

Online Property Rental System

Use Cases

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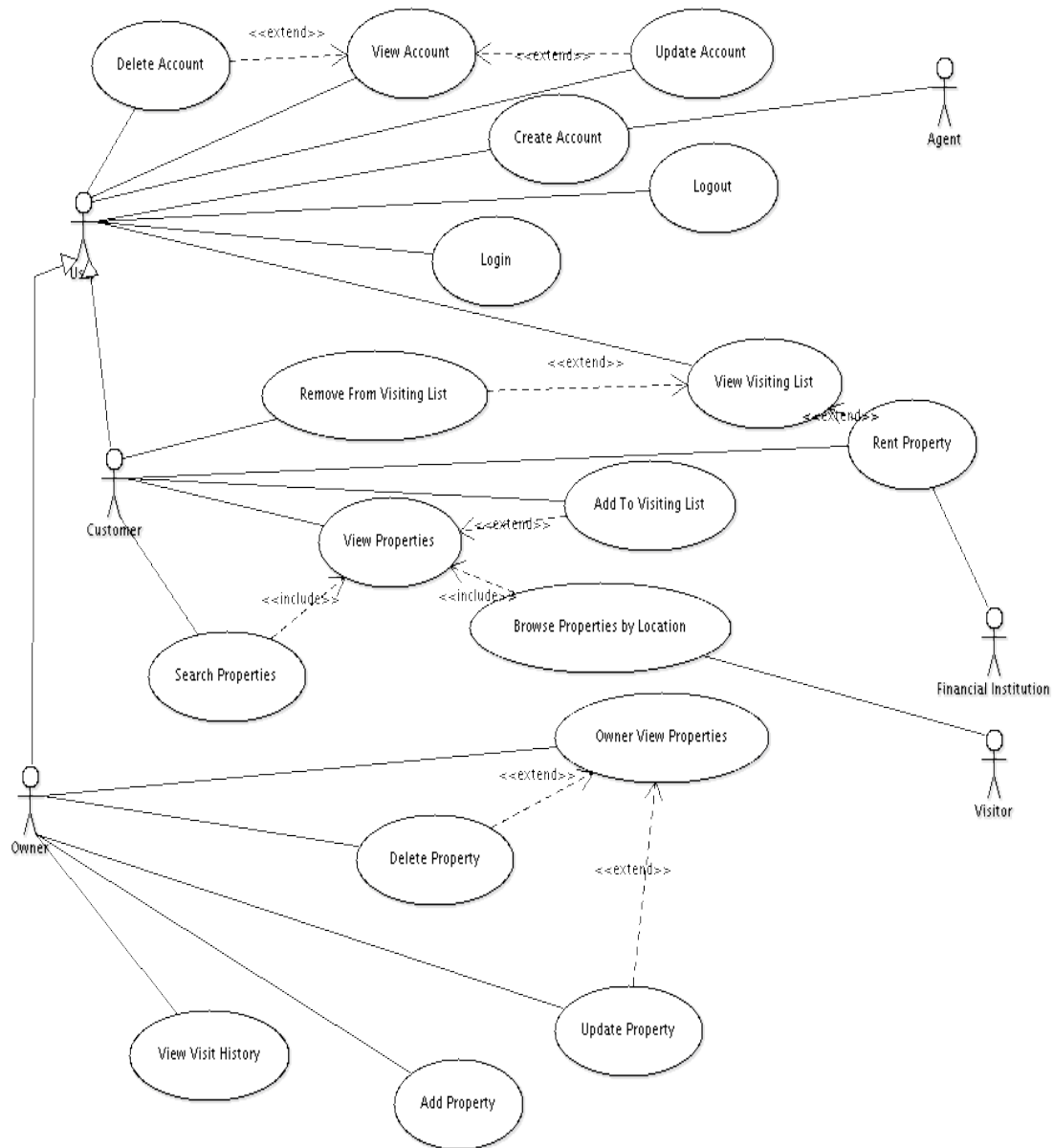
The project for SEG3102/SEG3502 is an Online Property Rental (OPR) System. Your company's requirements engineering team has met with the customer and has compiled an Initial Requirements Document (id OPR-Req-01) and several use cases described in this document.

