**Software Requirements Specification (SRS) Document**

**1. Introduction**

The Parking Management System with Mobile Wireless Chargers (PMS-MWC) is a project aimed at revolutionizing electric vehicle charging by integrating mobile wireless chargers (MWbots) into parking spaces. This system enables convenient charging for electric vehicle owners while optimizing parking space utilization. The following document outlines the functional and non-functional requirements, system architecture, and key features of the PMS-MWC.

**2. Purpose**

The purpose of this document is to provide a comprehensive overview of the requirements and specifications for the development of the Parking Management System with Mobile Wireless Chargers.

**3. Scope**

The PMS-MWC will encompass the following key functionalities:

* Basic users can park and request charging services.
* Premium users can reserve parking spots in advance and access additional features.
* MWbots autonomously move under electric cars to provide wireless charging.
* Sensors monitor parking space occupancy.
* Administrators can monitor the system, update costs, and view payment details.

**4. Functional Requirements**

**4.1 User Features:**

* Basic users:
  + Park their electric vehicles.
  + Request charging services.
* Premium users (in addition to basic features):
  + Reserve parking spots in advance.
  + Access additional features through the application.

**4.2 MWbot Features:**

* Identify car models and battery capacities.
* Move autonomously to provide wireless charging.

**4.3 Application Features:**

* Multi-platform application for users.
* Features include:
  + Checking parking space availability.
  + Pre-booking parking spots.
  + Requesting charging services.

**4.4 Payment System:**

* Users are charged for parking and charging services upon exit.

**4.5 Administrator Capabilities:**

* Monitor parking space occupancy.
* Update parking and charging costs.
* View payment details.

**5. System Architecture**

The Parking Management System with Mobile Wireless Chargers consists of the following components:

* Backend:
  + Responsible for data management and database interaction.
* User Interface:
  + Allows users to interact with the system.
* IoT Subsystem Manager:
  + Communicates with sensors, parking monitors, and MWbots using MQTT broker.

**6. Non-Functional Requirements**

**6.1 Performance:**

* The system must handle a high volume of users simultaneously.
* Response time for user requests should be minimal.

**6.2 Reliability**:

* The system should operate reliably under normal conditions.
* Failures should be handled gracefully, ensuring minimal disruption to users.

**6.3 Security:**

* User data must be securely stored and transmitted.
* Access to administrator functionalities should be restricted to authorized personnel

**6.4 Scalability:**

* The system should be scalable to accommodate future expansions and increasing user demands.

**7. Conclusion**

The Parking Management System with Mobile Wireless Chargers aims to enhance the user experience for electric vehicle owners by providing seamless parking and charging services. With its innovative features and user-friendly interface, the system sets out to revolutionize electric vehicle charging infrastructure.

8. Appendix

Additional information, diagrams, and technical details can be provided in the appendix as needed.

This SRS document serves as a comprehensive guide for the development team to design, implement, and test the Parking Management System with Mobile Wireless Chargers, ensuring that all requirements are met and stakeholders' expectations are fulfilled.