

Harvest

Functional Requirements and Application Design

HTTP_418

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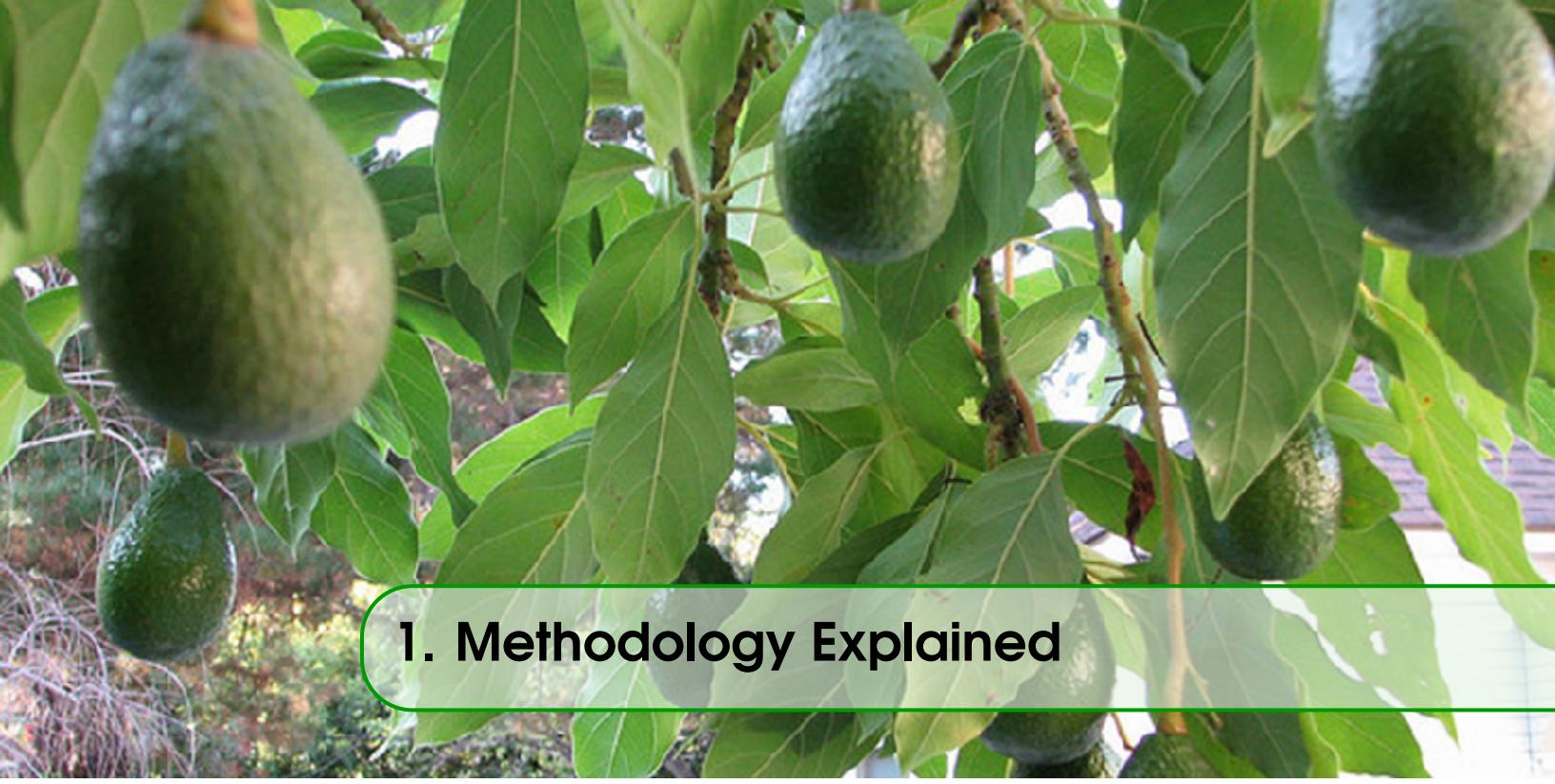
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1. Methodology Explained

We, as HTTP_418, had a discussion after project allocations regarding how we were going to tackle our project. We came to the decision to first map out the system as a whole, so as to fully understand the scope and inner workings of the system. We did this through various meetings and then finally a determination of an adequate domain model. Once we had a better understanding of our system, we decided that understanding what was required for each functional part was important to know where to begin. So we planned on drafting a formulation of our functional requirements and then confirming this draft with our client to ensure we were on the right track. This involved mapping each functional part of our system into diagrams so we understood how each part of the system interacted with each other.

Once this was completed, we realised the importance of a unified user interface that encompassed user-friendliness and an excellent user experience. As we were going to be split up during the holiday, this factor was extremely important as we didn't want the design to suffer because of miscommunication. To solve this issue, we decided our next sprint would need to be a mock-up of the user interface for every use case so that we could agree as a whole that we were satisfied with what the outcome of the system would be. After this, we agreed that the focus should entirely be on the implementation and testing of the system now that we had an interface to work from, especially considering it is a mostly Web-based system which requires code to link to the interface mark-up.

Thus, we believe that we have formed our own methodology, which is neither completely Agile nor Waterfall, which is more effective for Web development than choosing one type of methodology in its entirety. We feel that the importance of initially determining the functional and user interface requirements is crucial to a successful user-friendly website rather than needing to iron out all inconsistencies and design issues right at the end of development. Once these requirements are drafted, the implementation and testing should become of more importance with updates to all the documentation still occurring throughout the development process. To sum it up, this methodology is divided into 2 phases where the focus shifts from requirements definition and design to implementation and testing following a semi-Waterfall structure within each phase but an Agile structure overall.



2. Use Case Prioritization

2.1 Critical

- Login/Logout user
- Change Password
- Recover Password
- View/Edit/Create Farmer – Web interface
- View/Edit/Create Farm – Web interface
- View/Edit/Create Foreman – Web interface
- View/Edit/Create Worker – Web interface
- View/Create/Edit Orchard Block (crop dimensions, crop type, irrigation type, date planted, yields per hectare, cultivation frequency, yield measurement type) – Web interface
- View/Create/Edit Irrigation Type – Web interface
- View/Create/Edit Crop Type – Web interface
- View/Update Worker Performance (yields collected per worker)
- View/Create/Edit Yield Measurement Type (by farmer, eg. kg, bag, g, etc.) – Web interface
- View/Create/Edit Cultivation Frequency – Web interface
- Maintain Foreman-Orchard Block Allocations (allocate/deallocate foreman to orchard blocks) – Web interface
- View Foreman-Orchard Block Allocation – Web interface
- Maintain Worker-Foreman Assignments (assign/reassign workers to/from foreman) – Web interface
- View Worker-Foreman Assignment – Web interface

2.2 Important

- Import Census Data – Web interface
- Generate Statistical Report of Worker Performance (time intervals) – Web interface
- Generate Statistical Report Crop Yield per Orchard (potentially linked to heatmap generation) – Web interface

2.3 Nice-to-have

- View Heat Map – Web interface
- View/Create/Edit Foreman's Shift (potentially linked to location tracking) – Web interface
- Notify Farmer Regarding Foreman's Locations (according to time intervals)
- Notify Farmer of Foreman's Activity History Every Half an Hour
- View/Delete Notifications
- Generate Revenue Report Regarding Seasonal Yields (to plan paying workers, operational costs, etc.) – Web interface
- Generate Statistical Report Regarding Time Taken to Yield Specific Crops– Web interface

3. Use Cases and Service Contracts

3.1 Login User

- Description

This use case will be used by the users of the Web interface, Android interface and the iOS interface to initiate login via the back-end service.

- Pre-Conditions

1. The user has a registered account within the database.
2. The user's account is not locked.

- Post-Conditions

1. The user will be logged in and have access to the necessary functionality.

- Service Contract

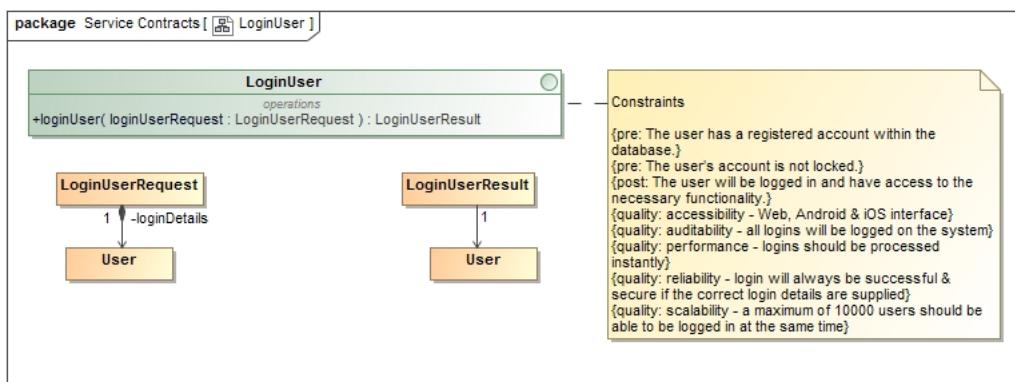


Figure 3.1: Login User

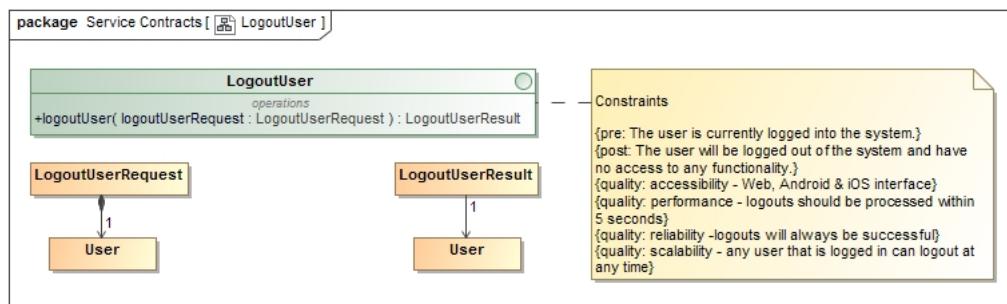


Figure 3.2: Logout User

3.2 Logout User

- Description
This use case will be used by the users of the Web interface, Android interface and the iOS interface to log a user out of the system.
- Pre-Conditions
 1. The user is currently logged into the system.
- Post-Conditions
 1. The user will be logged out of the system and have no access to any functionality.
- Service Contract

3.3 Change Password

- Description
This use case will be used by the users of the Web interface, Android interface and the iOS interface to change their password.
- Pre-Conditions
 1. The user has a registered account within the database.
 2. The user's account is not locked.
- Post-Conditions
 1. The user's password is updated in the database.
- Service Contract

3.4 Recover Password

- Description
This use case will be used by the users of the Web interface, Android interface and the iOS interface to recover their forgotten password.
- Pre-Conditions
 1. The user has a registered account within the database.
 2. The user's account is not locked.
- Post-Conditions
 1. The user will receive an email containing their password.
- Service Contract

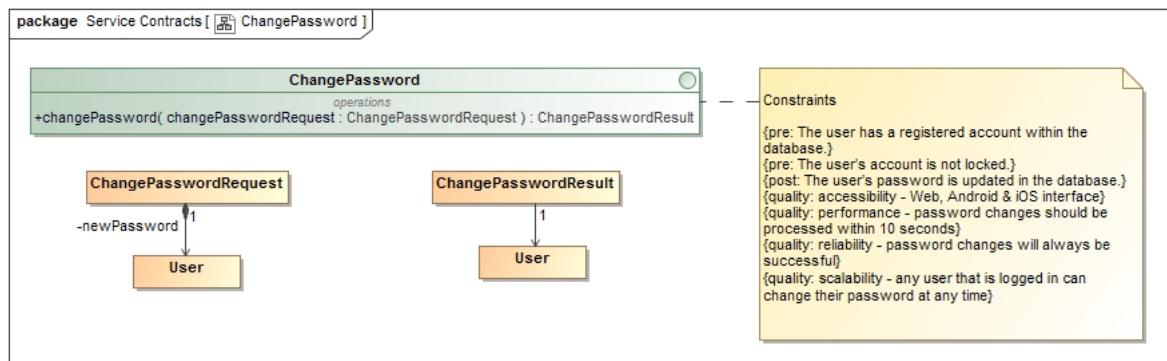


Figure 3.3: Change Password

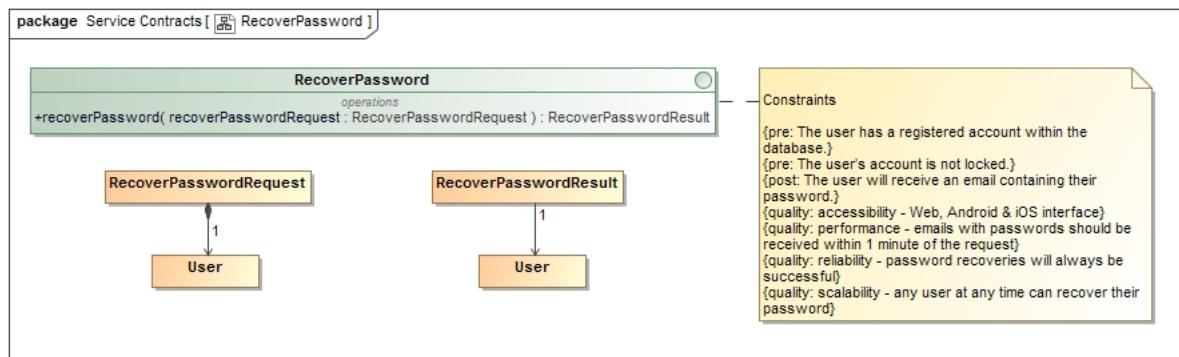


Figure 3.4: Recover Password

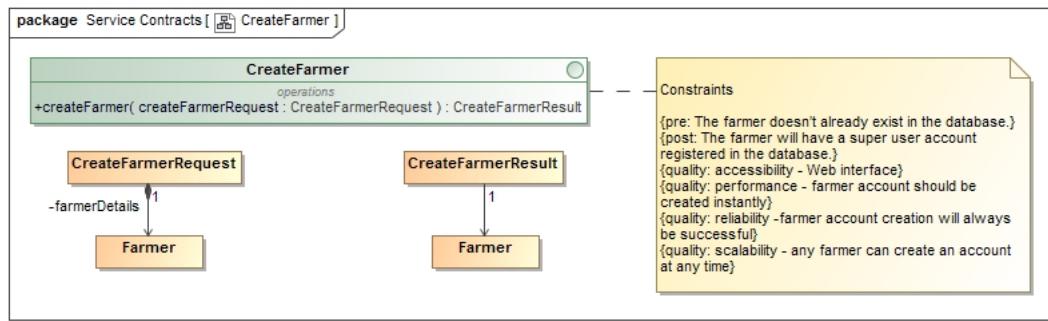


Figure 3.5: Create Farmer

3.5 Create Farmer

- Description
This use case will be initiated by the farmer to create his superuser account for the system via the Web interface.
- Pre-Conditions
 1. The farmer doesn't already exist in the database.
- Post-Conditions
 1. The farmer will have a superuser account registered in the database.
- Service Contract

3.6 View Farmer

- Description
This use case will be initiated by the farmer to view the current state of his superuser account for the system via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The farmer already exists in the database.
- Post-Conditions
 1. The farmer's account details will be displayed.
- Service Contract

3.7 Edit Farmer

- Description
This use case will be initiated by the farmer to edit his superuser account for the system via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The farmer already exists in the database.
- Post-Conditions
 1. The farmer's details are updated in the database.
- Service Contract

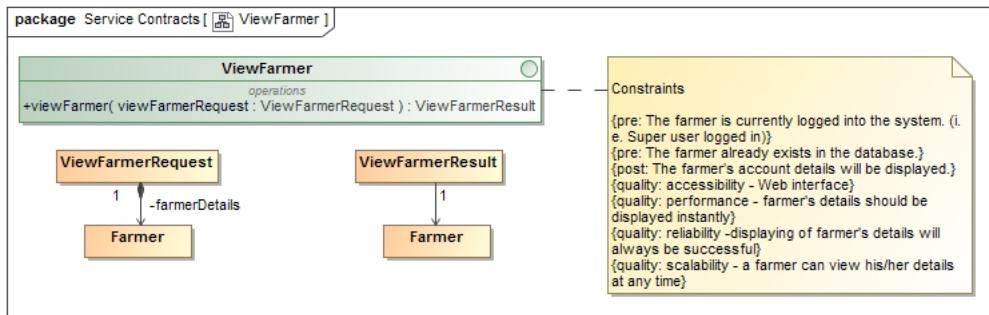


Figure 3.6: View Farmer

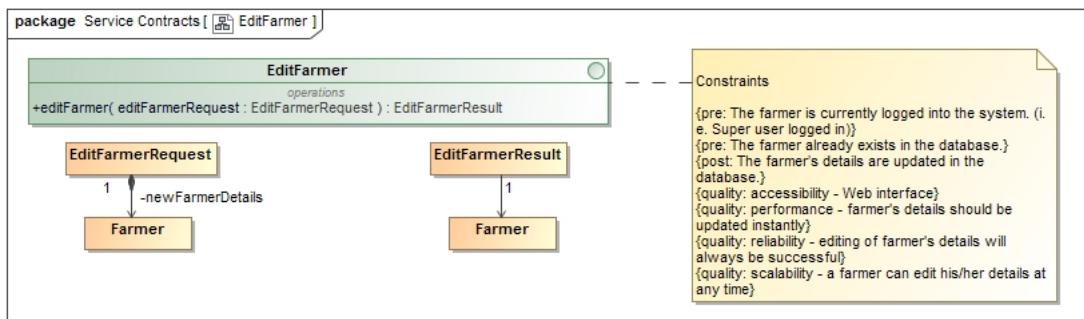


Figure 3.7: Edit Farmer

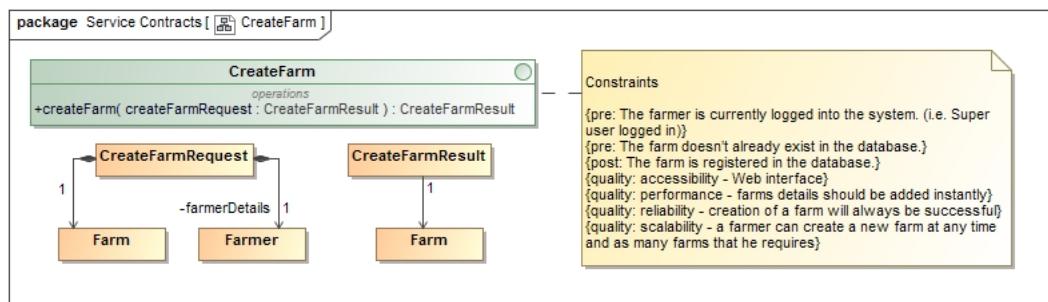


Figure 3.8: Create Farm

3.8 Create Farm

- Description
This use case will be initiated by the farmer to register his farm on the system via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The farm doesn't already exist in the database.
- Post-Conditions
 1. The farm is registered in the database.
- Service Contract

3.9 View Farm

- Description
This use case will be initiated by the farmer to view the current state of his farm's details on the system via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The farm already exists in the database.
- Post-Conditions
 1. The farm's account details will be displayed.
- Service Contract

3.10 Edit Farm

- Description
This use case will be initiated by the farmer to edit his farm's details on the system via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The farm already exists in the database.
- Post-Conditions
 1. The farm's details are updated in the database.

