

Use Case Specifications

Project Phase 2 - Final

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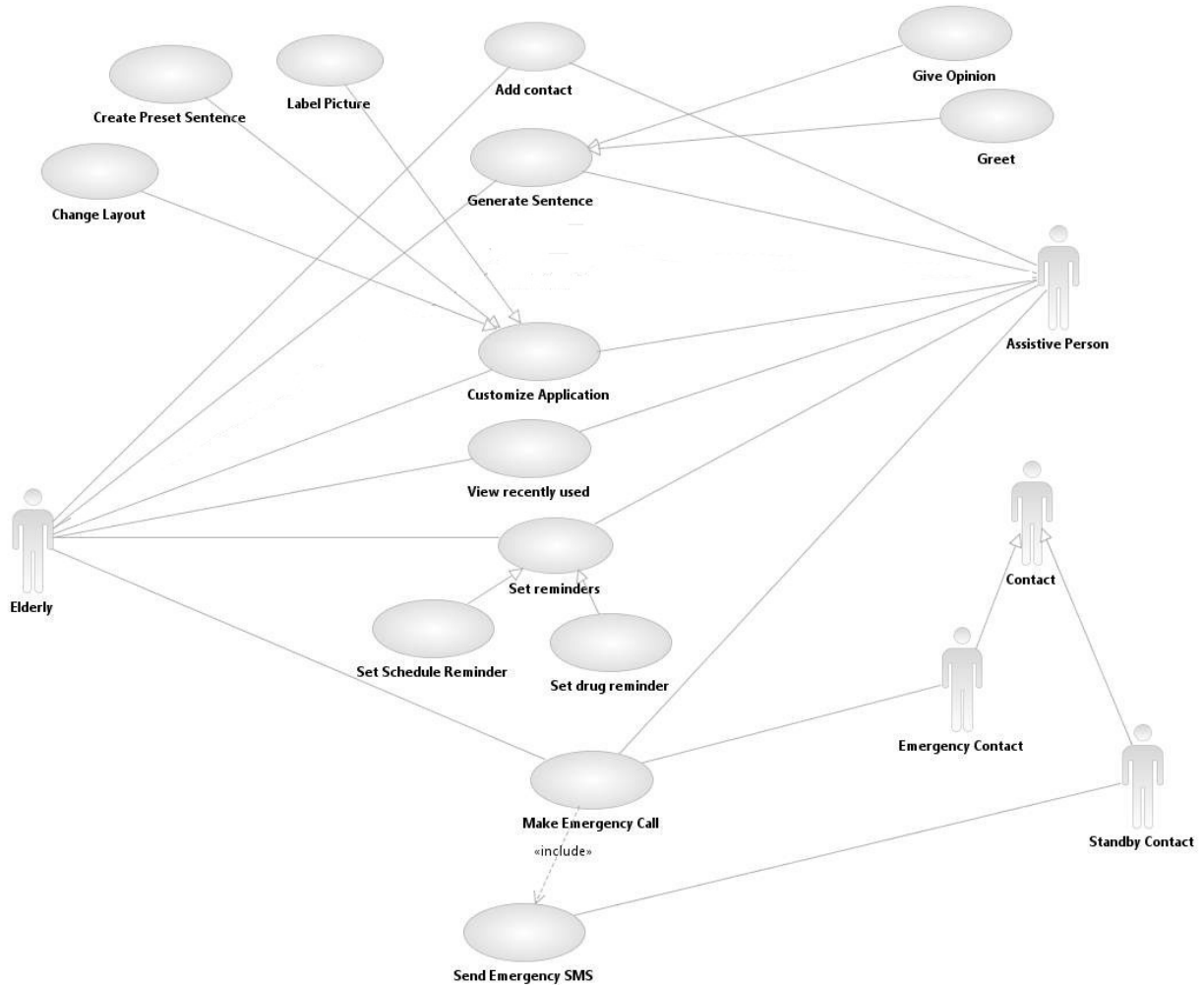
Team Website: <http://utdallas.edu/~sas071100/reqsproj/>

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Use Case Diagram



Use Case Specifications

Make Emergency Call

ID: 1

Brief Description: Attempt to contact someone to notify them that an emergency has occurred and requires the attention of an emergency service or caregiver.

Primary Actors: Elderly or Assistive Person

Secondary Actors: Emergency Contact

Preconditions:

- The user is running the HCPA.

Main Flow:

1. On any page, the user selects the emergency button.

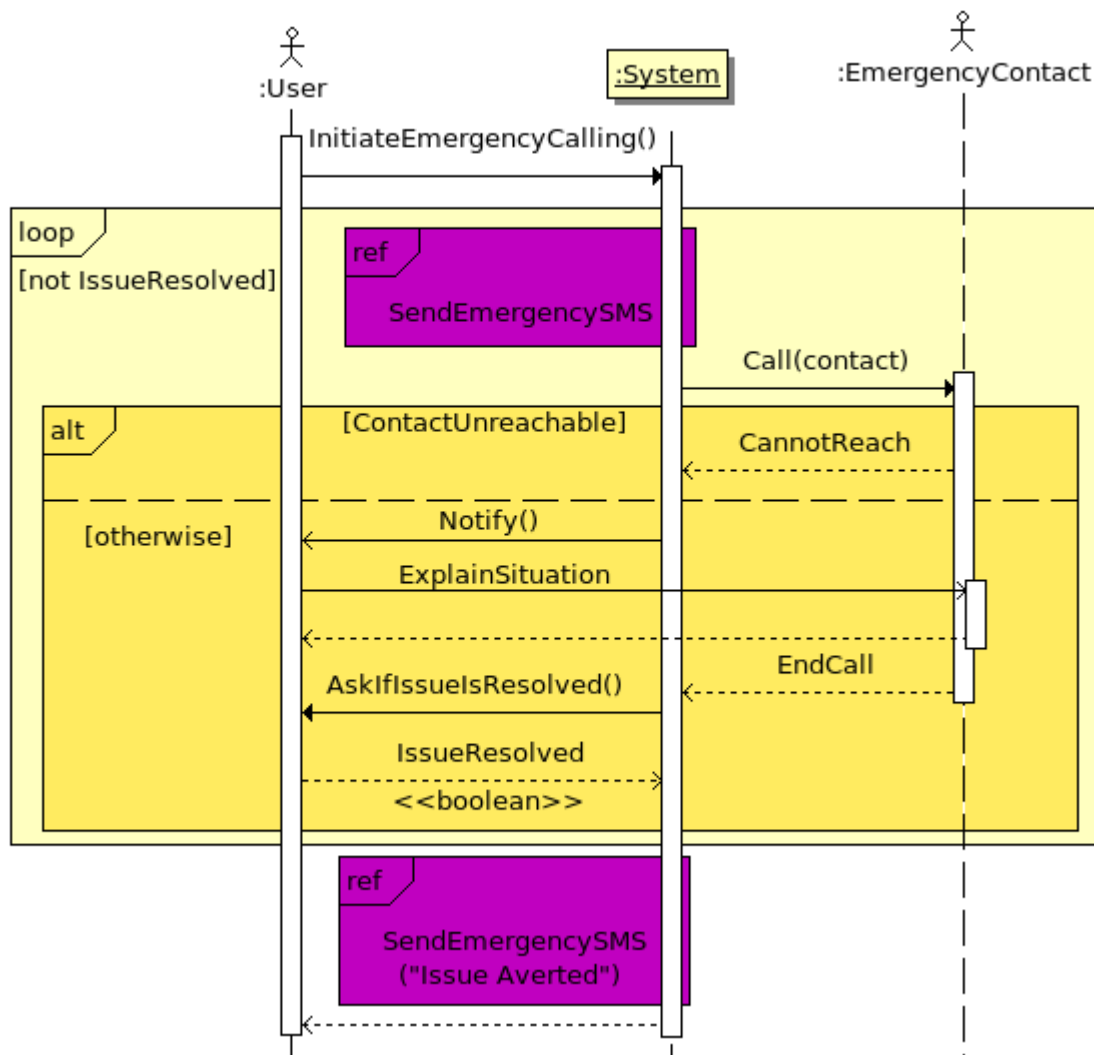
2. Include ('Send Emergency SMS')
3. The system immediately begins looping through the emergency contacts, attempting to establish a phone call
4. Once a call goes through, the phone notifies the user
5. The user talks on the phone, explaining their situation and hangs up when complete
6. The system asks the user if the emergency is handled
7. If the user selects no or does not respond in 2 minutes, return to step 3
8. Include('Send Emergency SMS') send "Issue averted"

Postconditions:

- Emergency contacts notified

Alternative Flows:

- If during the sequence a call comes in, the system pauses it's dialing cycle to answer the call. Go to step 5.
- If a cellular signal cannot be reached, notify the user and continue trying to connect
- If the user at any point in the main flow selects cancel, skip to step 8



Send Emergency SMS

ID: 2

Brief Description: Attempt to contact someone to notify them that an emergency has occurred and requires the attention of an emergency service or caregiver. Use a means that allows for maximum reach.

Primary Actors: Elderly or Assistive Person

Secondary Actors: Standby Contact

Preconditions:

- The user is running the HCPA and a list of standby contacts has been setup

Main Flow:

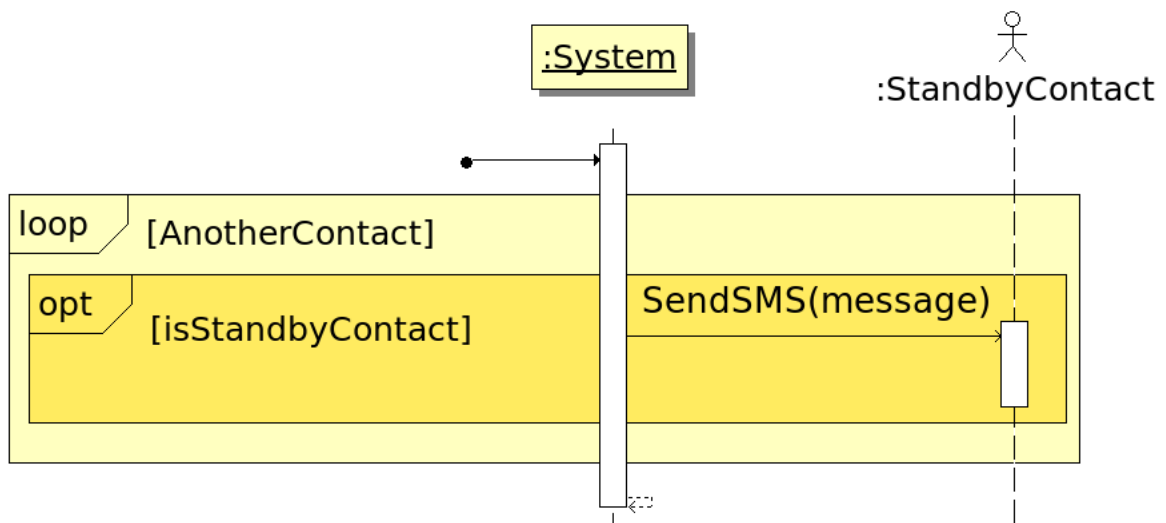
- The system loops through the contact list
- If the contact is marked as an emergency contact, send the message "I am in need of assistance, if you are nearby, please seek me out immediately" via SMS to the contact.

Postconditions:

- Standby contacts notified

Alternative Flows:

- If given another string as input, send that in step 2, rather than the listed string.



Add Contact

ID: 3

Brief Description: Add a contact to the HCPA database

Primary Actors: Elderly or Assistive Person

Secondary Actors: None

Preconditions:

- The user is running the HCPA and is on home screen

Main Flow:

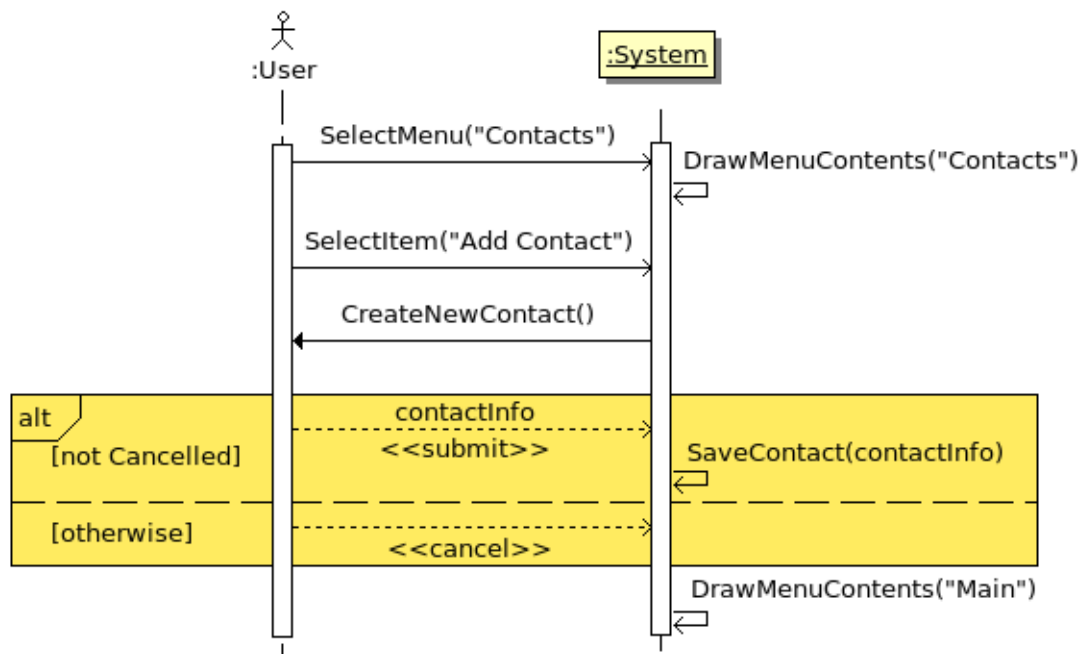
- User clicks on contacts; the system displays contact list
- User clicks on add contact; the system prompts for the following information:
 - Name
 - Number
 - Is Emergency Contact?
 - Breadcrumb
- The user submits the data; the system commits the contact to the database.
- The contact list screen is displayed.

Postconditions:

- Either the new contact is persisted in the database or no changes are made
- The system returns to the contact list.

Alternative Flows:

- If at step 3 in the main flow the user cancels the addition, the system aborts any changes to its database. Flow continues as normal.



Generate Sentence

ID: 4

Brief Description: Generate a new sentence from scratch and read it using text-to-speech libraries.

