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CS414-Ghosh
Assignment #2
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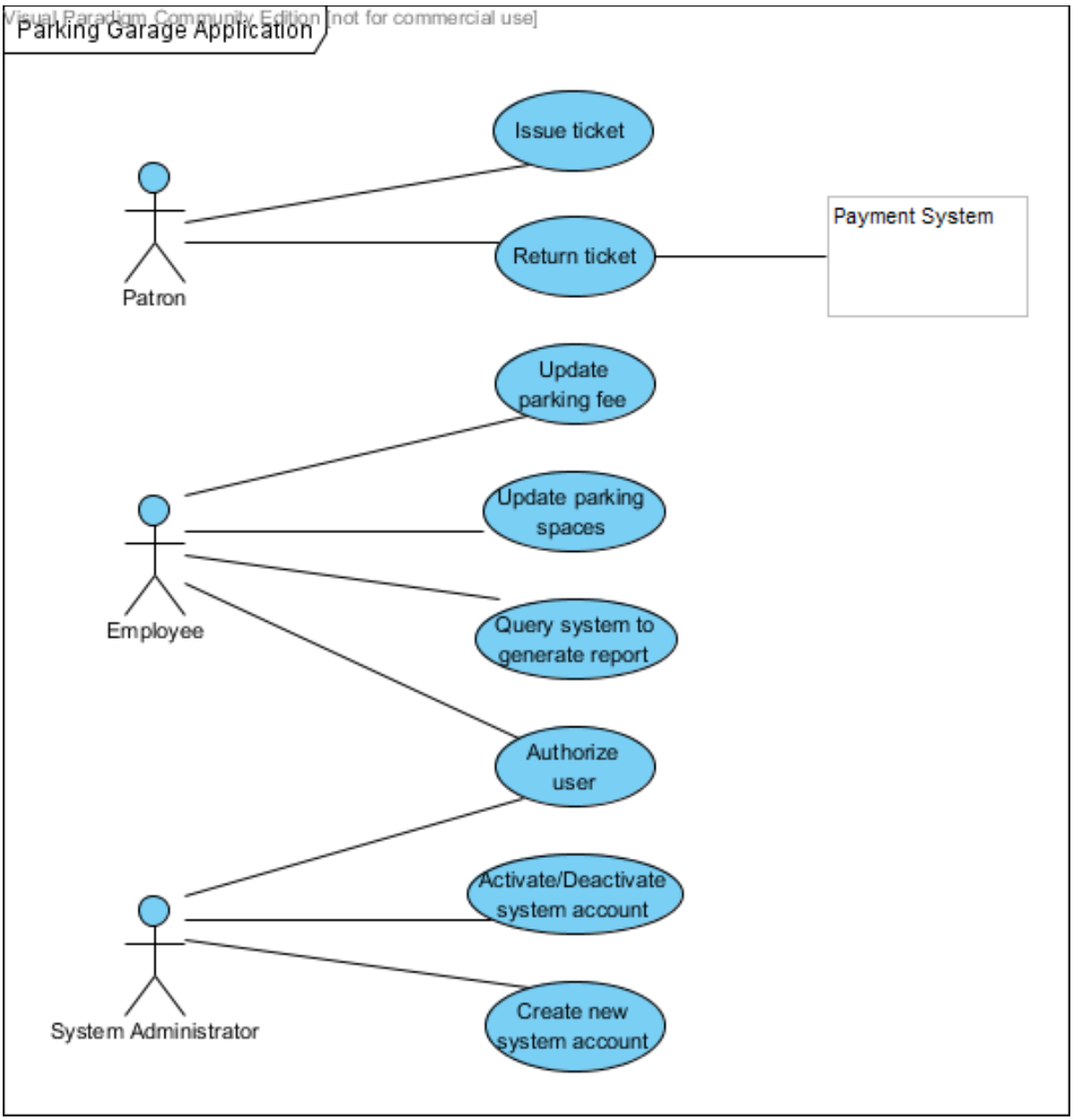
Parking garage application use case model:



Use Case UC1: Issue Ticket
Scope: Parking Garage Application
Level: User goal
Primary Actor: Patron
Stakeholders and interests:
Patron: issued ticket and enters garage.
Preconditions:
None
Success Guarantee:
Patron is given access to garage and posseses ticket. Sign is updated if garage is full.
Main Success Scenario:
1. Patron arrives at entrance gate and requests access.
2. System generates a ticket with unique ID and current date/time.
3. System stores ticket data.
4. System provides ticket to patron.
5. Entry access gate opens and patron enters.
6. Gate closes after patron enters
7. Total occupants of garage is updated in system.
8. Sign is updated to signify full status if garage is determined to be full.

Extensions:
At any time steps 1-5: Patron requests assistance.
    1. Patron requests assistance from syste.
    2. Employee is notified to assist patron.

1: Garage is full.
    1. Patron is alerted that garage is currently at full capacity.
    2. Transaction terminated.

At any time steps 1-5: Patron requests to cancel transaction.
    1. Employee cancels transaction and voids ticket record in system.

5-6: Gate malfunction (out of scope).
    1. Employee manually opens or closes gate.

8: Sign malfunction (out of scope).
    1. Employee provides manual update.

Special Requirements:
None
Technology and Data Variations List:
2: Each ticket generated by the system is unique for individual event.
2: Date/time is local for garage location.
Frequency of Occurrence:
Could be nearly continuous.
Miscellaneous:
None

Use Case UC2: Return Ticket
Scope: Parking Garage Application
Level: User goal
Primary Actor: Patron (supporting actor: payment system)
Stakeholders and interests:

Patron: Returns ticket, pays fee, and exits garage.
Payment system: Collects fee and authorizes exit.

Preconditions:

UC1

Success Guarantee:

Fee paid and patron is allowed to exit garage. Sign is updated if garage is no longer full.

Main Success Scenario:

1. Patron arrives at exit gate and requests exit.
2. Patron provides ticket from UC1 to system.
3. System looks up ticket data.
4. System calculates parking fee based on UC1 timestamp and current time.
5. Patron selects payment method and pays fee.
6. System authorizes payment type/amount and provides change if needed.
7. System logs payment event.
8. Transaction receipt generated and printed.
9. Exit gate opens.
10. Gate closes after patron enters
11. Total occupants of garage is updated in system.
12. Sign is updated to signify not full status if garage was full and is determined to be no longer full.

Extensions:

At any time steps 1-9: Patron requests assistance.
    3. Patron requests assistance from system.
    4. Employee is notified to assist patron.

9-10: Gate malfunction (out of scope).
    1. Employee manually opens or closes gate.

12: Sign malfunction (out of scope).
    1. Employee provides manual update.

2: Patron does not have ticket from UC1.
    1. System charges a set fee for lost ticket transaction.
    2. System logs lost ticket event.
    3. Resumes at step 5.

6: Payment is not authorized.
    1. Patron notified of payment authorization failure.
    2. Returns to step 5.

5: Patron does not have sufficient funds for fee.
    1. Patron requests employee assistance.
    2. Employee gets patron information for later billing.
    3. Employee enters information into system.
    4. Resumes at step 9.

2: System cannot read ticket data.

1. Patron is asked to manually enter ticket ID number.
2. Resumes at step 3.

2: System determines ticket to be invalid/fake.

1. System charges a set fee for lost ticket transaction.
2. System logs invalid ticket event.
3. Resumes at step 5.

Special Requirements:

-System accepts fee payment in either cash or credid/debit card.

Technology and Data Variations List:

4: Date/time is local for garage location.

Frequency of Occurrence:

Could be nearly continuous.

Miscellaneous:

None

Use Case UC3: Create new system account
Scope: Parking Garage Application
Level: User goal
Primary Actor: System administrator
Stakeholders and interests:
System administrator: create system account for employee.
Preconditions:
UC4 with system administrator privileged account.
Success Guarantee:
New employee account created in system.
Main Success Scenario:
1. Admin navigates to user management.
2. Admin enters new user credentials and access privileges.
3. Admin submits data to system.
4. System creates new account with specified credentials and privileges.