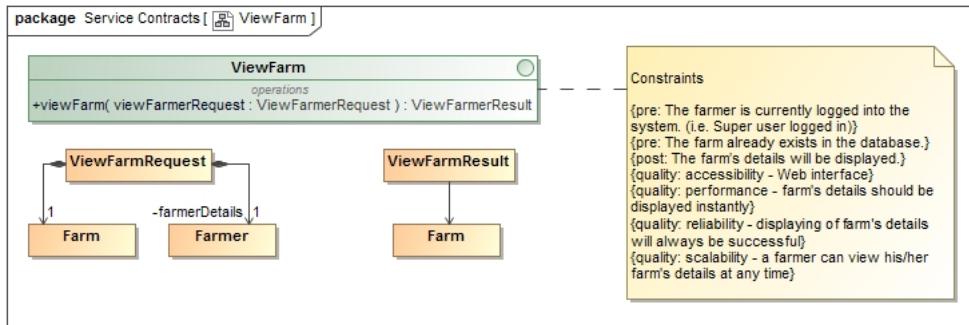


Figure 3.9: View Farm

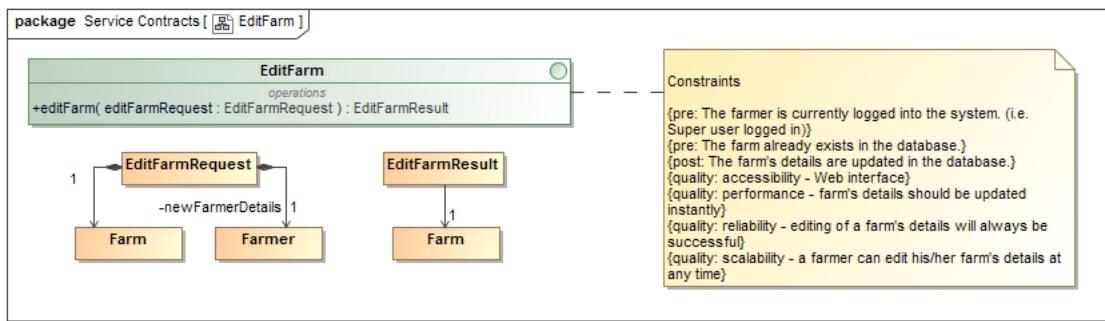


Figure 3.10: Edit Farm

- Service Contract

3.11 Create Foreman

- Description

This use case will be initiated by the farmer to register his foremen individually on the system as general users via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The foreman doesn't already exist in the database.

- Post-Conditions

1. The foreman will have a general user account registered in the database.
2. Login details are generated for the foreman.

- Service Contract

3.12 View Foreman

- Description

This use case will be initiated by the farmer to view the current state of his foreman's general user account for the system via the Web interface.

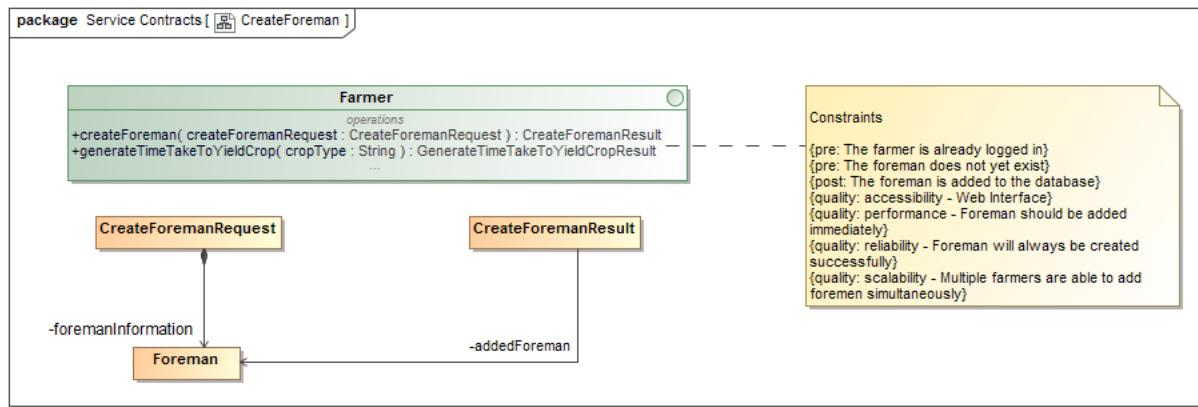


Figure 3.11: Create Foreman

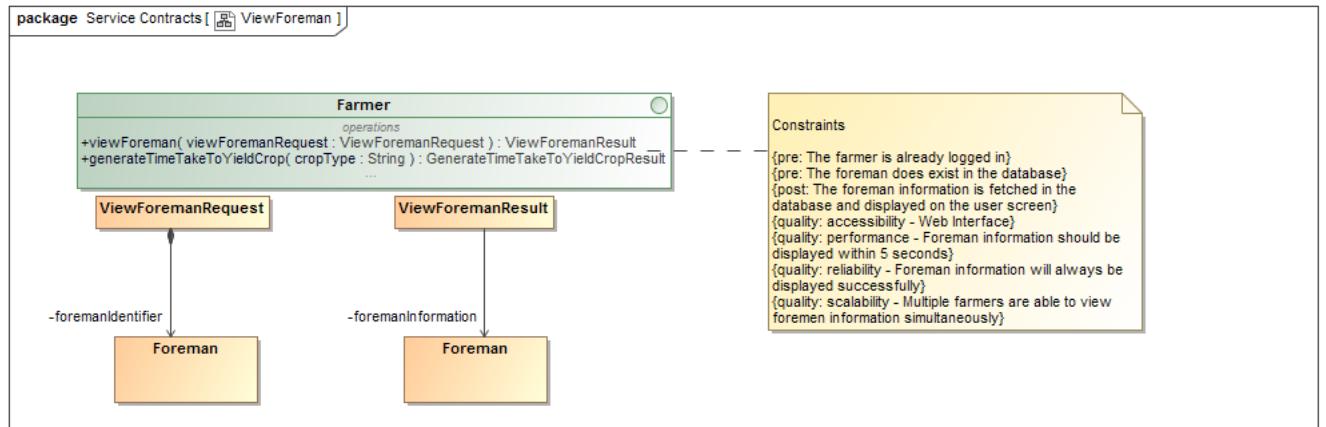


Figure 3.12: View Foreman

- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The foreman already exists in the database.
- Post-Conditions
 1. The foreman's account details will be displayed.
- Service Contract

3.13 Edit Foreman

- Description

This use case will be initiated by the farmer to edit his foreman's general user account for the system via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The foreman already exists in the database.

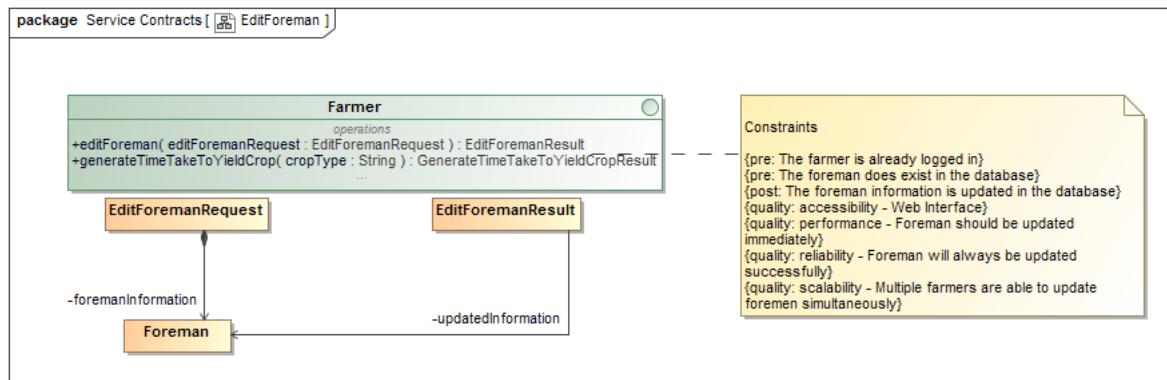


Figure 3.13: Edit Foreman

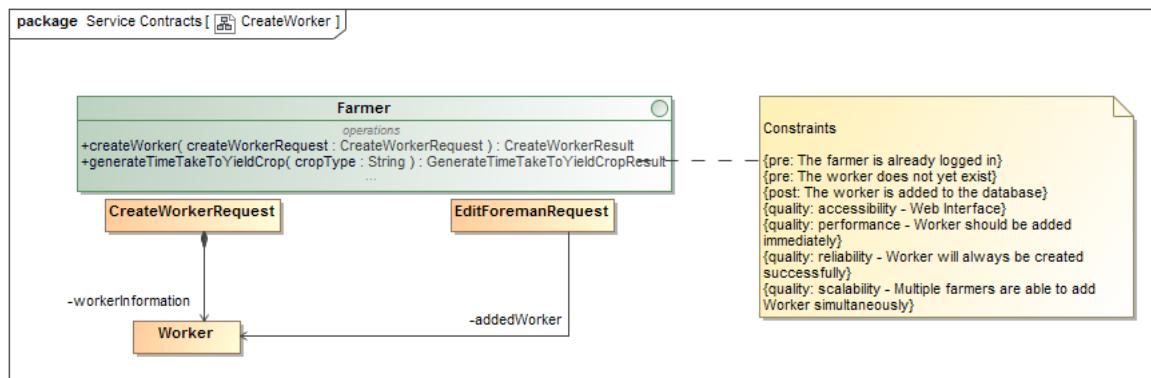


Figure 3.14: Create Worker

- Post-Conditions
 1. The foreman's details are updated in the database.
- Service Contract

3.14 Create Worker

- Description

This use case will be initiated by the farmer to add his workers individually onto the system via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The worker doesn't already exist in the database.
- Post-Conditions
 1. The worker's details are in the database.
- Service Contract

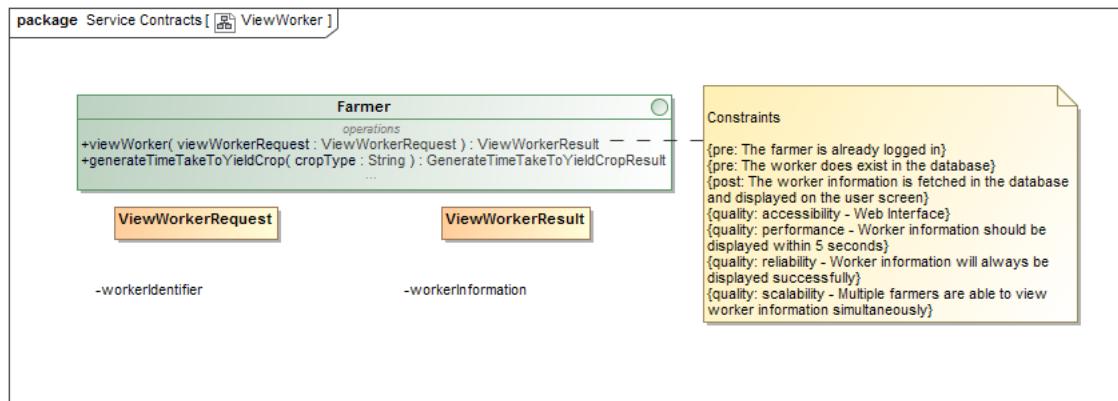


Figure 3.15: View Worker

3.15 View Worker

- Description

This use case will be initiated by the farmer to view the current state of his worker's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The worker already exists in the database.

- Post-Conditions

1. The worker's account details will be displayed.

- Service Contract

3.16 Edit Worker

- Description

This use case will be initiated by the farmer to edit his worker's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The worker already exists in the database.

- Post-Conditions

1. The worker's details are updated in the database.

- Service Contract

3.17 Create Orchard Block

- Description

This use case will be initiated by the farmer to create the orchard block on his farm according to map coordinates and by entering the necessary details (crop dimensions, crop type, irrigation type, date planted, yields per hectare) via the Web interface.

- Pre-Conditions

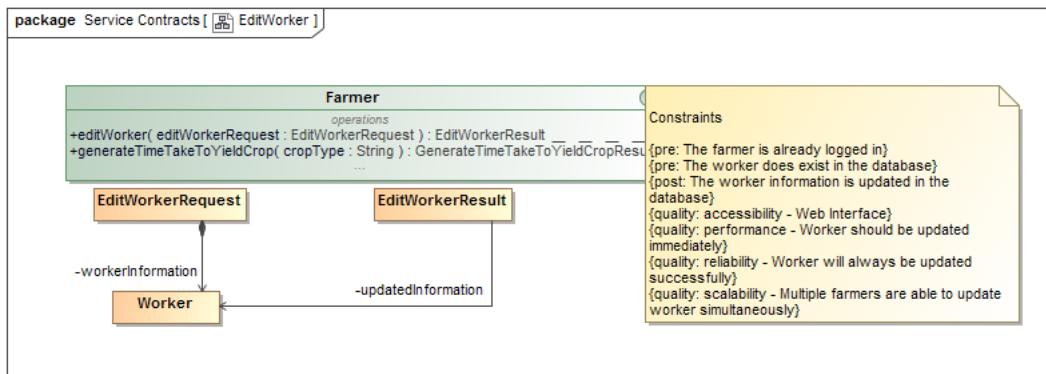


Figure 3.16: Edit Worker

[Insert
Image Here]

Figure 3.17: Create Orchard Block

1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The orchard block doesn't already exist.
- Post-Conditions
 1. The new orchard block's details are stored in the database.
 - Service Contract

3.18 View Orchard Block

- Description

This use case will be initiated by the farmer to view the orchard block on his farm via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The orchard block already exists on the system.
- Post-Conditions
 1. The orchard block's details are displayed.
- Service Contract

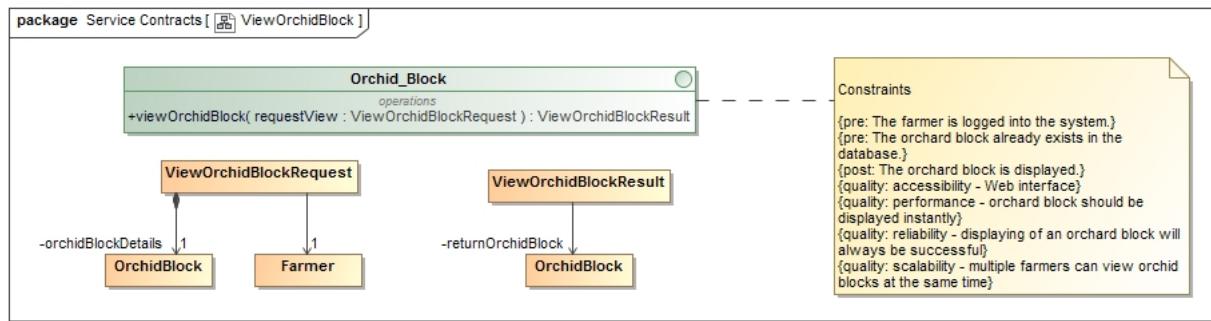


Figure 3.18: View Orchard Block

[Insert
Image Here]

Figure 3.19: Edit Orchard Block

3.19 Edit Orchard Block (i.e. crop type, irrigation type, re-demarcate coordinates, archive, etc.)

- Description
This use case will be initiated by the farmer to edit the orchard blocks on his farm via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The orchard block already exists on the system.
- Post-Conditions
 1. The orchard block's details are updated in the database.
- Service Contract

3.20 Create Irrigation Type

- Description
This use case will be initiated by the farmer to create an irrigation type used on his farm on the system via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The irrigation type doesn't already exist in the database.
- Post-Conditions
 1. The irrigation type is added to the database.
- Service Contract

[Insert
Image Here]

Figure 3.20: Create Irrigation Type

[Insert
Image Here]

Figure 3.21: View Irrigation Type

3.21 View Irrigation Type

- Description

This use case will be initiated by the farmer to view the current state of an irrigation type's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The irrigation type already exists in the database.

- Post-Conditions

1. The irrigation type's details will be displayed.

- Service Contract

3.22 Edit Irrigation Type

- Description

This use case will be initiated by the farmer to edit an irrigation type's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The irrigation type already exists in the database.

- Post-Conditions

1. The irrigation type's details are updated in the database.

- Service Contract

[Insert
Image Here]

Figure 3.22: Edit Irrigation Type

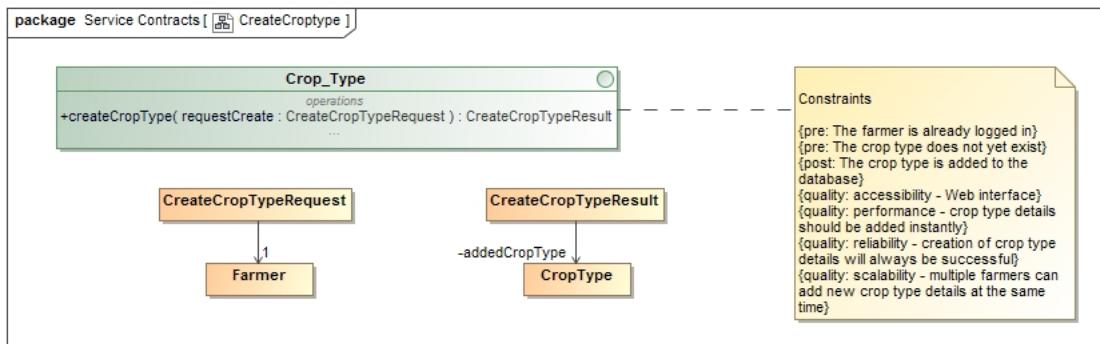


Figure 3.23: Create Crop Type

3.23 Create Crop Type

- Description

This use case will be initiated by the farmer to create a crop type planted on his farm on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The crop type doesn't already exist in the database.

- Post-Conditions

1. The crop type is added to the database.

- Service Contract

3.24 View Crop Type

- Description

This use case will be initiated by the farmer to view the current state of a crop type's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The crop type already exists in the database.