Primary Actors: Elderly

Secondary Actors: Assistive Person

Preconditions:

- The user is running the HCPA and is in the sentence creation dialog
- The list of most recently used sentences is initialized (though perhaps empty)

Main Flow:

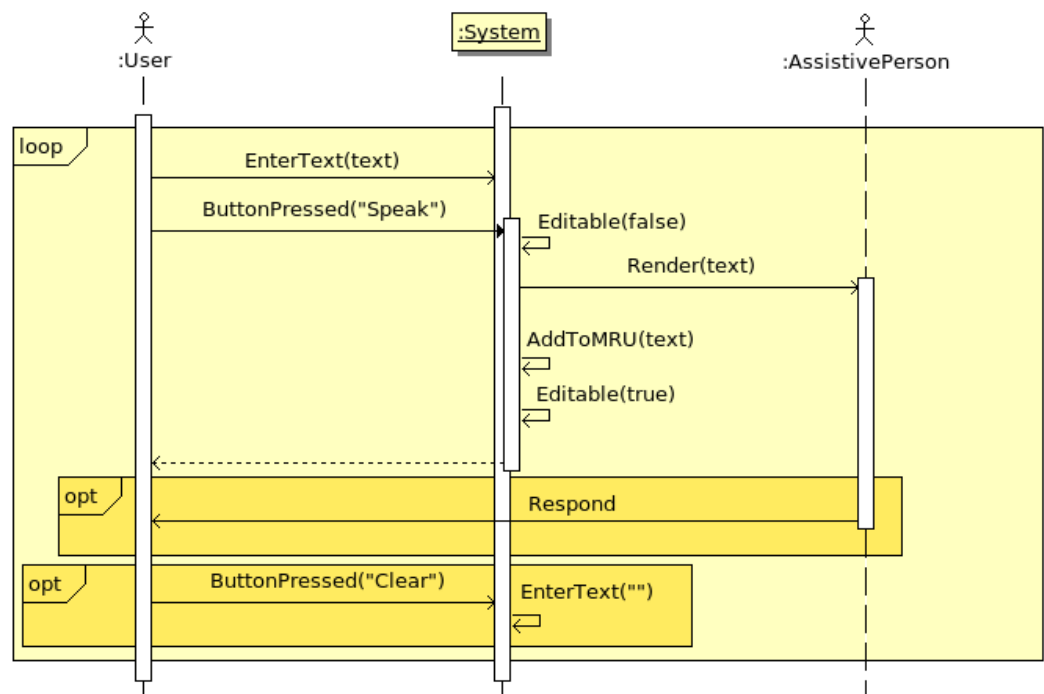
1. The user enters, via keyboard, the new sentence to be generated
2. The user presses the speak button; the system disables editing.
3. The system renders the audio using text-to-speech libraries
4. The system adds the sentence to the most recently used list
5. The system re-enables editing of the sentence field
6. The assistive person reacts accordingly

Postconditions:

- The message is conveyed to the assistive person

Alternative Flows:

- If at step 1 in the main flow the user selects the home button, abort all operations and exit the sentence creation dialog.
- If after step 5 in the main flow the user modifies the sentence, return to step 1.
- If at step 6 in the main flow the assistive person does not hear the output, the user may return to step 2.



Give Opinion

ID: 5

Brief Description: The system renders a pre-generated sentence, giving an opinion, using text-to-speech libraries.

Primary Actors: Elderly

Secondary Actors: Assistive Person

Preconditions:

- The user is running the HCPA and is in the pre-set opinions menu
- The list of most recently used sentences is initialized (though perhaps empty)

Main Flow:

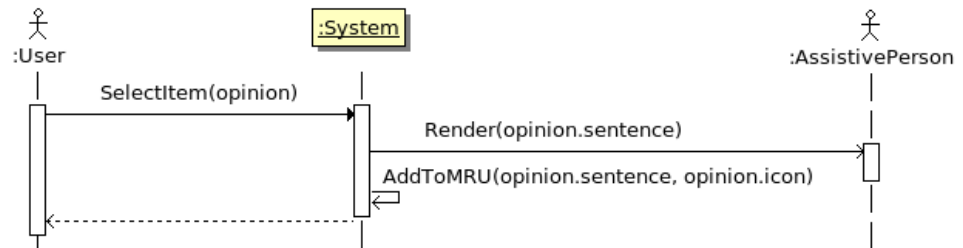
1. The user selects the icon of the opinion that they wish to express
2. The system uses text-to-speech rendering to speak the sentence
3. The system adds the sentence to the most recently used list
4. The system returns to the pre-set opinions menu

Postconditions:

- The message is conveyed to the assistive person

Alternative Flows:

- If the assistive person does not get the message, begin again at step 1.



Greet

ID: 6

Brief Description: The system renders a pre-generated sentence, greeting an assistive person, using text-to-speech libraries.

Primary Actors: Elderly

Secondary Actors: Assistive Person

Preconditions:

- The user is running the HCPA and is in the pre-set greetings menu
- The list of most recently used sentences is initialized (though perhaps empty)

Main Flow:

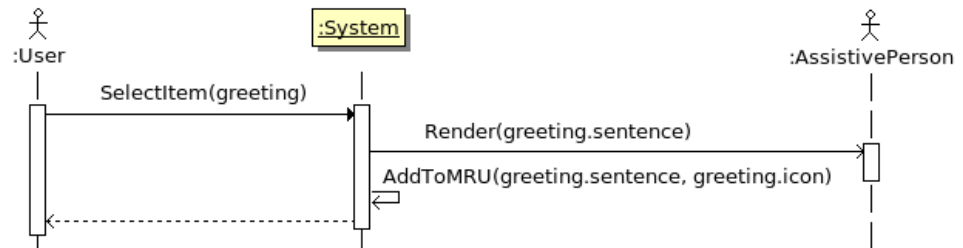
1. The user selects the icon of the greeting that they wish to express
2. The system uses text-to-speech rendering to speak the sentence
3. The system adds the sentence to the most recently used list
4. The system returns to the pre-set greetings menu

Postconditions:

- The message is conveyed to the assistive person

Alternative Flows:

- If the assistive person does not get the message, begin again at step 1.



