Coffee Management System

Use Cases

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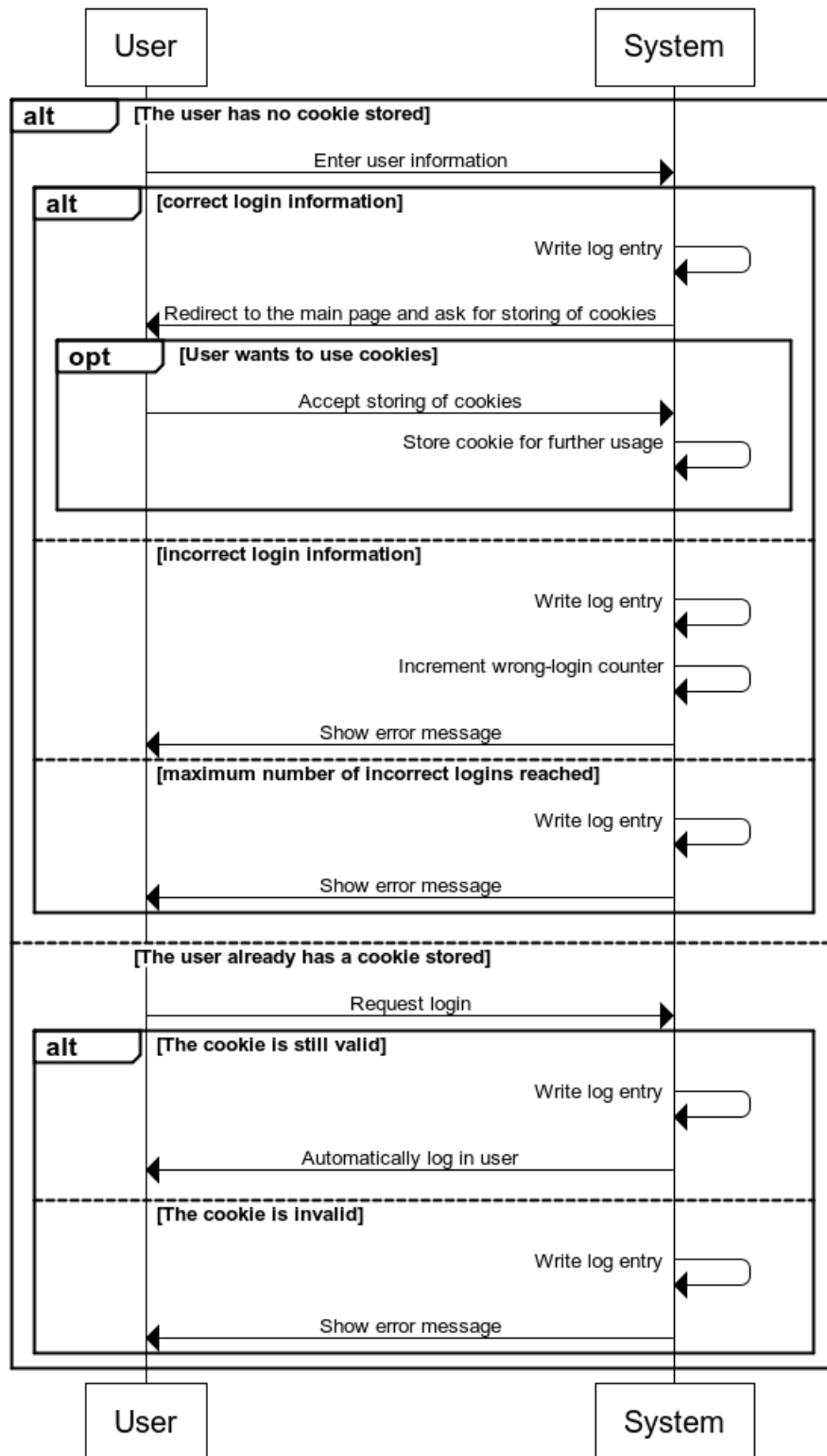Linnæus University
Sweden

Contents

1 User Login

Description

The users go through this use case whenever they want to access any of the user interfaces. After logging in the user should be redirected to the main page of the application.

Actors

User

Preconditions

The application is started

Basic Flow

1. The user types in the username and password.
2. The system logs in the user.
3. The system writes a log entry for the activity of the user with the current time and date.
4. The system asks if the user wants to store a cookie.
5. The user accepts and a cookie is stored for further usage.

Alternate Flows

1 a) The user already has a cookie in store.

    1. The system checks that the cookie is still valid.
    2. The system logs in the user automatically.

3 a) The user declined the storage of a cookie.

    1. The system does not store a cookie for further usage.

Exception Flows

2 a) The entered password is incorrect.

    1. The system shows an error message.
    2. The user returns to 1.

2 b) The maximum number of wrong password entries has been reached.

    1. The system shows an error message.
    2. The use case exits.

3 a) The cookie is invalid or expired.

    1. The system notifies the user that the cookie is invalid.
    2. The user is sent to the login page and needs to enter the username and password to continue.

Postconditions

The user is redirected to the correct page.

User Login

User		System

alt [The user has no cookie stored]

User → System: Enter user information

alt [correct login information]

System: Write log entry

System → User: Redirect to the main page and ask for storing of cookies

opt [User wants to use cookies]

User → System: Accept storing of cookies

System: Store cookie for further usage

- - - - - - - - -

[incorrect login information]

System: Write log entry

System: Increment wrong-login counter

System → User: Show error message

- - - - - - - - -

[maximum number of incorrect logins reached]

System: Write log entry

System → User: Show error message

- - - - - - - - -

[The user already has a cookie stored]

User → System: Request login

alt [The cookie is still valid]

System: Write log entry

System → User: Automatically log in user

- - - - - - - - -

[The cookie is invalid]

System: Write log entry

System → User: Show error message
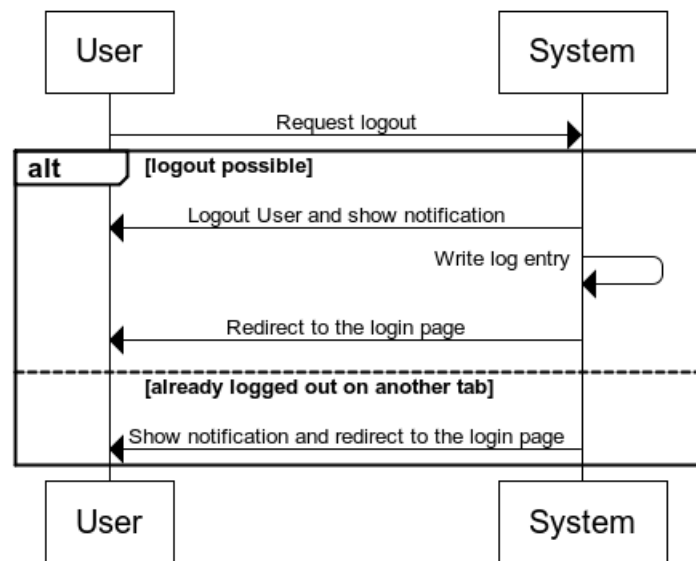
User		System

2   User Login via Smartphone

Description

When the user wishes to login via his or her smartphone. Very similar to the regular User Login use case.