- Post-Conditions

1. The crop type's details will be displayed.

- Service Contract

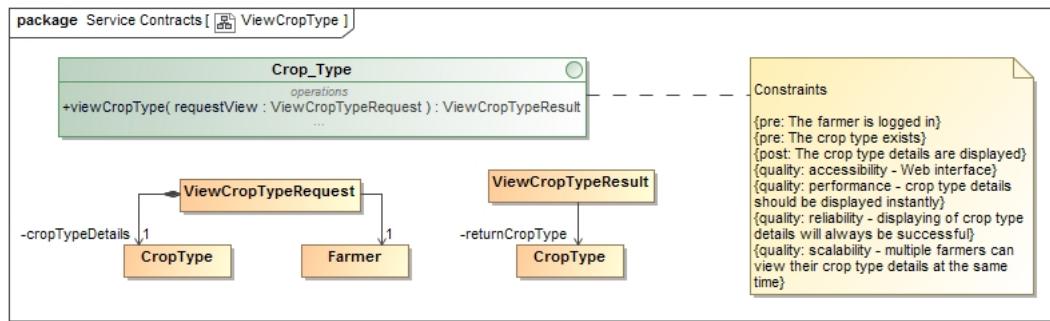


Figure 3.24: View Crop Type

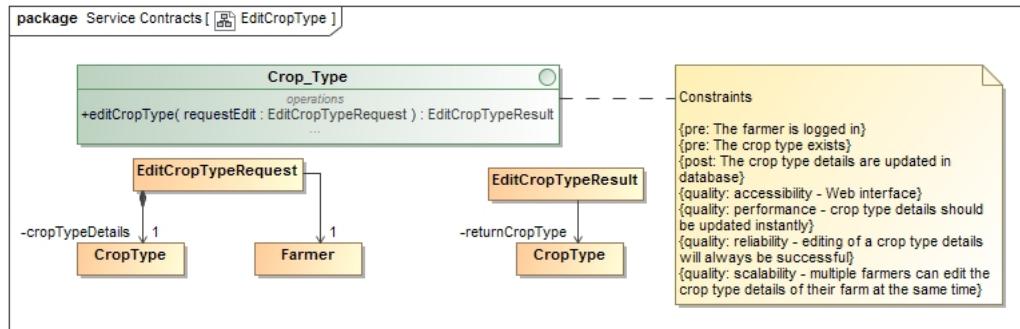


Figure 3.25: Edit Crop Type

3.25 Edit Crop Type

- Description

This use case will be initiated by the farmer to edit a crop type's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The crop type already exists in the database.

- Post-Conditions

1. The crop type's details are updated in the database

- Service Contract

3.26 View Worker Yield

- Description

This use case will be initiated by the foreman to view the current state of a specific worker's performance details on the system via the Android or iOS interface.

- Pre-Conditions

1. The foreman is currently logged into the system.
2. The worker already exists in the database.

- Post-Conditions

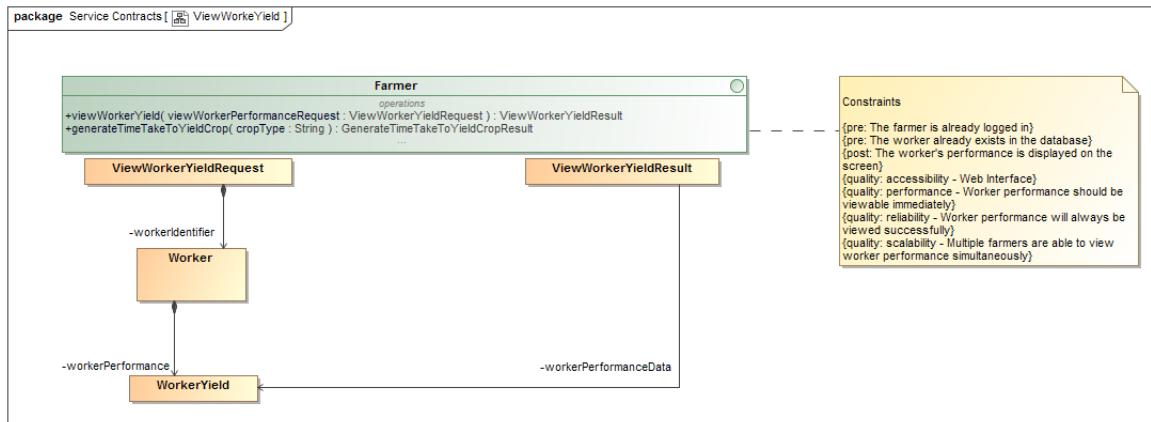


Figure 3.26: View Worker Yield

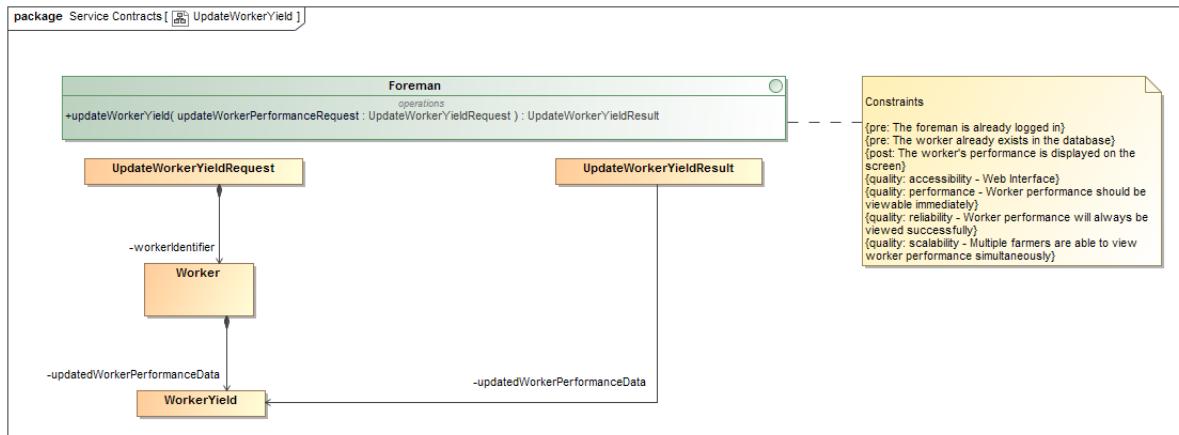


Figure 3.27: Update Worker Yield

1. The worker's performance details will be displayed.
- Service Contract

3.27 Update Worker Yield

- Description

This use case will be initiated by the foreman to update a specific worker's performance by adjusting the yields collected by the worker on the system via the Android or iOS interface.

- Pre-Conditions

1. The foreman is currently logged into the system.
2. The worker already exists in the database.

- Post-Conditions

1. The worker's performance details are updated in the database.

- Service Contract

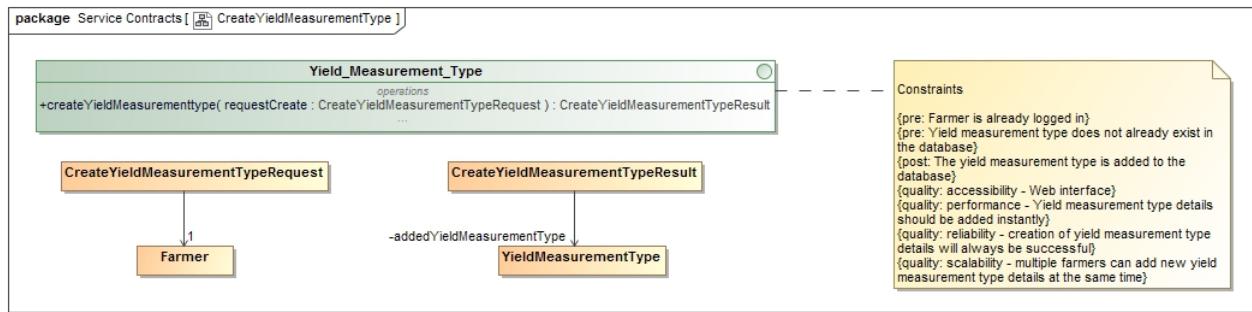


Figure 3.28: Create Yield Measurement Type

3.28 Create Yield Measurement Type

- Description

This use case will be initiated by the farmer to create a yield measurement type used on his farm on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The yield measurement type doesn't already exist in the database.

- Post-Conditions

1. The yield measurement type is added to the database.

- Service Contract

3.29 View Yield Measurement Type

- Description

This use case will be initiated by the farmer to view the current state of a yield measurement type's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The yield measurement type already exists in the database.

- Post-Conditions

1. The yield measurement type's details will be displayed.

- Service Contract

3.30 Edit Yield Measurement Type

- Description

This use case will be initiated by the farmer to edit a yield measurement type's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The yield measurement type already exists in the database.

- Post-Conditions

1. The yield measurement type's details are updated in the database.

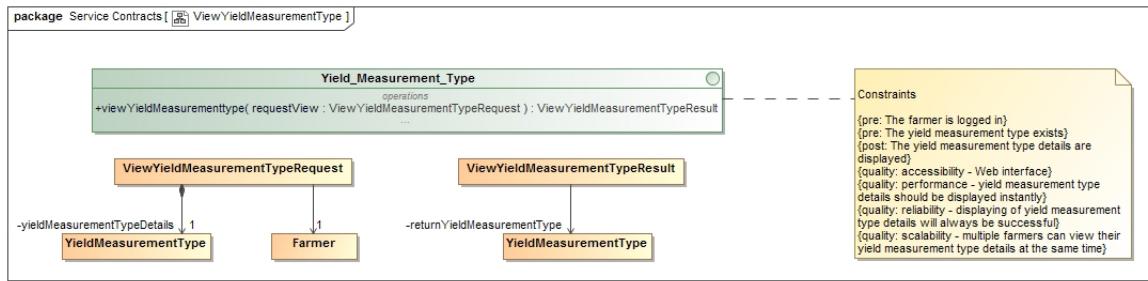


Figure 3.29: View Yield Measurement Type

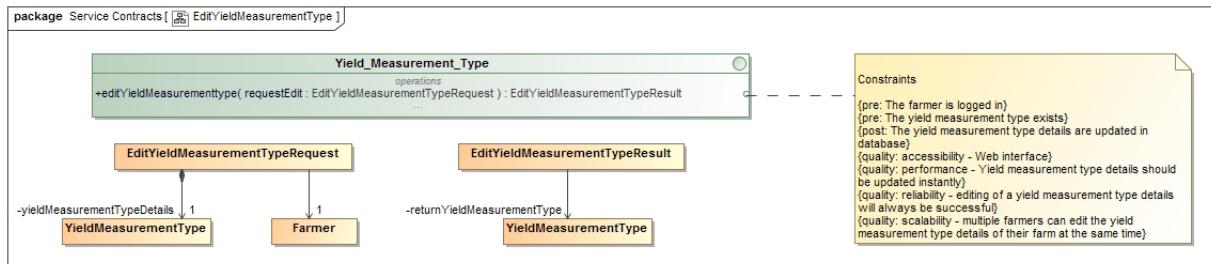


Figure 3.30: Edit Yield Measurement Type

- Service Contract

3.31 Create Cultivation Frequency

- Description

This use case will be initiated by the farmer to create a cultivation frequency used on his farm on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The cultivation frequency doesn't already exist in the database.

- Post-Conditions

1. The cultivation frequency is added to the database.

- Service Contract

[Insert
Image Here]

Figure 3.31: Create Cultivation Frequency

[Insert
Image Here]

Figure 3.32: View Cultivation Frequency

[Insert
Image Here]

Figure 3.33: Edit Cultivation Frequency

3.32 View Cultivation Frequency

- Description

This use case will be initiated by the farmer to view the current state of a cultivation frequency's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The cultivation frequency already exists in the database.

- Post-Conditions

1. The cultivation frequency's details will be displayed.

- Service Contract

3.33 Edit Cultivation Frequency

- Description

This use case will be initiated by the farmer to edit a cultivation frequency's details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The cultivation frequency already exists in the database.

- Post-Conditions

1. The cultivation frequency's details are updated in the database.

- Service Contract

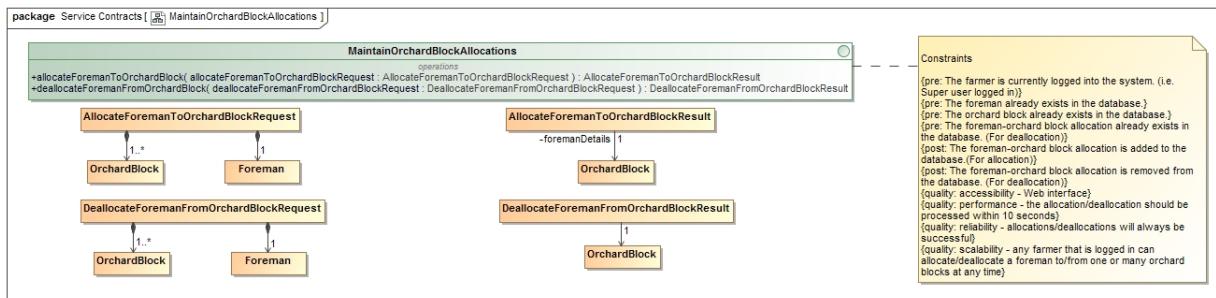


Figure 3.34: Maintain Foreman-Orchard Block Allocations

3.34 Maintain Foreman-Orchard Block Allocations

- Description

This use case will be initiated by the farmer to allocate or deallocate a specific foreman to/from a specific orchard block or multiple orchard blocks on his farm on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The foreman already exists in the database.
3. The orchard block already exists in the database.
4. The foreman-orchard assignment already exists in the database. (For deallocation)

- Post-Conditions

1. The foreman-orchard assignment is added to the database. (For allocation)
2. The foreman-orchard assignment is removed from the database. (For deallocation)

- Service Contract

3.35 View Foreman-Orchard Block Allocations

- Description

This use case will be initiated by the farmer to view the current foreman-orchard block allocations on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The foreman-orchard block allocation already exists in the database.

- Post-Conditions

1. The foreman-orchard block allocations will be displayed.

- Service Contract

3.36 Maintain Worker-Foreman Assignments

- Description

This use case will be initiated by the farmer to assign/reassign a specific worker to a specific foreman on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)

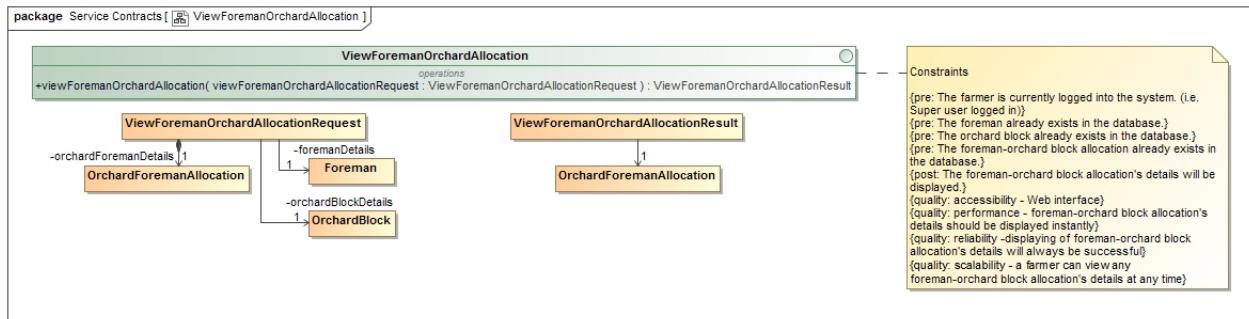


Figure 3.35: View Foreman-Orchard Block Allocations

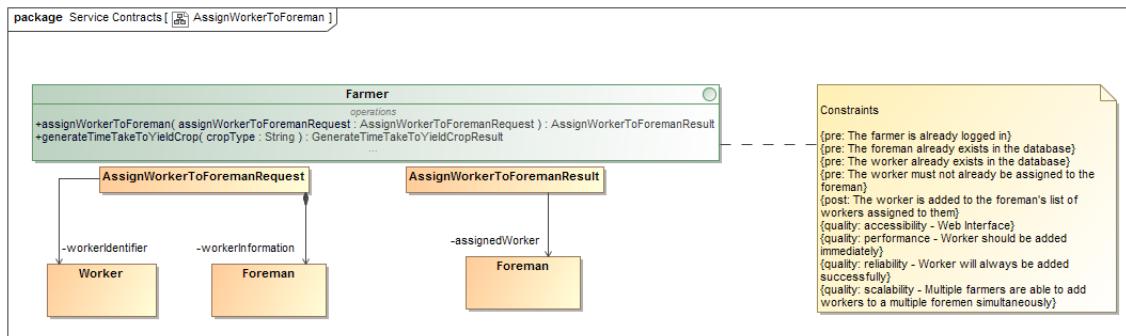


Figure 3.36: Assign Worker to Foreman

2. The worker already exists in the database.
 3. The foreman already exists in the database.
 4. The worker-foreman assignment already exists in the database. (For reassignment)
- Post-Conditions
 1. The worker-foreman assignment is added to the database. (For assignment)
 2. The worker-foreman assignment is updated in the database. (For reassignment)
 - Service Contract

3.37 View Worker-Foreman Assignments

- Description

This use case will be initiated by the farmer to view the current worker-foreman block assignments on the system via the Web interface.
- Pre-Conditions
 1. The farmer is currently logged into the system. (i.e. Super user logged in)
 2. The worker-foreman block assignment already exists in the database.
- Post-Conditions
 1. The worker-foreman block assignments will be displayed.
- Service Contract

