Requirements Document

🔥 Project Scope

Name	EzElectronics
State	COMPLETED
Version	1.5
Owners	Group 19
Document Scope	Conduct analysis of the existing server code to extract its underlying architecture and functionalities. Subsequently translating these into a comprehensive Requirements document and a GUI prototype.
Details	EZElectronics serves as a comprehensive software solution tailored for Electronics store management. It manages product inventory, customer transactions,… via a dedicated web platform. It allows customers to review existing products, add new ones, and validate purchases. This application provides a seamless experience to browse available products, add desired items to your virtual cart, and access a detailed history of your past purchases.
Users	1. Store Managers: Purchase large Order, manage inventory. 2. Customers which can be: a. Buying at the store. b. Purchasing products online.
Use case scenarios	• Inventory management; • Customer transaction recording; • Product browsing; • Cart management; • Purchase validation; • Access to purchase history;

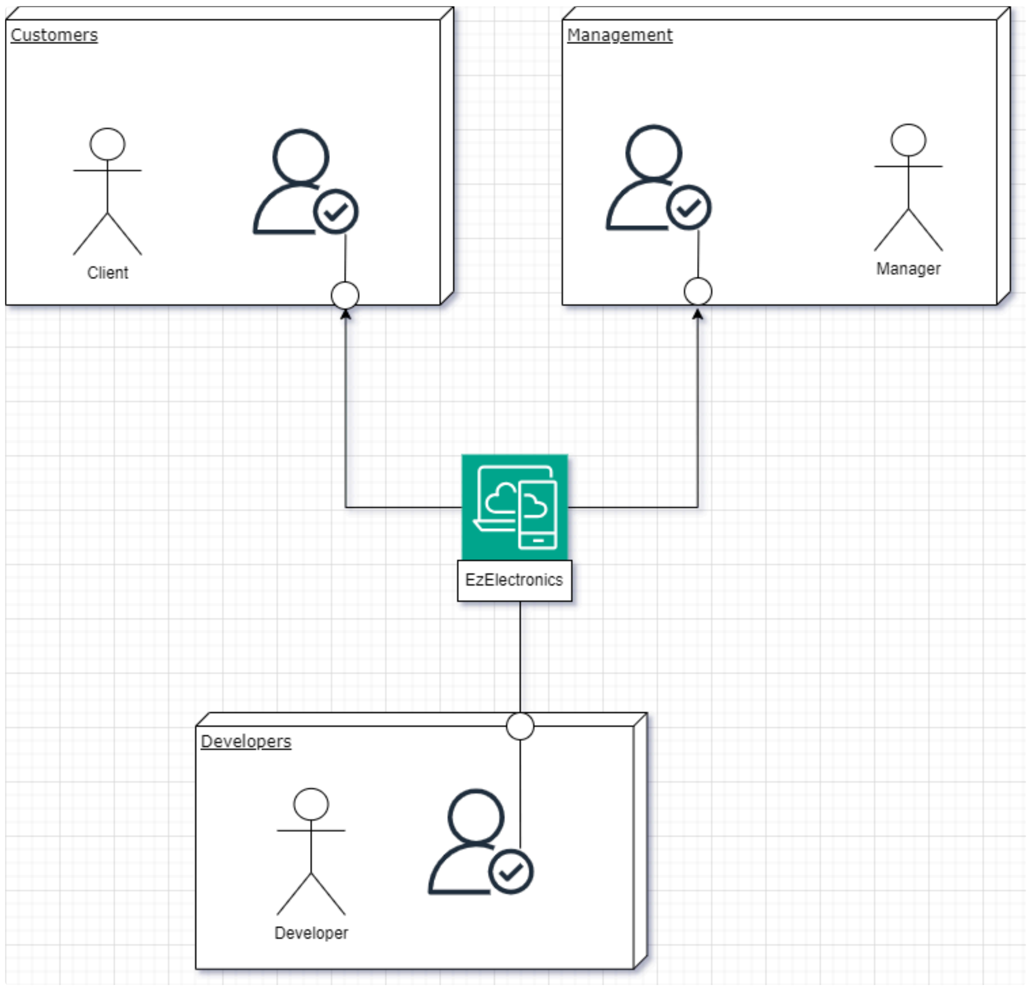
Buisness Model

EZElectronics operates as an online platform for electronics stores, facilitating the management of products and sales through a user-friendly website. The business model revolves around providing value to both electronics store managers and customers. Store managers can efficiently manage their inventory, add new products, and track sales, while customers can easily browse and purchase electronics products.

