Requirements:

PARKING GARAGE ENTRY/EXIT:

1. The parking garage shall have one entry and one exit gate.

2. Cars shall enter through the entry gate and exit through the exit gate.

3. There shall be one ticket provided to a car upon entering the parking garage through the entry gate.

4. There shall be a payment upon exiting the parking garage based upon the number of minutes spent inside the parking garage.

5. The ticket shall be verified to be the ticket given to the car upon entry.

6. The parking garage shall keep track of the current occupancy.

7. Multiple cars should be allowed to enter and exit during the day.

8. If the parking garage is at maximum occupancy a sign shall be shown stating the garage is at full occupancy, otherwise it is not illuminated

PARKING GARAGE STATISTICS:

1. An administrator shall be able to query statistics about the occupancy of the parking garage on a hourly, daily, weekly, and monthly basis.

2. The parking garage system shall allow track payments and ticket sales.

3. The parking garage shall collec occupancy summaries for each hour of the day.

USE CASE 1:

- Use Case Name
    a. Enter Garage
- Scope
    a. Parking Garage Application
- Level
    a. UserGoal
- Primary Actor
    a. Car
- Stakeholders and Interests
    a. Car: Wants a quick and easy way to enter the parking garage.
    b. Parking Garage: Wants to accurately record time car entered, update occupancy, and dispense a ticket.
    c. Administrator: Wants to be able to query statistics that include this car.

- Preconditions:
    a. Car has arrived at an entry gate with the garage not at maximum occupancy.
- Postconditions:
    a. Car has been given a ticket, parking garage has a record of the ticket, parking garage has updated occupancy records.
- Main Success Scenario
    1. Parking Garage is not at maximum occupancy and car arrives at entry gate
    2. Car requests a ticket from Parking Garage
    3. Parking Garage dispenses a ticket while recording entry time and ticket number
    4. Car takes ticket and parks inside Parking Garage
- Extensions:
    *a. At any time, System fails:
        1. Entry Gate does not dispense any tickets until system is fixed.
    1a. Parking Garage is at maximum occupancy
        1. Car waits until a car leaves and a ticket is dispensed.
        2. Car leaves and goes to park in another place and ticket is not dispensed.
    2-3a. Car requests a ticket but no paper is available to print ticket
        1. Error is thrown to system indicating more paper is needed.
    3b. Parking Garage attempts to save information but system fails
        1. Error is thrown indication information was not saved
    4a. Car takes ticket but does not enter garage
        1. Administrator is able to go in and clear ticket entry from server
- Special Requirements:
    - Entry Gate must be connected to main Parking Garage server
    - Entry Gate state should be able to be recovered
- Technology and Data Variations:
    - Typically will be dealt with through the Entry Gate to Car meeting
    - Rare case that an administrator can edit information about car's ticket.
- Frequency of Occurrence:
    - Very frequent. Only way for cars to enter Parking Garage

USE CASE 2:

- Use Case Name
    a. Exit Garage
- Scope
    a. Parking Garage Application
- Level
    a. UserGoal
- Primary Actor
    a. Car
- Stakeholders and Interests
    a. Car: Wants a quick and easy way to leave the parking garage.
    b. Parking Garage: Wants to accurately record time car exited, update occupancy, and verify ticket.
    c. Administrator: Wants to be able to query statistics that include this car.
- Preconditions:
    a. Car has arrived at an exit gate with a valid ticket.
- Postconditions:
    a. Car has paid for the ticket and has left parking garage, parking garage has a record of the ticket and transactions, parking garage has updated occupancy records.
- Main Success Scenario
    1. Car arrives at the Exit Gate with a valid ticket and valid form of payment
    2. Car gives ticket to Exit Gate
    3. Parking Garage verifies ticket is valid and figures out how much is owed for parking
    4. Parking Garage displays amount needed for the payment
    5. Car pays for ticket and Exit Gate opens allowing Car to leave
    6. Exit time and transaction information are stored in the Parking Garage for Administrator querying.
- Extensions:
    *a. At any time, System fails:
        1. Exit Gate does not verify any tickets until system is fixed.
        2. System is able to be recovered.
    3a. Car gives Parking Garage an invalid ticket.

1. Error is thrown from system asking for Administrator to take a look.

3b. Exit Gate is unable to figure out how much is owed

1. Error is thrown from system asking for Administrator to take a look

2. Administrator is able to calculate how much is owed and manually enter this information

4a. Car is unable to pay for amount owed

1. Error is thrown from system asking for Administrator to take a look

- Special Requirements:
  - Exit Gate must be connected to main Parking Garage server
  - Exit Gate state should be able to be recovered
- Technology and Data Variations:
  - Typically will be dealt with through the Exit Gate to Car meeting
  - Rare case that an administrator can edit information about car's ticket.
- Frequency of Occurrence:
  - Very frequent. Only way for cars to exit Parking Garage

USE CASE 3:

- Use Case Name
  a. Query Statistics
- Scope
  a. Parking Garage Application
- Level
  a. User Goal
- Primary Actor
  a. Administrator
- Stakeholders and Interests
  a. Administrator: Wants to be able to query statistics regarding occupancy over a period of time.

- Preconditions:
    a. Parking Garage has been sending data to be stored and is in a format that is able to be queried.
- Postconditions:
    a. Information regarding to the query of the Administrator have been displayed or saved to a file.
- Main Success Scenario
    1. Administrator arrives at a terminal.
    2. Administrator asks Parking Garage to display information based upon occupancy of (hourly, daily, weekly, monthly).
    3. Information is displayed to Administrator correctly.
- Extensions:
    *a. At any time, System fails:
        1. Information should not be corrupted
    2a. Data is corrupted.
        1. Error is thrown indicating information has been corrupted.
- Special Requirements:
    - Data has been stored in a way that is queryable.
- Technology and Data Variations:
    - Information will only be entered by the Administrator.
- Frequency of Occurrence:
    - Infrequent as Administrator will probably query for reports and maybe once or twice a day.