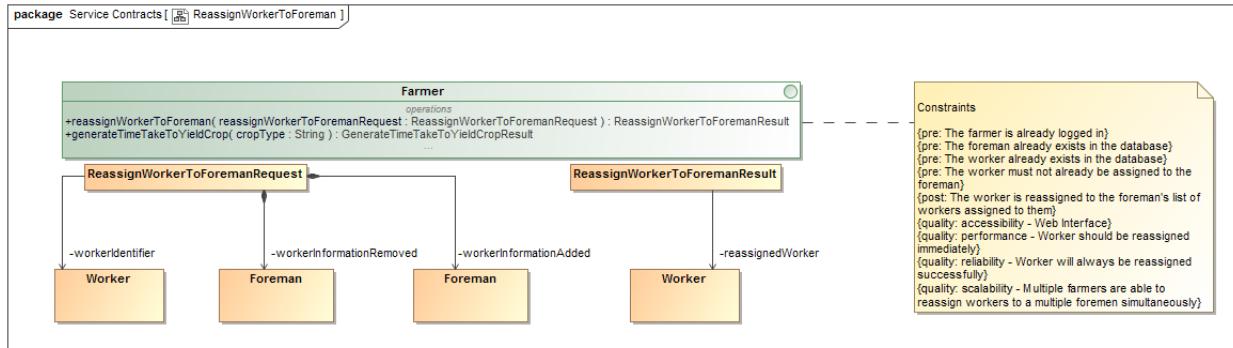


Figure 3.37: Reassign Worker to New Foreman

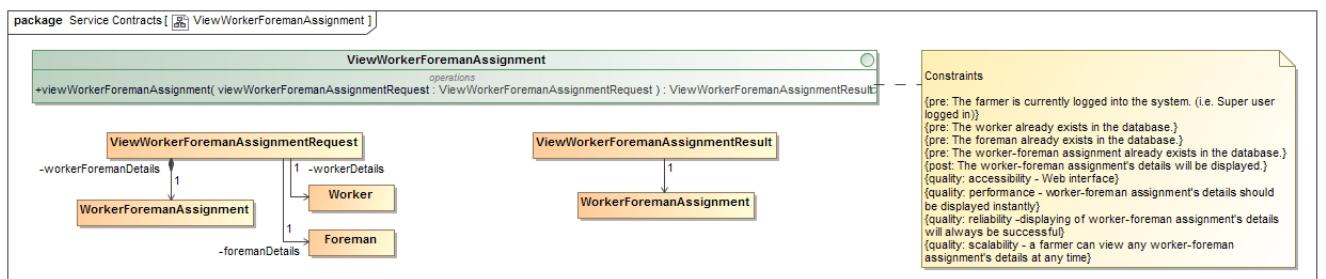


Figure 3.38: View Worker-Foreman Assignments

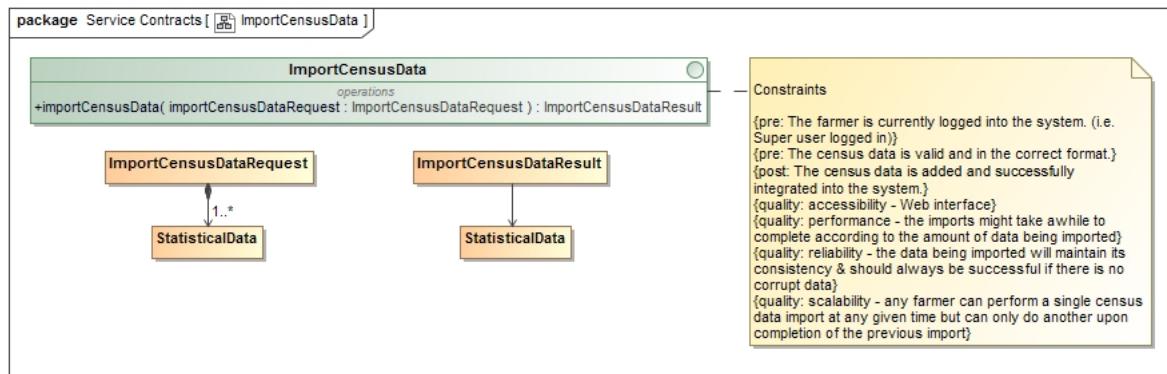


Figure 3.39: Import Census Data

3.38 Import Census Data

- Description

This use case will be initiated by the farmer to import current census data onto the system via the Web interface to reduce the amount of data needed to be input manually.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The census data is valid and in the correct format.

- Post-Conditions

1. The census data is added and successfully integrated into the system.

- Service Contract

3.39 Generate Statistical Report of Worker Performance (according to time intervals)

- Description

This use case will be initiated by the farmer to generate a report showing the performance of his workers during certain time intervals for statistical purposes via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The data on the worker's performance, required for the report, is present in the database.

- Post-Conditions

1. The workers performance report has been generated in a usable format.

- Service Contract

3.40 Generate Statistical Report of Crop Yield per Orchard

- Description

This use case will be initiated by the farmer to generate a report showing the crop yield per orchard for statistical purposes via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)

[Insert
Image Here]

Figure 3.40: Generate Statistical Report of Worker Performance (according to time intervals)



Figure 3.41: Generate Statistical Report of Crop Yield per Orchard

2. The data on the crop yields for each orchard, required for the report, is present in the database.
- Post-Conditions
 1. The crop yield per orchard report has been generated in a usable format.
 - Service Contract

3.41 View Heat Map

- Description

This use case will be initiated by the farmer to view the crop yields per orchard blocks according to a heat map via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The data on the crop yields for each orchard, required to generate the heat map, is present in the database.

- Post-Conditions

1. The crop yield per orchard heat map is generated and displayed.

- Service Contract

3.42 Create Foreman's Shift

- Description

This use case will be initiated by the farmer to allocate a foreman to a specific shift on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)

[Insert
Image Here]

Figure 3.42: View Heat Map

[Insert
Image Here]

Figure 3.43: Create Foreman's Shift

2. The foreman already exists in the database.
 3. The foreman-shift assignment doesn't exist in the database.
- Post-Conditions
 1. The foreman-shift assignment is added to the database.
 - Service Contract

3.43 View Foreman's Shift

- Description

This use case will be initiated by the farmer to view the current state of a foreman's shift details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The foreman-shift assignment already exists in the database.

- Post-Conditions

1. The foreman-shift assignment details will be displayed.

- Service Contract

3.44 Edit Foreman's Shift

- Description

This use case will be initiated by the farmer to edit a foreman's shift details on the system via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The foreman-shift assignment already exists in the database.

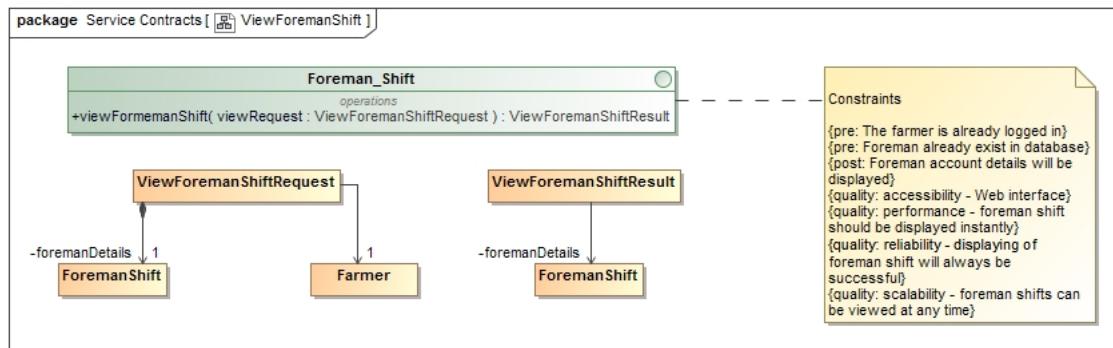


Figure 3.44: View Foreman's Shift

[Insert
Image Here]

Figure 3.45: Edit Foreman's Shift

- Post-Conditions
 1. The foreman-shift assignment details are updated in the database.
- Service Contract

3.45 Notify Farmer Regarding Foreman's Locations (according to time intervals)

- Description

This use case will be initiated when a foreman leaves the demarcated area he has been allocated during his shift hours. When this occurs, a SMS or in-app notification will alert the farmer regarding this unusual occurrence via the Android or iOS interface.
- Pre-Conditions
 1. The farmer is currently logged into the system on his mobile device. (i.e. Super user logged in)
 2. The foreman is logged into the system on his mobile device.
 3. The data regarding the foreman's shift, allocated orchard block and his current GPS location are available to initiate the notification.
- Post-Conditions
 1. The farmer receives an SMS or an in-app notification regarding the foreman's current location.
- Service Contract

[Insert
Image Here]

Figure 3.46: Notify Farmer Regarding Foreman's Locations

[Insert
Image Here]

Figure 3.47: Notify Farmer of Foreman's Activity History Every Half an Hour

3.46 Notify Farmer of Foreman's Activity History Every Half an Hour

- Description

This use case will be initiated every half an hour to notify the farmer on his mobile device regarding the foreman's activity history to prevent theft.

- Pre-Conditions

1. The farmer is currently logged into the system on his mobile device. (i.e. Super user logged in)
2. The foreman is logged into the system on his mobile device.
3. The foreman's activity history is present in the database.

- Post-Conditions

1. The farmer receives an SMS or an in-app notification every half an hour regarding the foreman's activity history.

- Service Contract

3.47 Generate Revenue Report Regarding Seasonal Yields

- Description

This use case will be initiated by the farmer to generate a report showing the revenue generated according to seasonal yields per orchard block for statistical purposes via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The data on the crop yields for each orchard and the related revenue, required for the report, is present in the database.

- Post-Conditions

1. The revenue per orchard report has been generated in a usable format.



Figure 3.48: Generate Revenue Report Regarding Seasonal Yields

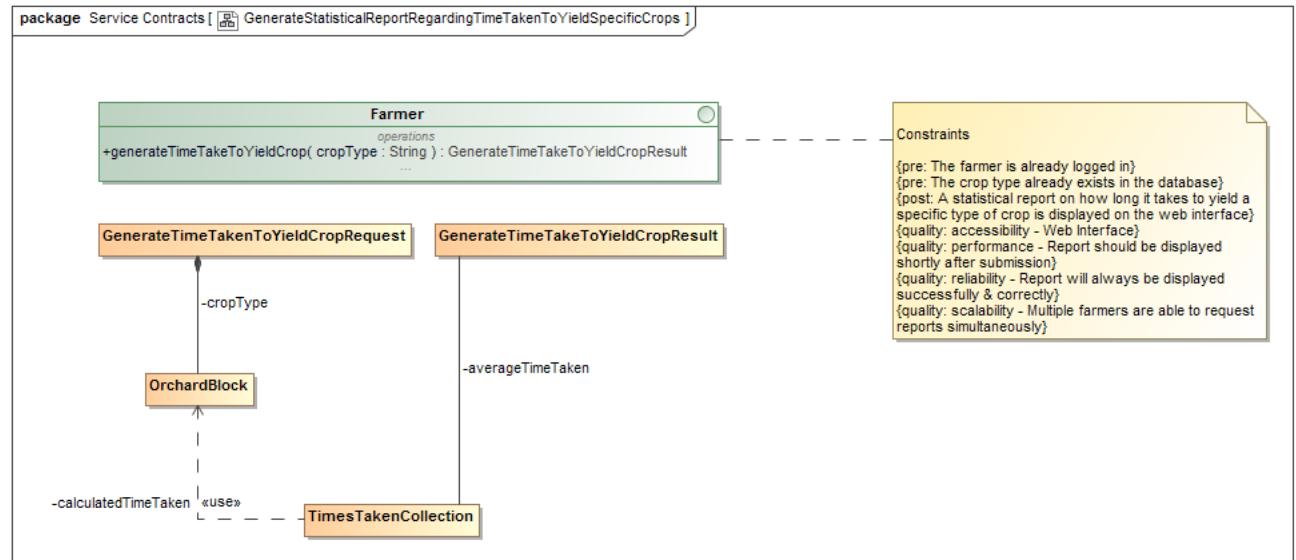


Figure 3.49: Generate Statistical Report Regarding Time Taken to Yield Specific Crops

- Service Contract

3.48 Generate Statistical Report Regarding Time Taken to Yield Specific Crops

- Description

This use case will be initiated by the farmer to generate a report showing the amount of time it takes to yield certain crops for statistical purposes via the Web interface.

- Pre-Conditions

1. The farmer is currently logged into the system. (i.e. Super user logged in)
2. The data regarding the time it takes to yield specific crops is present in the database.

- Post-Conditions

1. The time taken to yield specific crops report has been generated in a usable format.

- Service Contract



4. Use Case Functionality

- 4.1 Login User
- 4.2 Logout User
- 4.3 Change Password
- 4.4 Recover Password
- 4.5 Create Farmer
- 4.6 View Farmer
- 4.7 Edit Farmer
- 4.8 Create Farm
- 4.9 View Farm
- 4.10 Edit Farm
- 4.11 Create Foreman
- 4.12 View Foreman
- 4.13 Edit Foreman
- 4.14 Create Worker
- 4.15 View Worker
- 4.16 Edit Worker
- 4.17 Create Orchard Block
- 4.18 View Orchard Block