Use Cases Summary

<u>Name</u>	<u>Goal</u>	<u>Primary Actor</u>	<u>Other Actors</u>	<u>Includes</u>	<u>Extends</u>
Add Property	Owner wants to add a property to the OPR system	Owner			
Add To Visiting List	Customer wants to add a property to her/his visiting list.	Customer			View Properties
Browse Properties By Location	Visitor wants to browse photos by location.	Visitor		View Properties	
Create Account	Agent wants to create an account to OPR.	Agent	User (Customer, Owner)		
Delete Account	User (Customer or Owner) wants to delete her/his account.	User			View Account
Delete Property	Owner wants to delete one of her/his properties.	Owner			Owner View Properties
Login	User (Customer or Owner) wants to log in.	User (Customer or Owner)			
Logout	User (Customer or Owner) wants to logout of the system.	User			
Owner View Properties	Owner wants to view her/his properties in the OPR database.	Owner			Update Property, Delete Property
Remove From Visiting List	Customer wants to remove a property from her/his visiting list.	Customer			View Visiting List
Rent Property	Customer wants to rent	Customer	Financial		View Visiting

	a property from her/his visiting list.		Institution	List
Search Properties	Customer wants to search for properties using various search criteria.	Customer		View Properties
Update Account	User (Owner or Customer) wants to update her/his account information.	User		View Account
Update Property	Owner wants to update her/his property.	Owner		Owner View Properties
View Account	User (Customer or Owner) wants to view her/his account information.	User		
View Properties	OPR displays a list of thumbnails and Visitor can select one to view in a larger size.	Customer		
View Visit History	Owner wants to view the visit history of her/his properties for a specific reporting period.	Owner		
View Visiting List	Customer wants to view her/his visiting list.	Customer		

Use Case Diagram



Use-Cases Specification

Add Property

- Preconditions:
 - Owner is logged to the OPR website.
- Postconditions:
 - If successful, information about the new property was uploaded and stored.
 - If not successful, the actor was informed about the problem.

Basic Flow

The use case begins when Owner wants to add a property to the OPR system.

1. OPR asks Owner to fill out the add property form by providing:
 - 5 photo (by browsing to their location) (maximum size is 5MB and file format is jpg)
 - Type of the property (house or apartment)
 - address of the property
 - location (chosen from a list of available locations)
 - number of bedrooms
 - number of bathrooms
 - number of other rooms
 - rent
2. Owner fills out the add property form in any order and submits the add request.
3. OPR uploads the photos and store information about the property. An identifier is associated to each new inserted property.
4. OPR informs Owner that the information about the property was successfully stored.
5. The use case terminates.

Alternate Flows

A1. Missing Information

Occurs at step 3 of the basic flow if not all of required information was correctly entered.

1. OPR displays the filled add property form, indicating which property information was not entered correctly.
2. The use case resumes with step 2 of the basic flow.

Special Requirements

OPR must handle ten concurrent property add operations. Adding a property should not take longer than 10 seconds.

Add To Visiting List

- Preconditions:
 - Customer is logged in the OPR website.
 - Use case [View Properties](#)
- Postconditions:
 - If successful, the property was added to the customer's visiting list.
 - If not successful, the customer was informed about the problem.

Basic Flow

The use case begins when Customer wants to add a property to his/her visiting list.

1. Customer submits the add request.
2. OPR checks if the rent of the property is lower or equal to the maximum rent that the customer can offer by month.
3. OPR adds the selected property to the customer's visiting list.
4. The use case resumes with the base use case.

Alternate Flows

A1. Duplicate Item

Occurs at step 2 of the basic flow if an item that is already in the visiting list was selected.

1. OPR informs Customer that the property is already in the visiting list.
2. The use case resumes with step 4 of the basic flow.

A2. Rent is too high

Occurs at step 2 of the basic flow if the amount of rent is greater than the rent the customer can offer.

1. OPR informs Customer that the rent of this property is too high for him.
2. The use case resumes with step 4 of the basic flow.

Special Requirements

OPR must handle ten concurrent add operations to visiting list. Adding a property should not take longer than 30 seconds.

Browse Properties By Location

- Preconditions:
 - Visitor is at the OPR website.
- Postconditions:
 - If successful, properties matching the actor's input were displayed.
 - If not successful, the actor was informed about the problem.