Stakeholders

Stakeholder	Description
Store Manger	manages inventory, tracks sales & update inventory.
Customer	who visit the dedicated website to browse and purchase electronics products.
Developers	The team responsible for building and maintaining the EzElectronics software application, ensuring its functionality, security, and usability.

Context Diagram & Interfaces



Interfaces

Here we describe each interface present in the Context Diagram:

Actor	Physical	Logical
Store Managers	Product management, inventory updates, sales tracking.	Web browser

Customers	Browsing products, placing orders, providing feedback	Web browser
Developers	Software development, security, maintenance.	Development environment (IDE, Git)

Stories & Personas

1-Persona: Alex;

Age: 24;

Role: customer;

Gender: M;

Level of education: PoliTo student;

Studies software engineering.

Country: Italy;

city: Turin;

Story: wants to buy a better laptop for better performance in his university carrier so he browses products, adds products to his cart, checks specifications and filters products by various criterias.

2-Persona: Leo;

Age: 46;

Role: manger;

Gender: M;

Level of education: postgraduate;

Owns electronics and appliances store;

country: Italy;

city: Turin;

Story: He wants to add products, view users, update product details.

Functional Requirements

ID	Description	API Method
FR1: User Authentication	Create a new session for user authentication	POST `/sessions`
FR2: User Logout	Log out the current user session	DELETE `/sessions/current`
FR3: Get Current Session Info	Get information about the current session	GET `/sessions/current`
FR4: User Registration	Register a new user	POST `/users`

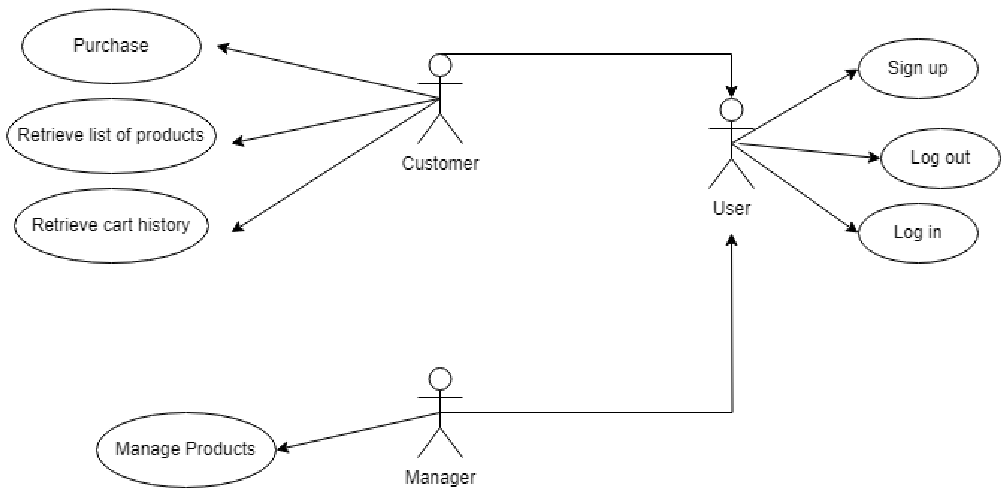
FR5: View All Users	Get a list of all users	GET `/users`
FR6: View Users by Role	Get users by role	GET `/users/role/:role`
FR7: View Specific User	Get a specific user by username	GET `/users/:username`
FR8: Delete User	Delete a specific user by username	DELETE `/users/:username`
FR9: Delete All Users	Delete all users	DELETE `/users`
FR10: Add Product	Add a new product	POST `/products`
FR11: Record Product Arrivals	Record new product arrivals	POST `/products/arrivals`
FR12: Update Product Information	Update a product's information	PATCH `/products/:code`
FR13: View All Products	Get a list of all products	GET `/products`
FR14: View Specific Product	Get a specific product by code	GET `/products/:code`
FR15: View Products by Category	Get products by category	GET `/products/category/:category`
FR16: View Products by Model	Get products by model	GET `/products/model/:model`
FR17: Delete All Products	Delete all products	DELETE `/products`
FR18: Delete Specific Product	Delete a specific product	DELETE `/products/:code`
FR19: View Current Cart	Get current cart for user	GET `/carts`
FR20: Add Product to Cart	Add a product to the cart	POST `/carts`
FR21: Update Cart	Update products in the cart	PATCH `/carts`
FR22: View Purchase History	Get purchase history	GET `/carts/history`
FR23: Remove Product from Cart	Remove product from cart	DELETE `/carts/products/:productId`
FR24: Clear Current Cart	Clear current cart	DELETE `/carts/current`
FR25: Clear All Carts	Clear all carts	DELETE `/carts`