Actors

User

Preconditions

1. User's smartphone is on.
2. User's smartphone views the installed apps.

Basic Flow

1. The user taps on the icon that corresponds to the coffee machine application.
2. The system presents the user with the login page.
3. The user taps on the username text field.
4. The user types in his or her username.
5. The user taps on the password field.
6. The user types in his or her password.
7. The user taps the login button.
8. The system logs in the user.
9. The system makes an entry in the log file about the login from the smartphone.
10. The system presents the user with the default post-login page.

Alternate Flows

5 a) The user taps on the "next field" key on the keyboard.

   1. The basic flow continues from step 6.

7 a) The user taps the enter key on the keyboard.

   1. The basic flow continues from step 8.

Exception Flows

8 a) The user has typed in a bad username or password.

   1. The system notifies the user that he or she is not logged in.

8 b) The maximum number of bad tries has been reached.

   1. The system notifies the user that the maximum number of bad tries has been reached.
   2. The system disables the user's account.
   3. The use case exits.

Postcondition

User is logged in.

3   User Logout

Description   The user can request logout through the interface at any time. When a logout is requested the user goes through this use case.

Actors   User

Preconditions   The application is started and the user is logged in.

Basic Flow
1. The user requests logout
2. The system logs out the user and sends a notification.
3. The system writes a log entry for the activity of the user with the current time and date.
4. The system sends the user to the log in page.

Alternate Flows   2 a) The user has already been logged out in a different tab.
1. The system notifies the user.
2. The system sends the user to the log in page.

Postconditions   The user is logged out and redirected to the login page.

User logout

```
        User                          System

          │      Request logout          │
          │ ──────────────────────────▶  │
 ┌─ alt ──┤ [logout possible]            │ ─────────────────┐
 │        │                              │                  │
 │        │  Logout User and show notification              │
 │        │ ◀──────────────────────────  │                  │
 │        │                              │  Write log entry │
 │        │                              │ ◀────────────────┘
 │        │   Redirect to the login page │
 │        │ ◀──────────────────────────  │
 │  - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 │        │  [already logged out on another tab]
 │        │ Show notification and redirect to the login page
 │        │ ◀──────────────────────────  │
 └────────┤                              │
        User                          System
```

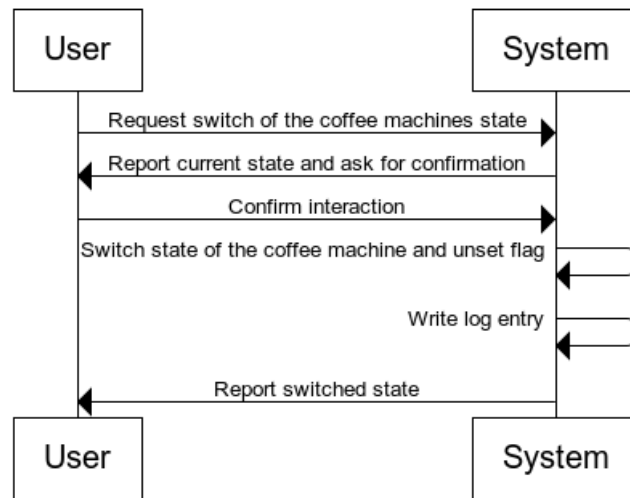www.websequencediagrams.com

4   User Logout via Smartphone

Description   When the user wishes to logout from the session via his or her smart-phone. Very similar to the regular User Logout Use Case. The mobile application session, and the website session are independent - if the user logs out from the website, the user may still be logged in from the application.

Actors   User

Preconditions

1. The user's smartphone's display is on.
2. The user is logged in to the application.

Basic Flow

1. The user taps on the logout link inside the application.
2. The system logs the user out.
3. The system presents the user with the login view.

Postconditions   The user is logged out and has been sent to the login page.

5   Switching the State of the Coffee Machine

Description   The user goes through this use case whenever they request activation or deactivation of the coffee machine through the interface.

Actors   User

Preconditions   The application is started and the user is logged in. The user is currently on the page for switching the state of the coffee machine.

Basic Flow

1. The user requests switch of the coffee machines state through the user interface.
2. The system writes a log entry for the activity of the user with the current time and date.
3. The system notifies the modified state of the coffee machine through the interface.
4. The system notifies the modified state of the coffee machine via the LED light.

Postconditions   The flag indicating if the machine is filled located on the main page is not set anymore, and the system notifies the user of the state switch.
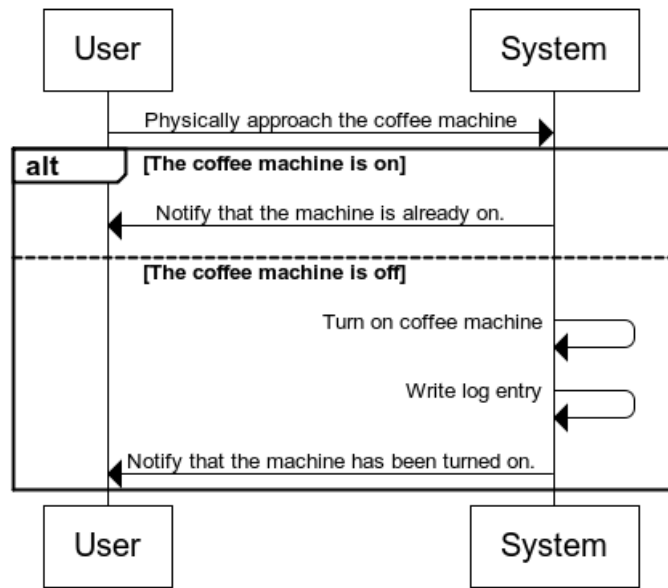
Switching the Coffee Machines State

User		System

User → System: Request switch of the coffee machines state

System → User: Report current state and ask for confirmation

User → System: Confirm interaction

Switch state of the coffee machine and unset flag

Write log entry

System → User: Report switched state

User		System

6 Automatic Activation

Description
This use case covers the automatic activation of the coffee machine through approaching of the user.

Actors
User

Preconditions
The application is running in the background on a mobile device. The user is logged in and has previously activated the automatic start feature. The machine is also in automatic start mode.

Basic Flow
1. The user approaches the coffee machine to a set distance.
2. The system turns on the coffee machine.
3. The system writes a log entry for the activity of the user with the current time and date.
4. The system notifies the user that the coffee machine has been turned on.

Alternate Flows
2 a) The coffee machine is already activated.
1. The system notifies the user that the coffee machine is already activated.