Extensions:
2: Duplicate user login detected by system.
    1. System alerts user of duplicate account.
    2. Resume at step 2.

Special Requirements:
None
Technology and Data Variations List:
-Credentials are user ID and password.
-User IDs must be unique.
Frequency of Occurrence:
At time of new employee hire. Rarely.
Miscellaneous:
None

Use Case UC4: Authorize User
Scope: Parking Garage Application
Level: User goal
Primary Actors: Employee & System Administrator
Stakeholders and interests:
Employee: log in to system.
System administrator: log in to system.
Preconditions:
Account for user has been created (UC3).
Success Guarantee:
Employee authorized and allowed access.
Main Success Scenario:
1. Employee enters credentials.
2. System checks credentials
3. System allows access.

Extensions:
2: Invalid credentials.
1. System alerts user of invalid credentials
2. Resume at step 1.

Special Requirements:
None
Technology and Data Variations List:
-Credentials are user ID and password.
Frequency of Occurrence:
At time user request access to system. Multiple times per day.
Miscellaneous:
None

Use Case UC5: Activate/Deactivate System Account
Scope: Parking Garage Application
Level: User goal
Primary Actor: System administrator
Stakeholders and interests:
System administrator: activate/deactivate employee system account.
Preconditions:
UC4 with system administrator privileged account.
Success Guarantee:
Employee account activated/deactivated in system.
Main Success Scenario:
1. Admin navigates to user management.
2. Admin enters user ID to manage.
3. System verifies user ID and enters specific user account management.
4. Admin updates account status.
5. Admin submits changes to system.
6. System updates account status.

Extensions:
2: User ID does not exist in system
3. System alerts user of non-existent account.
4. Resume at step 1.

Special Requirements:
None
Technology and Data Variations List:
None
Frequency of Occurrence:
At time of new employee re-hire or fire. Rarely.
Miscellaneous:
None

Use Case UC6: Update parking fee
Scope: Parking Garage Application
Level: User goal
Primary Actor: Employee
Stakeholders and interests:
Employee: update fee amount in system.
Preconditions:
UC4
Success Guarantee:
Parking fee amount updated in system.
Main Success Scenario:
1. Employee navigates to fee management.
2. Employee enters new fee amount.
3. Employee submits data to system.
4. System updates fee.

Extensions:
3: Fee is invalid.
1. Employee is alerted that entered fee is invalid.
2. Resume at step 2.

Special Requirements:
None
Technology and Data Variations List:
2: Fee is numerical and positive.
Frequency of Occurrence:
When parking fee must be updated. Rarely.
Miscellaneous:
None

Use Case UC7: Update parking spaces
Scope: Parking Garage Application
Level: User goal
Primary Actor: Employee
Stakeholders and interests:
Employee: update total number of spaces for parking in the garage.
Preconditions:
UC4
Success Guarantee:
Number of parking spaces updated in system.
Main Success Scenario:
1. Employee navigates to parking space management.
2. Employee enters new number of spaces.
3. Employee submits data to system.
4. System updates number of spaces.
5. Sign is updated based on new number of spaces.

Extensions:
3: Number of spaces is invalid.
    1. Employee is alerted that entered number of spaces is invalid.
    2. Resume at step 2.

Special Requirements:
None
Technology and Data Variations List:
2: Number of spaces is numerical and positive.
Frequency of Occurrence:
When number of spaces increases or decreases. Rarely.
Miscellaneous:
None

Use Case UC8: Query System to Generate Report
Scope: Parking Garage Application
Level: User goal
Primary Actor: Employee
Stakeholders and interests:
Employee: Generate a report based on use and fees.
Preconditions:
UC4
Success Guarantee:
Report generated.
Main Success Scenario:
1. Employee navigates to report management.
2. Employee selects report constaints.
3. Employee submits report constraints to system.
4. System performs query and generates report.

Extensions:
None
Special Requirements:
None
Technology and Data Variations List:
None
Frequency of Occurrence:
When employee requires system data. Moderately often.
Miscellaneous:
None