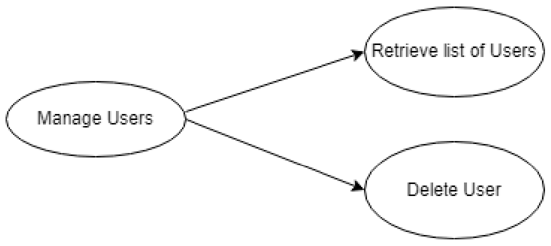
Non-Functional Requirements

ID	Type (efficiency, reliability,)	Description	Refers to
NFR1	Usability	system is not too complex and there is few functions to use so it is very easy to learn Search bar allow user to find the product/user fastly	All FR
NFR2	Efficiency	Minimal resource usage because the program is simple	All FR dao/db files

		• Organised Database and DAO queries to optimise interaction with database.	
NFR3	Reliability	Defects visible by end user are already defined (cart not found, user not found product is sold)	Errors file
NFR4	Maintainability	Functions to add/modify/delete/getare already defined	All FR
NFR5	Portability	Expected to be portable across various environments, such as browsers on mobile phones, pc's, laptops…. Typescript is a versatile and lightweight interface for web development, fasilitating developers lifecycle .	Erro
NFR6	Security	user data carts are protected. Some function require logging in as manager other functions require logging in as costumer; Authentication is required to access and modify the different tables in the Database (Note: Passport.js is used for authentications). The session time is set to 7 DAYS .	Routers File

Use case Diagram





Use Cases

Actors Involved	Customer, Manager
Precondition	Person doesn’t have a user account
Post condition	Creation of user account
Nominal Scenario	Scenario 1.1 (Customer sign up)
Variants	Scenario 1.2 (Manager sign up)
Exceptions	Scenario 1.3 (Username already exists);

Scenarios

Use case 1, UC1: Registration:

Scenario 1.1	Customer creates an account
Precondition	Person doesn’t have user account
Post condition	Person has a new account
Step#	Description
1	Filling in username
2	Filling in Name
3	Filling in Surname
4	Filling in password
5	Choosing Customer role to create an account
6	Submitting inputs
7	All fields are being checked by system for not being empty
8	System checks if the username is not already taken
9	Person sees notification of successful creation of the account

Scenario 1.2	Manager creates an account
Precondition	Person doesn’t have user account
Post condition	Person has a new account
Step#	Description
1	Filling in username
2	Filling in Name
3	Filling in Surname

4	Filling in password
5	Choosing Manager role to create an account
6	Submitting inputs
7	All fields are being checked by system for not being empty
8	System checks if the username is not already taken
9	Person sees notification of the successful creation of the account

Scenario 1.3	Person fails to create an account due to existing username
Precondition	Person doesn’t have user account
Post condition	Person fails to create new account
Step#	Description
1	Filling in username
2	Filling in Name
3	Filling in Surname
4	Filling in password
5	Choosing role to create an account
6	Submitting inputs
7	All fields are being checked by system for not being empty
8	System checks if the username is not already taken
9	Person sees notification that username has been taken

Use Case 2, UC2: Log in

Actors Involved	Customer, Manager
Precondition	Person has existing account
Post condition	Person logs in to the system
Nominal Scenario	Scenario 2.1 (Person logs in)
Variants	
Exceptions	Scenario 2.2 (Username doesn’t exist); Scenario 2.3 (Password is wrong)