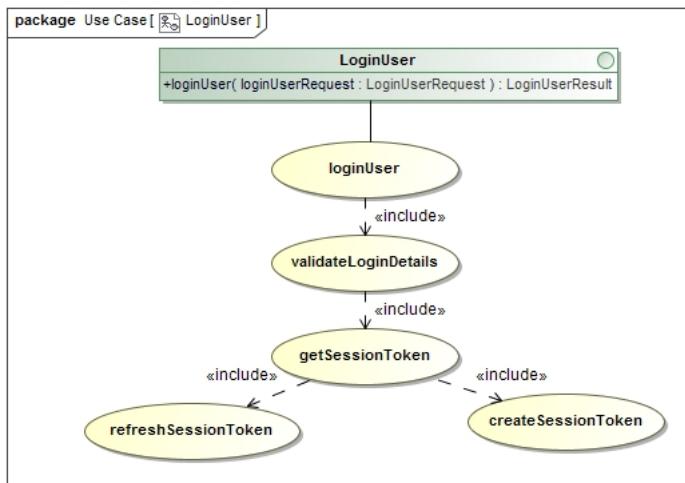


Figure 4.1: Login User

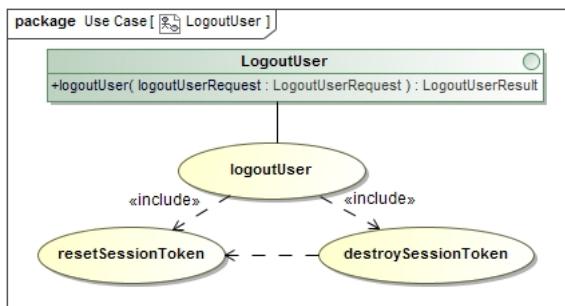


Figure 4.2: Logout User

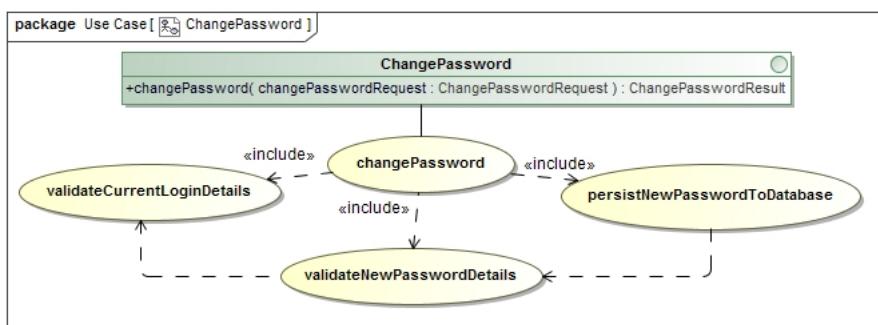


Figure 4.3: Change Password

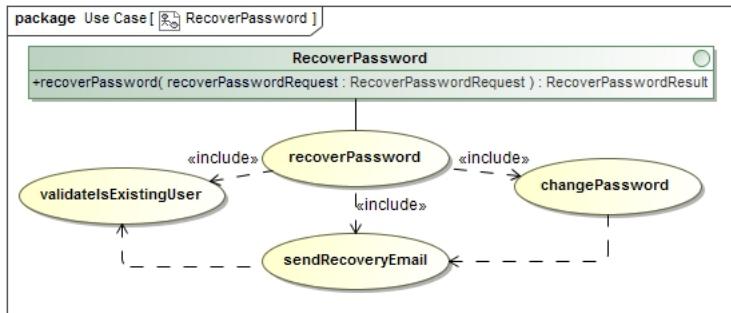


Figure 4.4: Recover Password

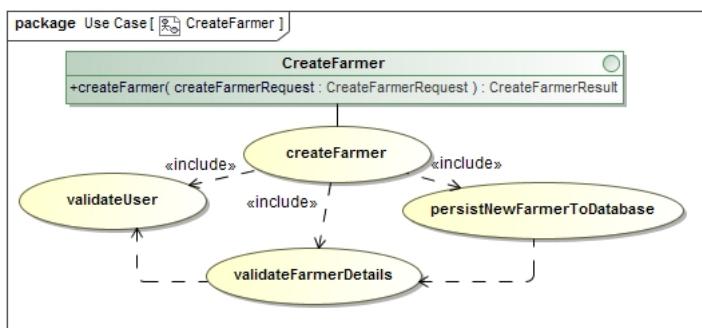


Figure 4.5: Create Farmer

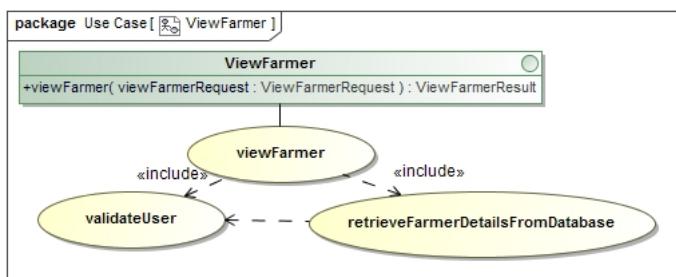


Figure 4.6: View Farmer

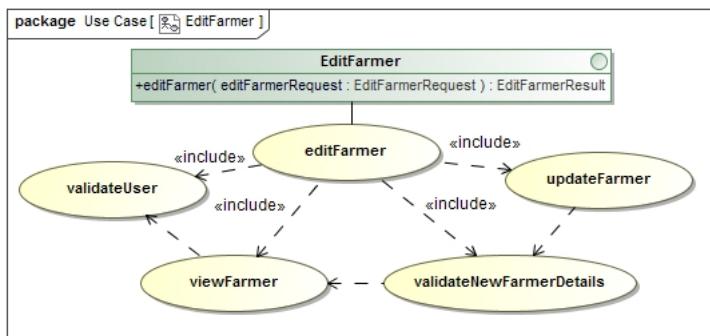


Figure 4.7: Edit Farmer

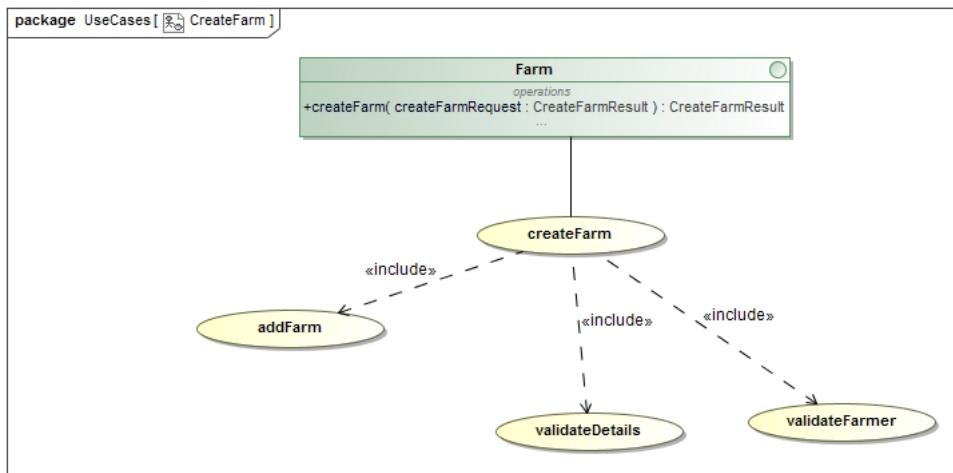


Figure 4.8: Create Farm

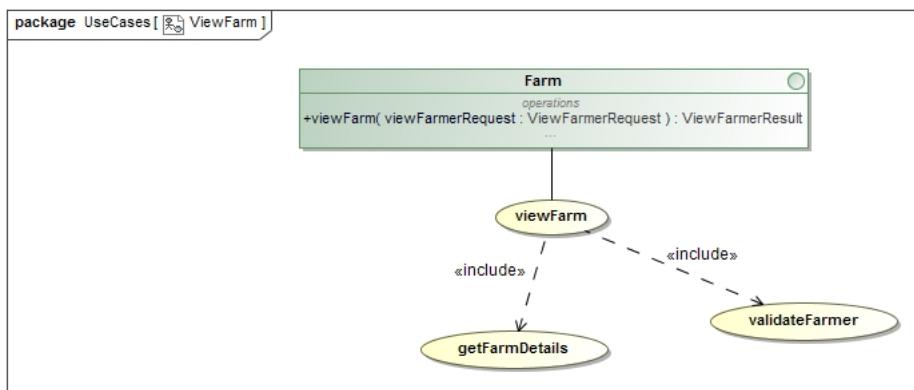


Figure 4.9: View Farm

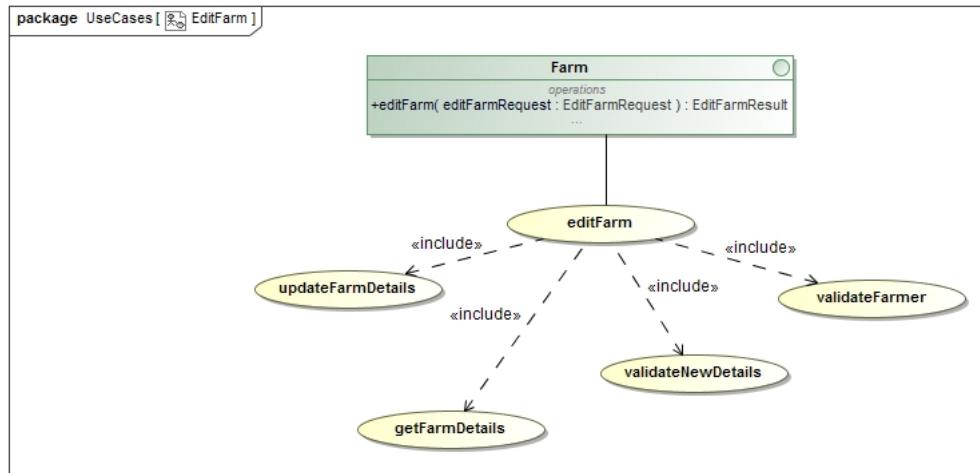


Figure 4.10: Edit Farm

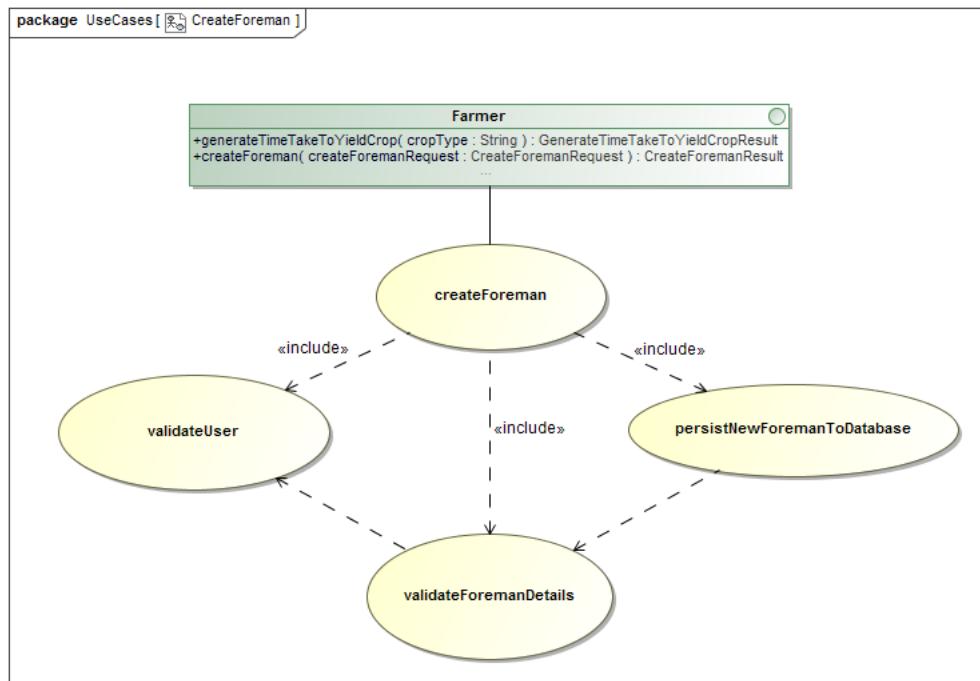


Figure 4.11: Create Foreman

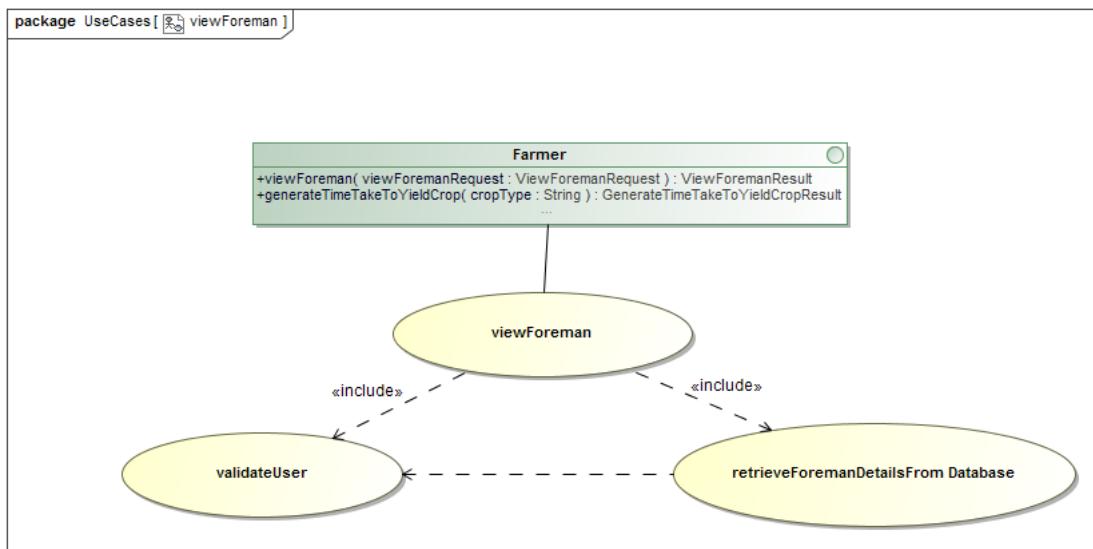


Figure 4.12: View Foreman

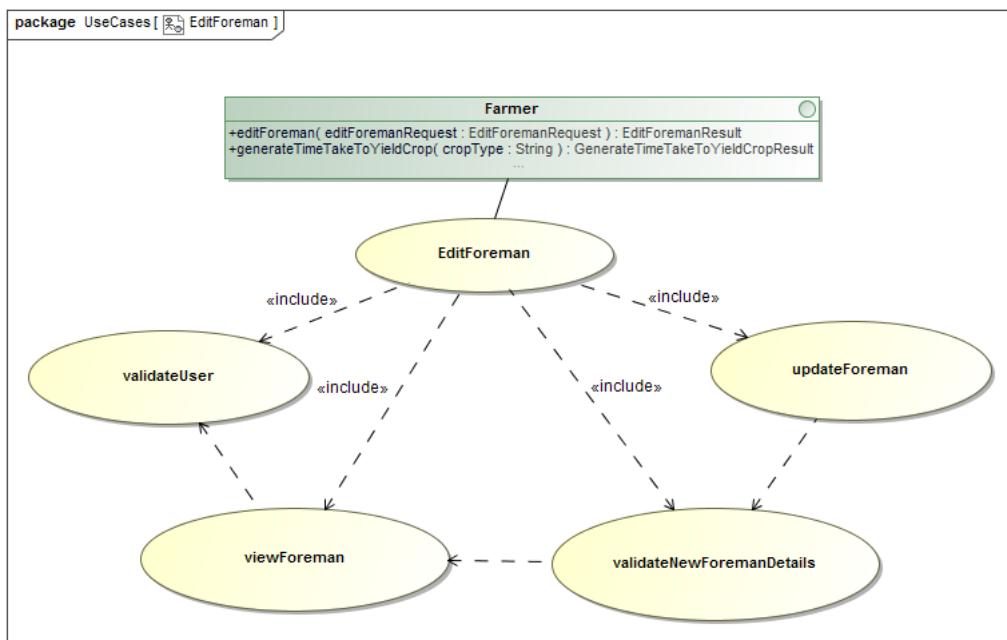


Figure 4.13: Edit Foreman

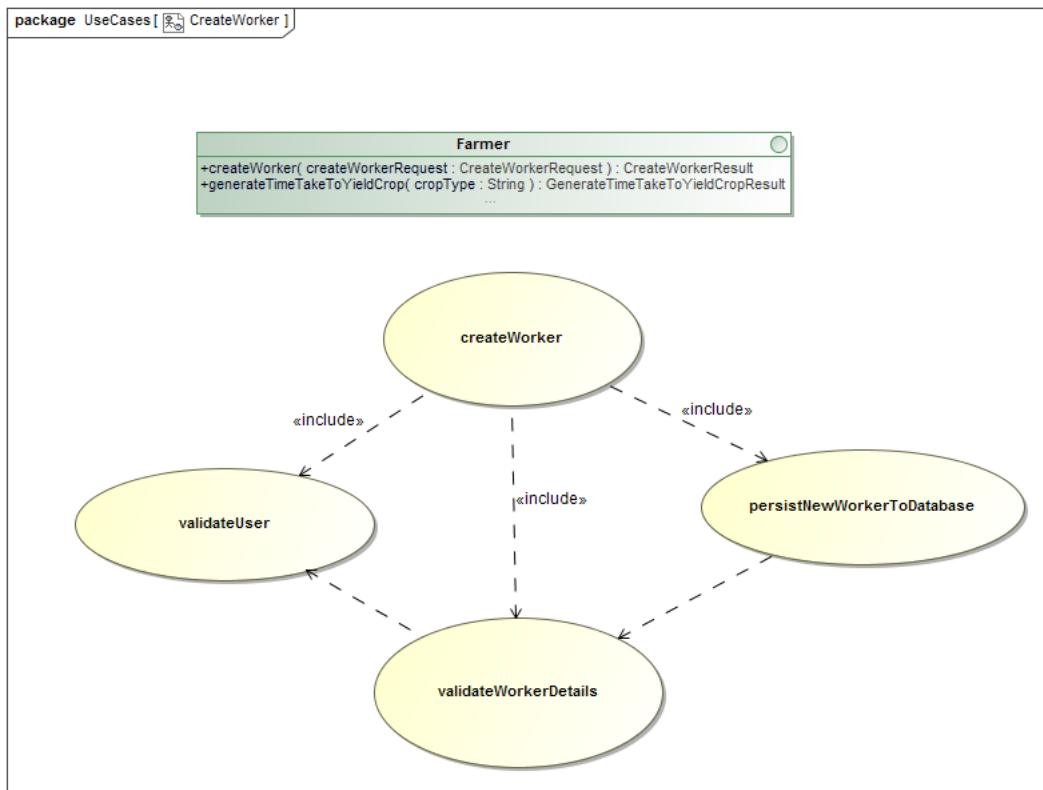


Figure 4.14: Create Worker

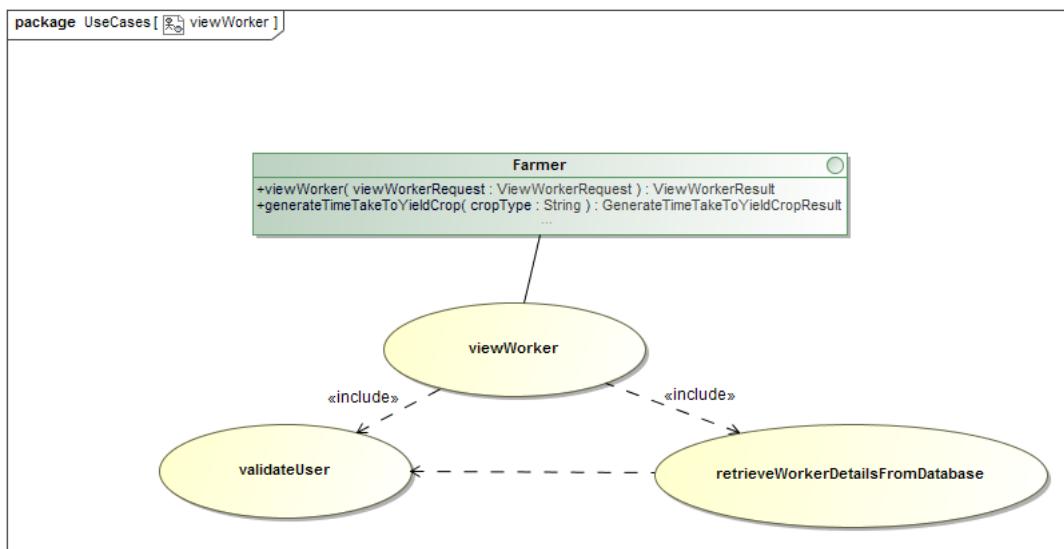


Figure 4.15: View Worker

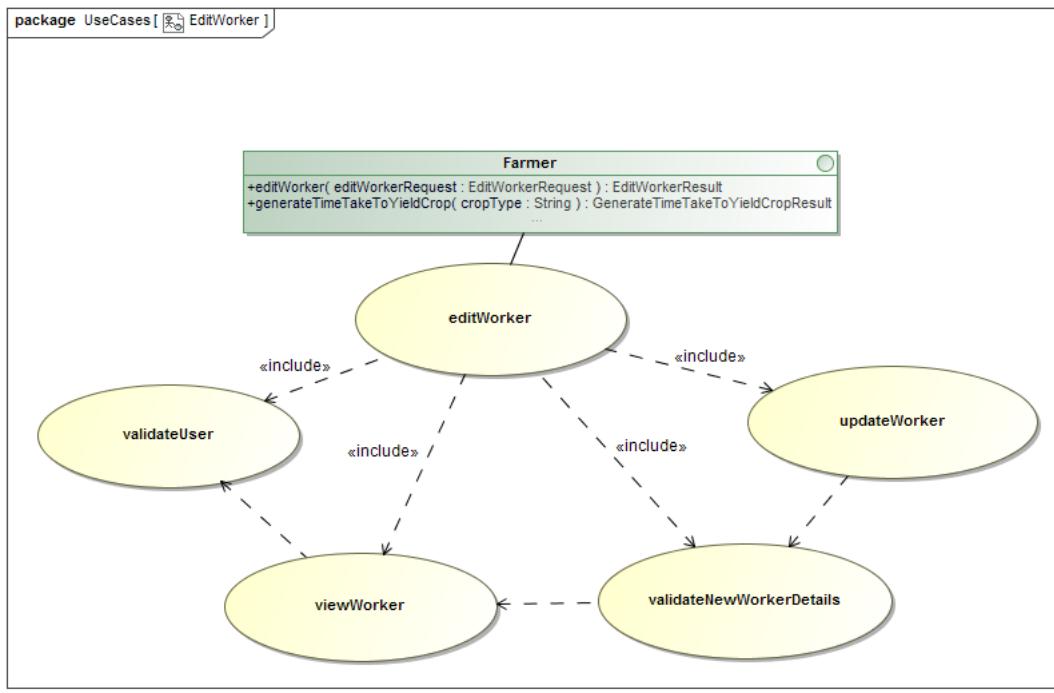


Figure 4.16: Edit Worker

[Insert
Image Here]

Figure 4.17: Create Orchard Block

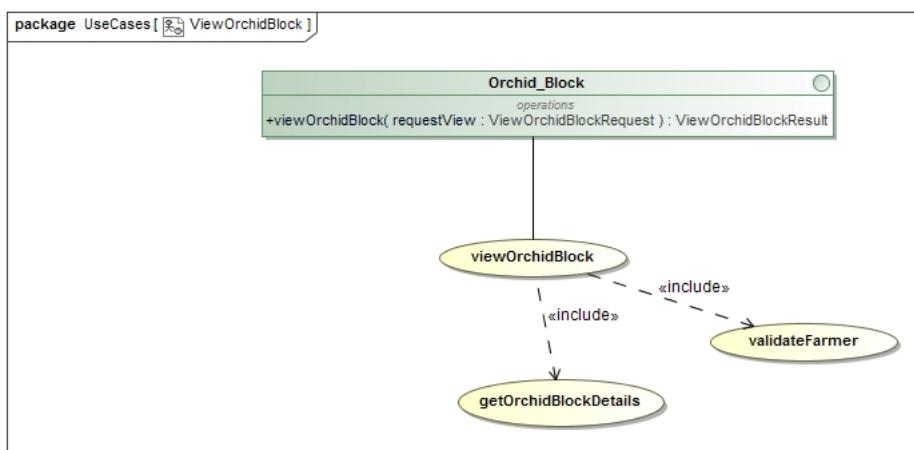


Figure 4.18: View Orchard Block

[Insert
Image Here]

Figure 4.19: Edit Orchard Block

[Insert
Image Here]

Figure 4.20: Create Irrigation Type

[Insert
Image Here]

Figure 4.21: View Irrigation Type

[Insert
Image Here]

Figure 4.22: Edit Irrigation Type

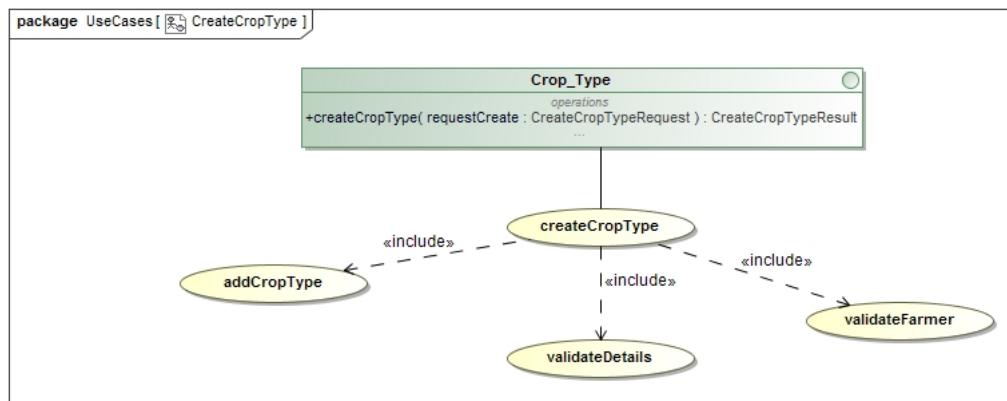


Figure 4.23: Create Crop Type

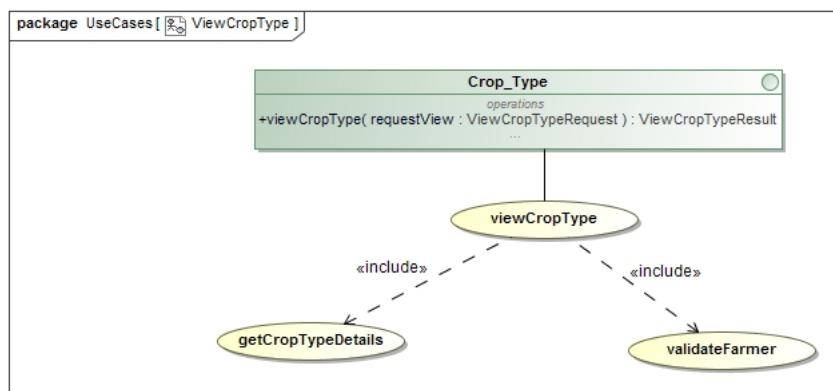


Figure 4.24: View Crop Type

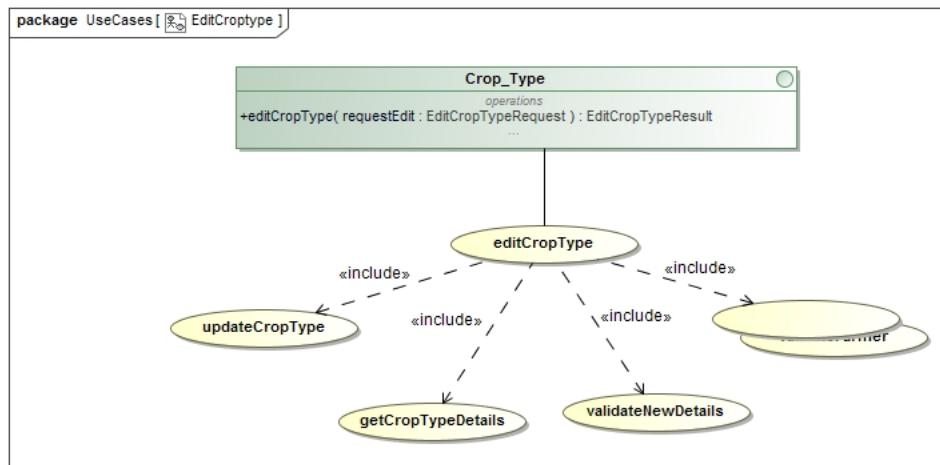


Figure 4.25: Edit Crop Type

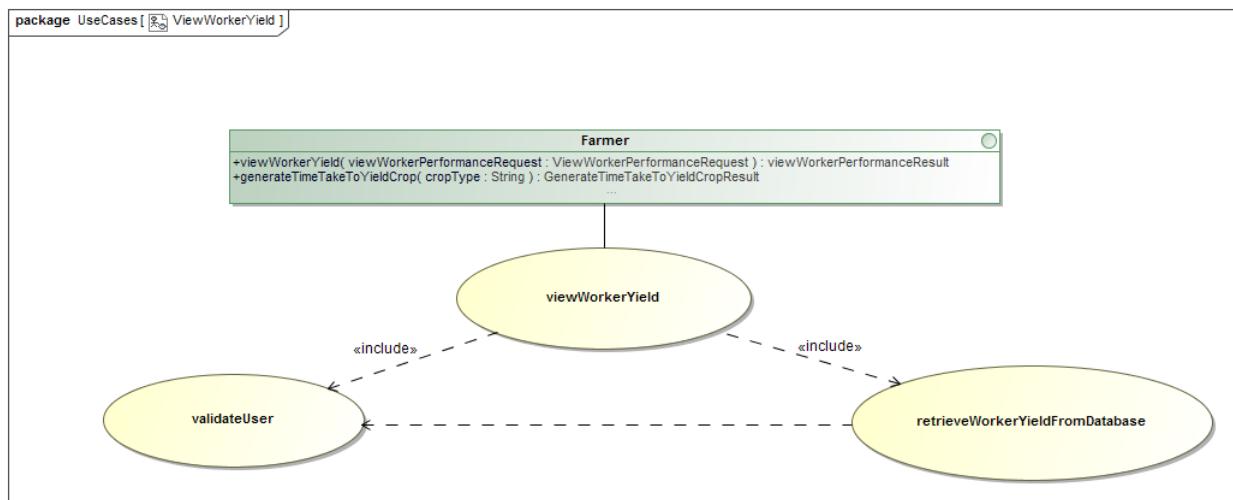


Figure 4.26: View Worker Yield

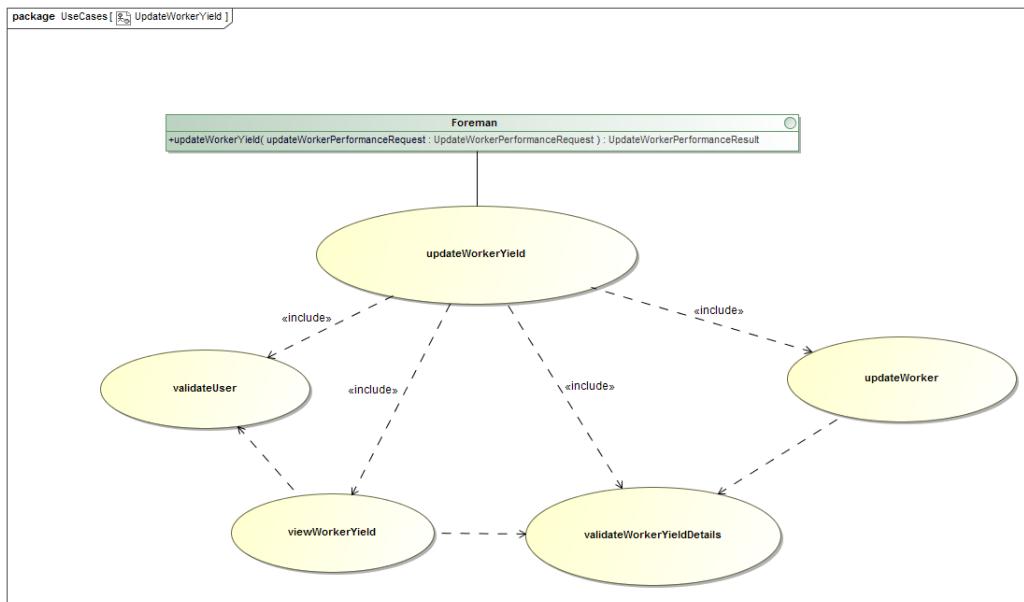


Figure 4.27: Update Worker Yield

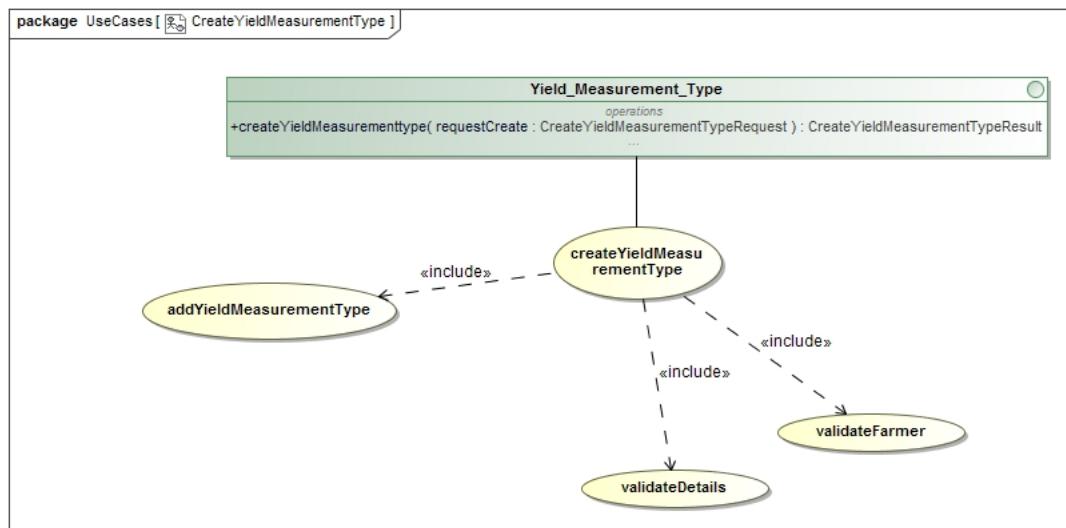


Figure 4.28: Create Yield Measurement Type

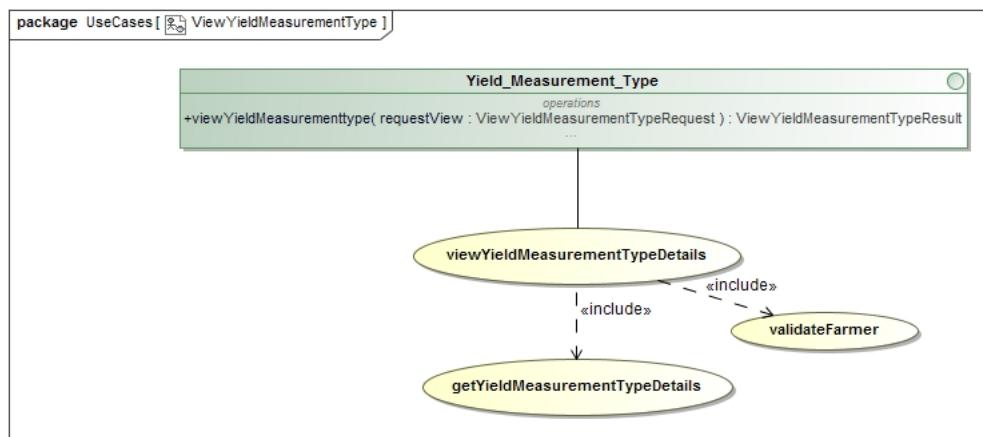


Figure 4.29: View Yield Measurement Type

- 4.19 Edit Orchard Block (i.e. crop type, irrigation type, re-demarcate coordinates, archive, etc.)
- 4.20 Create Irrigation Type
- 4.21 View Irrigation Type
- 4.22 Edit Irrigation Type
- 4.23 Create Crop Type
- 4.24 View Crop Type
- 4.25 Edit Crop Type
- 4.26 View Worker Yield
- 4.27 Update Worker Yield
- 4.28 Create Yield Measurement Type
- 4.29 View Yield Measurement Type
- 4.30 Edit Yield Measurement Type
- 4.31 Create Cultivation Frequency
- 4.32 View Cultivation Frequency
- 4.33 Edit Cultivation Frequency
- 4.34 Maintain Foreman-Orchard Block Allocations
- 4.35 View Foreman-Orchard Block Allocations
- 4.36 Maintain Worker-Foreman Assignments
- 4.37 View Worker-Foreman Assignments
- 4.38 Import Census Data
- 4.39 Generate Statistical Report of Worker Performance (according to time intervals)
- 4.40 Generate Statistical Report of Crop Yield per Orchard
- 4.41 View Heat Map
- 4.42 Create Foreman's Shift
- 4.43 View Foreman's Shift

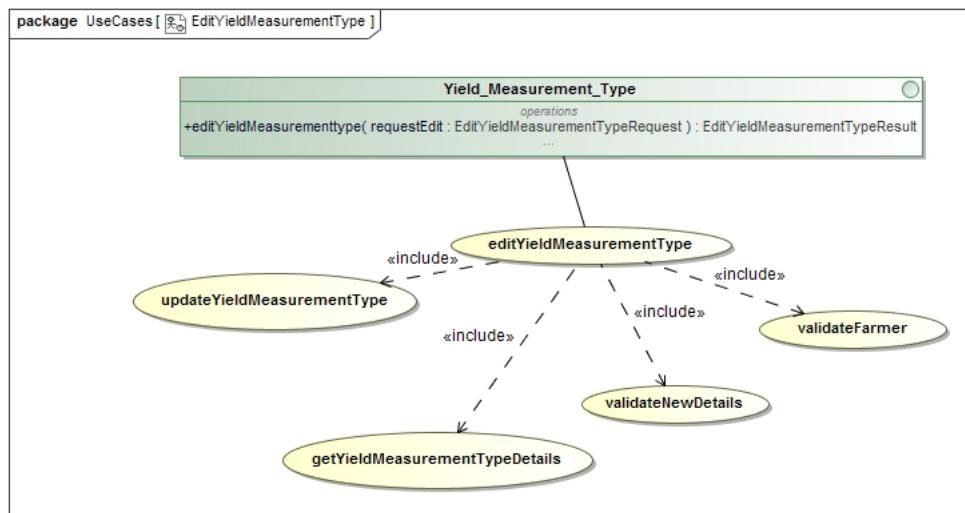


Figure 4.30: Edit Yield Measurement Type

[Insert
Image Here]

Figure 4.31: Create Cultivation Frequency

[Insert
Image Here]

Figure 4.32: View Cultivation Frequency

[Insert
Image Here]

Figure 4.33: Edit Cultivation Frequency

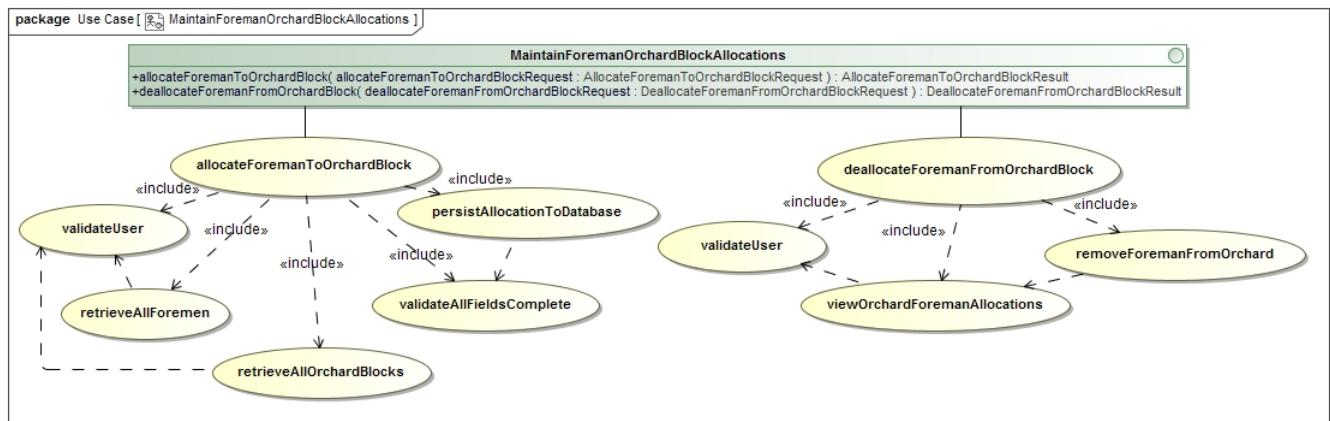


Figure 4.34: Maintain Foreman-Orchard Block Allocations

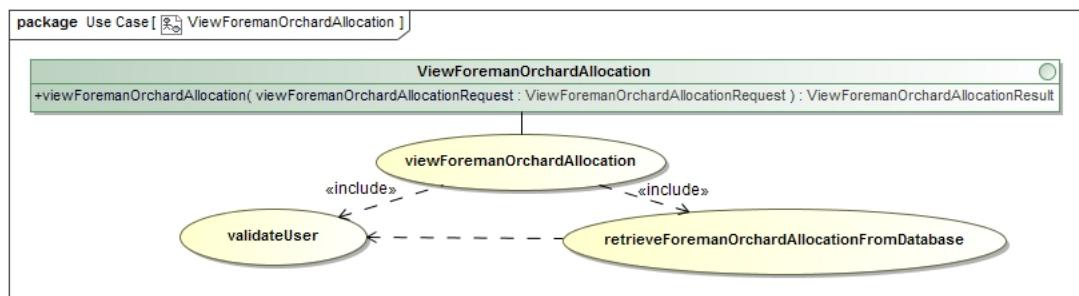


Figure 4.35: View Foreman-Orchard Block Allocations

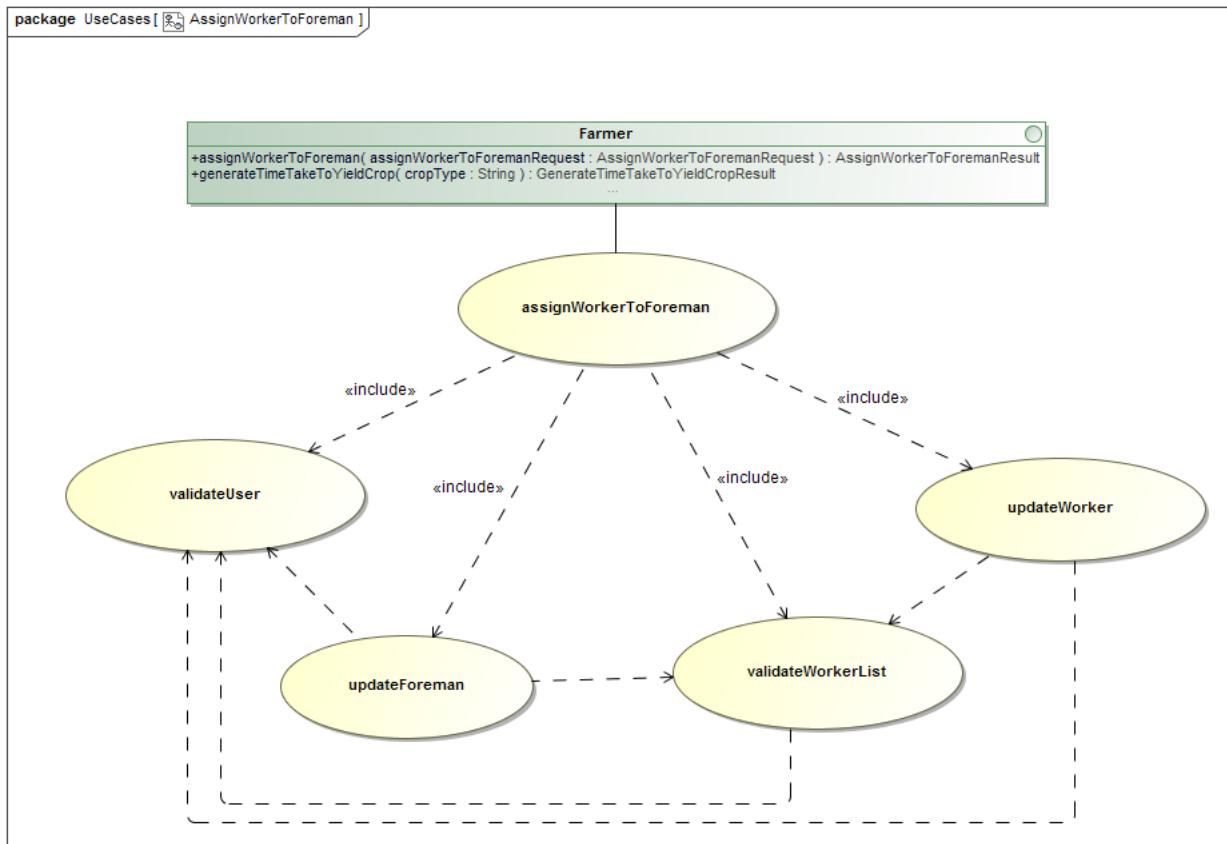


Figure 4.36: Assign a Worker to a Foreman

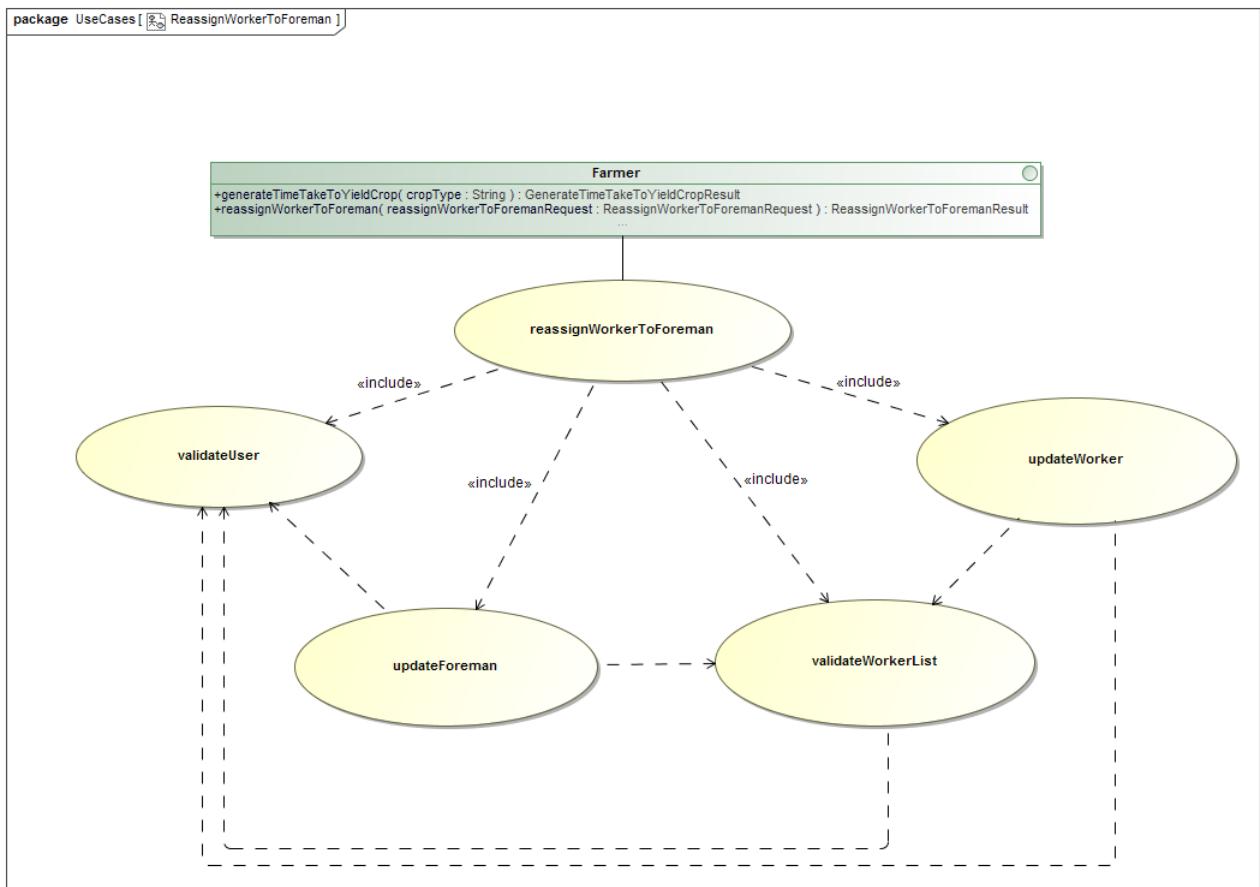


Figure 4.37: Reassign a Worker to a Foreman

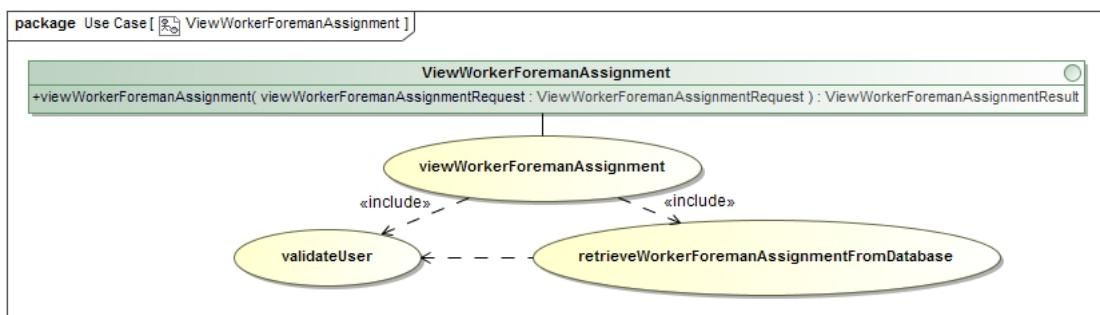


Figure 4.38: View Worker-Foreman Assignments

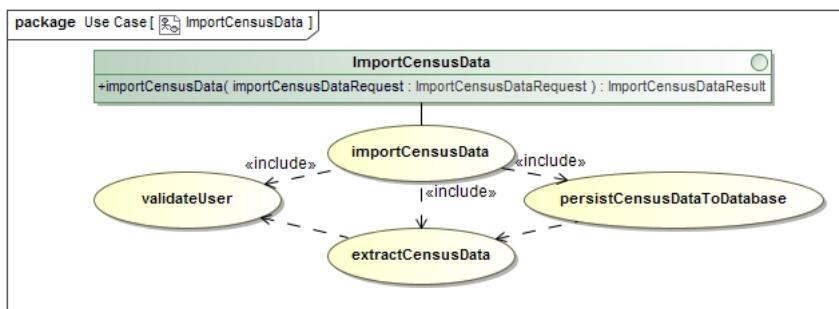


Figure 4.39: Import Census Data

[Insert
Image Here]

Figure 4.40: Generate Statistical Report of Worker Performance (according to time intervals)

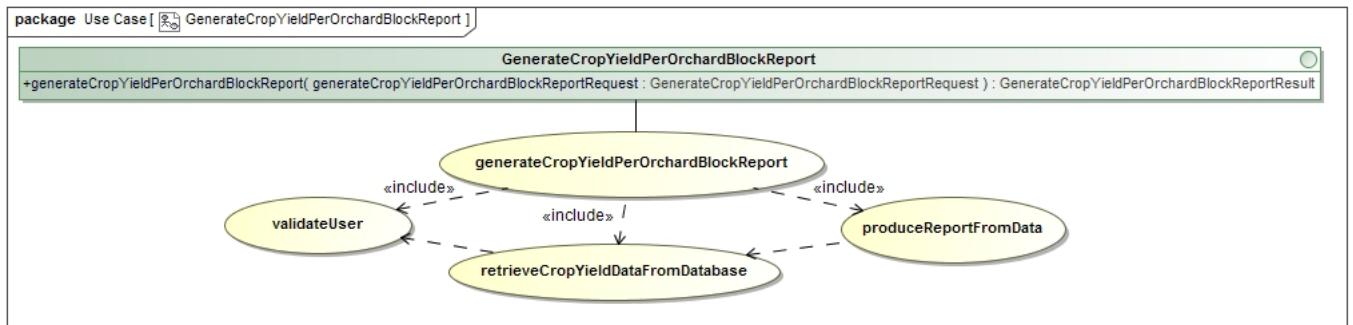


Figure 4.41: Generate Statistical Report of Crop Yield per Orchard

[Insert
Image Here]

Figure 4.42: View Heat Map

[Insert
Image Here]

Figure 4.43: Create Foreman's Shift

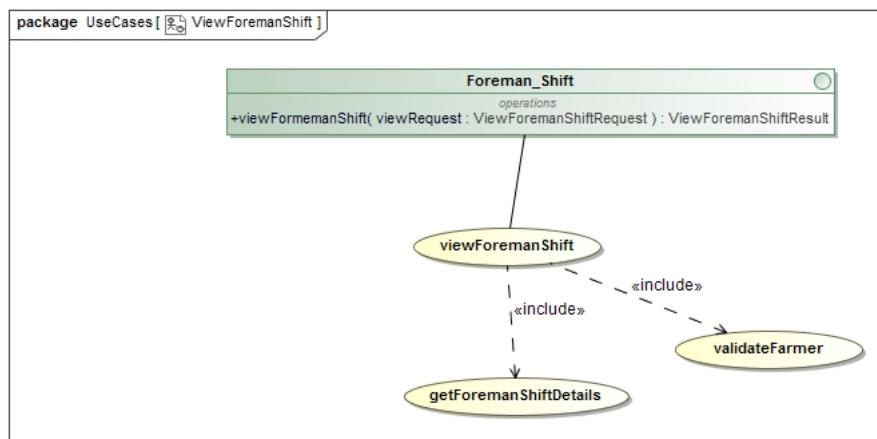


Figure 4.44: View Foreman's Shift

[Insert
Image Here]

Figure 4.45: Edit Foreman's Shift

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Image Here]

Figure 4.46: Notify Farmer Regarding Foreman's Locations

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Image Here]

Figure 4.47: Notify Farmer of Foreman's Activity History Every Half an Hour

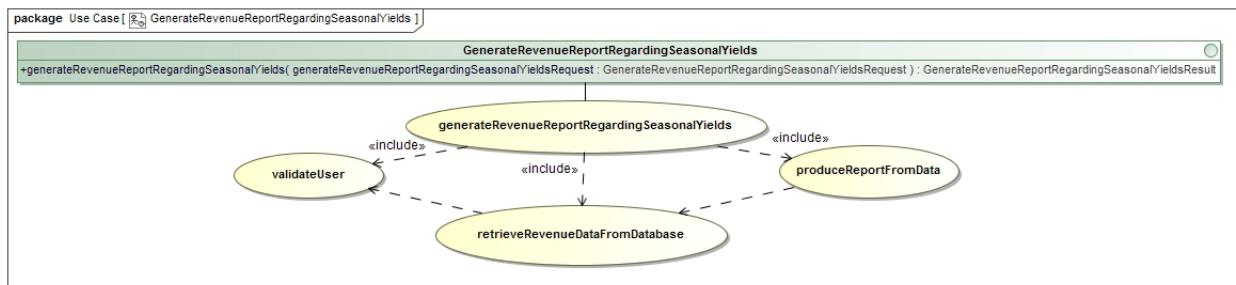


Figure 4.48: Generate Revenue Report Regarding Seasonal Yields

4.47 Generate Revenue Report Regarding Seasonal Yields

4.48 Generate Statistical Report Regarding Time Taken to Yield Specific Crops

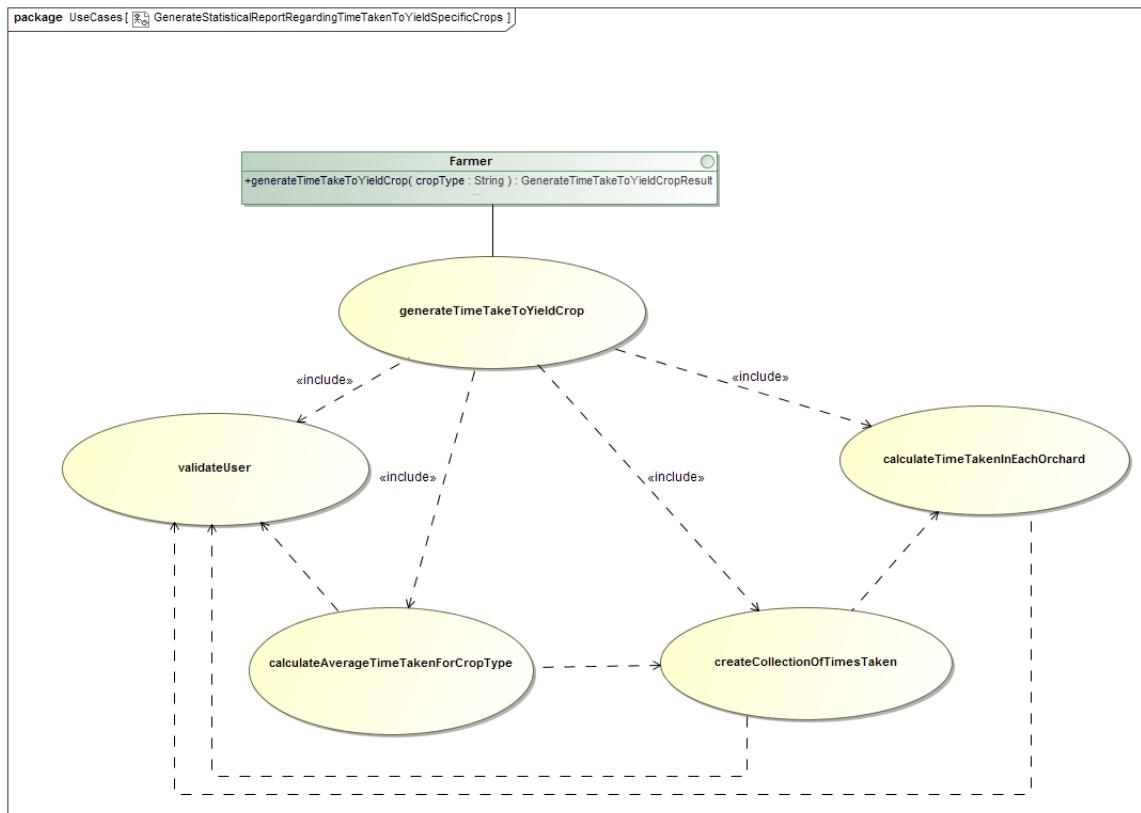


Figure 4.49: Generate Statistical Report Regarding Time Taken to Yield Specific Crops



5. Use Case Process Specifications

- 5.1 Login User
- 5.2 Logout User
- 5.3 Change Password
- 5.4 Recover Password
- 5.5 Allocate Foreman To Orchard Block
- 5.6 Deallocate Foreman From Orchard Block
- 5.7 Assign Worker To Foreman
- 5.8 Reassign Worker To Foreman
- 5.9 Import Census Data
- 5.10 Generate Statistical Report of Worker Performance (according to time intervals)
- 5.11 Generate Statistical Report Regarding Time Taken To Yield Specific Crops

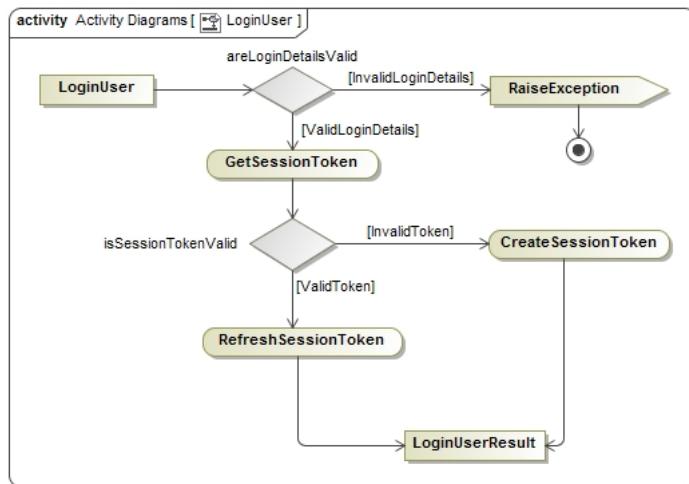


Figure 5.1: Login User

[Insert
Image Here]

