**Arduino**

The system is able to detect cars in parking places.

The system is able to detect when cars are parked incorrectly.

The system is able to detect when cars arrive at the gate.

The system is able to detect the presence of a car at gate.

The system will verify the driver’s information and confirm their reservation.

Once verified, the system will give the parking space identifier to the driver. A parking space identifier is a unique alpha-numeric that identifies the facility’s parking space.

The system is able to open and close an entry gate.

The system will lift the entry gate and allow the driver to enter the facility.

**Garage Management System**

The system will provide continual status of parking facility to the attendant as follows.

* It will show which parking spots are open and which are occupied.
* It will show how long a car has occupied a particular spot.
* It will notify when cars are parked at wrong places and reallocate the parking space.
* It will provide a visual indicator at the parking spot (blinking LED) anytime a car crosses the lanes in a parking space and notify the parking attendant after 2 minutes.

The system will provide basic statistics on facility usage to the owner. Basic statistics will include average occupancy, peak usage hours, parking slot statics (e.g., how much time cars were parked in parking slots) and revenue.

**Reservation Management System**

The system will allow drivers to reserve parking spaces in any of the parking facilities owned by the customer. Reservation will be made via mobile app, laptop, or desktop app.

To reserve a parking slot, the system will need driver’s identifying information, the day and time they would like to park, and payment information.

If there is a parking space available, the system will return confirmation information that will be used to identify the driver when they arrive at the garage.

If the customer doesn’t show up within the grace period (e.g., a half hour, but it should be configurable), the system will release the parking spot.

Drivers are charged by the hour for parking after they enter the garage. Customers will automatically be charged on their credit card for the duration of their stay.

**Market Context**

*Stakeholders:*

Customer: Geoff’s Transportation and Parking Services (GTPS LLC)

Owner: Anthony J. Lattanze

Project team members:

*Functional expectations:*

The system shall enable drivers to find and reserve parking spaces quickly and efficiently and is capable of monitoring parking facilities operations.

*Time to market:*

The initial system, which is for a parking lot with 5 parking places, should be built in 5 weeks.

*Notion of Quality:*

*Price of Products and Services:*

*Business and some Technical Constraints:*

*Product Packaging:*

**Organizational Context**

Structure:

The development team has 5 members.

Culture:

Our culture is defined by …

**Business Context**

The strategies for serving our market:

Profit Model:

More efficiently utilize the space in the parking facilities thereby increasing profits. More efficiently utilize personnel and reduce the number of people required to operate any given garage reducing operating costs.

Competition and Competitive Positions:

Future Direction:

GTPS would like to scale the system to include larger parking lots and garages and, if the solution is successful for them, market the system to other garage owners around the world.

**Technical Context**

Languages:

C, C++ for Arduino, Java

Tools:

Operating Systems and Hardware Platform:

Implementation Frameworks:

Industry Standard: