



رواد مصر الرقمية Digital Egypt Pioneers Initiative.



- Alexandria Abu Qir Metro

Supervised by

Eng: Abdelrahman Ragab

## Submitted by:

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# **1. Project Planning & Management**

## **PROJECT PROPOSAL – Alexandria Metro Website**

### **1. Project Overview**

The Alexandria Metro Website is a digital platform designed to streamline the metro experience for commuters in Alexandria.

The system allows users to create personal accounts, purchase tickets, subscribe to monthly metro plans, view metro stations, and explore Alexandria's famous attractions. Administrators can manage users, stations, notifications, and system content through a dedicated admin dashboard.

The goal of the platform is to make metro transportation more accessible, organized, and user-friendly while supporting the upcoming Alexandria Metro project.

### **2. Project Objectives**

- Provide a modern online platform for metro ticketing and subscriptions.
- Offer seamless registration and profile management for users.
- Enable users to subscribe to different metro plans with flexible payment options.
- Support admins with efficient management tools for users, stations, and notifications.
- Display metro stations clearly with a map view for easy navigation.
- Promote Alexandria's landmarks by showing them in the stations/attractions section.
- Improve transportation accessibility and reduce crowding through digital services.

## 3. Project Scope

### In-Scope (Included)

#### *User Features*

- User Registration & Login
- Ticket Purchase
- Subscription Plans:
  - **Student Plan** – Unlimited metro rides at \$15/month
  - **Regular Plan** – Unlimited rides for daily commuters at \$30/month
  - **VIP Plan** – Priority access + extra benefits at \$50/month
- Payment via **Visa** and **Wallet**
- View metro stations (List + Map)
- View Alexandria attractions
- Edit Profile (First name, Last name, Email, Phone Number, Region)
- Contact Form (Simple form: Name – Email – Message)

#### *Admin Features*

- User Management
- Station Management
- Notification Management (All types: offers, alerts, issues...)
- Single Admin account
- Admin pages in **Arabic allowed**, except Notification Management which remains English

### Out of Scope (Not Included)

- Offline metro kiosk integration
- Real-time train tracking
- NFC or physical metro card system
- Multi-language user interface (English only for users)
- Mobile App (Web version only)

## 4. Target Users

### Regular Users:

Residents and visitors use Alexandria Metro for transportation.

### Admin:

One admin responsible for managing the system, content, and user data.

## 5. Project Deliverables

- Fully functional metro website
- User Registration & Authentication
- Admin Dashboard (User/Station/Notification management)
- Subscription system with payment integration
- Profile editing module
- Stations + Map page
- Contact page with form submission
- Complete documentation (Project Plan, SRS, Use Cases, ERD, Testing Reports)

## 6. Success Criteria (KPIs)

- Fast user response time (under 2 seconds per page)
- System uptime above 99%
- High user adoption rate after launch
- Smooth payment process (90%+ successful transactions)

## Project Timeline (8 Weeks)

### Week 1 – Requirements & Analysis

- Collect functional & non-functional requirements
- Identify user types (Admin – User)
- Study metro system features

- Initial documentation start

## Week 2 – System Design

- Use Case Diagram
- ERD + Database Schema
- UI Wireframes
- Finalize project plan

## Week 3 – Backend Core

- Authentication (Login/Signup)
- Tickets Module (Model + Controller)
- DB creation & migrations

## Week 4 – Backend Advanced

- Subscriptions (Student–Regular–VIP)
- Notifications backend
- Station management backend

## Week 5 – Frontend (Views)

- Home – Map – Profile (Mai)
- Login – Signup – Ticket Prices (Alaa)

## Week 6 – Admin Panel + Final UI

- Users Management
- Stations Management
- Tickets & Subscriptions management
- Notification UI

## Week 7 – Integration

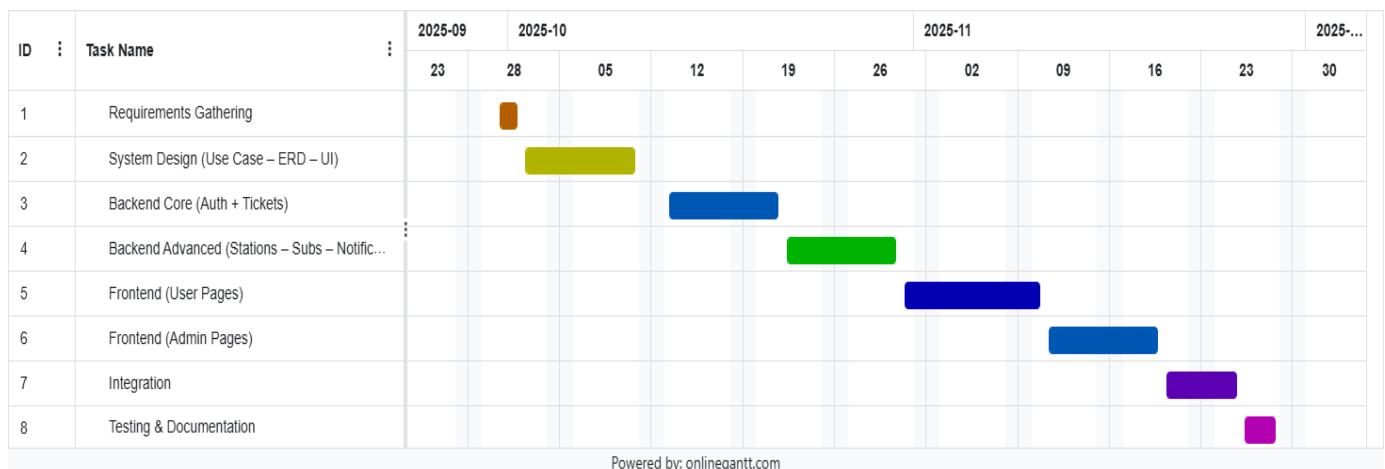
- Connect all controllers → views
- Database testing
- Fix design issues

## Week 8 – Testing & Delivery

- Full application testing
  - Final Documentation
  - Submission preparation
- 

## 2) Gantt Chart (Simple Table Format)

Chart – 2 Months Timeline



## 3) Project Milestones (Major Checkpoints)

Milestone	Description	Deadline

<b>M1 – Requirements Completed</b>	Requirements documented + approved	Week 1
<b>M2 – System Design Completed</b>	ERD + Use Case	Week 1 and Week 2
<b>M3 – Core Backend Ready</b>	Auth + Tickets working	Week 3
<b>M4 – Full Backend Ready</b>	All modules completed	Week 4
<b>M5 – User Frontend Completed</b>	All user pages (Home–Map–Profile–Signup).	Week 5
<b>M6 – Admin Panel Completed</b>	CRUD (Users–Stations–Tickets–Subs)	Week 6
<b>M7 – Full System Integration</b>	MVC connected + DB working	Week 7 and Week 8
<b>M8 – Final Delivery</b>	Testing + Documentation	Week 8

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## 4) Deliverables (What You Submit)

### Analysis & Design Deliverables

- Requirements document
- Use Case diagram
- ERD
- UI Wireframes
- Project plan

### Development Deliverables

- MVC project
- Fully working frontend views
- Full backend controllers and models
- Database schema + SQL script

## Testing Deliverables

- Test cases
- Bug report
- System testing results

## Final Deliverables

- Final project + documentation
  - Presentation
  - Demo video
- 

## 5) Resource Allocation (Who Does What)

Member	Role / Skills	Frontend Responsibilities	Backend Responsibilities	Database / ERD
Ahmed	Full stack + DB	Ticket confirmation, Ticket Management, login and signup	Authentication (Sign Up, Login, Profile), Tickets, Backend Logic	Schema
Mai	Full Stack + Documentation	Home, Live Map, Notifications (User), Profile, Explore Alex Contact admin	Notification (User),	-
Basmala	Backend + Documentation	-	Stations, Notification (management) Logic, Contact Admin	-
Alaa	Frontend + Documentation	Login, Signup, Ticket Prices, Book	-	-

		Ticket, Subscriptions UI		
Eman	Full Stack + DB	Stations, User Management, Subscriptions, Contact/Help	Subscription (Admin & User), User Management	ERD

## 📌 Risk Assessment & Mitigation Plan – Alexandria Metro Website

Risk	Likelihood	Impact	Mitigation Plan	Responsible
Missing or incomplete requirements	Medium	High	Hold detailed requirement meetings, checklist for all features, get approval from supervisor	All
Security vulnerabilities in Authentication	Medium	High	Use MVC security features, input validation, test login/signup thoroughly	Ahmed
Incorrect ticket booking or subscription processing	Low	High	Test all scenarios, backend validation, manual payment tests	Ahmed + Eman
Incorrect station or landmark info displayed	Low	Medium	Verify data with official source, peer review UI	Mai + Basmala + Eman
Notifications not showing or duplicated	Low	Medium	Test notification triggers, implement duplicate checks	Mai + Basmala
Profile page fails to update info	Low	Medium	Validate all fields in backend, test profile updates	Mai

UI layout breaks on different devices	Medium	Medium	Test responsive design, multiple devices, peer review	Alaa
Database inconsistency / missing relations	Low	High	Peer review schema, backup database before tests	Ahmed + Eman
Integration issues (Controllers → Views)	Medium	High	Follow MVC conventions strictly, test each module before integration	All
Late delivery / bugs remain after deadline	Medium	High	Allocate 1–2 extra days buffer, daily progress tracking	All

## **Requirements Gathering**

Stakeholder	Description	Needs & Expectations
<b>Passengers (End Users)</b>	Individuals who book tickets or purchase subscriptions.	Easy navigation, clear ticket prices, secure payments, and fast booking.
<b>Metro Staff</b>	Employees supervising ticketing and customer operations.	Accurate data, simple tools to check bookings and subscriptions.
<b>System Administrator</b>	Manage system settings, users, and pricing.	Full control panel, user management, ticket price configuration.

<b>Metro Management</b>	Decision makers who need insights and reports.	Sales reports, subscription statistics, and system performance data.
<b>Payment Provider</b>	External payment gateway used in the system.	Secure transactions, stable API integration.
<b>Developers Team</b>	Backend & frontend developers working on the system.	Clear requirements, structured data, and defined APIs.

### 3.2 User Stories

1. **As a user, I want to create an account so that I can access the system.**
2. **As a user, I want to log in securely so that I can manage my bookings.**
3. **As a user, I want to view ticket prices so that I can choose the appropriate option.**
4. **As a user, I want to book a metro ticket so that I can complete my trip.**
5. **As a user, I want to receive a confirmation message after booking, so I know the process was successful.**
6. **As a user, I want to purchase a monthly or yearly subscription so that I can reduce transportation costs.**
7. **As a user, I want the system to suggest booking a ticket after making a subscription to complete my next step easily.**

8. As a user, I want a simple and clean user interface so that I can navigate easily.
9. As an admin, I want to update ticket prices so that users always see the correct data.
10. As an admin, I want to view all bookings so that I can monitor system performance.
11. As an admin, I want to manage user accounts so that I maintain a secure environment.
12. As a user, I want to log out to keep my account safe.
13. As a user, I want to secure online payment so I can complete the transaction safely.
14. As an admin, I want to generate monthly reports so that I can evaluate system usage.
15. As a user, I want the system to load quickly so that I don't waste time.

### **3.3 Use Cases (Professional Format)**

#### **Use Case 1: User Login**

- **Actor:** User
- **Precondition:** User already has an account
- **Main Flow:**
  1. User opens the Login page.
  2. User enters email and password.
  3. System verifies credentials.
  4. Users are redirected to the main dashboard.
- **Postcondition:** User successfully logged in.

## **Use Case 2: User Registration**

- **Actor:** User
- **Main Flow:**
  1. User opens the Signup page.
  2. User enters required personal details.
  3. System validates and stores user data.
  4. The account was created successfully.

## **Use Case 3: View Ticket Prices**

- **Actor:** User
- **Main Flow:**
  1. User opens the Ticket Prices page.
  2. System displays updated ticket prices.
  3. User selects preferred ticket type.

## **Use Case 4: Book a Ticket**

- **Actor:** User
- **Main Flow:**
  1. User selects start and destination stations.
  2. The system calculates ticket prices.
  3. The user confirms the booking.