Postconditions
The coffee machine is activated.

Autostart

User   **System**

Physically approach the coffee machine

alt   [The coffee machine is on]

Notify that the machine is already on.

[The coffee machine is off]

Turn on coffee machine

Write log entry

Notify that the machine has been turned on.

User   **System**
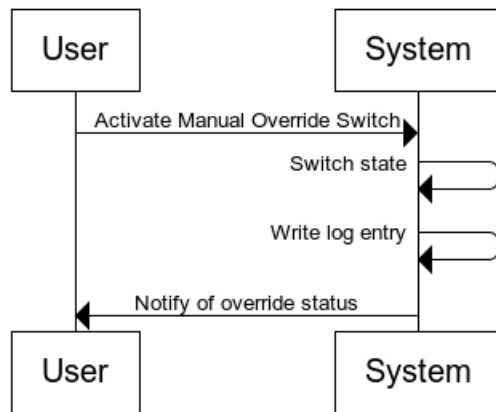
7 Manual Override

Description

In case the user wants to go around the system and turn the coffee machine on or off this use case is used.

Actors

User

Preconditions

The user is physically close to the machine.

Basic Flow

1. The user activates the manual override switch.

2. The system switches the state of the coffee machine

3. The system writes a log entry for the activity of the user with the current time and date.

4. The system notifies other users that the system is in manual override mode.
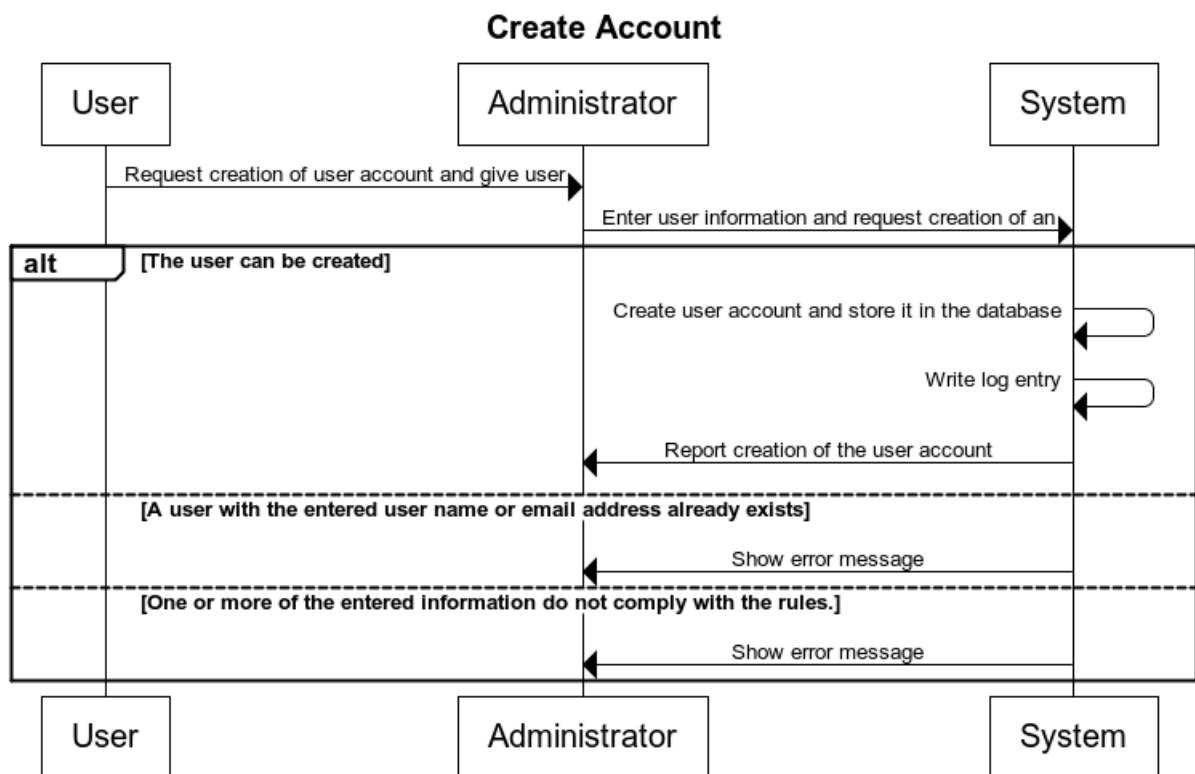
Postconditions

All users are notified of override state.

Manual Override

User → System: Activate Manual Override Switch
System: Switch state
System: Write log entry
System → User: Notify of override status

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8 Create Account

Description   The administrator creates accounts for all users. When a new user should be created they give their information to the administrator, who then creates the account. The information a user needs to create an account is the email, desired user name and desired password of the user. The rules for user names and passwords have not yet been defined.

Actors   User, Administrator

Preconditions   The system is already setup and an administrator exists. The administrator is logged in to the system.

Basic Flow

1. The user requests an account and gives information to the administrator.
2. The administrator accesses the user creation page.
3. The administrator enters the users data and requests creation of the new account.
4. The system saves the user data in the database.
5. The system writes a log entry for the activity of the user with the current time and date.
6. The system notifies the administrator that the account has been created.
7. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows

4 a) A user with the entered user name or email address already exists.

    1. The system notifies the administrator.
    2. The administrator asks the user for different user information.
    3. The administrator returns to step 3.

4 b) One or more of the entered information do not comply with the rules.

    1. The system notifies the administrator.
    2. The administrator asks the user for different user information.
    3. The administrator returns to step 3.