Label Picture

ID: 7

Brief Description: Associate a custom icon with custom text for use in the system

Primary Actors: Elderly or Assistive Person

Secondary Actors: None

Preconditions:

- The user is running the HCPA and is in the Image Glossary (under Settings)

Main Flow:

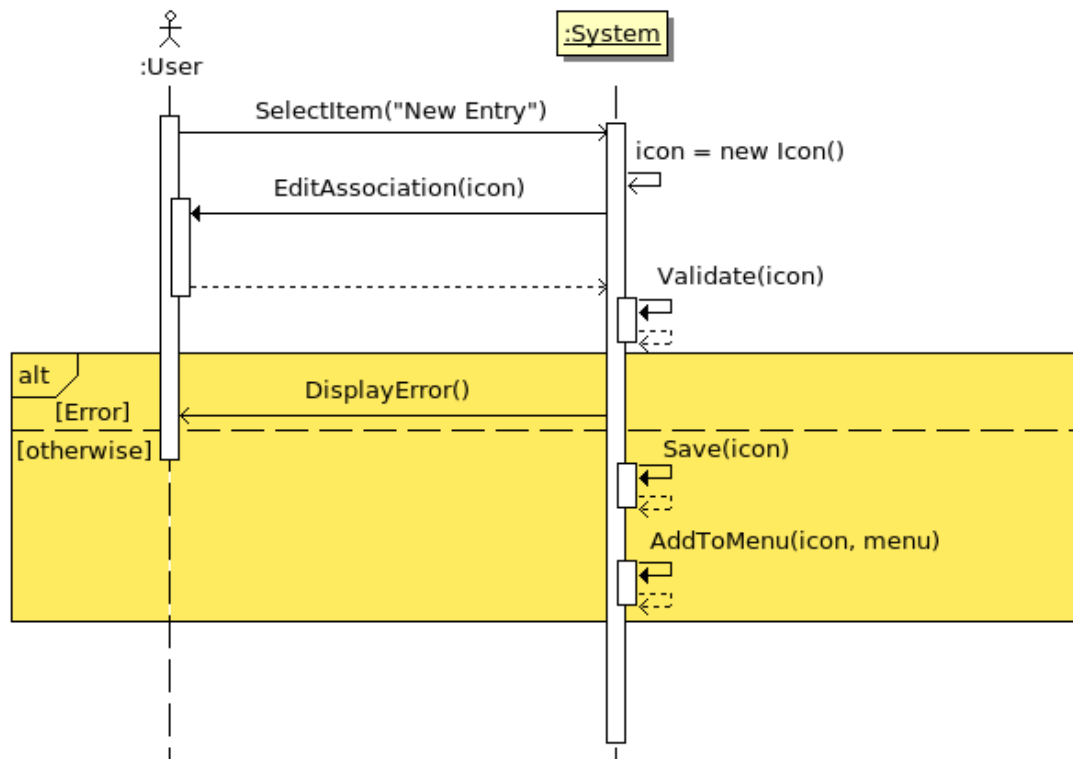
- The user selects the New Entry button
- The system requests the image file, a sentence, and the location of the icon in the menus.
- The user enters the requested information and clicks the Add button
- The system validates the input information
- The system persists the association
- The system inserts the new icon in the appropriate menu

Postconditions:

- A new icon is created at the proper location

Alternative Flows:

- If at step 4 in the main flow the image file or menu location does not exist, the system displays an error and aborts the use case
- If at step 4 in the main flow the system finds that at the image or its associated sentence is already in the image glossary (bit-for-bit), then the system displays an error and aborts the use case



Change Preset Sentence

ID: 8

Brief Description: Change an existing image-to-text association throughout the system.

Primary Actors: Elderly or Assistive Person

Secondary Actors: None

Preconditions:

- The user is running the HCPA and is in the Image Glossary (under Settings)

Main Flow:

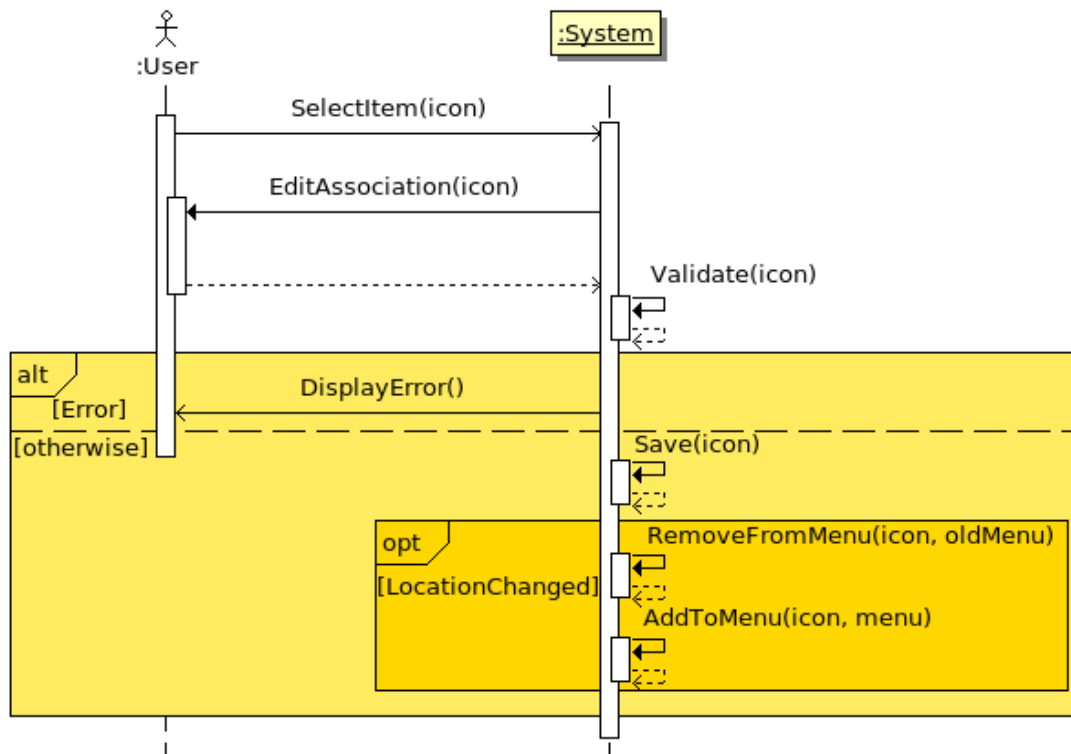
- The user finds and selects the icon in the image glossary; the system brings up an edit dialog
- The user changes at least one of the following values: Image File, Sentence, Menu Location.
- The user clicks the Save button
- The system validates the input information
- The system persists the association
- If the Menu Location was changed in step 2, the system removes the icon from the old menu and inserts it into the new one

Postconditions:

- The existing icon is re-purposed as per the user's customization

Alternative Flows:

- If at step 4 in the main flow the image file or menu location does not exist, the system displays an error and aborts the use case
- If at step 4 in the main flow the system finds that at the image or its associated sentence is already in the image glossary (bit-for-bit), then the system displays an error and aborts the use case



Change Layout

ID: 9

Brief Description: Customize the number of icons on the screen for easier viewing.

Primary Actors: Elderly or Assistive Person

Secondary Actors: None

Preconditions:

- The user is running the HCPA and is in Settings menu

Main Flow:

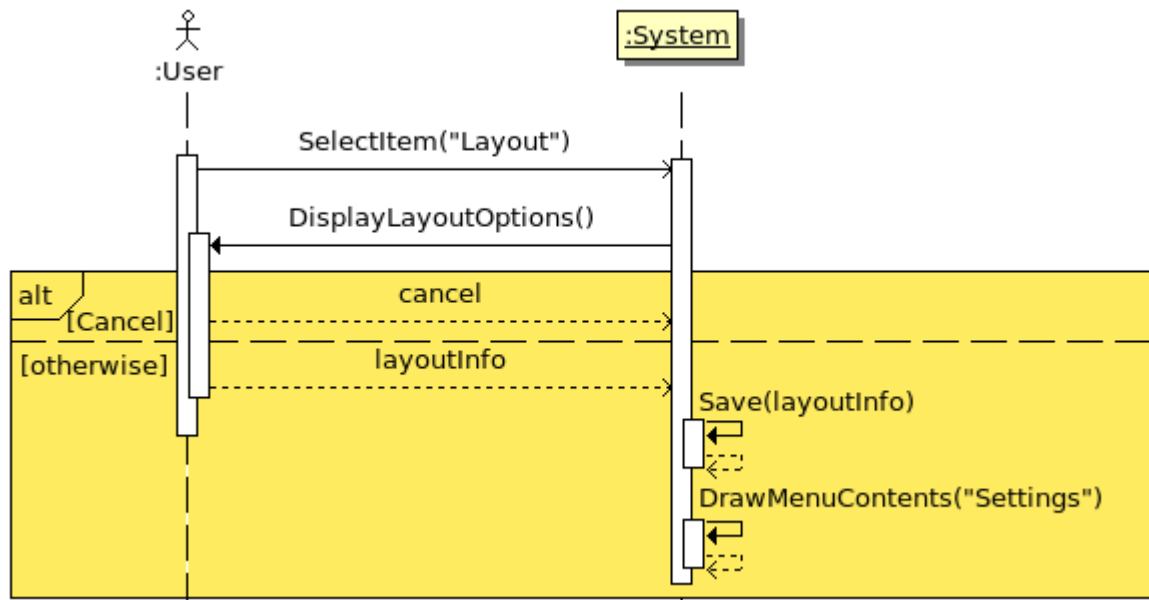
- The user selects the Layout menu item
- The system queries the user for one of the following layouts: 4, 6, 9, 16
- The user selects the desired layout and presses the Save button
- The system persists the setting in the configuration file
- The system returns to the Settings menu and redraws it to have the selected number of icons on the screen

Postconditions:

- The number of icons per screen is set for current and future use

Alternative Flows:

- If the user selects the Cancel button (before step 4), then the screen returns to the Settings menu and no changes are made to the configuration.



View Recently Used

ID: 10

Brief Description: Open a menu to view the most recently used sentences by the text-to-speech system.

Primary Actors: Elderly or Assistive Person

Secondary Actors: None

Preconditions:

- The user is running the HCPA and is on the home screen
- The user has previously generated sentences using the Generate Sentences use case

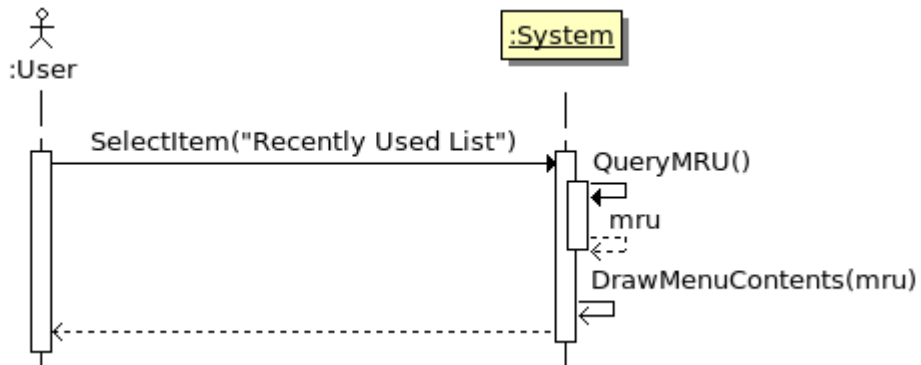
Main Flow:

1. The user selects the most recently used menu.
2. The system queries the most recently used list and displays the 10 most recent sentences

Postconditions:

- The user can see and select from any of the 10 most recently generated sentences

Alternative Flows: None.



Set Drug Reminder

ID: 12

Brief Description: Cause the application to post a reminder to take medication or that the supply of drugs is running low.

Primary Actors: Elderly or Assistive Person

Secondary Actors: None

Preconditions:

- The user is running the HCPA and is in Tools menu

Main Flow:

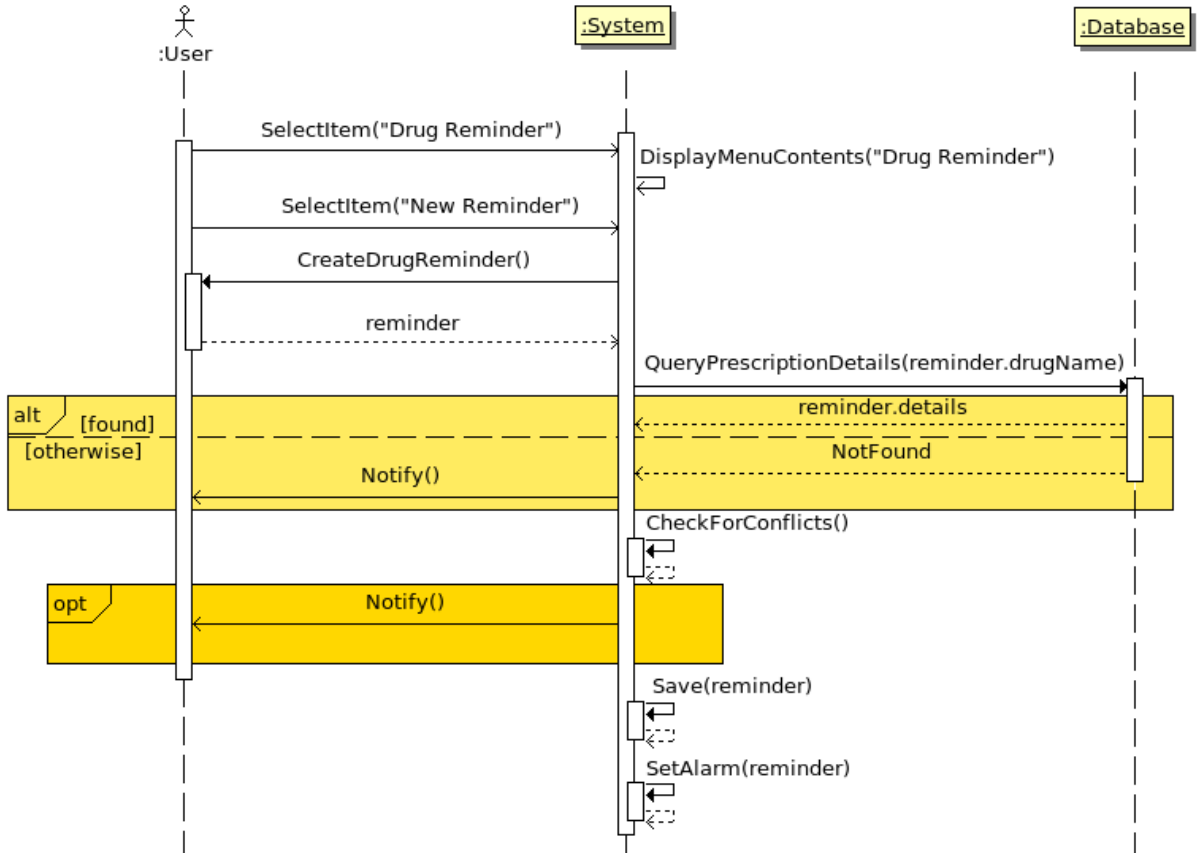
1. The user clicks on the Drug Reminder menu
2. The system opens the menu consisting of existing reminders
3. The user clicks on the New Reminder button
4. The system brings up a dialog prompting for the following:
 - a. Prescription Name
 - b. Doctor Name
 - c. Doctor SMS-capable phone number
 - d. Pharmacy SMS-capable phone number
 - e. Days of week to take
 - f. Times of day to take
 - g. Number of pills to take each time
 - h. Size of prescription (# of pills)
 - i. Number of authorized refills
5. The user submits the information to the system
6. The system queries the HOPE prescription database using the Prescription Name
7. The system downloads from the database the following data
 - a. List of drugs to avoid while taking this prescription + duration of avoidance
 - b. Take with food, without food, or apathetic?
8. The system checks all existing drug reminders for conflicts (see 7a)
9. The system persists all data and sets a recurring alarm