4. The system processes the request and sends confirmation.
- **Postcondition:** Ticket booked successfully.
- ## Use Case 5: Subscription Purchase
- **Actor:** User
  - **Main Flow:**
    1. User opens the Subscriptions page.
    2. User chooses a subscription type (Monthly/Yearly).
    3. Payment is processed.
    4. System displays message: **“Would you like to book a ticket now?”**
    5. If the user selects "Yes", redirect to ticket booking.

### 3.4 Functional Requirements

#### User Functional Requirements

- The system shall allow users to create an account.
- The system shall allow users to log in and log out.
- The system shall display ticket prices.
- The system shall allow users to book metro tickets.
- The system shall allow users to buy subscriptions.
- The system shall send confirmation messages after each action.

- The system shall provide easy navigation between pages.

## **Admin Functional Requirements**

- The system shall allow the admin to manage users.
- The system shall allow the admin to update ticket prices.
- The system shall allow the admin to view bookings and subscriptions.
- The system shall generate reports.

## **3.5 Non-Functional Requirements**

### **Performance Requirements**

- Pages should be loaded within **2 seconds**.
- The system should support multiple users simultaneously without slowdowns.

### **Security Requirements**

- User passwords shall be encrypted.
- Only authorized users can access admin features.
- The payment process shall be secure and protected.

### **Usability Requirements**

- Interface shall be simple, intuitive, and easy to navigate.

- Colors and UI elements shall follow accessibility standards.

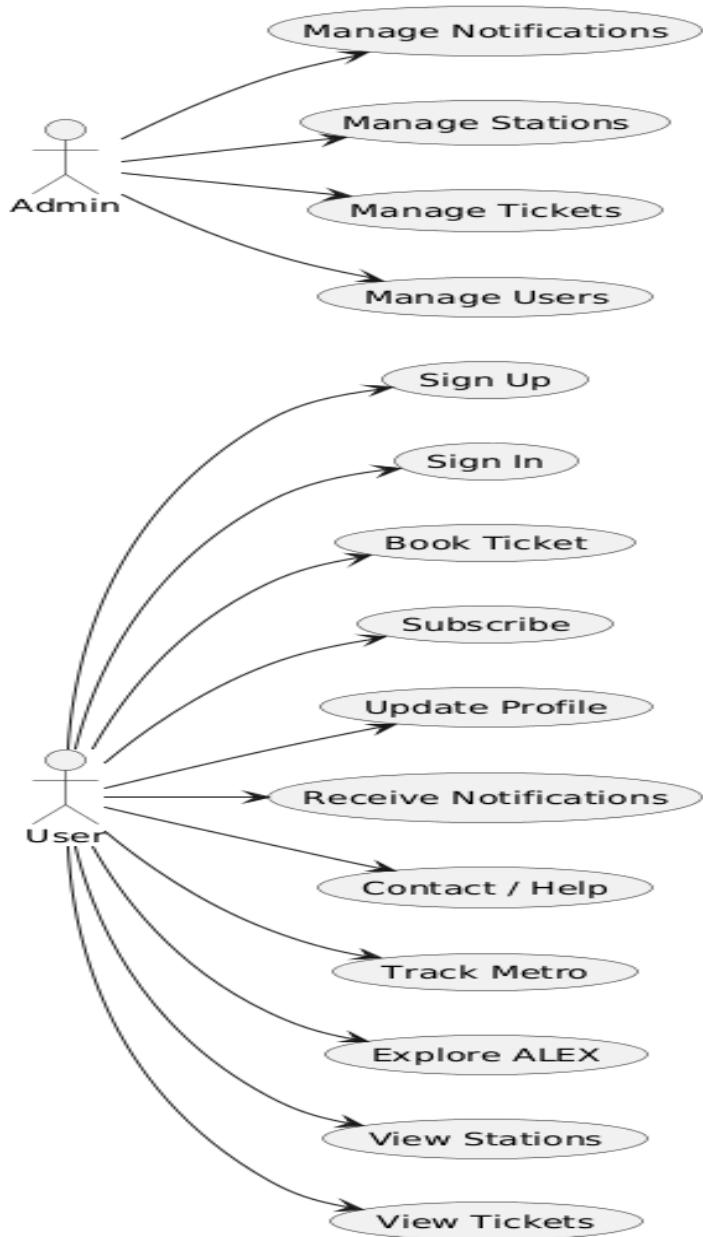
## **Reliability Requirements**

- The system must remain operational with minimal downtime.
- Data backup must be available to prevent loss.

## **4. System Analysis & Design**

### **i. Problem Statement & Objectives – Define the problem being solved and project goals.**

- Use Case Diagram & Descriptions – Identify system actors and interactions.



## Software Architecture

The Metro Alexandria system is built using **ASP.NET Core MVC** framework with **SQL Server** as the database backend. The architecture follows a **3-tier pattern**, consisting of the Presentation layer, the Application (business logic) layer, and the Data layer.

## **1. Presentation Layer**

This layer is responsible for user interfaces and user interactions. It includes **Razor Views** that render web pages such as Home, Login, Signup, Ticket Booking, Subscriptions, and Station Information.

## **2. Application Layer**

The Application layer is implemented via **ASP.NET Core Controllers**. Controllers handle HTTP requests, perform input validation, coordinate operations such as booking tickets and managing subscriptions, and interact directly with the data layer. No separate service layer is used in this implementation.

## **3. Data Layer**

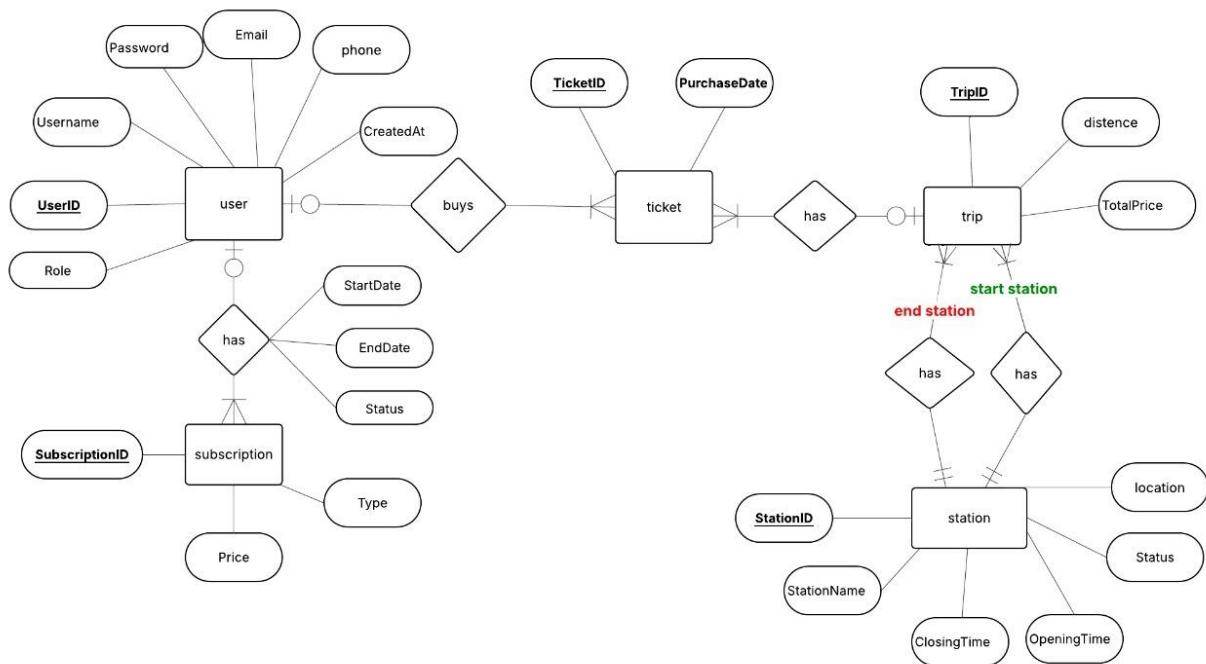
The Data layer consists of the **SQL Server database**, which stores persistent data related to users, tickets, subscriptions, stations, and notifications. Data access is handled through **Entity Framework Core**, which facilitates querying and updating the database.

**Authentication** is implemented with role-based access for **Users** and **Admins**, using hashed passwords and cookie-based authentication mechanisms.

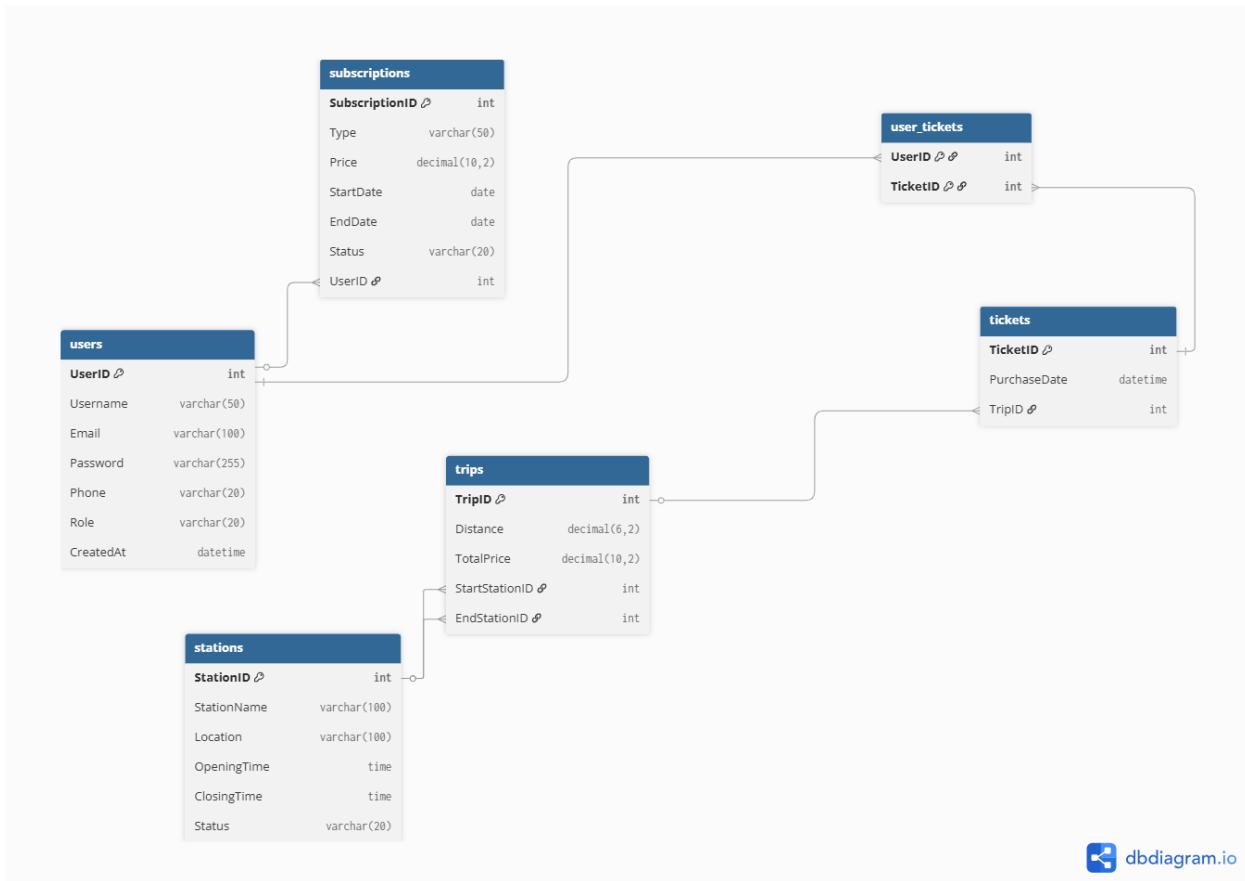
The system also includes a static demo live map that displays train positions based on stored station coordinates, but this is not real-time tracking.

## **ii. Database Design & Data Modeling**

### **1-ERD**



## 2-Shcema

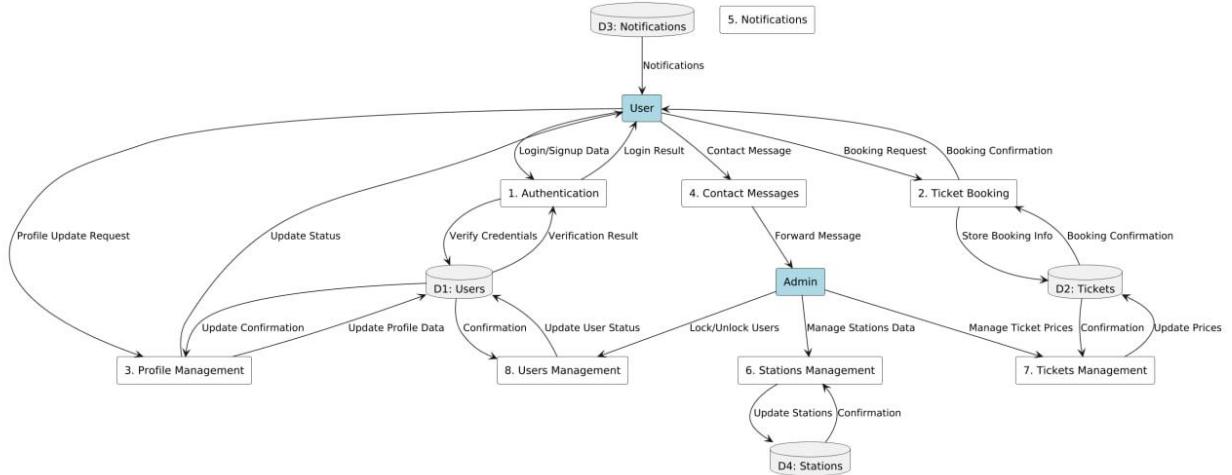


### iii. Data Flow & System Behavior

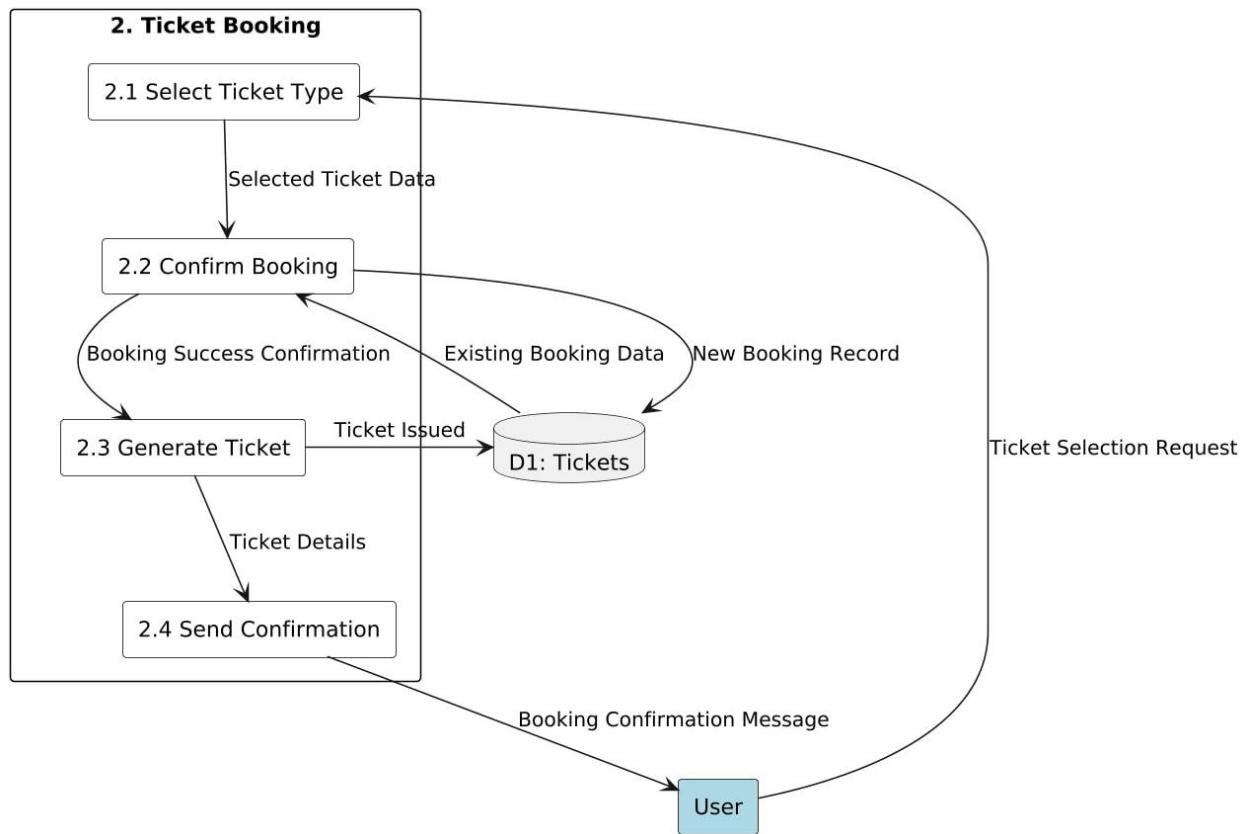
#### **DFD 0**

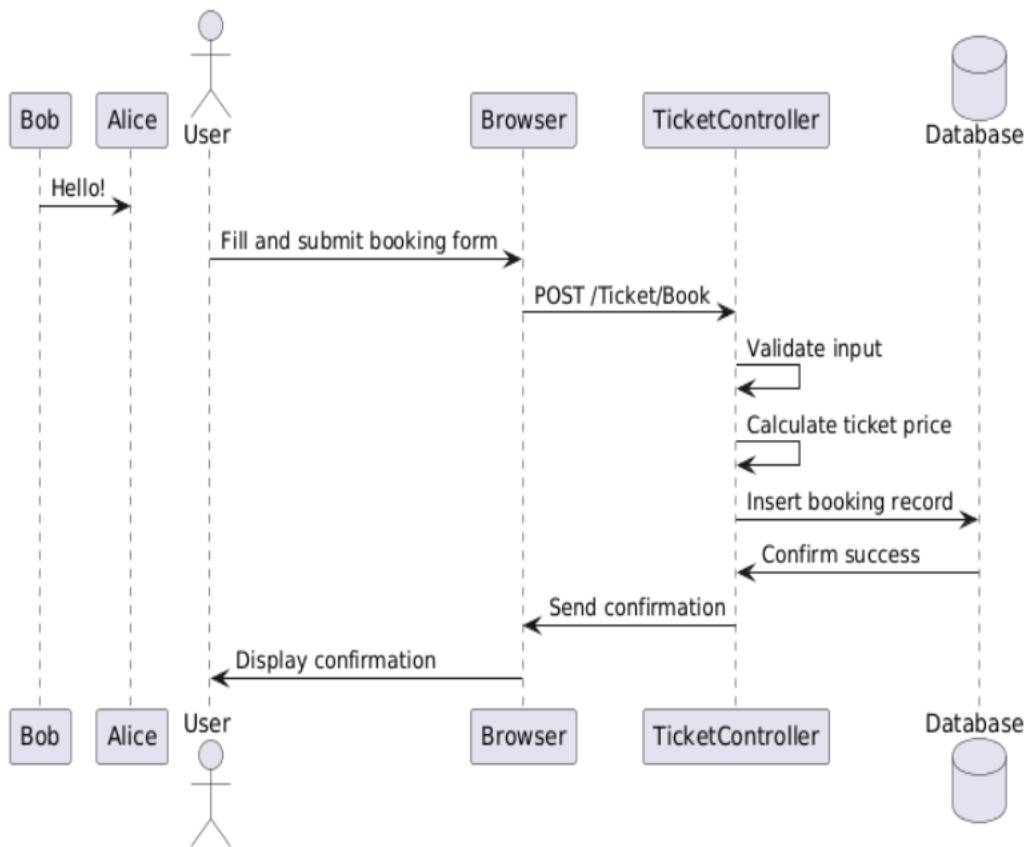


**DFD 1**



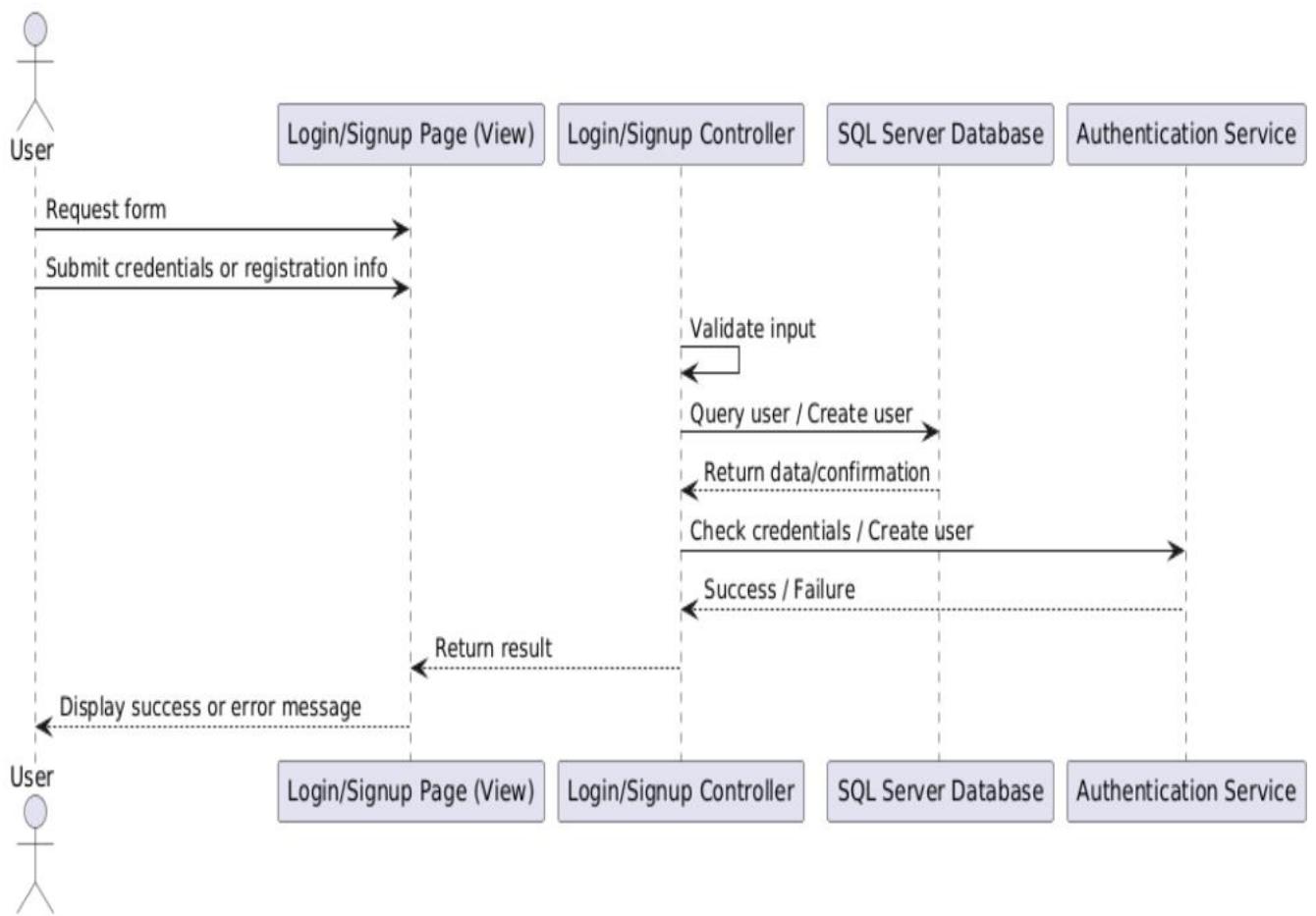
## DFD 2



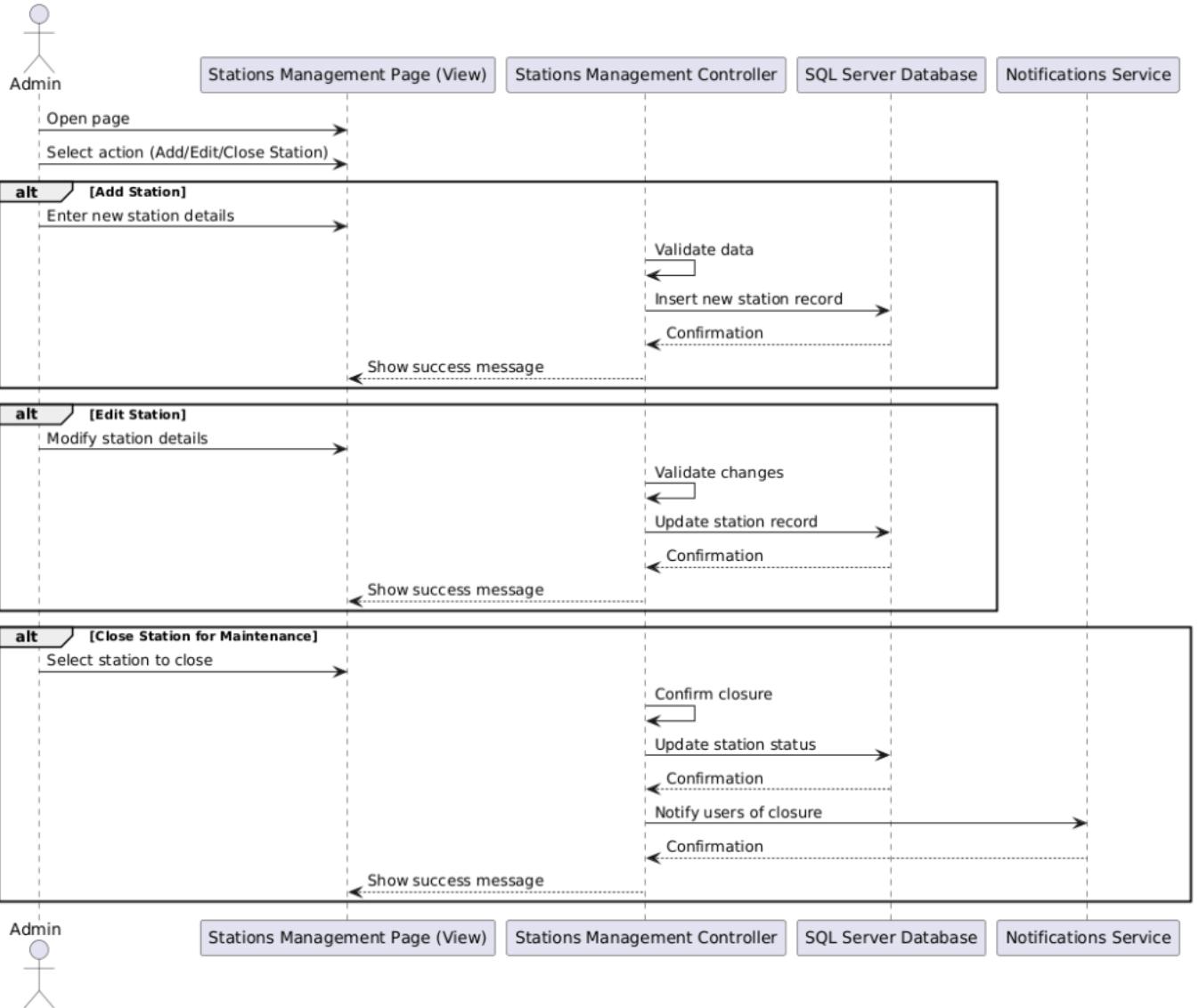


## Sequence Diagrams

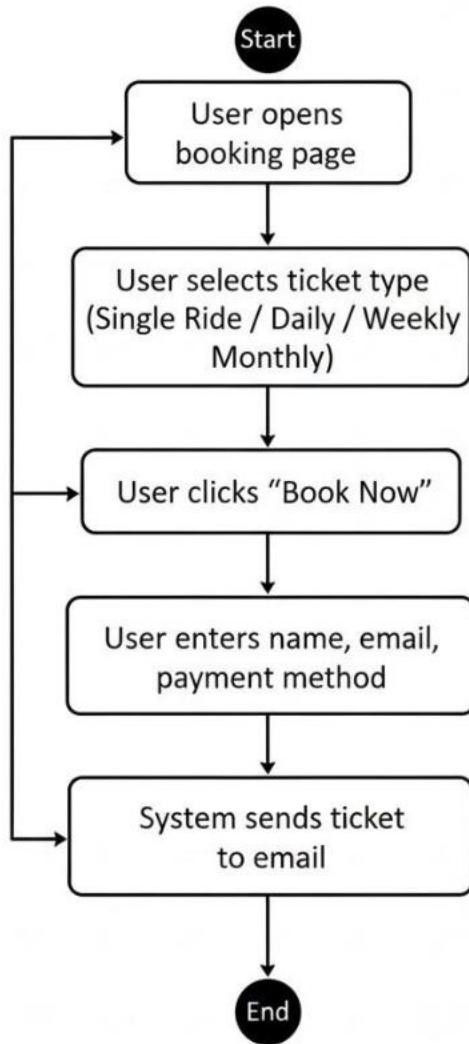
### 1-Ticket Booking Process [Text Wrapping Break]



