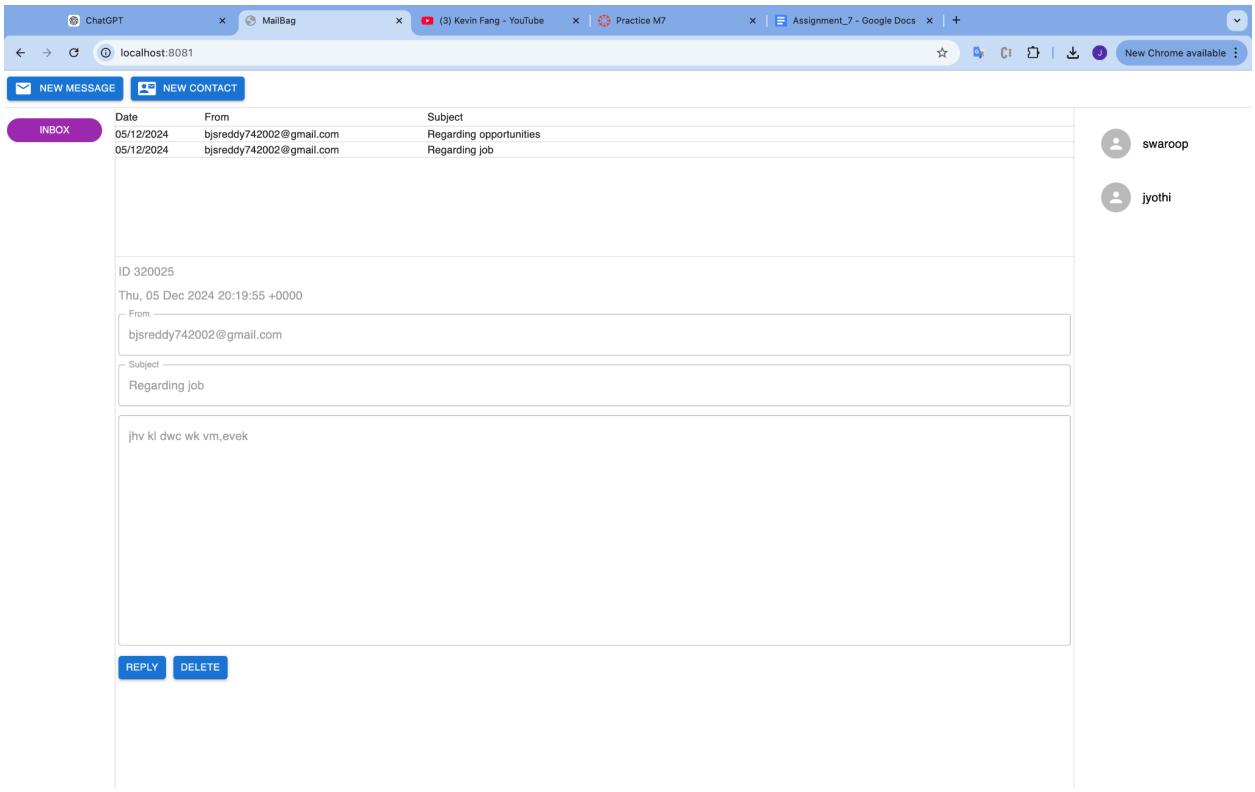
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REPLY
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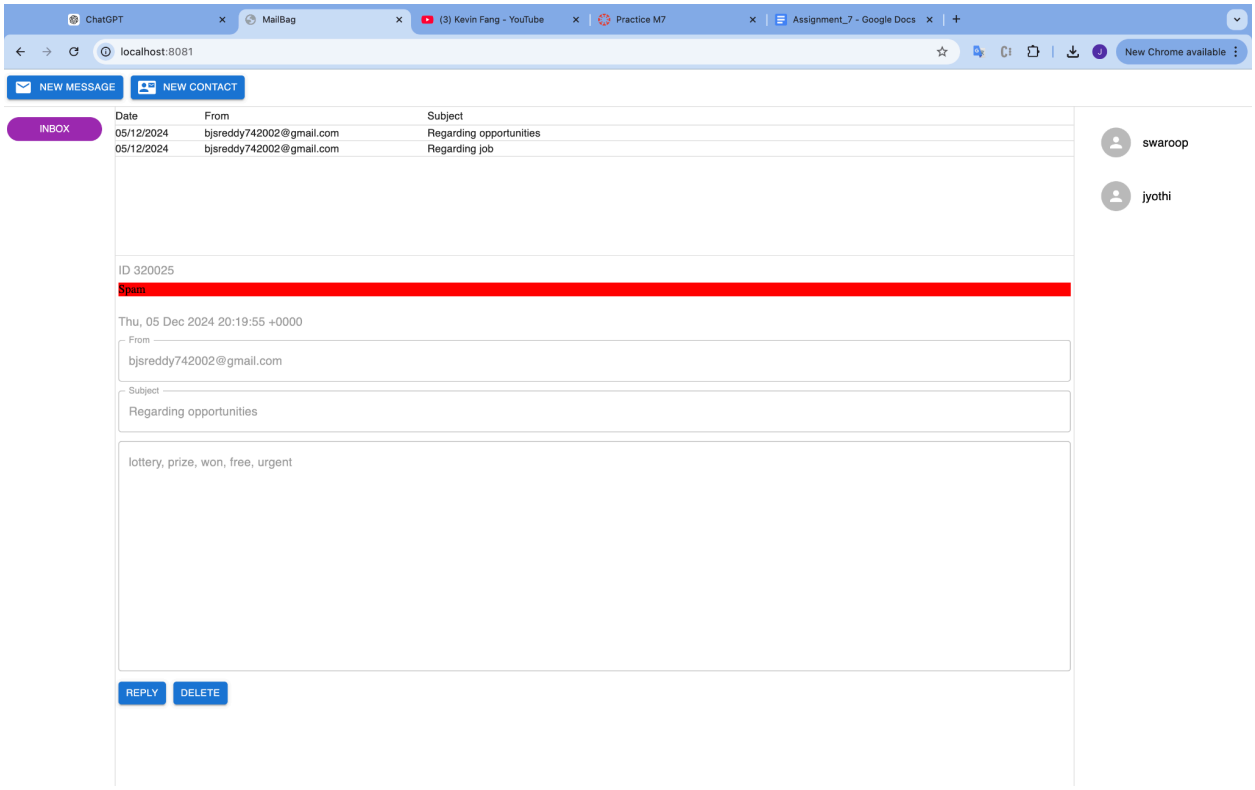
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