Postconditions   A new user account with the users information has been created.
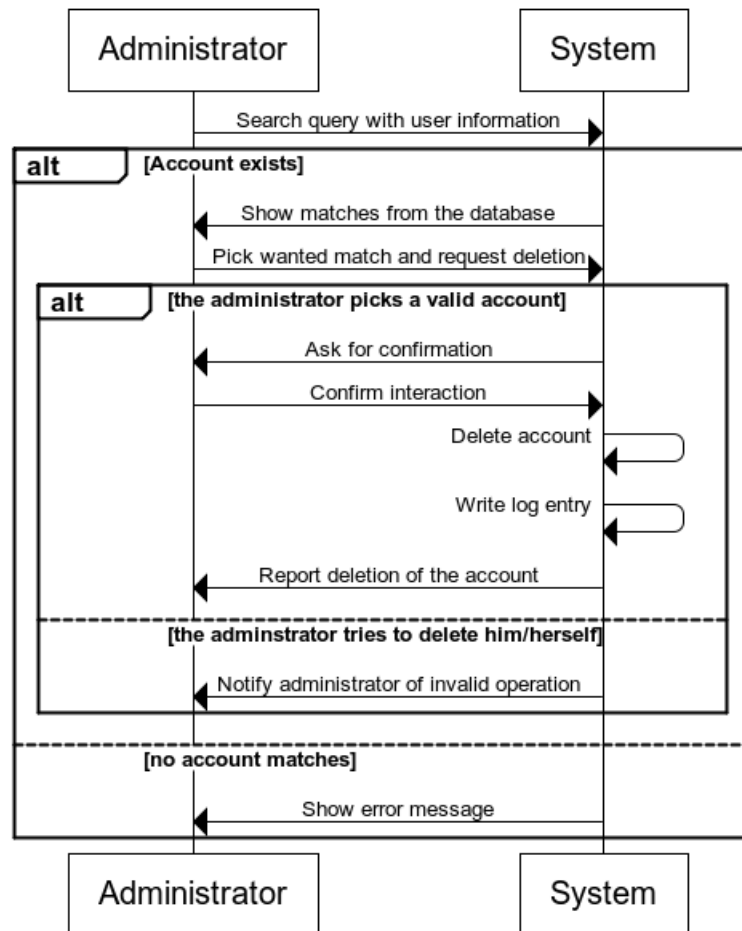
Create Account

```
      User              Administrator             System

       │   Request creation of user account and give user │
       │ ─────────────────────────────────────► │         │
       │                     │ Enter user information and request creation of an │
       │                     │ ─────────────────────────────────────► │

 ┌─alt──┐ [The user can be created]
 │      │                                              Create user account and store it in the database
 │      │                                         │ ◄───────────┐
 │      │                                              Write log entry
 │      │                                         │ ◄───────────┐
 │      │                     │ Report creation of the user account │
 │      │                     │ ◄─────────────────────────────────── │
 │ ─ ─ ─│─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─
 │      │ [A user with the entered user name or email address already exists]
 │      │                     │    Show error message │
 │      │                     │ ◄─────────────────────── │
 │ ─ ─ ─│─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─
 │      │ [One or more of the entered information do not comply with the rules.]
 │      │                     │    Show error message │
 │      │                     │ ◄─────────────────────── │
 └──────┘

      User              Administrator             System
```

9 Delete Account

Description
The administrator manages all user accounts including the deletion of accounts. The administrator can find a user by putting in either the user name or the email address.

Actors
Administrator

Preconditions
The system is already setup and an administrator exists. The administrator is logged in to the system.

Basic Flow
1. The administrator searches for a user by putting in the users information.
2. The system shows a list of users fitting the search criteria.
3. The administrator chooses the user he wants to delete and requests deletion.
4. The system asks for confirmation.
5. The administrator confirms.
6. The system notifies the administrator of the deletion of the users account.
7. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows
4 a) No user with the entered user information can be found.

    1. The system notifies the administrator.
    2. The use case is exited.

4 b) The administrator tries to delete him-/herself.

    1. The system notifies the administrator that an administrator cannot delete him-/herself.
    2. The administrator is routed back to the administrator page.

Postconditions
The user account has been deleted.

Delete Account

Administrator   **System**

Search query with user information

alt [Account exists]

Show matches from the database

Pick wanted match and request deletion

alt [the administrator picks a valid account]

Ask for confirmation

Confirm interaction

Delete account

Write log entry

Report deletion of the account

[the adminstrator tries to delete him/herself]

Notify administrator of invalid operation

[no account matches]

Show error message

Administrator   **System**
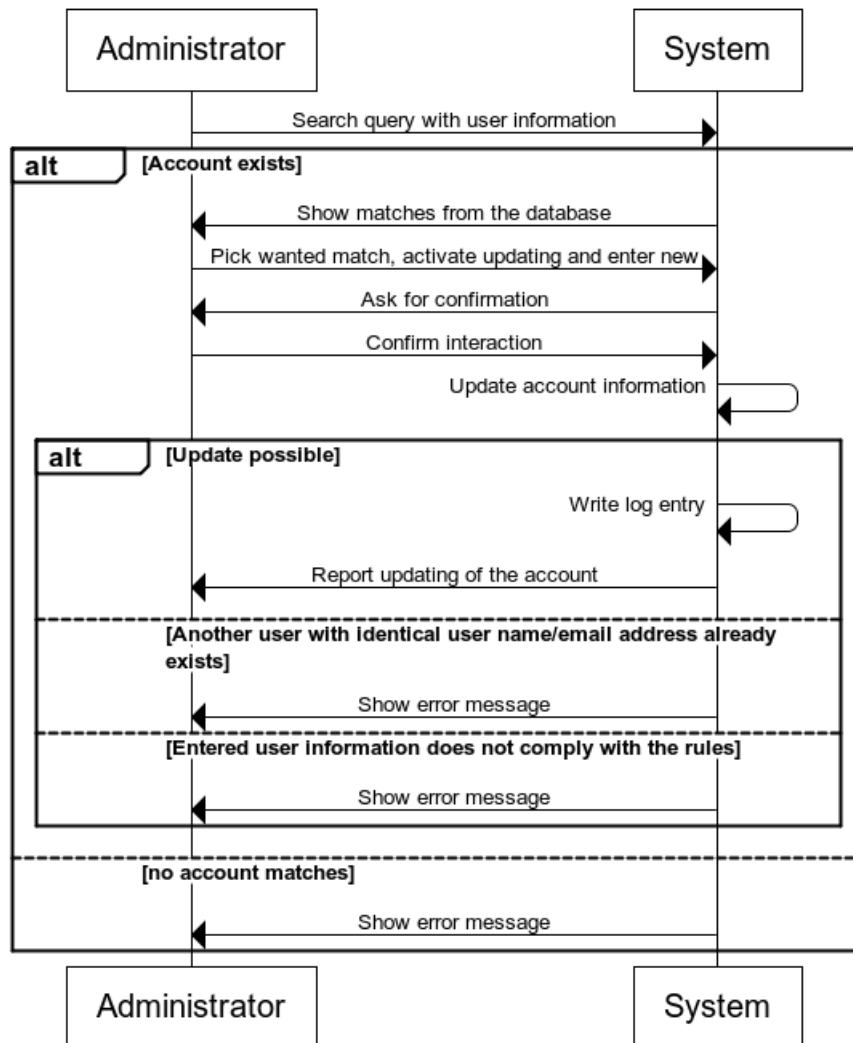
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10   Deactivate Account

Description
The administrator manages all user accounts including the deactivation of accounts. The administrator can find a user by putting in either the user name or the email address. A deactivated user will still show up in the statistics but is not able to log in to the system.

Actors
Administrator

Preconditions
The system is already setup and an administrator exists. The administrator is logged in to the system.

Basic Flow

1. The administrator searches for a user by putting in the users information.
2. The system shows a list of users fitting the search criteria.
3. The administrator chooses the user he wants to deactivate and requests deactivation.
4. The system asks for confirmation.
5. The administrator confirms.
6. The system notifies the administrator of the deactivation of the users account.
7. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows

4 a) Alternate flow.

   1. The system notifies the administrator.
   2. The use case is exited.

4 b) Alternate flow.