Basic Flow

The use case begins when the Visitor wants to browse properties photos by location.

1. OPR asks Visitor to enter one location (from a list of available locations).
2. Visitor selects a location and submits a browse request.
3. Include use case [*View Properties*](#)
4. The use case terminates.

Alternate Flows

A1. No Location Available

Occurs at step 1 of the basic flow if no Location is available.

1. OPR informs the Customer that no location is available.
2. The use case terminates.

Special Requirements

OPR must handle ten concurrent instances of photo browsing. Showing of photos should not take longer than 10 seconds.

Create Account

- Preconditions:
 - The user's file has already been manually reviewed.
 - Agent is logged to the OPR website.
- Postconditions:
 - If successful, a new account was added to the OPR system.
 - If not successful, the actor was informed about the problem.

Basic Flow

The use case begins when Agent wants to add an account to the OPR.

1. OPR asks Agent to fill out the account form with:
 - username (can only contain letters and numbers)
 - password
 - given name
 - last name
 - email address (must contain one "@" character)
 - type of account (one out of "Customer" and "Owner")
 - If the type of account is Customer, the maximum amount of rent that the customer can offer.
2. Agent obtains the information from a User (Customer or Owner) and fills out the account form in any order and submits the create request.
3. OPR sets the account creation date to the local server date, the account creation time to the local server time, and store it.
4. OPR displays a confirmation page informing Agent that the account has been created successfully.
5. An identifier is related to the User to whom the account was created.
6. The use case terminates.

Alternate Flows

A1. Missing Information

Occurs at step 3 of the basic flow if not all of the required customer or owner information was entered correctly.

1. OPR displays the filled account form, indicating which information was not entered correctly.
2. The use case resumes with step 2 of the basic flow.

A2. Duplicate Username

Occurs at step 3 of the basic flow if the entered username already exist in the OPR system.

1. OPR displays the filled account form, indicating that the chosen username already exists.
2. The use case resumes with step 2 of the basic flow.

Special Requirements

OPR must handle ten concurrent create account operations. Creating accounts should not take longer than 10 seconds.

Delete Account

- Preconditions:
 - Use case [View Account](#)
- Postconditions:
 - Upon successful completion of a delete request, the account and all associated properties were marked "deleted" and User was logged out of the system.

Basic Flow

The use case begins when User wants to delete her/his account.

1. User submits a delete request.
2. OPR warns User that s/he is about to delete her/his account and that s/he will be logged out of the system.
3. User confirms the deletion of her/his account.
4. OPR marks the account as deleted. OPR also marks all properties associated with the selected account as deleted (in case user is an Owner).
5. OPR logs User out the system.
6. The use case terminates.

Special Requirements

OPR must handle ten concurrent delete account operations. Deleting an account should not take longer than 10 seconds.

Delete Property

- Preconditions:
 - Use case [*Owner View Properties*](#)
- Postconditions:
 - If successful, the selected Property was marked as "deleted".
 - If not successful, the actor was informed about the problem.

Basic Flow

The use case begins when Owner wants to delete a property from the OPR system.

1. Owner selects one property to be deleted and submits the delete request.
2. OPR marks the property as "deleted".
3. OPR informs Owner that the property was deleted successfully.
4. The use case resumes with the base use case.

Alternate Flows

A1. No Property Selected

Occurs at step 2 of the basic flow if no property was selected.

1. OPR informs the actor that no property was selected.
2. The use case resumes with step 1 of the basic flow.

Special Requirements

OPR must handle five concurrent delete property operations. Deleting a property should not take longer than 10 seconds.

Login

- Preconditions:
 - User (Customer or Owner) is at the OPR website.
- Postconditions:
 - If successful, User is logged in.
 - If not successful, User is not logged in and the actor was informed about the problem.

Basic Flow

The use case begins when when a User wants to log in.

1. OPR displays the login form, asking the User to enter her/his username and password.
2. User enters her/his username and password and submits the login request.
3. OPR logs User into the system.
4. The use case terminates.

Alternate Flows

A1. Invalid Input

Occurs at step 3 of the basic flow if the username and password cannot be matched against the records of OPR or the account is marked "deleted".

