Project Architecture

Members:

Martin Alejandro Cordero Viteri
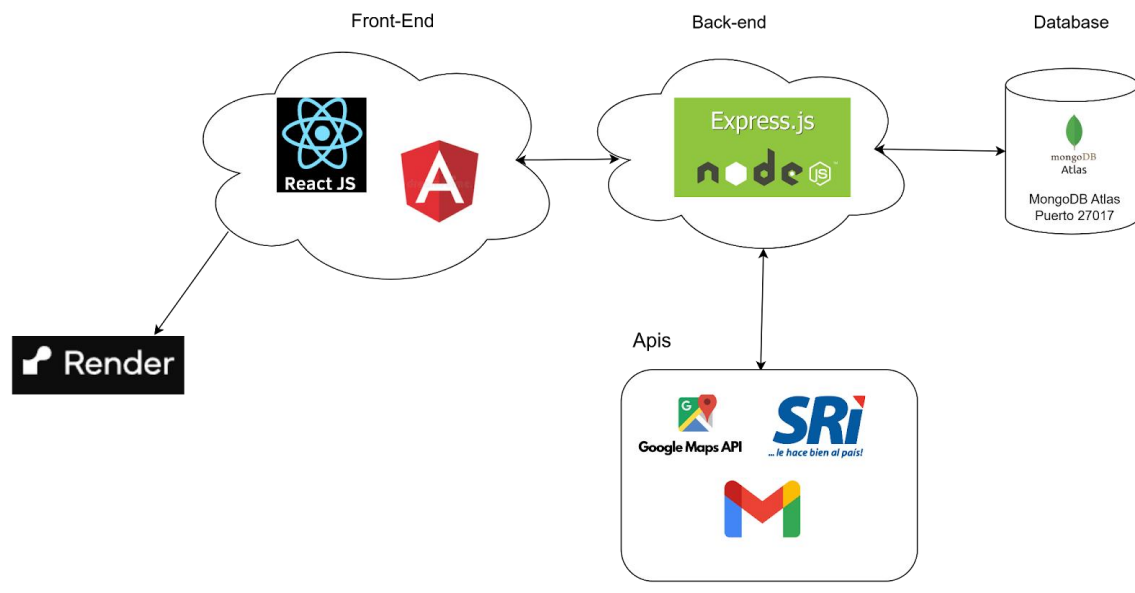
Steven David Egas Jácome

Josué Daniel Guayasamín Heredia

NRC: 27819

Subject: Advanced Web Programming

Group # 4

Front-End

- **Framework:** React.js

- **Language:** JavaScript

- **Libraries Used:** TailwindCSS, Axios, Leaflet, React-Google-Map

- **Purpose:**

  - Builds a fast, interactive, and responsive user interface.

  - Makes it easy to display products, shopping carts, and delivery tracking.

- Uses components to reuse design elements efficiently.

- Connects with the backend to show live data (product stock, delivery status).

- TailwindCSS improves visual design and mobile responsiveness.

- **Why it's useful for the minimarket:**

  - Allows customers to browse and buy products quickly.

  - Provides a smooth experience when managing or tracking deliveries.

  - Easy to maintain and update as the minimarket grows.

Back-End

- **Framework:** Node.js with Express.js

- **Language:** JavaScript

- **Main Libraries:** Express, Cors, Dotenv, Bcrypt

- **Purpose:**

  - Manages communication between the front-end and database.

  - Handles product, order, and user information securely.

  - Controls routes for user authentication, sales, and deliveries.

  - Ensures data is processed quickly and accurately.

- **Why it's useful for the minimarket:**

  - Supports multiple users and transactions at the same time.

  - Provides security for customer accounts and payments.

  - Works efficiently with the MongoDB Atlas database.

Database

- **System:** MongoDB Atlas

- **Type:** NoSQL (Document-based)

- **Port:** 27017

- **Purpose:**

  - Stores all information about users, products, orders, and deliveries.

- o Uses flexible JSON-like documents that adapt to different data types.

- o Syncs easily with the Node.js backend.

- **Why it's useful for the minimarket:**

  - o Scales easily as the business grows.

  - o Ensures fast data access and updates.

  - o Keeps information secure and available from the cloud.

Useful APIs for the Minimarket Web Application

- **SRI (Servicio de Rentas Internas) API**

  - o **Purpose:** Verifies customers' or businesses' tax identification numbers (RUC or CI).

  - o **Usefulness:** Ensures valid billing information for sales and invoices.

  - o **Benefit:** Helps the minimarket comply with Ecuadorian tax regulations and generate legal receipts.

- **Google Gmail API**

  - o **Purpose:** Sends automated email notifications.

  - o **Usefulness:** Notifies customers about order confirmations, delivery status, and account updates.

  - o **Benefit:** Improves communication and customer satisfaction with timely messages.

- **Google Maps API**

  - o **Purpose:** Displays and manages maps for deliveries.

  - o **Usefulness:** Allows real-time tracking of delivery routes and estimated arrival times.

  - o **Benefit:** Helps both the minimarket and customers monitor deliveries efficiently.