**System Requirements Specification**

**System Requirements Specification** is a crucial phase in both systems engineering and software development. It involves identifying, documenting, and managing the needs and conditions required for a new or altered system 14.

##### 1. Functional Requirements

**System Administrator**

1. **Show/Add/Edit User Account**.

* **Show User Account:**

▪ The admin can view the details of registered users, including their name, email, and other relevant information.

* **Add User Account:**

▪ The admin can create a new user account by entering the user's personal details such as name, email, and plate number.

* **Edit User Account:**

▪ The admin can modify the details of an existing user account, such as updating the email, name, or plate number.

1. **Add/Edit Parking Spaces**

* **Add Parking Space:**

▪ The admin can add new parking spaces to the system, specifying the location and availability status.

* **Edit Parking Space:**

▪ The admin can modify the details of existing parking spaces, such as updating availability or renaming locations.

1. **View Parking**

* **The admin can view a detailed overview of:**

▪ Available parking spaces.

▪ Reserved spaces along with details of the user accounts (e.g., name and plate number) associated with the reservation.

1. **Add/Delete Parking Police Account**.

* **Add Parking Police Account:**

▪ The admin can create accounts for parking police by providing necessary details like name and email.

* **Delete Parking Police Account:**

▪ The admin can remove existing parking police accounts when no longer needed.

**2. Parking Police**

1. **View Parking**

* Parking police can access detailed information about parking spaces, including:
  + - * Available spaces.
      * Reserved spaces with the associated user details (e.g., name and plate number)

**System User**

1. **Registration**

* Users can create an account by providing:
  + - Name
    - Email address
    - Password
    - Vehicle plate number

1. **Login**

* Users can log into the system using their registered email and password.

1. **View Parking**

* Users can see:
  + - Available parking spaces.
    - Reserved spaces (including their own reservations).

1. **Reserve a Parking Space**

* Users can:
  + - Select an available parking space.
    - Confirm the reservation to ensure the space is allocated to them.

1. **Cancel Reservation**

* Users can cancel their existing reservation through the app, making the parking space available for others.

##### 2. Non-Functional Requirements:

1. **Performance:**

* Response Time: less than 2 seconds.
* Scalability: Handle increased user loads seamlessly.

1. **Security:**

* Data Encryption: Encrypt sensitive user data.
* User Authentication: Strong authentication measures.
* Compliance: Adhere to healthcare regulations (HIPAA, GDPR).

1. **Reliability:**

* System Uptime: High availability. (%99.9).
* Fault Tolerance: Gracefully handle errors.

1. **Usability:**

* Accessibility: Follow WCAG guidelines.
* User Interface: Intuitive design.

1. **Compatibility:**

* Cross-Browser Compatibility.
* Device Compatibility.

1. **Maintainability:**

* Code Maintainability: Clean, well-documented code.
* System Updates: Seamless update processes.

###### **3. Objectives**

* Improve Parking Management: Streamline the process of locating and managing parking spaces at Jazan University.
* Enhance User Experience: Provide a user-friendly interface that helps users quickly find available parking spots.
* Optimize Space Utilization: Maximize the usage of available parking spaces on campus to avoid congestion and underutilization.
* Ensure seamless user experience on Android devices with minimal latency.

## **4. Project Scope**

The SPOTLOCATOR APPLICATION aims to address the parking challenges at Jazan University by offering a real-time parking management solution on Android devices. The project scope includes the following:

* **Parking Space Availability:** The app will provide real-time data on the availability of parking spots across the university campus.
* **Reservation System:** Users will have the ability to reserve parking spaces in advance, ensuring a smooth parking experience upon arrival.
* **User Profiles:** The application will support multiple user roles (students, faculty, and visitors), each with different access levels and preferences.
* **Mobile Platform:** The app will be developed exclusively for the Android platform, making it compatible with a wide range of Android smartphones.
* **Real-time Updates:** The app will be designed to provide live updates on parking space availability, ensuring users have up-to-date information.

## **5. Constraints**

The SPOTLOCATOR APPLICATION is subject to several limitations and constraints, including:

* **Platform Limitation:** The app will be developed exclusively for Android devices, excluding iOS users from accessing the application.
* **Campus Area Coverage:** The app will only cover parking spaces available within the boundaries of Jazan University, excluding off-campus parking facilities.
* **User Dependency:** The success of the app's parking reservation and navigation features is dependent on user compliance with the reservation system and correct use of the app.
* **Language Barrier**: The website interface is currently available only in English, which may pose a challenge for non-English speaking users or those less familiar with the language.
* **Internet Usage Requirement**: All users must have basic knowledge of using the internet to effectively interact with the application and access its features.
* **Internet Connection Dependency**: The application requires a stable internet connection for real-time updates, parking reservations, and navigation features. Without internet access, the app will not function properly, limiting its usability in areas with poor or no network coverage.