   1. The system notifies the administrator that an administrator cannot deactivate him-/herself.
   2. The administrator is routed back to the administrator page.

Postconditions
The user account has been deactivated.

11 Update Account

Description

The administrator manages all user accounts including the updating of accounts. The administrator can find a user by putting in either the user name or the email address.

Actors

Administrator

Preconditions

The system is already setup and an administrator exists. The administrator is logged in to the system.

Basic Flow

1. The administrator searches for a user by putting in the users information.
2. The system shows a list of users fitting the search criteria.
3. The administrator chooses the user he wants to update and activates updating.
4. The administrator enters updated user information.
5. The system asks for confirmation.
6. The administrator confirms.
7. The system notifies the administrator of the deletion of the users account.
8. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows

4 a) No user with the entered user information can be found.

    1. The system notifies the administrator.

    2. The use case is exited.

7 a) A user with the entered user name or email address already exists.

    1. The system notifies the administrator.

    2. The use case is exited.

7 b) One or more of the entered information do not comply with the rules.

    1. The system notifies the administrator.

    2. The use case is exited.

Postconditions

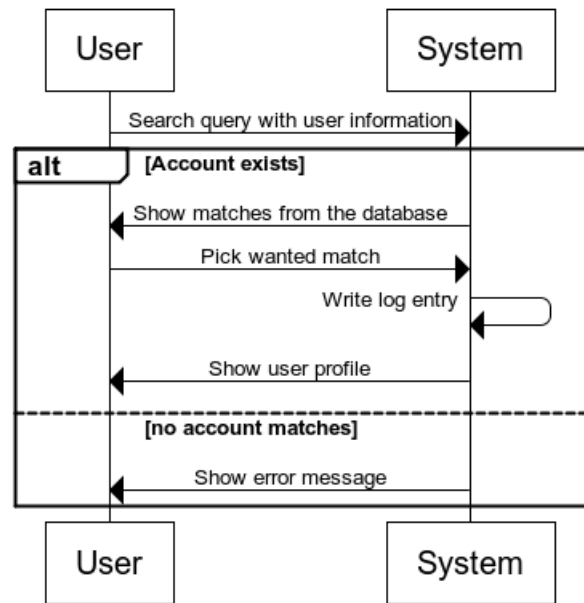The user accounts information has been updated.

Update Account

Administrator   **System**

Search query with user information

alt [Account exists]

Show matches from the database

Pick wanted match, activate updating and enter new

Ask for confirmation

Confirm interaction

Update account information

alt [Update possible]

Write log entry

Report updating of the account

[Another user with identical user name/email address already exists]

Show error message

[Entered user information does not comply with the rules]

Show error message

[no account matches]

Show error message

Administrator   **System**

12 Search for User

Description

The administrator has to search for users to be able to perform actions such as updating, deletion and deactivation on them. All users must be able to find a specific user to be able to view their statistics. Users should be able to be found by entering their user names or part of their user names.

Actors

Administrator, User

Preconditions

The user is logged in.

Basic Flow

1. The user enters information in the search field
2. The system shows a list of users fitting the search criteria.
3. The user chooses the desired user from the list.
4. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows

4 a) No user with the entered user information can be found.

1. The system notifies the user.
2. The use case is exited.

Postconditions

The user is redirected to the users page.

Search for User

User   **System**

Search query with user information →

alt   [Account exists]

← Show matches from the database

Pick wanted match →

Write log entry

← Show user profile

- -

[no account matches]

← Show error message

User   **System**
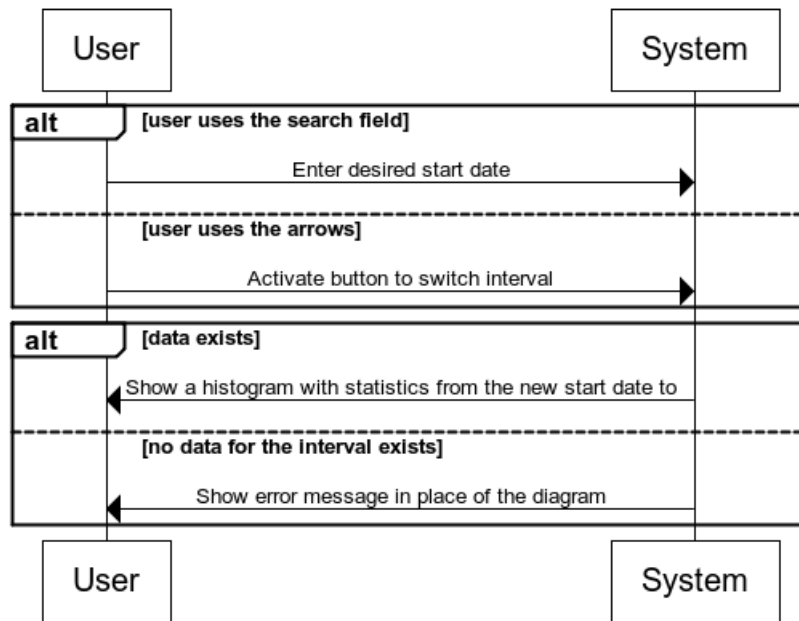
13   Change Statistics Viewing Interval

Description

When statistics for a activity are already shown the interval to view can be changed either by selecting a date directly or by clicking the plus or minus buttons on days, weeks or years.

Actors

User

Preconditions

The user is logged in to the system and is currently on the page for viewing statistics. A activity to be viewed has already been chosen.

Basic Flow

1. The user selects the start field provided on the statistics page and enters the desired date.

2. The system updates the viewed statistics.

3. The system writes a log entry for the activity of the user with the current time and date.

Alternate Flows

1 a) The user chooses to change the time using the buttons.

1. The system updates the viewed statistics every time a button is activated to change the interval.

Exception Flows

4 a) No data for the chosen interval exists.

1. The system displays a message instead of the histogram.

2. The use case is exited.

Change Statistics Viewing Interval

User   **System**

alt   [user uses the search field]

Enter desired start date

[user uses the arrows]

Activate button to switch interval

alt   [data exists]

Show a histogram with statistics from the new start date to

[no data for the interval exists]