1. OPR displays the login form, indicating that they do not match the records of OPR.
2. The use case terminates.

Special Requirements

OPR must handle ten concurrent login operations. Logging in should not take longer than 10 seconds.

Logout

- Preconditions:
 - User (Customer or Owner) is logged in the OPR website.
- Postconditions:
 - User was logged out of the system.

Basic Flow

The use case begins when User wants to log out.

1. User submits the logout request.
2. OPR logs the user out of the system.
3. OPR informs User that s/he has been logged out of the system.
4. The use case terminates.

Special Requirements

OPR must handle ten concurrent logout operations. Logging out should not take longer than 10 seconds.

Owner View Properties

- Preconditions:
 - Owner is logged in the OPR website.
- Postconditions:
 - If successful, the property selected by the owner was displayed.

Basic Flow

The use case begins when Owner wants to view information about her/his properties.

1. OPR retrieves all properties of the owner (properties marked as "deleted" are included).
2. OPR displays the following information for each property:
 - The 5 descriptive photos as thumbnails
 - type of the property (house or apartment)
 - address of the property
 - number of bedrooms
 - number of bathrooms
 - number of other rooms
 - rent
 - deletion status ("Active" or "Inactive")
 - If there are more than 25 properties to be shown, the list is paginated and the actor is allowed to flip through the pages. The list may be sorted by number of rooms, rent.
3. Optionally, use case [Update Property](#), [Delete Property](#)
4. The use case terminates.

Alternate Flows

A1. No Properties of Owner

Occurs at step 2 of the basic flow if the number of retrieved properties is zero.

1. OPR informs the actor that s/he has no properties in the OPR database.
2. The use case terminates.

Special Requirements

OPR must handle ten concurrent view properties operations. Viewing and sorting properties of a owner should not take longer than 10 seconds.

Remove From Visiting List

- Preconditions:
 - Use case [View Visiting List](#)
- Postconditions:
 - If successful, the property was removed from the Customer's visiting list.
 - If not successful, the customer was informed about the problem.

Basic Flow

The use case begins when Customer wants to remove a property from its visiting list.

1. Customer selects one property in his/her visiting list and submits the removal request.
2. OPR removes the property from the visiting list.
3. The use case resumes with the base use case.

Alternate Flows

A1. No Property Selected

Occurs at step 2 of the basic flow if no property was selected.

1. OPR informs the actor that no property was selected.
2. The use case resumes with step 1 of the basic flow.

Special Requirements

OPR must handle ten concurrent remove property operations. Removing a property should not take longer than 10 seconds.

Rent Property

- Preconditions:
 - Use case [View Visiting List](#)
- Postconditions:
 - If successful, the Financial Institution has received payment of a deposit (which will be deduced from the first month rent).
 - the default deposit amount is 25% of the rent
 - If successful, the Customer was allowed to download a lease for the rented property.
 - If not successful, the Customer was informed about the problem.

Basic Flow

The use case begins when Customer wants to rent a property.

1. Customer submits the initial application request.
2. OPR asks Customer to fill out the payment form:
 - email address (must contain one "@" character)
 - type of credit card (VISA, Mastercard)
 - credit card number (16 digits)
 - name of the primary card holder
 - month of the expiry date (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12)
 - year of the expiry date (greater than or equal to the current year)
3. Customer fills out the payment form in any order and submits the rent request.
4. OPR sends the application for rental request authorization to Financial Institution.
5. Financial Institution authorizes the payment.
6. OPR makes the lease of the rented location available at a download location.
7. OPR displays a confirmation page with links to the download location of the lease of the rented property. OPR informs Customer that the lease will be available for 24hours and (s)he will have to confirm the rental within this time frame. Customer saves the page (especially the link location) as a backup. Note that a customer will have at a given moment at most one rental to confirm.
8. Customer clicks on the link(s) on the confirmation page and downloads the lease from the download location.
9. OPR removes the lease from the download location after 24 hours.
10. OPR stores the rent record including the following information:
 - ID of Customer
 - email address
 - ID of the rented property
 - Rent of the property
 - Rental date
 - Rental time
11. The use case terminates.

Alternate Flows

A1. Missing Information

Occurs at step 4 of the basic flow if not all of the payment information was entered.

1. OPR displays the filled payment form, indicating which information was not entered.
2. The use case resumes with step 3 of the basic flow.

