CS414.A2 Assignment 2

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Actor Goals for Garage Parking System

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| **Actor** | **Goal** | **Use Case** |
| Driver | Park a car in less than 3 minutes | Enter Garage (UC1) |
| Driver | Leave garage, pay and leave within 5 minutes | Exit Garage (UC2) |
| Driver | Manage System Account | Outside scope of project |
| Cashier | Process sale | Exit Garage (UC2) |
| Cashier | Create System Account | Manage Accounts (UC3) |
| Cashier | Update System Account | Manage Accounts (UC3) |
| Garage Administrator | Manage System | Manage System (UC4) |
| Garage Administrator | View Usage | Show Usage (UC5) |
| Garage Administrator | Increase Revenue | Manage System (UC4) |

**Glossary:**

|  |  |  |
| --- | --- | --- |
| **Term** | **Definition and Information** | **Initial Value / Range** |
| Currency | Local currency at the garage location. | US Dollar ($), configurable |
| Grace Period | Minimum period of time where the driver incurs no charges. | 1 hour (first hour free), configurable, open (garage is temporarily free) |
| Maximum  Fee | Amount charged, per day, for a lost ticket, if entry time is not determined. | 24 \* hourly fee,  calculated |
| Hourly fee | Cost to park in currency, per hour | $2.00 per hour, configurable, min $0, max $50.00 / hour |
| ALPR System | Automatic License Plate Recognition System, consists of camera at entry and exit; includes ocr software as part of the system. |  |
| Maximum Park Time | The maximum time a car is allowed to park at the garage. Beyond this time, cars may be ticketed or towed. | 48 hours, configurable |
| Driver / Customer | The driver of the car is the primary customer. As such, quality customer service should be observed. This is lacking in many garage systems. |  |
| Cashier | Cashier may be a physical person at the garage, some cashier tasks may be automated by the system (ie credit card reader vs entering credit card; ticket reader) |  |
| Garage Occupancy | The number of cars inside the garage at any point in time. | variable, calculated |
| Maximum Occupancy | The desired maximum number of cars in the garage at one time. Once max is reached, the full sign is lit. | Less than or equal to number of spaces available, 300, configurable. |
| System Account | System can track drivers by license plate number, allows for monthly billing. | License plate, driver name, address, optional credit card |
| System Login | Used by cashier and garage administrator, allows login to the system and tracks user privileges. |  |

**Fully Dressed Use Cases:**

**Use Case Name:**

Enter Garage (UC1)

**Scope:**

Parking System

**Level:**

User goal

**Primary Actor:**

Driver / Customer

**Stakeholders and Interests:**

Garage Administrator

Payment Authorization Service

**Preconditions:**

System has power.

System is connected to a server.

**Success Guarantee:**

Driver is given a ticket.

Entry is logged.

System tracks garage occupancy.

Entry gate is closed.

**Main Success Scenario:**

1. Driver arrives at the parking garage and views entry sign.

2. Driver drives to the entry gate.

3. Driver indicates presence to entry kiosk (presses button).

4. ALPR System logs license plate and time.

5. Entry kiosk prints ticket with time stamp.

6. Driver takes the ticket.

7. System opens Entry Gate.

8. System increments garage occupancy

9. System updates entry sign.

9. Driver drives through the gate.

10. System closes Entry Gate.

**Extensions:**

1a. Garage sign indicates full

1. Driver leaves.

1b. Driver sees price.

1. Driver leaves.

2a. Another car is at the entry gate.

1. Driver waits.

4a. ALPR is unable to determine plate number

1. Nothing is logged.

5a. Ticket dispenser is jammed or unoperational.

1. Driver presses a “call” button to contact garage administrator.

2. Driver explains problem to administrator.

3a. Administrator fixes the jam.

3b. Administrator marks the time on an informal ticket.

6a. System detects kiosk is out of tickets.

1. System contacts the garage administrator to refill.

**Special Requirements:**

Call button that will create a contact with the garage administrator.

Phone line and speaker system.

Dispense ticket button.

Ticket dispenser system.

Access to correct system time.

Automatic License Plate Recognition System (ALPR).

**Technology and Data Variations List:**

**Frequency of Occurrence:**

Intermittent to continuous.

**Open Issues:**

If the user is in the system and is recognized by the ALPR the gate could automatically open and there would be no need for the driver to take a ticket. This is saved for a later iteration.