Show error message in place of the diagram
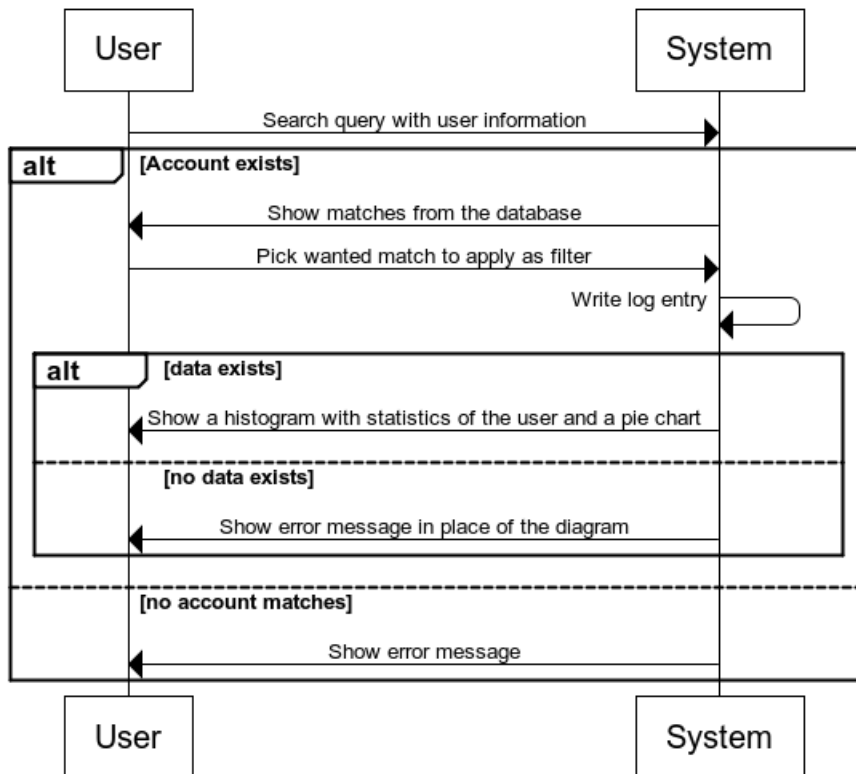
User   **System**

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14   Change Statistics Viewing Filter

Description   When statistics for an activity are already viewed the user can add user through the search field to filter the viewed statistics.

Actors   User

Preconditions   The user is logged in to the system and is currently on the page for viewing statistics. An activity to be viewed has already been chosen.

Basic Flow

1. The user enters the user-name of another user in the search-field provided on the page.

2. The system provides a list of users that fit with the provided search term.

3. The user chooses the user they want to enter to the view as filter.

4. The system shows the histogram for only the selected users' activities and a pie chart showing the percentage of each users contribution to the activity.

5. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows   4 a) No data for the chosen activity and user exists.

1. The system displays a message instead of the histogram.

2. The use case is exited.
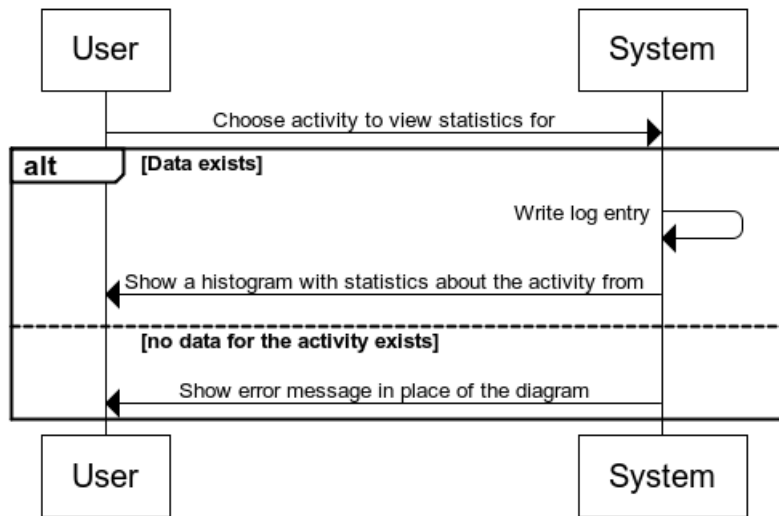
Change Statistics Viewing Filter

```
         User                                          System

              Search query with user information
         |---------------------------------------------->|
  ┌─ alt ──┐ [Account exists]                            |
  |         Show matches from the database               |
  |       |<----------------------------------------------|
  |         Pick wanted match to apply as filter          |
  |       |---------------------------------------------->|
  |                                       Write log entry |
  |                                                    |<─┐
  |  ┌─ alt ──┐ [data exists]                             |
  |  | Show a histogram with statistics of the user and a pie chart
  |  |    |<---------------------------------------------- |
  |  |╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌|
  |  |  [no data exists]                                  |
  |  |         Show error message in place of the diagram |
  |  |    |<---------------------------------------------- |
  |╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌╌|
  |  [no account matches]                                 |
  |              Show error message                       |
  |       |<----------------------------------------------|

         User                                          System
```

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15 View Statistics

Description

All users, including the administrator, should be able to view the statistics of the coffee machine sorted by activity. The statistics should be shown within a time span with the smallest increment of days. In addition to viewing overall statistics users can be specified to show the statistics for (as in how many times did those people do this...)

Actors

User

Preconditions

The user is logged in to the system and is currently on the page for viewing statistics.

Basic Flow

1. The user chooses a activity from the list of activities to view.

2. The system shows a histogram of the data about the selected activity from the beginning of data collection to the current day.

3. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows

2 a) No data for the chosen activity exists.

    1. The system displays a message instead of the histogram.

    2. The use case is exited.

View Statistics

User		System

Choose activity to view statistics for

alt [Data exists]

Write log entry

Show a histogram with statistics about the activity from

[no data for the activity exists]

Show error message in place of the diagram

User		System

16 Set Automatic Activation Feature

Description

The automatic activation feature should be activatable and deactivatable in case the customers decide that they find the feature annoying and would rather have control over it themselves. The box for to activate this feature should be located on the main page on a mobile interface.

Actors

User

Preconditions

The user is logged in to the system on a mobile device and is currently on the main page.

Basic Flow

1. The user selects the automatic activation feature box.
2. The system displays an information message about the function and asks the user for confirmation.
3. The user confirms his choice.
4. The system notifies that the feature has been activated.
5. The system writes a log entry for the activity of the user with the current time and date.

Postconditions

The user has changed the status of the automatic activation feature.

17 Geofence Use Case

Description

Geofence is the virtual perimeter for a real-world geographic area, according to Wikipedia. In this context, the geofence is the virtual perimeter for when the automatic turn-on feature will be triggered.

Actors

User

Preconditions

1. The user has activated the geofence function in his or her smartphone.
2. The smartphone's GPS hardware is activated.
3. The application is running, either in foreground or background.

Basic Flow

1. The user closes in to the virtual perimeter.
2. The smartphone detects the breach of the virtual perimeter.
3. The smartphone sends a request to the system to turn on the coffee machine.
4. The system sends a notification to the smartphone that the coffee machine has been turned on.
5. The smartphone notifies the user that the coffee machine has been turned on.

Alternative Flows

4 a) The system sends a notification that the coffee machine already is on.

    1. The use case ends without any other action.

Postconditions   The coffee machine is on.

18   Set Flag

Description   On the main page a flag should be settable by the user to show if the coffee machine is filled with water and coffee beans.