## 2. User Authentication

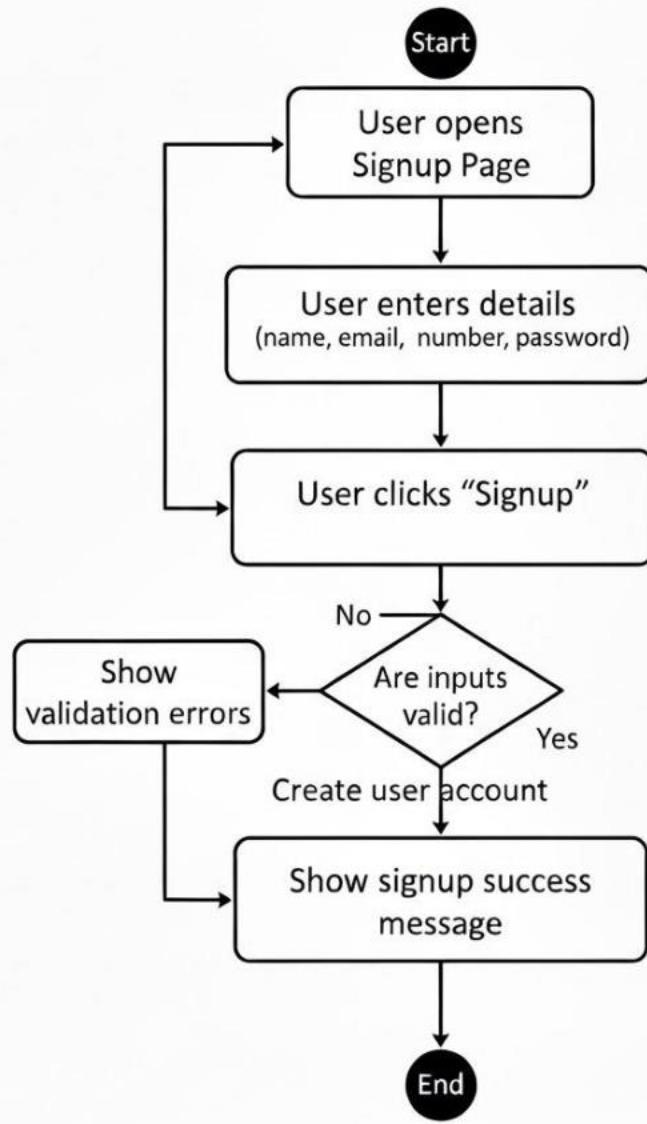


### 3. Admin Stations Management

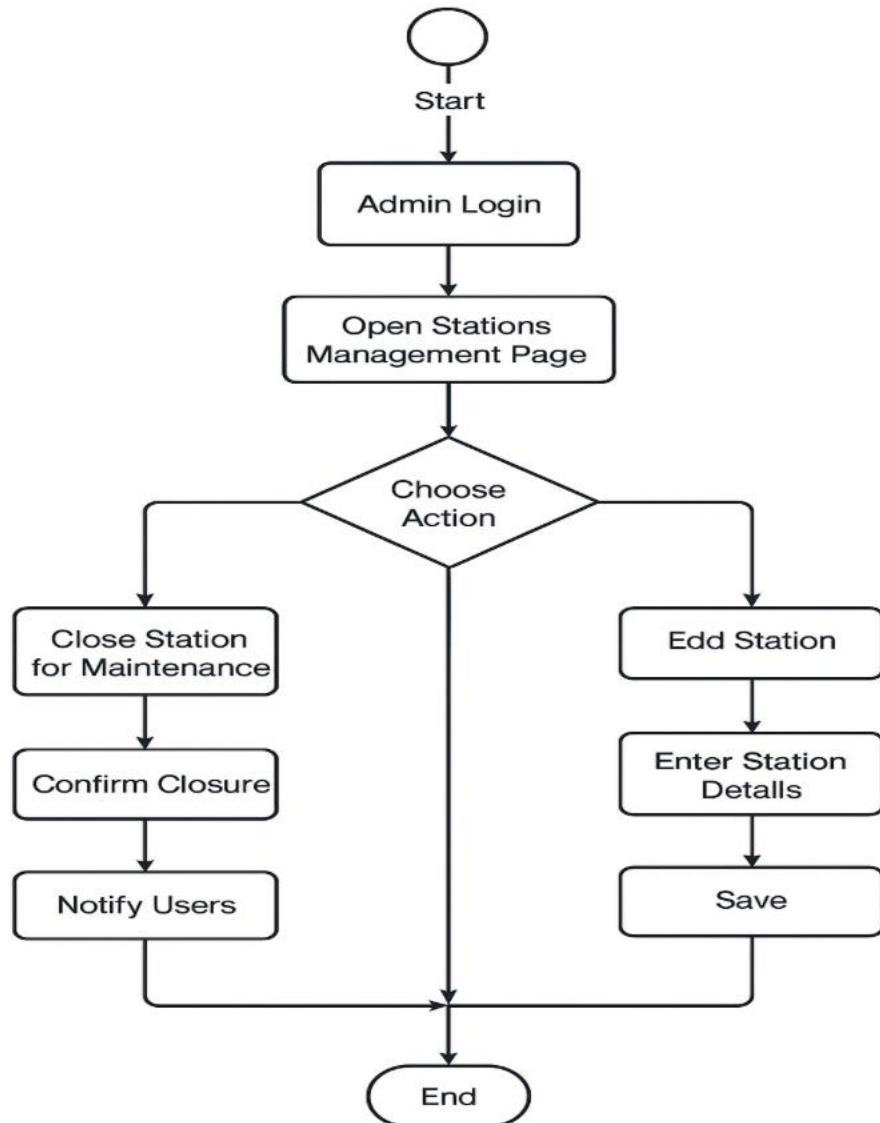


## Activity Diagrams

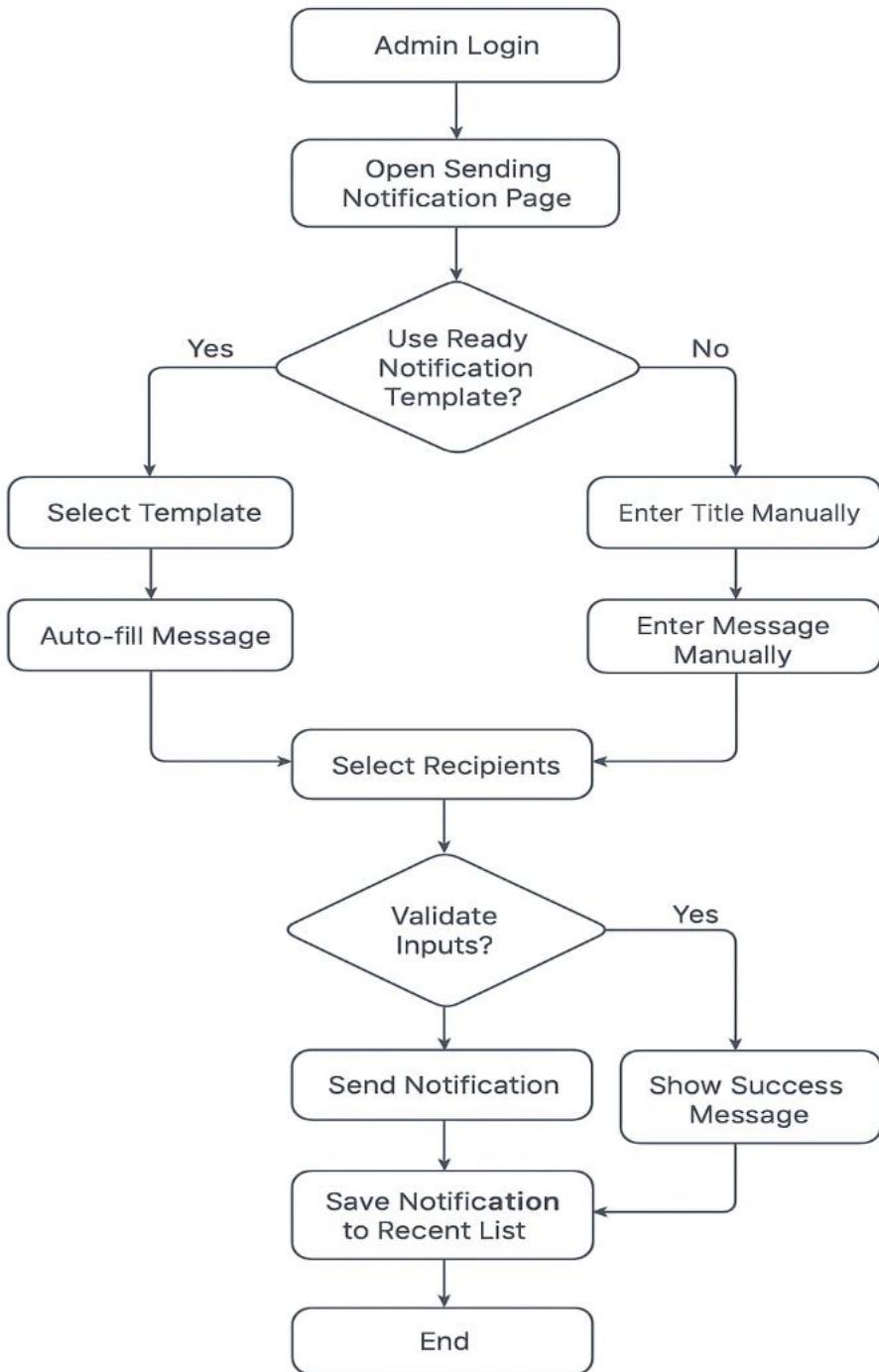
### 1. Activity Diagram for Online Ticket Booking



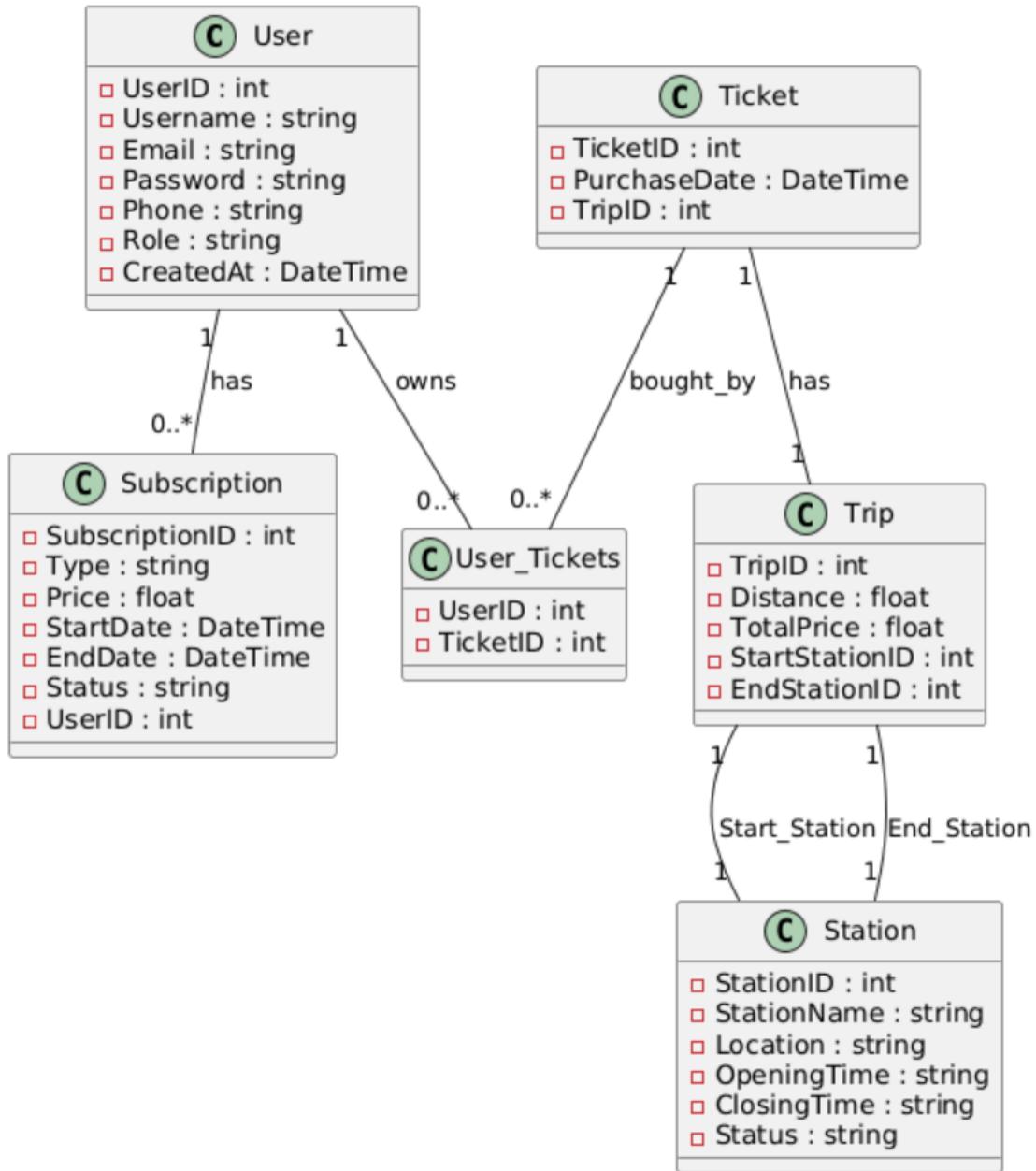
## 2. Activity Diagram for User Signup



### 3. Activity Diagram for Admin Managing Stations



#### 4. Activity Diagram for Sending Notifications

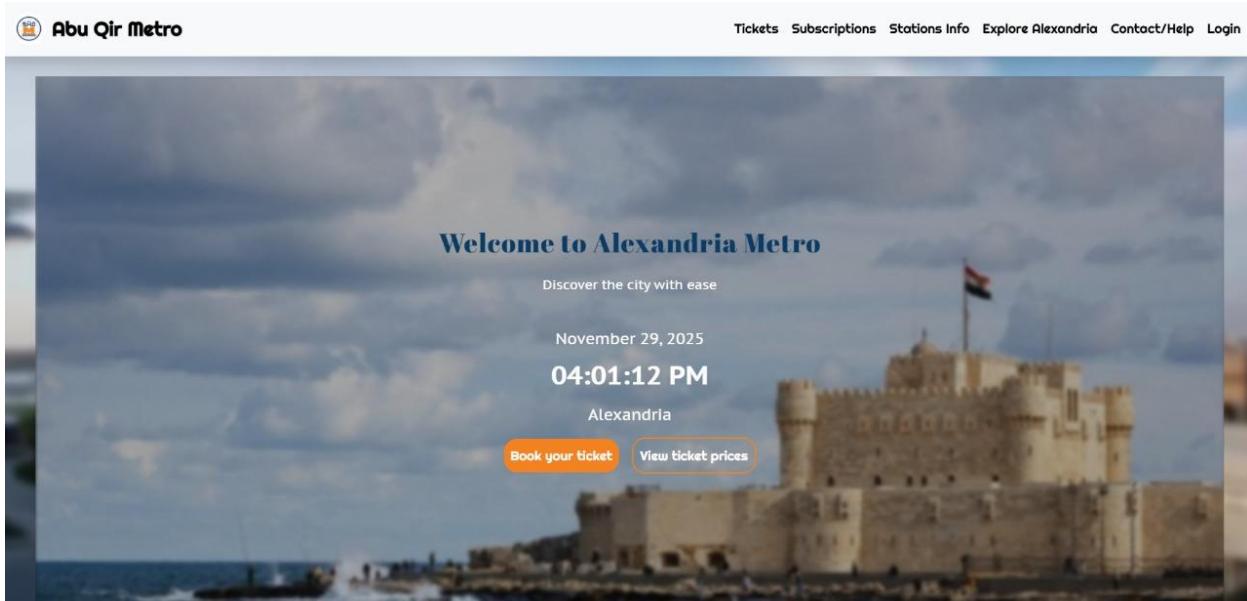


## Class Diagram

## iv. UI/UX Design & Prototyping

### Wireframes & Mockups

#### *First: Users' pages*



This wireframe represents the layout of the Home Page. It includes the navigation bar at the top, and quick access buttons for Tickets, Subscriptions, Explore Alexandria, and Notifications. The design focuses on clarity and ease of navigation for users.

This wireframe represents the Login page layout. Users can enter their credentials to access their account. Links to Sign up and password recovery are provided for user convenience.