**Use Case Name:**

Exit Garage (UC2)

**Scope:**

Parking System

**Level:**

User Goal

**Primary Actor:**

Driver / Customer

**Stakeholders and Interests:**

Cashier

Garage Administrator

**Preconditions:**

All systems have power.

System is connected to central server.

Driver is a valid driver with a current license.

**Success Guarantee:**

Transaction is logged and saved.

System tracks garage occupancy.

Exit gate is closed.

**Main Success Scenario:**

1. Driver arrives at exit gate.

2. Driver shows ticket to cashier or ticket reader.

3. Cashier enters arrival time.

4. System presents total due.

5. Cashier tells Driver the cost and requests payment.

6. Driver pays.

7. System logs completed sale.

8. System opens the Exit Gate.

9. Driver drives through the Exit Gate.

10. System updates the garage occupancy.

11. System updates entry sign.

12. System closed Exit Gate.

**Extensions:**

2a. Driver has lost the ticket.

1. Cashier checks ALPR system to determine entry time.

1a. Entry time is undetermined by the ALPR.

1. Cashier charges the Maximum Fee.

6a. Driver pays cash.

1. Cashier enters the cash amount tendered.

2. System presents balance due and opens cash drawer.

3. Cashier deposits cash and returns balance in cash to Driver.

6b. Driver pays by credit card.

1. Driver shows credit card.

2. System displays payment for verification.

3. Driver confirms.

4. System sends payment authorization request to external payment authorization system.

4a. System detects failure to collaborate with external system

1. System signals error to cashier.

2. Cashier asks driver for alternate payment.

5. System receives payment approval.

5a. System receives payment denial.

1. System signals denial to cashier.

2. Cashier asks customer for alternate payment.

5b. Timeout waiting for response.

1. System signals timeout to cashier.

2. Cashier asks customer for alternate payment.

6c. Driver pays by System Account.

1. ALPR System acknowledges that the driver has a System Account

1a. No account found.

1. Cashier asks driver if they want to open an account.

1a. Driver declines

1. Cashier asks for alternate payment.

2. Cashier asks driver for drivers license.

3. Cashier creates an account for the driver.

2a. ALPR System fails to recognize license plate.

1. Cashier manually enters license plate

2. System applies charges to System Account.

6d. Driver has no payment.

1. Cashier requests drivers license.

2. Cashier creates a System Account for the driver.

**Special Requirements:**

ALPR system installed and connected.

Cashier has a cash register and drawer.

Cashier has access to the system.

**Technology and Data Variations List:**

**Frequency of Occurrence:**

**Open Issues:**

**Use Case Name:**

Manage Accounts

**Scope:**

Parking System

**Level:**

Subfunction

**Primary Actor:**

User: Cashier, Garage Administrator

**Stakeholders and Interests:**

Driver

**Preconditions:**

User has access to system UI.

**Success Guarantee:**

System is updated with current information

**Main Success Scenario:**

1. User logs into system.

2. User executes a CRUD request.

3. System is updated.

**Extensions:**

**Special Requirements:**

**Technology and Data Variations List:**

**Frequency of Occurrence:**

**Open Issues:**

**Use Case Name:**

Manage System

**Scope:**

Parking System

**Level:**

Subfunction

**Primary Actor:**

Garage Administrator

**Stakeholders and Interests:**

Driver

Cashier

**Preconditions:**

Admin has access to the system UI.

**Success Guarantee:**

System all system parameters are up to date.

**Main Success Scenario:**

1. Admin logs into system.

2. System shows all current configurable parameters.

3. Admin selects the parameter to update.

4. Admin enters an updated value.

5. System checks input for validity.

6. System updates the parameter.

**Extensions:**

1a. User does not have permissions to access parameters.

1. System does not offer UI to change parameters.

5a. Input value is out of range.

1. System displays an out of range error.

**Special Requirements:**

**Technology and Data Variations List:**

**Frequency of Occurrence:**

**Open Issues:**

**Use Case Name:**

Show Usage

**Scope:**

Parking System

**Level:**

Subfunction

**Primary Actor:**

Garage Administrator

**Stakeholders and Interests:**

**Preconditions:**

Administrator is logged in and has adequate permissions.

**Success Guarantee:**

Administrator is able to view the data requested.

**Main Success Scenario:**

1. Administrator requests data.

2. System displays data.

**Extensions:**

1a. Administrator selects

**Special Requirements:**

**Technology and Data Variations List:**

System aggregates average occupancy by hour.

**Frequency of Occurrence:**

**Open Issues:**