Actors   User

Preconditions   The user is logged in to the system and is currently on the main page.
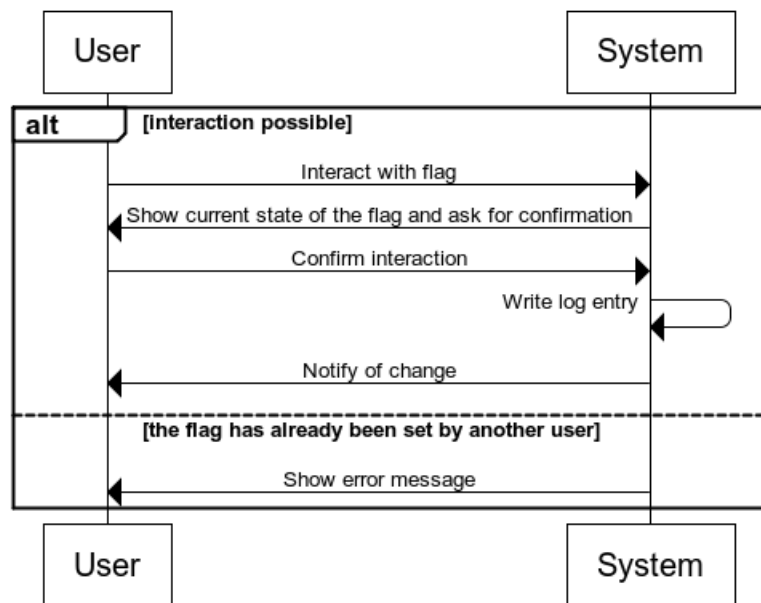
Basic Flow

1. The user selects a flag to set by pressing on its button.
2. The system asks the user if he wants to set the flag.
3. The user confirms his choice.
4. The system notifies the user of the change in the state of the flag by changing the button for setting the flag.
5. The system notifies the user of the change in the state of the flag by letting the LED blink.
6. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows   4 a) The flag has already been set to the desired state by another user

    1. The system displays a error message.
    2. The use case is exited.

Set Flag

alt [interaction possible]

User → System: Interact with flag

System → User: Show current state of the flag and ask for confirmation

User → System: Confirm interaction

System → System: Write log entry

System → User: Notify of change

[the flag has already been set by another user]

System → User: Show error message
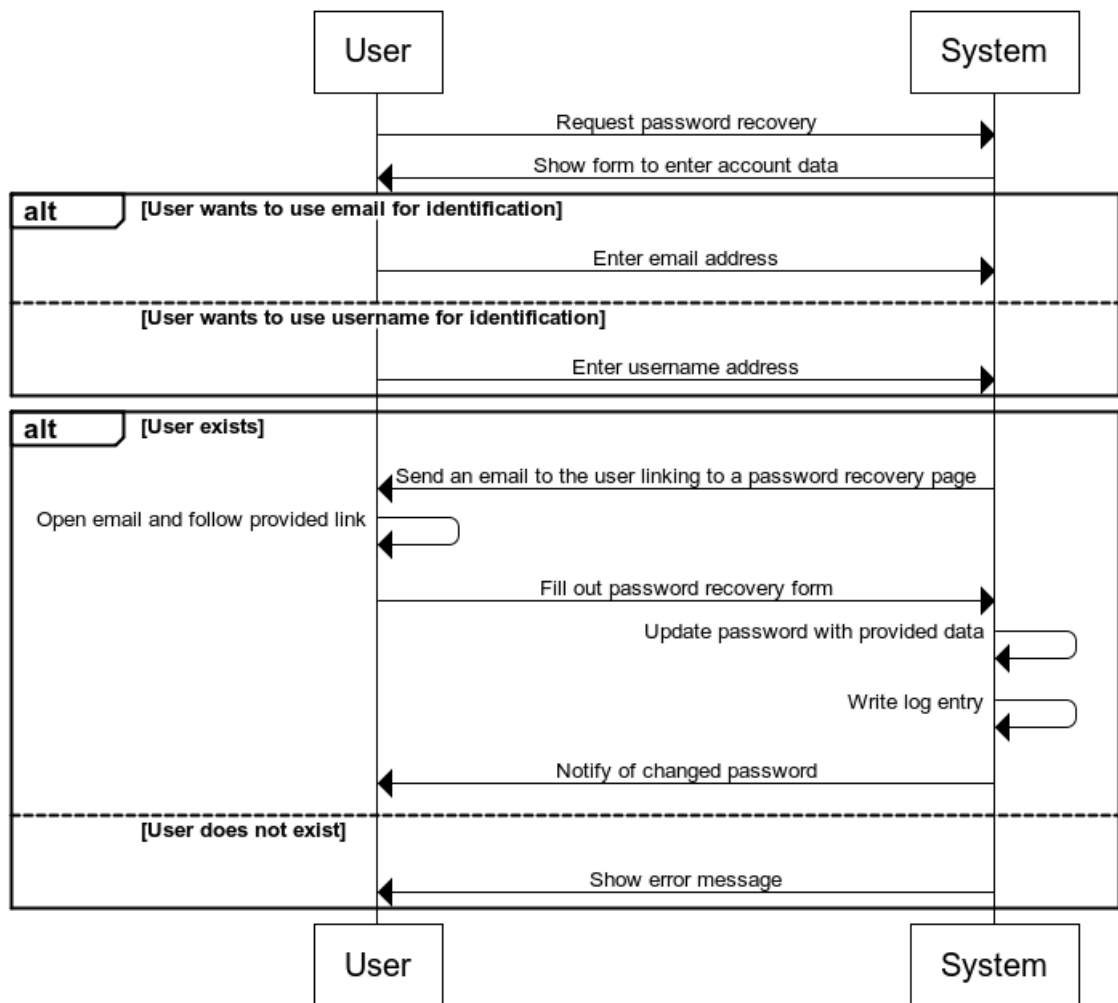
19 Password Recovery

Description
The user has the option to recover his password during login in case he does not remember the password, which makes it impossible for him to login.

Actors
User

Preconditions
The application is started and the user is on the login page.

Basic Flow
1. The user requests password recovery
2. The system requests account data from the user
3. The user enters his email address
4. The system verifies that the email address exists
5. The system sends an email to the user linking to a password recovery page
6. The user follows the link and fills out the form
7. The system updates the password of the user with the data from the form
8. The system writes a log entry for the activity of the user with the current time and date.

Alternate Flows
3 a) The user enters his user name.
   1. The system verifies that eh user name exists.
   2. return to step 4.

Exception Flows
4 a) The entered data does not exist.
   1. The system shows an error message.
   2. The use case is exited.