A2. Financial Transaction Declined

Occurs at step 5 of the basic flow if Financial Institution declines the credit card payment.

1. OPR informs the Customer that the payment was declined.
2. The use case resumes with step 2 of the basic flow.

A3. Another application is on this property

Occurs at step 2 of the basic flow if there is already an application on this property.

1. OPR informs Customer that there is an application on this property which has not been yet confirmed.
2. The identifier of the customer is inserted in a waiting list related to this property.
3. The use case terminates.

A4. The customer has applied for another property

Occurs at step 2 of the basic flow if the customer has an application on another property.

1. OPR informs Customer that he has an application on another property which has not been yet confirmed.
2. The use case terminates.

A5. The deadline for the confirmation is passed due.

Occurs if step 8 of the basic flow is not realized by the customer 24 hrs after the realization of step7.

1. OPR informs the first Customer in the waiting list of this property (in case not empty) about the availability of the property.
2. The use case terminates.

Special Requirements

OPR must be able handle five applications concurrently. Applying for a property should not take more than 120 processing seconds.

Search Properties

- Preconditions:
 - Visitor is at the OPR website.
- Postconditions:
 - If successful, properties matching the actor's input were displayed.
 - If not successful, the actor was informed about the problem.

Basic Flow

The use case begins when the Customer wants to search for properties using different criteria.

1. OPR asks Customer to fill out the property search form.
 - optionally filled, locations (one or many from the list of available locations)
 - optionally filled, type of property
 - optionally filled, number of bedrooms
 - optionally filled, number of bathrooms
 - optionally filled, minimal and maximal desired rent
2. Customer fills out the property search form in any order and submits the search request.
3. Include use case [View Properties](#)
4. The use case terminates.

Alternate Flows

No Search Criteria

Occurs at step 3 of the basic flow if no search criteria have been entered.

1. OPR displays the property search form, indicating that at least one search criteria must be entered.
2. The use case resumes with step 2 of the basic flow.

Special Requirements

OPR must handle ten concurrent property searches. Searching for properties should not take longer than 10 seconds.

Update Account

- Preconditions:
 - Use case [View Account](#)
- Postconditions:
 - If successful, the account information was updated.
 - If not successful, the actor was informed about the problem.

Basic Flow

The use case begins when User wants to update her/his account for the OPR website.

1. User submits the initial update request.
2. OPR presents the prefilled account update form to the User.
 - username (cannot be changed)
 - password (must be verified if changed, the password is displayed as "*****" for security reasons)
 - given name (cannot be changed)
 - last name (cannot be changed)
 - email address (must contain one "@" character)
 - type of account (cannot be changed)
3. User changes the information in the account update form and submits the update request.
4. OPR updates the account information.
5. OPR informs User that the account was updated successfully.
6. The use case resumes with the base use case.

Alternate Flows

A1. Missing or Invalid Information

Occurs at step 4 of the basic flow if not all of the required account information was entered correctly.

1. OPR displays the filled account update form, indicating which information was not entered correctly.
2. The use case resumes with step 3 of the basic flow.

Special Requirements

OPR must be able to handle ten concurrent update account operations. Updating accounts should not take longer than 10 seconds.

Update Property

- Preconditions:
 - Use case [Owner View Properties](#)
- Postconditions:
 - If successful, information about the selected property was updated.
 - If not successful, the actor was informed about the problem.

Basic Flow

The use case begins when Owner wants to update information about a property.

1. Owner selects one property to be updated and submits the initial update request.
2. OPR presents the prefilled property update form including the following information:
 - The five descriptive photos as thumbnails
 - type of the property (cannot be changed)
 - address of the property (can not be changed)
 - location (can not be changed)
 - number of bedrooms
 - number of bathrooms
 - number of other rooms
 - rent
3. Owner changes the information in the property update form and submits the update request.
 - User can click on a thumbnail to change corresponding picture
4. OPR updates the property information.
5. The use case resumes with the base use case.

Alternate Flows

A1. Missing Information

Occurs at step 4 of the basic flow if not all of the required property information was entered correctly.

1. OPR displays the filled property update form, indicating which property information was not entered correctly.
2. The use case resumes with step 3 of the basic flow.