Scenario 2.1	Person logs in

Precondition	Person has an existing Customer/Manager account
Post condition	Person logs in to the system
Step#	Description
1	Filling in username
2	Filling in password
3	Submitting inputs
4	All fields are being checked by system for not being empty
5	System checks if the username is in the database
6	System checks if the password is correct
7	Person sees notification that they’re logged in

Scenario 2.2	Person fails to log in due to wrong username
Precondition	Person enters wrong username
Post condition	Person fails to log in
Step#	Description
1	Filling in username
2	Filling in password
3	Submitting inputs
4	All fields are being checked by system for not being empty
5	System checks if the username is in the database
6	System checks if the password is correct
7	Person sees notification that the username doesn’t exist

Scenario 2.3	Person fails to log in due to incorrect password
Precondition	Person enters incorrect password
Post condition	Person fails to log in
Step#	Description
1	Filling in username
2	Filling in password
3	Submitting inputs

4	All fields are being checked by system for not being empty
5	System checks if the username is in the database
6	System checks if the password is correct
7	Person sees notification that the password is incorrect

Use Case 3, UC3: Log out

Actors Involved	Customer, Manager
Precondition	Person is logged in as a Customer/Manager
Post condition	Person logs out
Nominal Scenario	Scenario 3.1 (Person logs out)
Variants	No variants
Exceptions	No exceptions

Scenario 3.1	Person logs out
Precondition	Person is logged in
Post condition	Person logs out
Step#	Description
1	Person does the log out action
2	Person sees notification about being logged out

Use case 4, UC4: Purchase

Actors Involved	Customer
Precondition	Person is logged in as a Customer
Post condition	Person makes an order as a Customer
Nominal Scenario	Scenario 4.1 (Person makes an order)
Variants	Scenario 4.2 (Person removes a product from the cart); Scenario 4.3 (Person deletes the cart)
Exceptions	New product is already in the cart

Glossary (Demo)

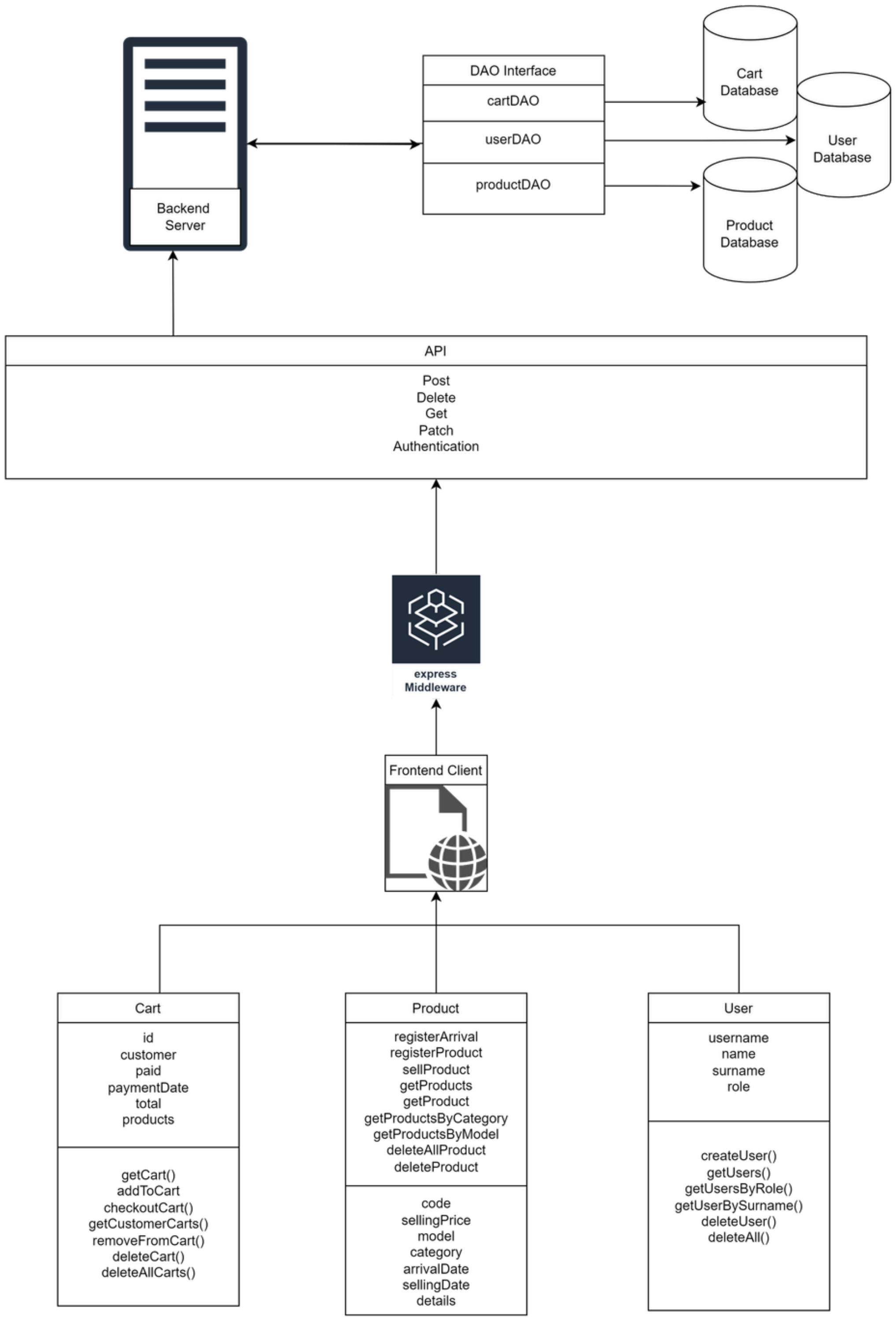
1. **Authentication:**
   - **Authenticator:** A class responsible for user authentication using Passport.js.