The wireframe shows a registration form titled "Register" for "RegisterViewModel". It includes fields for "Username", "Password", and "Confirm Password", each with a placeholder "Enter Username/Password". A large blue "Create" button is at the bottom. Navigation links "Back to List" and "Forgot Password" are also present. The background features a blurred image of a white and blue metro train on an elevated track.

This wireframe shows the Signup page. Users can register by providing personal information and creating a password. Clear input fields and submit buttons to ensure easy registration.

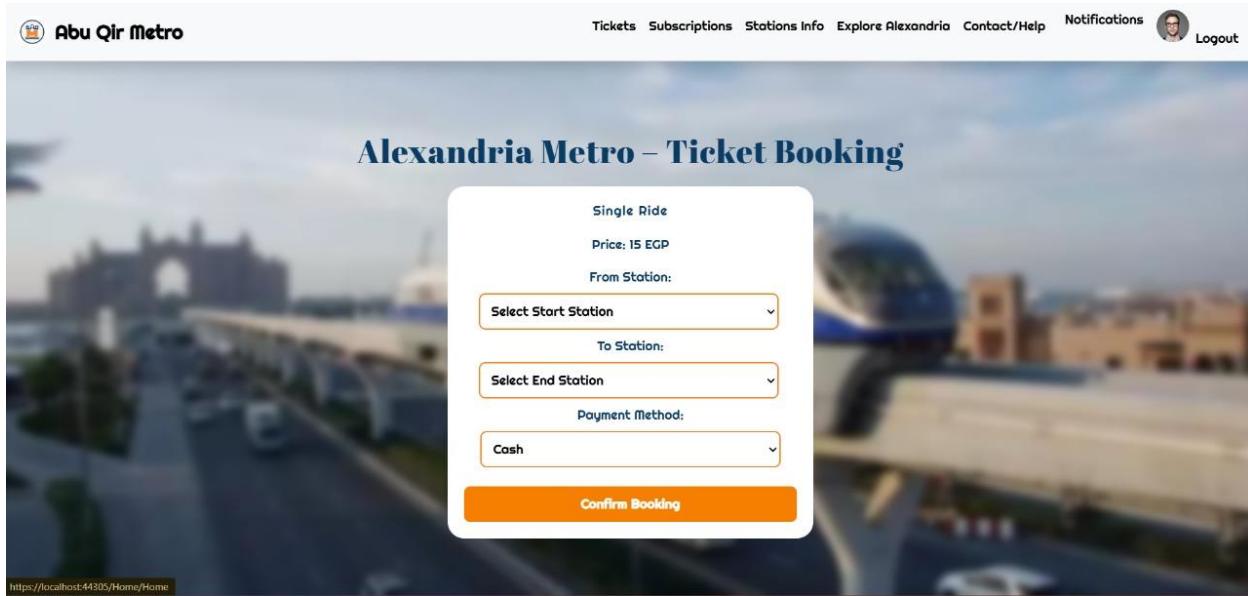
The wireframe displays a section titled "AVAILABLE METRO TICKETS" with three options: "Single Ride", "Daily Pass", and "Weekly Pass". Each option has a price and a "Book Now" button. The "Single Ride" is 15 EGP, "Daily Pass" is 40 EGP, and "Weekly Pass" is 100 EGP. The background is a gradient from dark blue to orange.