A2. No Property Selected

Occurs at step 2 of the basic flow if no property was selected.

1. OPR informs the actor that no property was selected.
2. The use case resumes with step 1 of the basic flow.

Special Requirements

OPR must be able to handle ten concurrent update property operations. Updating properties should not take longer than 10 seconds.

View Account

- Preconditions:
 - User (Customer or Owner) is logged to the OPR website.
- Postconditions:
 - If successful, the account information was shown.
 - If not successful, the actor was informed about the problem.

Basic Flow

The use case begins when User wants to view her/his account information.

1. OPR retrieves the User's account.
2. OPR displays the account information including:
 - username
 - given name
 - last name
 - email address
 - type of account
3. Optionally, use cases [Update Account](#), [Delete Account](#)
4. The use case terminates.

Alternate Flows

A1. No Matching Accounts

Occurs at step 2 of the basic flow if the number of retrieved accounts is zero.

1. OPR informs the actor that the provided account information does not match the records of OPR.
2. The use case terminates.

Special Requirements

OPR must handle ten concurrent view account operations. Viewing accounts should not take longer than 10 seconds.

View Properties

- Preconditions:
 - Use cases [Browse Properties By Location](#) or [Search Properties](#)
- Postconditions:
 - If successful, the property selected by the actor was shown.
 - If not successful, the actor was informed about the problem.

Basic Flow

1. OPR retrieves all available properties that match the actor's input (properties marked as "deleted" are not considered).
2. OPR displays a descriptive line for each property including
 - 5 descriptive photos as thumbnails - user may click on each to see a full size picture
 - type of the property
 - address of the property
 - location
 - number of bedrooms
 - number of bathrooms
 - number of other rooms
 - rent
3. Optionally, use case [Add To Visiting List](#)
4. The use case terminates.

Alternate Flows

A1. No Matching Properties

Occurs at step 2 of the basic flow if the number of retrieved properties is zero.

1. OPR informs the actor that no properties match the given input.
2. The use case terminates.

Special Requirements

OPR must handle ten concurrent instances of displaying properties. Displaying and sorting properties should not take longer than 10 seconds.

View Visit History

- Preconditions:
 - Owner is logged in the OPR website.
- Postconditions:
 - If successful, visit statistics about the Owner's properties were displayed.

Basic Flow

The use case begins when Owner wants to view the visit history of her/his properties.

1. OPR asks Owner to fill out the visit history form:
 - start month of reporting period
 - end month of reporting period
2. Owner fills out the visit history form in any order and submits the view request.
3. OPR retrieves the requested visit history of the properties of the owner.
4. OPR displays the visit history including:
 - start month of the reporting period
 - end month of the reporting period
 - for each month from the start month to the end month:
 - for each property visited at least once in the month
 - identifier of the property
 - total times visited (i.e included in a visiting list) during the month
 - total number of visits for the reporting period
 - The list may be sorted by month (descending by default), total times a property was visited.
5. The use case terminates.

Alternate Flows

A1. Missing Information

Occurs at step 3 of the basic flow if not all of the required visit history information was entered correctly.

1. OPR displays the filled visit history form, indicating which visit history information was not entered correctly.
2. The use case resumes with step 2 of the basic flow.

Special Requirements

OPR must be able to handle ten concurrent view history visit requests. Viewing and sorting statistics should not take longer than 10 seconds.

View Visiting List

- Preconditions:
 - Customer is logged to the OPR website.
- Postconditions:
 - If successful, the content of the customer's visiting list was displayed.

Basic Flow

The use case begins when Customer wants to view her/his visiting list.

1. OPR displays the content of the visiting list of Customer including the following information:
 - thumbnail of each photo of the property
 - Type of the property
 - address of the property
 - location
 - number of bedrooms
 - number of bathrooms
 - number of other rooms
 - rent
2. Optionally, use cases [Remove From Visiting List](#), [Rent Property](#)
3. The use case terminates.

Alternate Flows

A1. Empty Visiting List

Occurs at step 1 of the basic flow if the visiting list is empty.

1. OPR informs Customer that the visiting list is empty.
2. The use case terminates.

Special Requirements

OPR must be able to handle ten concurrent view visiting list operations. Viewing a visiting should not take longer than 10 seconds.