

Software Requirements Specifications (SRS)

A. System Overview

Parking Master is a self-service parking system. Our product will be installed on machine terminals in the parking garage of our clients and also the company computers for management. Parking Master has two main purposes: to cater to the customer parking through stress free convenience, unique abilities not found in any other parking garage and automatic management of the parking stalls, and to help management manage this parking software and their parking garage. Our users include, first, the customer, who will include anyone who seeks to park in a parking garage at the current moment or later on, and second, management who uses the software to update parking maps, prices, and reservations. This system will allow the parking garage patrons to choose to either reserve a parking stall in the garage ahead of time or choose a stall to park in the moment they arrive out of the available stalls. On the administration side, the parking garage owners and managers will be allowed to input the list of stalls and upload of map of their particular parking garage. This will allow for flexibility and the ability to use this software for multiple parking garage configurations. The administrators will also have the ability to set the pricing of the stalls and edit the reservations in the system.

B. Technical Requirements

i. Functional Requirements

General:

-Database of Parking Spaces(Initial Setup)

Users:

-Check into Parking Space: Enter License Plate and password to confirm check in, display Ticket information at end of transaction, Display Thank You screen at end of transaction

-Check Out of Parking Space: Checkout by entering License Plate and password, display Thank You screen at end of transaction

-Reserve Parking Space: View Parking Spaces Available, Be able to, as a reservation user, set level, row, space, time, date, length, and License Plate, display Ticket information at end of transaction, display Thank You screen at end of transaction

-Cancel Reservation: Enter License Plate and password to confirm cancel of reservation, display Thank You screen at end of transaction

-Park Now: View Parking Spaces Available, Be able to, as a park now user, set level, row, space, length, and License Plate, Display Ticket information at end of transaction, Display Thank You screen at end of transaction

Owners/Admins:

-View/Modify Reservations: View reservations, Remove/cancel a reservation, Allow reservations in a section, Disallow reservations in a section, Display Success Screen

-Add/Modify Parking Spaces: Add new section, Remove section, Set number of spots, price per section, Set prices of individual spots(handicap, service members), Set prices of sections on a parking level, Display Success Screen

-Upload Map: Set map image, Display Upload Success

ii. Nonfunctional Requirements

- The software should remain responsive to user input at all times.
- The software's design should be neat and easy to use from a car

iii. User-Interface specification

Our user-interface will be designed to work with a "click based" system (little/no keyboard required). All options will either be clickable or can be selected from a dropdown menu with the exception of license plate and password. This will allow our software to be implemented on a touch-screen system or a personal computer system (which we will use for the purpose of this project).

iv. User Task Flow

Please refer to the attached document named "AutoParkingVisualization.pdf"

v. Input/output

Our input will be mostly "clickable" options with the exceptions of license plate and password. The data that is selectable will include: date, time, level, row, space, length, and price. This data will be stored in a database.

vi. Interface specs

Our interface, for our purpose, will be the use of a personal computer. In the future, we hope to implement an onscreen keyboard for our touch screen users. But for the scope and sake of our project, we will use a personal computer with a keyboard, mouse, and monitor.

C. Acceptance Criteria

Q: Will the software take into account changes in parking availability that occur during the reservation process?

A: The software will regularly check the parking space during the reservation process and return any changes that occur to the user. Users will not be mistakenly charged for reservations that have been interrupted.

Q: Will the software be able to account for changes in parking availability due to construction or weather?

A: Any parking space can be flagged as unavailable through the Administrator options.

Q: Will the parking spaces have a maximum parking time, and what happens if a parking space is occupied past this time?

A: The owners of the parking garage will be responsible for setting their own regulations and will need personnel to enforce these rules if they implement them. Administrators can modify the system should extraneous circumstances like this occur.

Q: What if the same license plate is entered when already registered?

A: The system will scan through current reservations and return an error if a duplicate plate number is found. A screen will be displayed stating, "Error: Plate already registered. Assistance will be here shortly."

D. Validation/verification

We have created rough versions of our GUI for both our customers and our managers. Please refer to the attached document named "AutoParkingVisualization.pdf"

E. Requirements Consideration

i. Assumptions made about software

- Users will be able to use the software quickly and efficiently
- The software will be running 24/7 except for updates
- We will assume that the parking garage has a way to enforce violations.

ii. End users

-*Novice Drivers* - Drivers with little to no driving experience.

-*Experienced Drivers* - Drivers with a moderate to high amount of driving experience.

-*Those with little to no parking garage experience* - Users who have never parked in a parking garage before or have only used them a few times.

-*Experienced parking garage users* - Users who frequently park in a parking garage or simply have parked in many different garages over time.

-*Handicapped customers* - Users who need to park in handicapped-reserved parking stalls.

-*Parking garage owners* - The owners of the parking garage who need administrative privileges.

-*Parking garage managers* - The managers of the parking garage who need administrative privileges.

iii. Existing systems

Systems that currently exist in the static, non-mechanical and automated parking garage layouts as our software is intended to be used is either a manual human cashier parking attendant design or a firmware and embedded systems type design.

iv. Environment

- The software will operate on an isolated, consumer-class PC with touchscreen user controls. It will be the only user software to run on this machine. This machine will reside inside at the entrance and exit of the parking garage. The parking garage will be a simple static ramp style garage with no mechanical, moving, or automated parking stalls.
- This software will also operate on owner and manager computers with typical personal computer input devices such as a mouse and keyboard.

v. Limitations

- The software will not be able to keep track of cars that do not park in the space they are designated, so routine observation and regulation of the garage may be required.
- The software will not track any information about a car besides license plate number. Things like model and color cannot be kept track of.

vi. Rationale

The customer needed an efficient parking garage management solution. The customer requirements were simply to manage the parking spaces of the stalls and charge the customer accordingly with the system. We have designed a system that both meets these requirements by managing the spaces and charging accordingly with our check-in, check-out system but also exceeding these requirements by allowing for reservations and cancellations, designing an easy to use graphical user interface, and allow the owners and managers to customize the system to their specific garage layouts as well as manage the reservations of the garage.