This wireframe represents the Ticket Booking / View Tickets page.

Users can select the type of ticket (single ride, Daily, weekly) and choose travel details such as origin and destination stations.

Users can confirm and book their tickets through the clearly marked booking button.

The design focuses on clarity, ease of selection, and smooth user interaction.

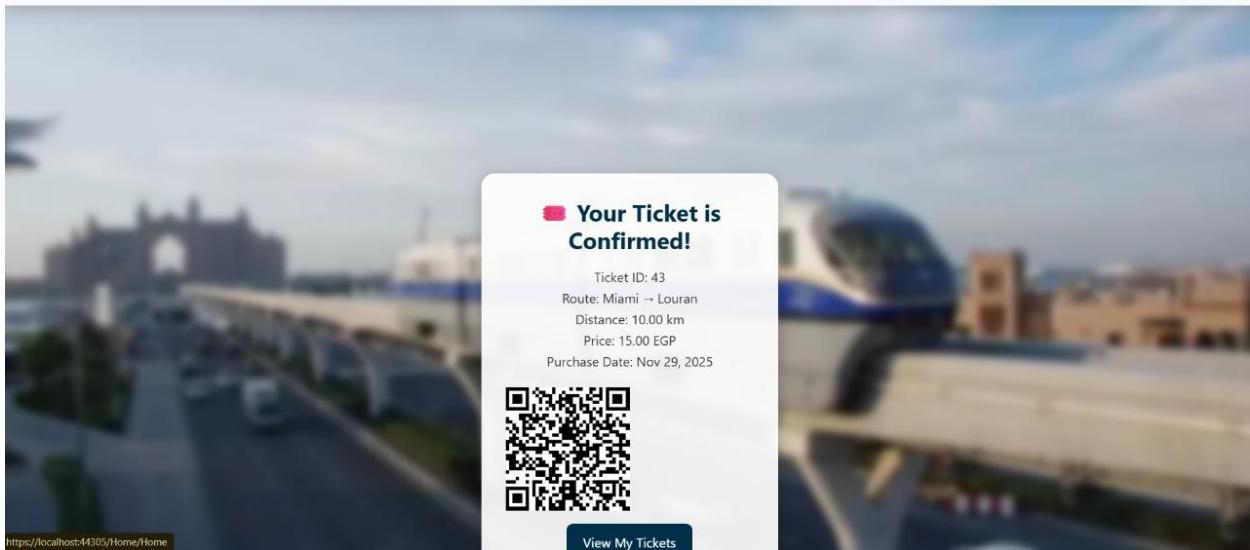


This wireframe represents the Ticket Booking page. Users can select their journey details including Origin and destination stations

The page includes a booking summary section showing the selected options and total cost. Payment options are displayed, including Wallet and Visa.

A clearly visible 'Book Ticket' button allows users to confirm their booking.

The layout is designed for clarity and ease of use, ensuring a smooth ticket booking process.



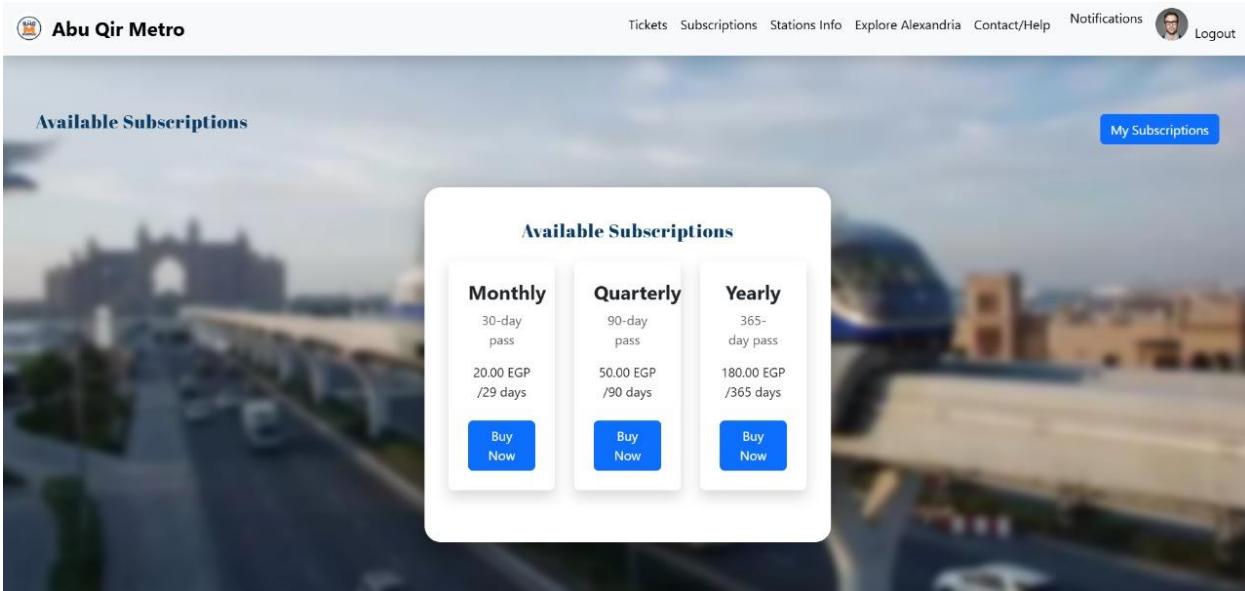
This wireframe represents the Confirmed Ticket page. After successfully booking a ticket, users are redirected to this page. It displays the ticket details including:

- Origin and Destination stations
- Date and Time of travel
- Ticket ID or Booking Reference

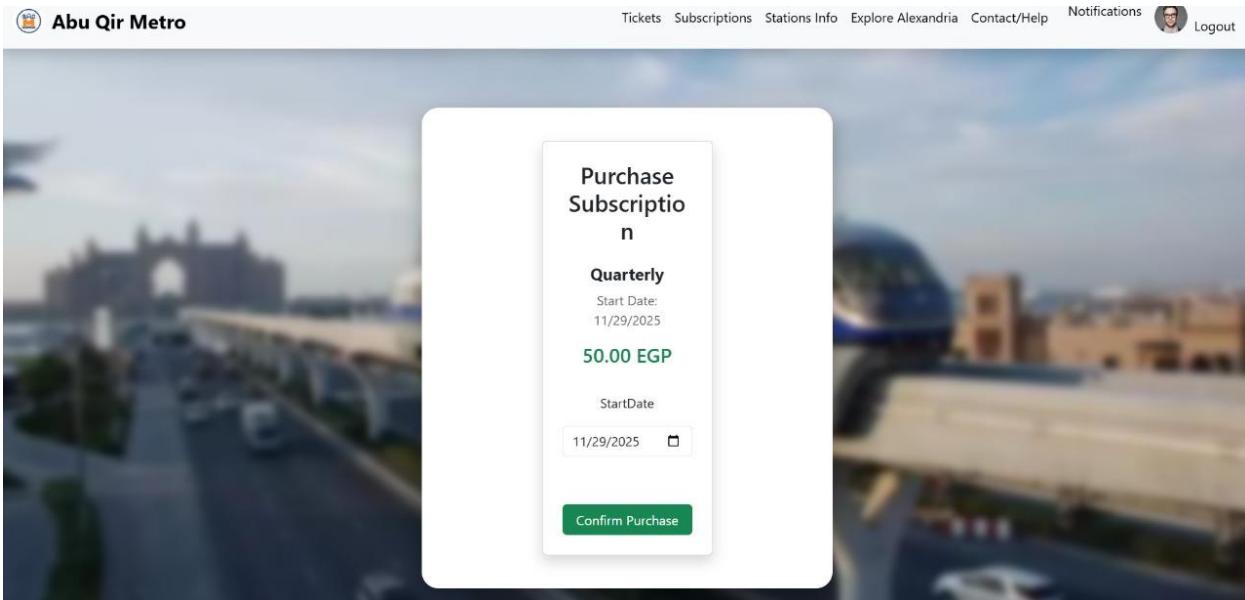
A QR code is prominently displayed for easy scanning at the metro gates.

Additional information such as total cost and payment confirmation is included.

The layout ensures clarity, making it easy for users to verify their ticket and proceed to travel.



This wireframe shows the Subscriptions page. Users can select a plan (Monthly, Quarterly, yearly) and proceed to payment. Information about benefits and pricing is clearly displayed.



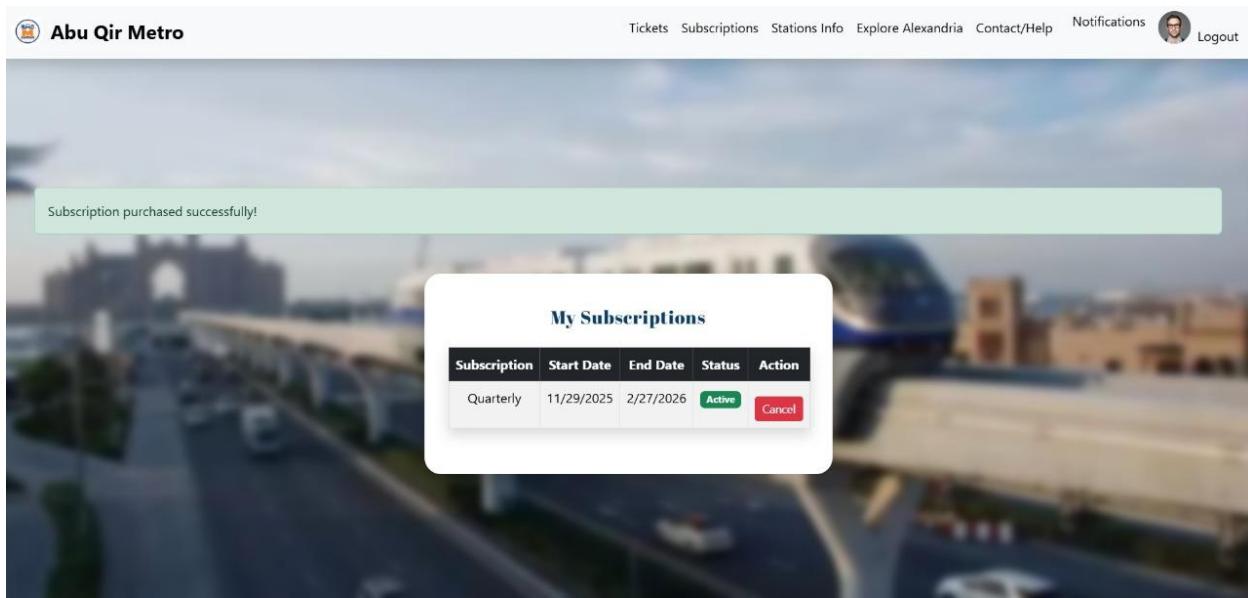
This wireframe represents the Purchase Subscription page. Users can view different subscription plans available:

- Student Plan (20 EGP/month)
- Regular Plan (50EGP/month)
- Yearly Plan (180EGP/month)

Each plan displays its benefits and pricing clearly.

Users can select a subscription plan and proceed to payment using Wallet or Visa. A summary section shows the selected plan, duration, and total cost.

A clearly visible 'Subscribe Now' button allows users to confirm their subscription. The design ensures simplicity, clarity, and a smooth user experience throughout the subscription purchase process.



This wireframe represents the My Subscriptions page.