Figure 5.2: Logout User

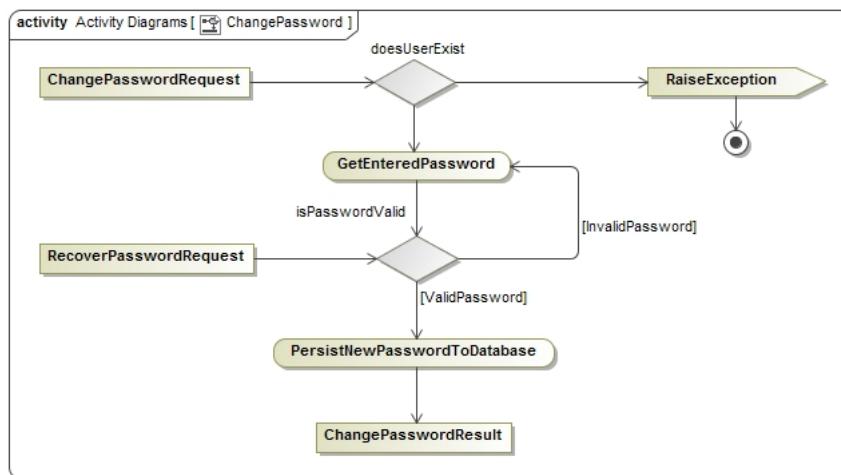


Figure 5.3: Change Password

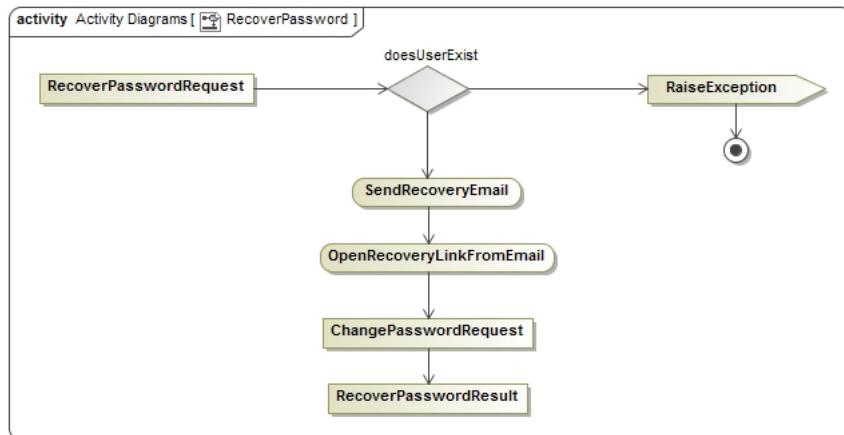


Figure 5.4: Recover Password

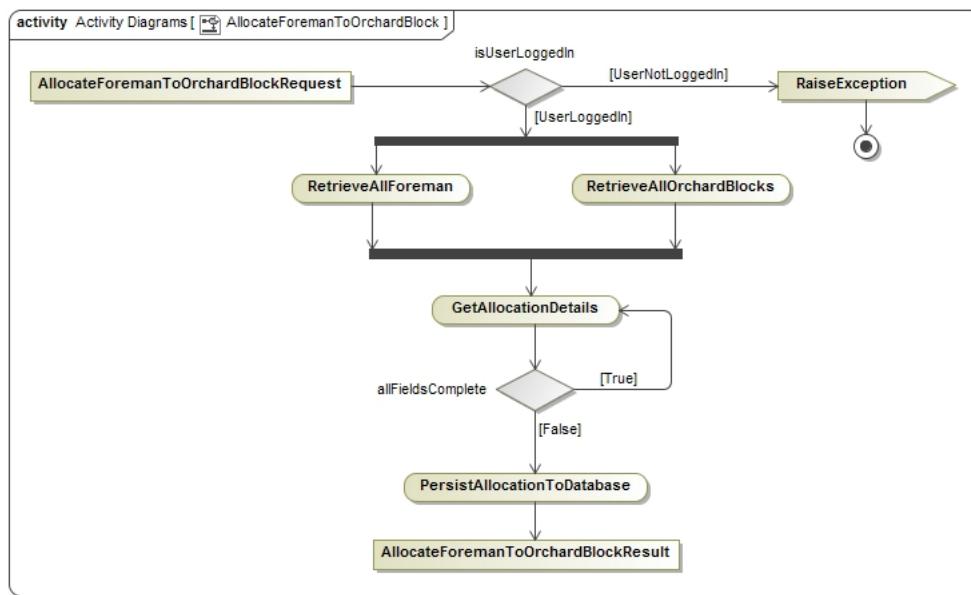


Figure 5.5: Allocate Foreman To Orchard Block

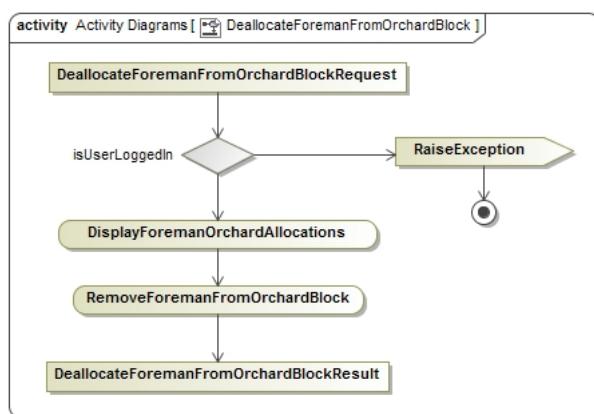


Figure 5.6: Deallocate Foreman From Orchard Block

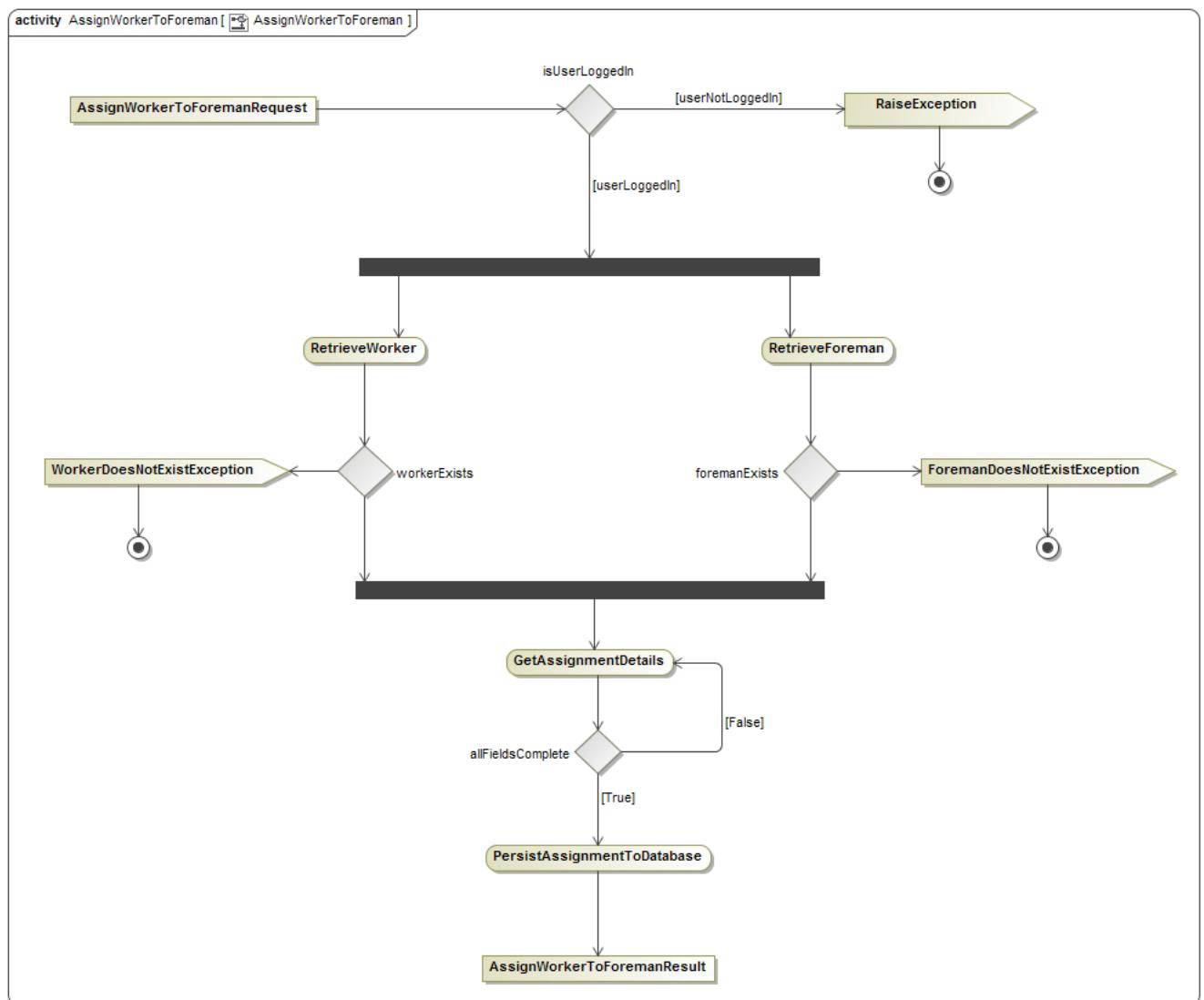


Figure 5.7: Assign a Worker to a Foreman

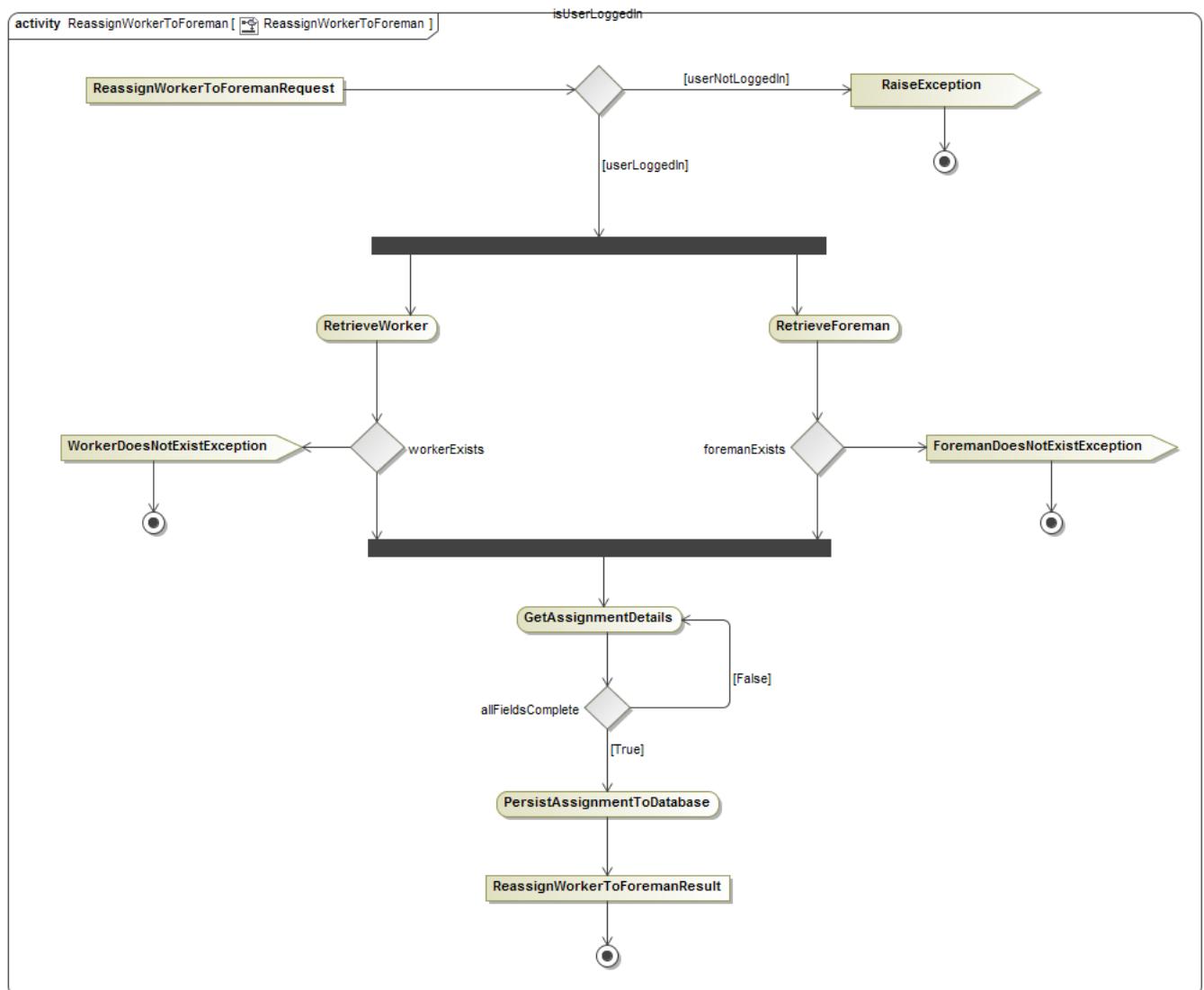


Figure 5.8: Reassign a Worker to a Foreman

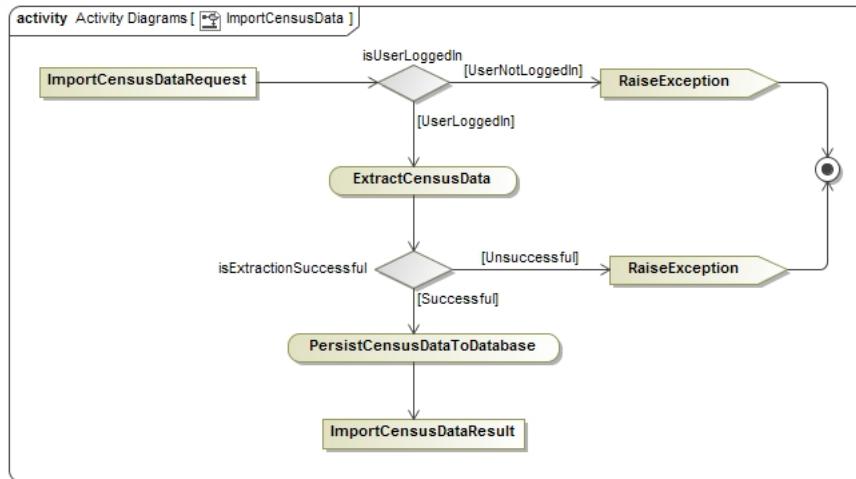


Figure 5.9: Import Census Data

[Insert
Image Here]

Figure 5.10: Generate Statistical Report of Worker Performance (according to time intervals)

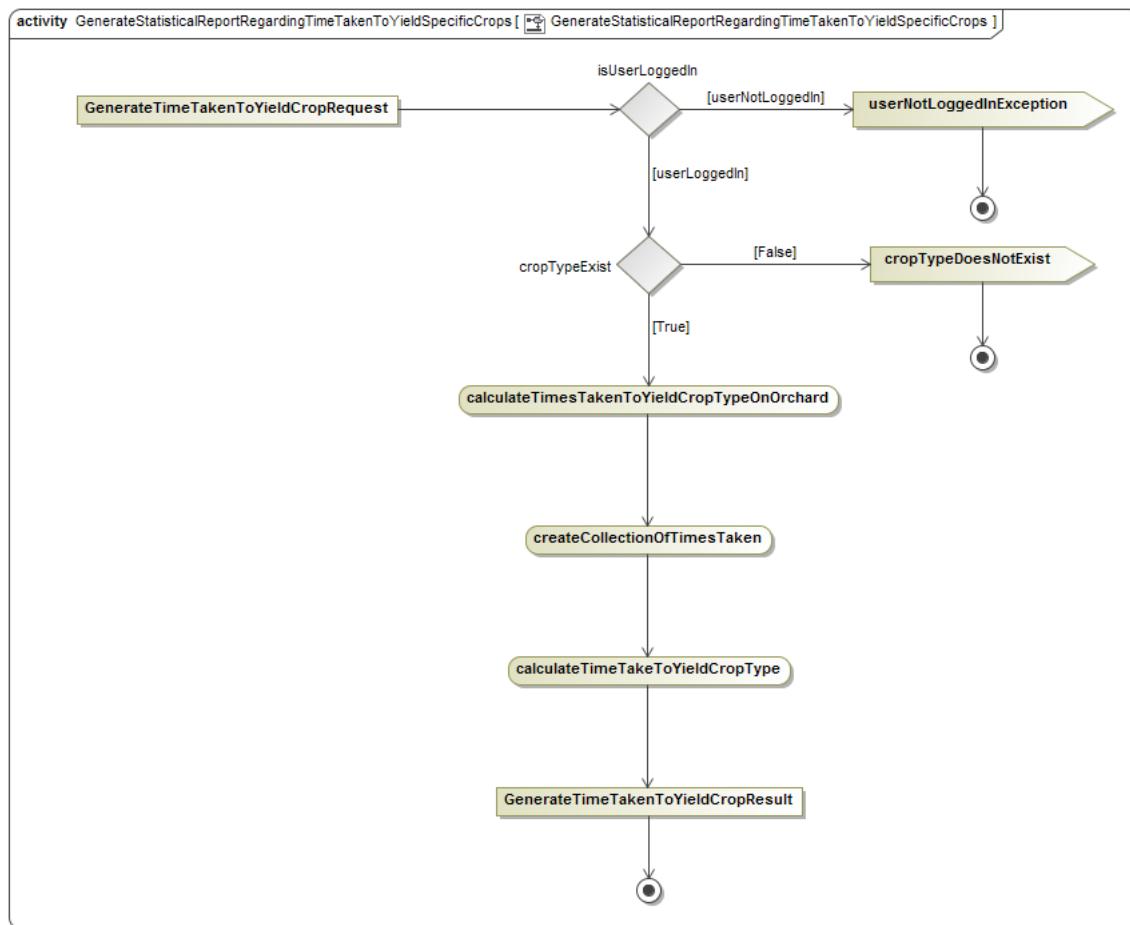


Figure 5.11: Generate a report that will statistically show how long it takes on average to yield a certain type of crop



6. Domain Model

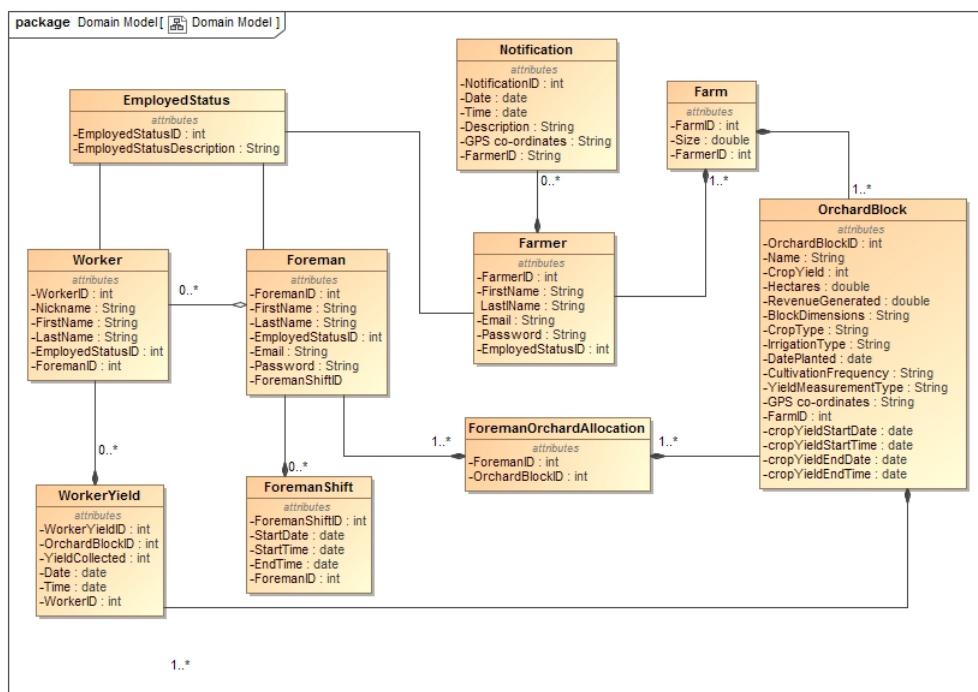


Figure 6.1: Domain Model



7. Open Issues

7.1 Functional Uncertainties

- We have a couple of uncertainties regarding the attributes which the farmers require.
- We plan on having a meeting with our client as soon as possible in order to clarify these uncertainties.