Postconditions
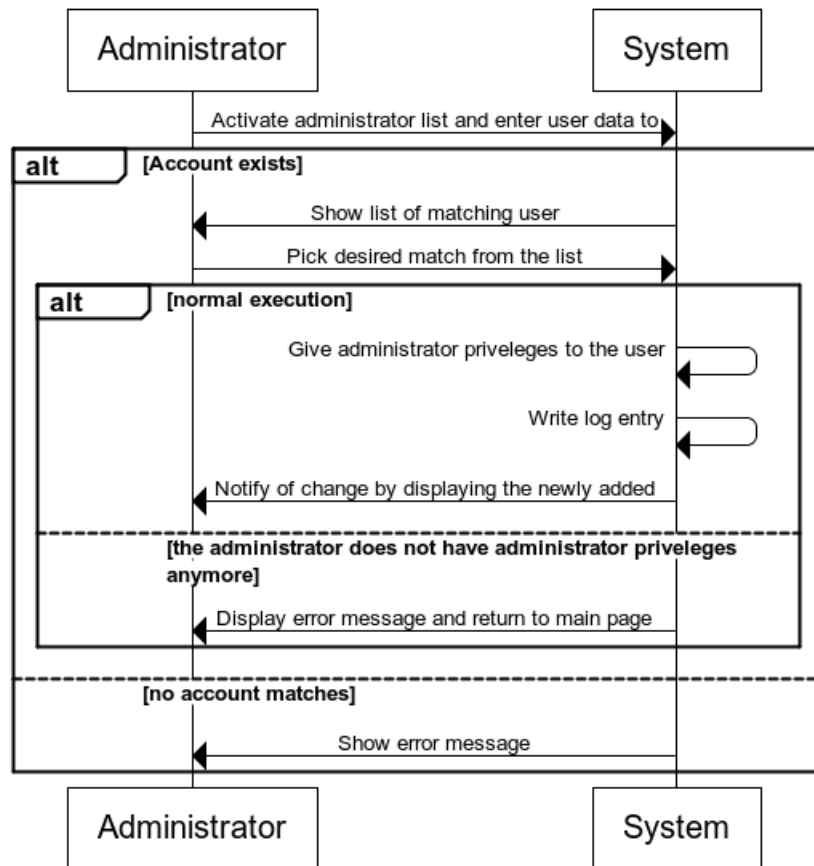The user's password is updated.

Password Recovery

User | System

User → System: Request password recovery

System → User: Show form to enter account data

alt [User wants to use email for identification]

User → System: Enter email address

[User wants to use username for identification]

User → System: Enter username address

alt [User exists]

System → User: Send an email to the user linking to a password recovery page

User: Open email and follow provided link

User → System: Fill out password recovery form

System: Update password with provided data

System: Write log entry

System → User: Notify of changed password

[User does not exist]

System → User: Show error message

User | System

20   Add Administrator Rights To User

Description

In case a new administrator needs to be assigned, when e.g. the current administrator leaves the company, the administrator needs to give permissions to any of the users of the system.

Actors

Administrator

Preconditions

The administrator is logged in to the system and is currently on the administrator page.

Basic Flow

1. The administrator activates the administrator list and searches for a user.
2. The system gives a list of users that match the search conditions.
3. The administrator picks a user from the list.
4. The system gives administrator privileges to the user.
5. The system writes a log entry for the activity of the user with the current time and date.
6. The system notifies the administrator of the change by displaying the user in the list of administrators.
7. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows

2 a) No user with the entered user information can be found.

   1. Display error message.
   2. The use case is exited.

4 a) The administrator does no longer have administrator privileges.

   1. Display error message.
   2. Return to the main page.

Postconditions

The user is added to the list of administrators and has administrator privileges.
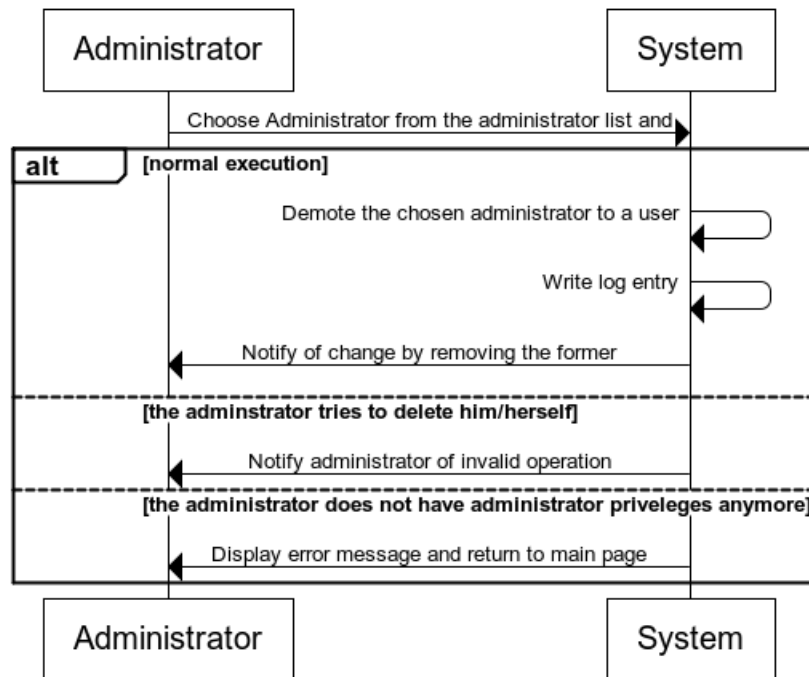
Add administrator rights to user

Administrator		System

Activate administrator list and enter user data to →

alt [Account exists]

← Show list of matching user

Pick desired match from the list →

alt [normal execution]

Give administrator priveleges to the user

Write log entry

← Notify of change by displaying the newly added

- -

[the administrator does not have administrator priveleges anymore]

← Display error message and return to main page

- -

[no account matches]

← Show error message

Administrator		System

21   Revoke Administrator Rights from User

Description   If a user that has administrator rights leaves the company, or in any other way makes it unnecessary for them to have administrator rights, then these rights should be revoked.

Actors   Two administrators

Preconditions   The administrator is logged into the system and is currently on the administrator page.

Basic Flow
1. The administrator finds the other administrator in the administrator list.
2. The administrator removes the other administrator from the list.
3. The system notifies the administrator by removing the other administrator from the list.
4. The system writes a log entry for the activity of the user with the current time and date.

Exception Flows
2 a) The administrator tries to remove him-/herself.
1. The system notifies the administrator that an admin cannot remove him-/herself.

2 b) The (former) administrator no longer has administrator rights.
1. The system notifies the (former) administrator that he/she is missing elevated rights.

Postconditions The user that got the administrator rights revoked is no longer an administrator.

Revoke administrator rights to user

Administrator → System: Choose Administrator from the administrator list and

alt [normal execution]

System → System: Demote the chosen administrator to a user

System → System: Write log entry

System → Administrator: Notify of change by removing the former

[the adminstrator tries to delete him/herself]

System → Administrator: Notify administrator of invalid operation

[the administrator does not have administrator priveleges anymore]

System → Administrator: Display error message and return to main page

22   Use Case Diagram