Users can view their active subscriptions with details including:

- Subscription Type (Quarterly, monthly, yearly)
- Start and Expiry Dates
- Status (Active, Expired)
- Benefits included in the plan

Options to renew or upgrade the subscription are clearly displayed.

The layout ensures that users can quickly check their subscription details and take appropriate action.

The wireframe shows a header with the logo 'Abu Qir Metro' and navigation links: Tickets, Subscriptions, Stations Info, Explore Alexandria, Contact/Help, Notifications, a user profile icon, and 'Logout'. Below the header is a large blurred background image of a coastal area. In the center, there is a white rounded rectangle containing the title 'My Trips' and a table with six columns: Trip ID, Start Station, End Station, Distance (KM), Trip Type, and Total Price. The table contains six rows of ticket information.

Trip ID	Start Station	End Station	Distance (KM)	Trip Type	Total Price
32	Miami	Louran	10.00	Single Ride	15.00 EGP
31	Sidi Gaber	Montaza	10.00	Daily Pass	40.00 EGP
30	Asafra	Louran	10.00	Single Ride	15.00 EGP
29	Sidi Gaber	Mandara	10.00	Daily Pass	40.00 EGP
25	Mahattet El Raml	Asafra	10.00	Single Ride	15.00 EGP
24	Cleopatra	Mandara	10.00	Single Ride	15.00 EGP

This wireframe represents the My Trips or Tickets page. Users can view all booked tickets with details such as:

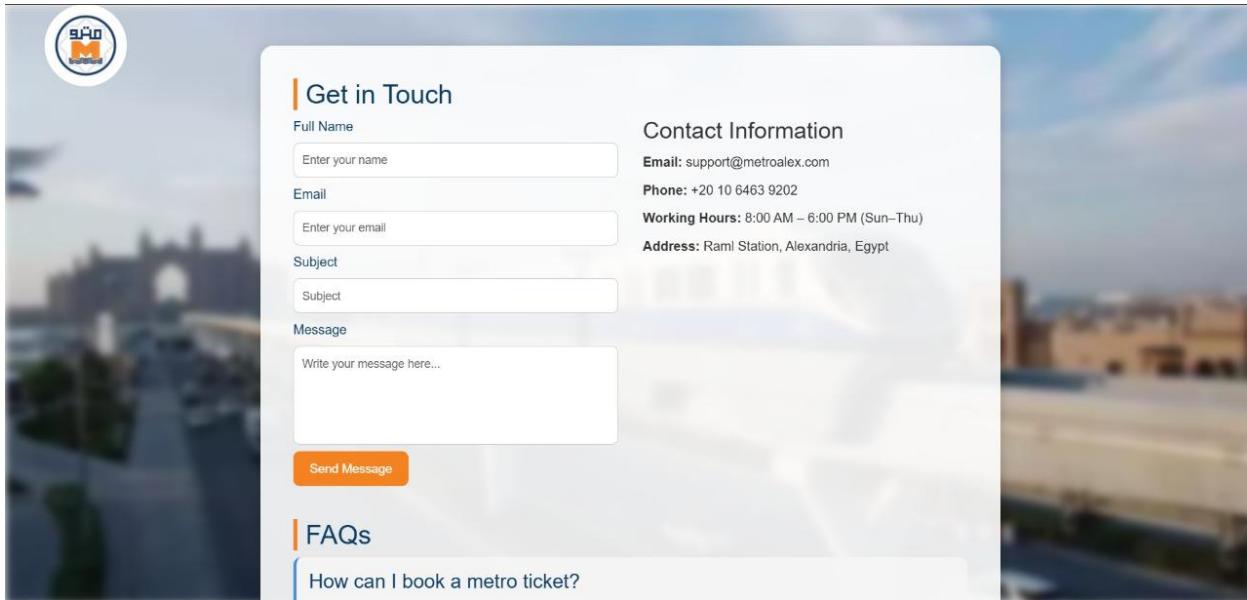
- Origin and Destination Stations
- Date and Time of travel.

The wireframe shows a header with the logo 'Abu Qir Metro' and navigation links: Tickets, Subscriptions, Stations Info, Explore Alexandria, Contact/Help, Notifications, a user profile icon, and 'Logout'. Below the header is a blurred background image of a coastal area. The main content is a grid of nine cards, each representing a metro station with its name, location, status, and opening/closing times.

Station	Location	Status	Opening Time	Closing Time
Raml	Raml Square	Active	06:00	23:00
Mahattet El Raml	El Raml District	Active	06:00	23:00
Cleopatra	Cleopatra District	Active	06:00	22:30
Sidi Gaber	Sidi Gaber Area	Active	06:00	22:30
Sporting	Sporting District	Active	06:00	22:30
Ibrahimia	Ibrahimia Area	Active	06:00	22:00
Azaria	Azaria District	Active	06:00	
Shatby	Shatby Main Road	Active	06:00	
Smouha	Smouha Square	Active	06:00	

This wireframe represents the Stations page.

Users can view a list of all metro stations and basic information and the status of each.



This wireframe shows the Contact / Help page layout. Users can submit inquiries or requests using a simple form. Information about customer support and assistance is included.

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## ***Second: Admins' pages:***

الإجراءات	الحالة	النوع	البريد الإلكتروني	اسم المستخدم
<button>تعديل</button> <button>Lock</button>	مفعل <input checked="" type="checkbox"/>	مستخدم	resision1@gmail.com	sara
<button>تعديل</button> <button>Lock</button>	مفعل <input checked="" type="checkbox"/>	مستخدم	moel3almy@gmail.com	momen
<button>تعديل</button> <button>Lock</button>	مفعل <input checked="" type="checkbox"/>	مستخدم		moaz
<button>تعديل</button> <button>Lock</button>	مفعل <input checked="" type="checkbox"/>	مستخدم	doctor1@gmail.com	ibrahim

This wireframe represents the User Management page for the admin

Admin can view, edit, and manage all registered users. Features include:

- Search and filter users by name, email, or subscription type
- Edit user details (First Name, Email)
- Delete or deactivate users

The layout is designed for clarity and easy administration.



الإجراءات	وقت الإغلاق	وقت الفتح	الحالة	المنطقة	اسم المحطة
[إغلاق للصيانة] [مدف]	23:00	06:00	نشطة	Raml Square	Raml
[إغلاق للصيانة] [مدف]	23:00	06:00	نشطة	El Raml District	Mahattet El Raml
[إغلاق للصيانة] [مدف]	22:30	06:00	نشطة	Cleopatra District	Cleopatra
[إغلاق للصيانة] [مدف]	22:30	06:00	نشطة	Sidi Gaber Area	Sidi Gaber
[إغلاق للصيانة] [مدف]	22:30	06:00	نشطة	Sporting District	Sporting
[إغلاق للصيانة] [مدف]	22:00	06:00	نشطة	Ibrahimia Area	Ibrahimia
[إغلاق للصيانة] [مدف]	22:00	06:00	نشطة	Azarita District	Azarita
[إغلاق للصيانة] [مدف]	22:00	06:00	نشطة	Shatby Main Road	Shatby
[إغلاق للصيانة] [مدف]	23:00	06:00	نشطة	Smouha Square	Smouha

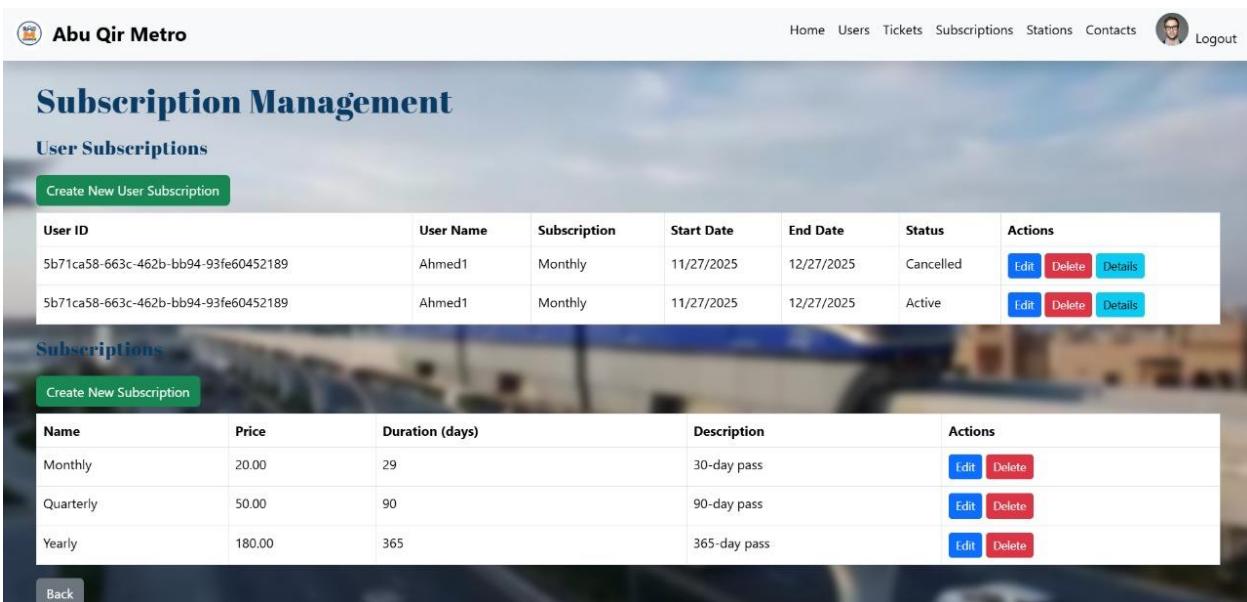
This wireframe represents the Station Management page.

Admin can add, edit, or remove metro stations.

Features include:

- List of all stations with status (active/inactive)
- Visual indicators for station availability

The layout is designed to simplify station monitoring and updates.



 Abu Qir Metro

Home Users Tickets Subscriptions Stations Contacts  Logout

## Subscription Management

### User Subscriptions

Create New User Subscription

User ID	User Name	Subscription	Start Date	End Date	Status	Actions
5b71ca58-663c-462b-bb94-93fe60452189	Ahmed1	Monthly	11/27/2025	12/27/2025	Cancelled	<button>Edit</button> <button>Delete</button> <button>Details</button>
5b71ca58-663c-462b-bb94-93fe60452189	Ahmed1	Monthly	11/27/2025	12/27/2025	Active	<button>Edit</button> <button>Delete</button> <button>Details</button>

### Subscriptions

Create New Subscription

Name	Price	Duration (days)	Description	Actions
Monthly	20.00	29	30-day pass	<button>Edit</button> <button>Delete</button>
Quarterly	50.00	90	90-day pass	<button>Edit</button> <button>Delete</button>
Yearly	180.00	365	365-day pass	<button>Edit</button> <button>Delete</button>

[Back](#)

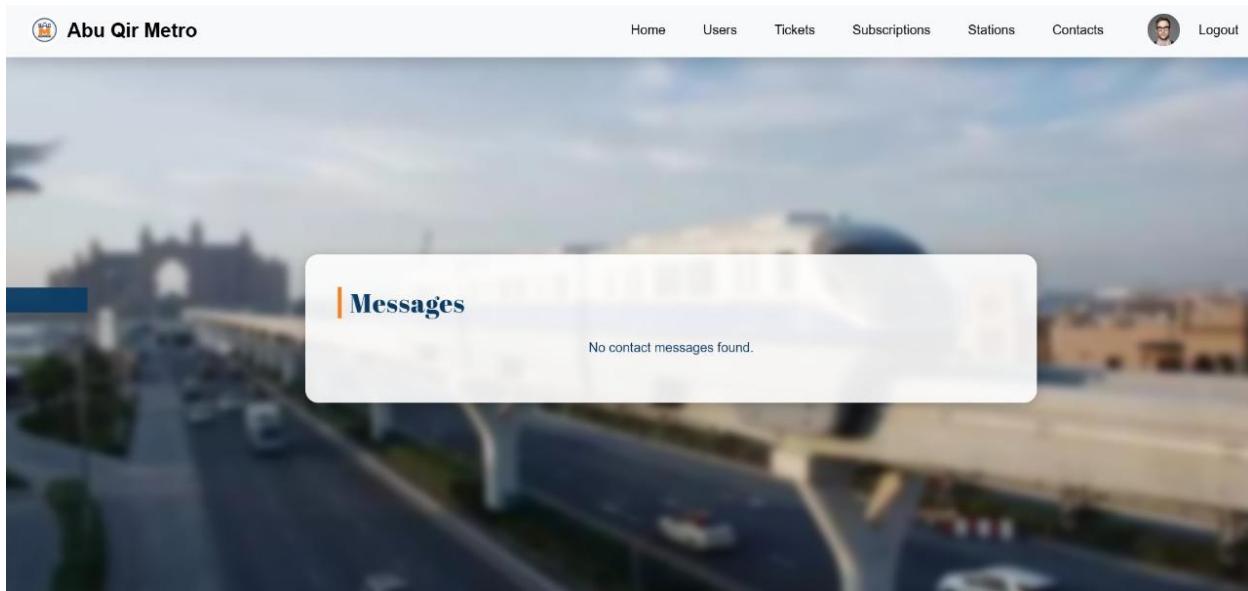
This wireframe shows the Subscription Management page for the Admin.