- **Auth Middleware:** Middleware functions for checking user authentication status and roles.

2. **User Management:**
    - **User Class:** Represents user data.
    - **User DAO:** Handles database operations related to users.
    - **User Errors:** Custom error classes for user-related errors.
    - **User Routes:** Express routes for user registration and login.
3. **Cart Management:**
    - **Cart Class:** Represents cart data.
    - **Cart DAO:** Handles database operations related to carts.
    - **Cart Errors:** Custom error classes for cart-related errors.
    - **Cart Controller:** Controller for cart operations.
    - **Cart Routes:** Express routes for cart management.
4. **Product Management:**
    - **Product Class:** Represents product data.
    - **Product DAO:** Handles database operations related to products.
    - **Product Errors:** Custom error classes for product-related errors.
    - **Product Controller:** Controller for product operations.
    - **Product Routes:** Express routes for product management.
5. **Error Handling:**
    - **Error Handler:** Centralized error handling middleware.
    - **Custom Error Classes:** Custom error classes for different types of errors in each module.
6. **Express Server:**
    - **Express App:** Configuration and initialization of the Express server.
    - **Main Routes:** Mounting of routes for authentication, user management, cart management, and product management.
7. **Database:**
    - **SQLite3 Database:** Connection setup and configuration.
8. **Validation:**
    - **Express Validator:** Middleware for request validation in routes.
9. **Utility Functions:**
    - **Utility Module:** Contains utility functions used across the application.
10. **Testing:**
    - **Test Scripts:** Provided test scripts in package.json for running tests.
    - **Test Database Setup:** Configuration for using a separate test database.
11. **Documentation:**

Requirement Document Template: Including sections for authentication, user management, cart management, product management, error handling, and testing.

Deployment Diagram


DAO Interface
cartDAO
userDAO
productDAO
Cart Database
User Database
Product Database
Backend Server
API
Post
Delete
Get
Patch
Authentication
express Middleware
Frontend Client
Cart
id
customer
paid
paymentDate
total
products
getCart()
addToCart
checkoutCart()
getCustomerCarts()
removeFromCart()
deleteCart()
deleteAllCarts()
Product
registerArrival
registerProduct
sellProduct
getProducts
getProduct
getProductsByCategory
getProductsByModel
deleteAllProduct
deleteProduct
code
sellingPrice
model
category
arrivalDate
sellingDate
details
User
username
name
surname
role
createUser()
getUsers()
getUsersByRole()
getUserBySurname()
deleteUser()
deleteAll()