SIT725 TASK 3.1P

Locate a Socket – Design Specification

1. Use Cases:

Use Case ID	Use Case Name	Description	Actors
UC1	User Registration/Login	EV drivers create an account or log in using email or social accounts.	EV Driver
UC2	Search Charging Stations	Search and view nearby charging stations on the map.	EV Driver
UC3	Filter Stations	Filter charging stations by price, charger type, and availability.	EV Driver
UC4	Book a Charging Slot	Reserve a spot at a chosen charging station.	EV Driver, Station Operator
UC5	Make a Payment	Complete secure payments for booking charging slots.	EV Driver
UC6	Receive Notifications	Get alerts for booking confirmations, reminders, and promotional offers.	EV Driver
UC7	Update Station Info	Update station data such as availability, pricing, and charger status.	Station Operator
UC8	Manage Platform	Oversee operations, handle user issues, and ensure platform uptime.	Administrator

2. User Stories:

As a…	I want to…	So that I can…
EV Driver	register/log in quickly using social accounts	start using the app without hassle
EV Driver	search nearby charging stations	find a place to charge my EV conveniently
EV Driver	filter stations by price and charger type	find an affordable and compatible charger
EV Driver	reserve a charging slot in advance	ensure there’s a spot available when I arrive
EV Driver	make a secure payment via card or wallet	pay for the charging service safely
EV Driver	receive booking and payment notifications	stay informed about my reservation status
Station Operator	update station information regularly	provide accurate data to EV drivers
Administrator	manage users and resolve issues	keep the platform reliable and trustworthy

3. User Requirements:

Requirement ID	Requirement Description
UR1	The system shall allow users to sign up via email or social login.
UR2	The system shall provide location-based search for nearby stations.
UR3	The system shall allow filtering stations by price, type, and availability.
UR4	The system shall enable users to reserve charging slots.
UR5	The system shall support secure online payments (Stripe/PayPal).
UR6	The system shall send notifications for bookings and payments.
UR7	The system shall allow operators to update station information.
UR8	The system shall provide an admin dashboard for platform management.
UR9	The app shall work on both mobile and desktop browsers.
UR10	The app shall encrypt user data and secure all communications (HTTPS)

4. Design Specifications

System Architecture

- **Frontend**: Responsive web app (HTML, CSS, JavaScript, React/Vue)
- **Backend**: RESTful API (Node.js / Django)
- **Database**: Relational DB (PostgreSQL/MySQL)
- **Map Integration**: Google Maps API
- **Payment Gateways**: Stripe / PayPal API
- **Notifications**: Email (SMTP), SMS (Twilio)

References

1. Google Maps API Documentation – https://developers.google.com/maps/documentation

2. Stripe API Documentation –

   https://stripe.com/docs/api

3. PayPal API Documentation –

   https://developer.paypal.com/docs/api/overview/

4. GDPR Overview and Compliance –

   https://gdpr-info.eu/

5. WCAG 2.1 Accessibility Guidelines –

   https://www.w3.org/WAI/WCAG21/quickref/