Admin can manage all subscriptions purchased by users.

Features include:

- View active and expired subscriptions
- Edit subscription details (type, duration, price)
- Approve, renew, or cancel subscriptions

The page ensures smooth monitoring and management of all subscription plans.



This wireframe represents the Complaints or Contact Management page.

Admin can view and respond to user complaints or inquiries.

Features include:

- List of complaints with user details and status (open/closed)
- View full message and contact information
- The design allows efficient handling of user feedback and support requests.

The wireframe shows a user interface for viewing subscription details. At the top, there's a header with the logo 'Abu Qir Metro' and navigation links for Home, Users, Tickets, Subscriptions, Stations, Contacts, a user profile icon, and 'Logout'. The main content area has a title 'User Subscription Details'. It's divided into three sections: 'User Info', 'Subscription Info', and 'Status'. 'User Info' contains fields for User ID (5b71ca58-663c-462b-bb94-93fe60452189), User Name (Ahmed1), and Email (admin@example.com). 'Subscription Info' shows a Monthly subscription at 20.00 for 29 days, described as a 30-day pass. 'Status' indicates the subscription is Cancelled, starting on 11/27/2025 and ending on 12/27/2025.

This wireframe shows detailed subscription information for a selected user.

Admin can view:

- User personal details
- All active and past subscriptions
- Subscription type and benefits

The layout provides a comprehensive view of user subscriptions for monitoring and reporting purposes.

## UI/UX DESIGN GUIDELINES

### 1. Design Principles

#### ✓ Simplicity

The interface is designed to be clean and straightforward, allowing users to navigate easily without distractions.

## ✓ Consistency

- Consistent use of the same color palette.
- Same button styles across all pages.
- Uniform typography and iconography.  
This ensures a unified and familiar user experience.

## ✓ Clarity

Text is clear, concise, and easy to read.

Buttons and labels directly indicate their functions.

## ✓ User-Centered Design

The layout and features are organized based on the needs of metro users to make information and actions quick to access.

## ✓ Accessibility

- High color contrast (Dark Blue × Orange).
- Readable font sizes.
- Clickable elements with adequate size.

## ✗ Responsiveness

The current version of the system is **not responsive** and is optimized for desktop only.

## 2. Color Scheme

Based on the variables you provided:

### Primary Color:

 **Orange — #f58220**

Used for important call-to-action buttons and highlights.

## **Secondary Color:**

- **Dark Blue — #0b3c65**

Used for header, footer, and main sections.

## **Accent Color:**

- ◆ **Navy Blue — #4a90e2**

Used for interactive UI elements and key indicators.

## **Neutral Color:**

- **Light Gray — #f5f5f5**

Used for backgrounds and content sections.

## **3. Typography**

### **Primary Font:**

**Abril Fat face** – used for main headings (bold and attention-catching).

### **Secondary Font:**

**Righteous** – used for subheadings and UI elements.

### **Body Font:**

**PT Sans Caption** – used for general text because it is clean and readable.

## **4. Accessibility Guidelines**

- Ensure high contrast between text and background colors.
- Maintain readable font sizes across all pages.
- Provide sufficiently large touch/click targets.
- Do not rely solely on color to convey information.
- Add descriptive **alt text** to images.

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## **. System Deployment & Integration**

- Technology Stack – Backend, frontend, and database technologies.**

### **1. Frontend Technologies**

- **HTML5** – Structure of all pages and UI elements.
- **CSS3** – Styling and layout design.
- **Bootstrap 5** – Responsive design, grid system, and reusable UI components.
- **JavaScript (Vanilla JS)** – Client-side interactions, form validation, and dynamic UI updates.

### **2. Backend Technologies**

- **ASP.NET MVC (C#)**
  - Handles routing, controllers, business logic, and server-side rendering.
  - Implements of authentication, ticket booking logic, subscriptions, and admin operations.

### **3. Database Technologies**

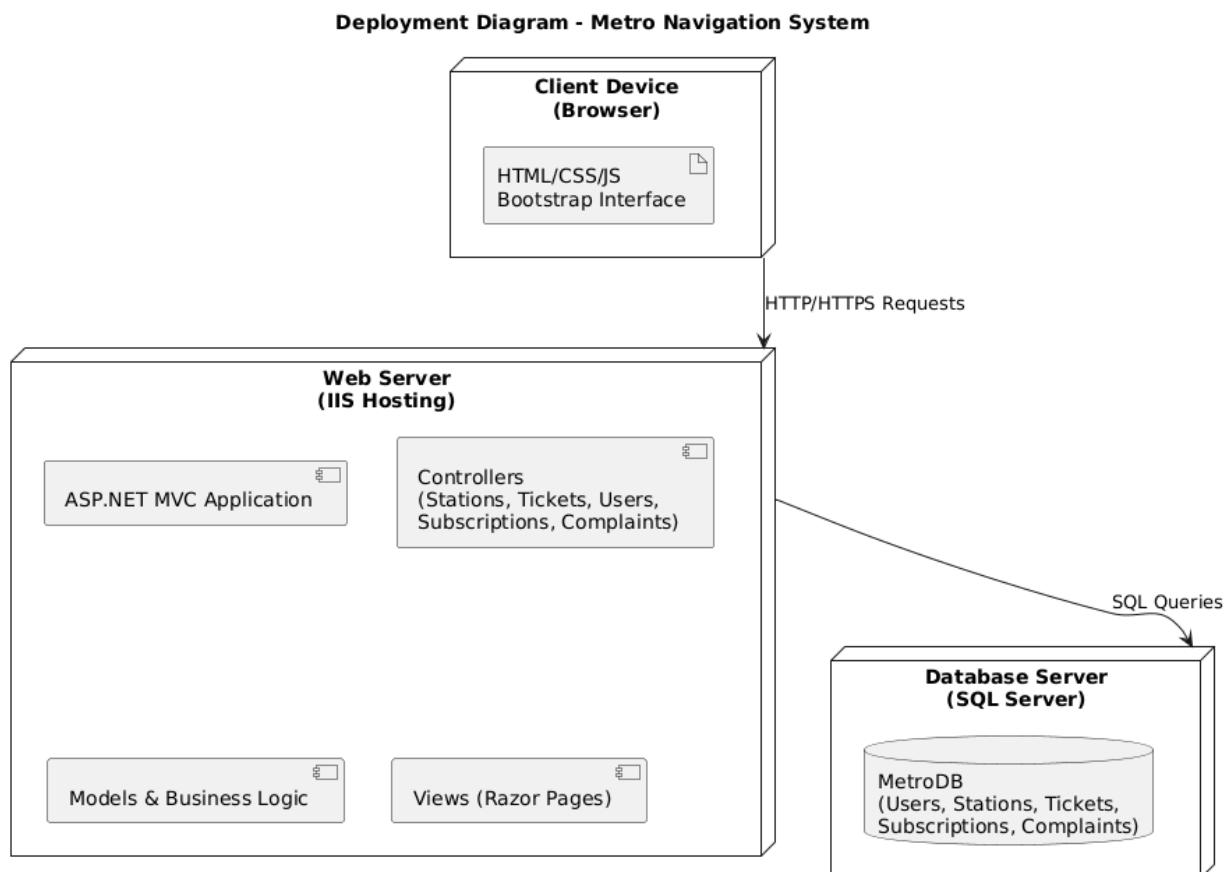
- **Microsoft SQL Server**
  - Stores all system data (Users, Stations, Tickets, Subscriptions, Notifications, Complaints).
  - Supports stored procedures, relational integrity, and optimized queries.

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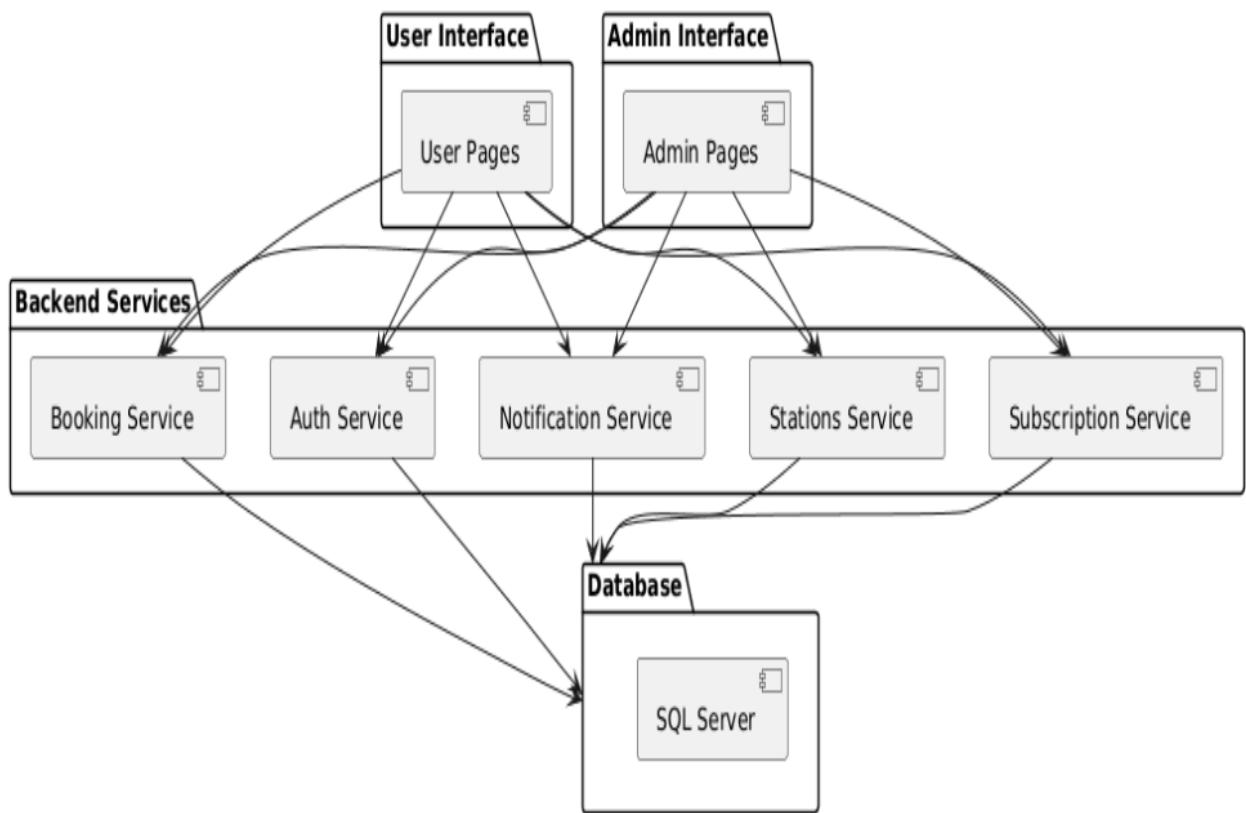
### **4. Development & Collaboration Tools**

- **GitHub**
    - Version control for the entire project
    - Used for collaboration, branch management, and pull requests.
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- Deployment Diagram – Describes how software components are distributed across hardware.



**Component Diagram – Shows high-level system components and their dependencies.**



**THANK YOU.**