Postconditions:

- A new drug reminder is set up to recur at the specified times
- If the doctor's SMS-capable phone number is supplied, the doctor will be notified 7 days in advance that we will require a refill
- If the pharmacy's SMS-capable phone number is supplied, the pharmacy will be notified 5 days in advance that we will require a refill

Alternative Flows:

- If at step 6 the database query comes up empty, skip steps 7 & 8 and the system shall inform the user that no data could be downloaded for the drug. Allow the user to cancel.
- If at any step the user selects Cancel, abort all changes to the system and exit the use case



Drug Reminder

ID: 13

Brief Description: The system notifies the elderly that it is time to take their drugs

Primary Actors: System

Secondary Actors: Elderly

Preconditions:

- The user is running the HCPA
- The user previously set up drug reminders using the Set Drug Reminder use case
- The current time is when a drug reminder is set to go off

Main Flow:

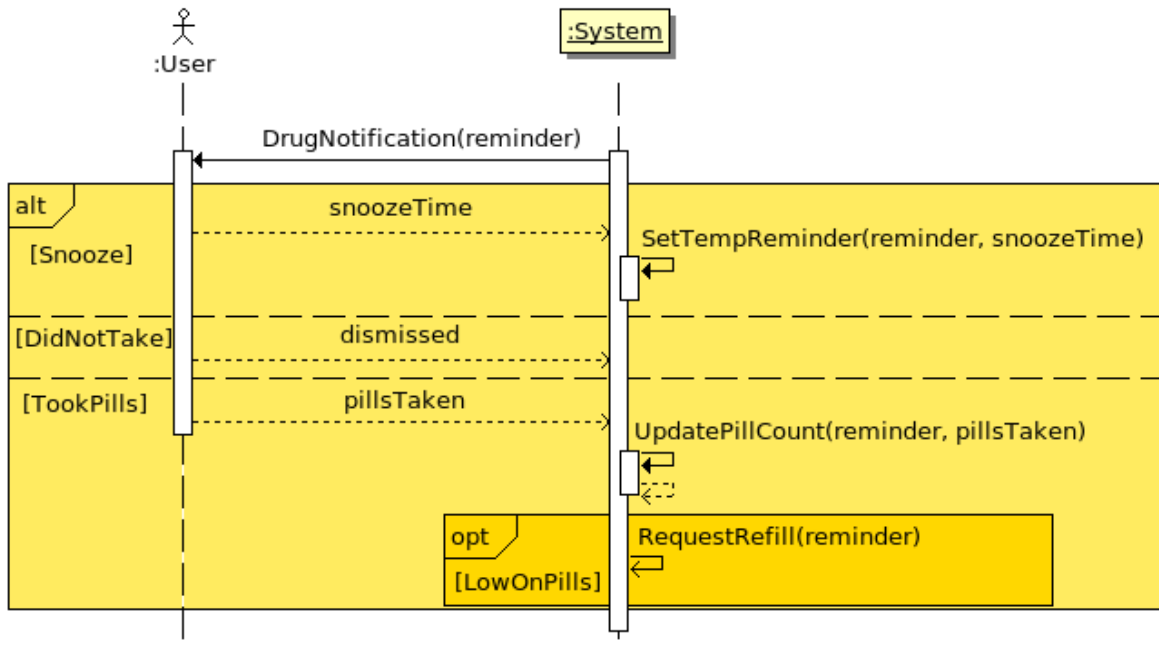
1. The system displays a notification that it is time to take their drugs. The message contains the list of drugs to take and the quantities of each.
2. The user takes the drugs and then clicks the 'I have taken all pills' button
3. The system prompts for confirmation; the user confirms they took the pills
4. The pill counts are updated and persisted
5. If the pill count has declined below the threshold (5 or 7 days worth) and the SMS-capable phone number is supplied, the system sends a message requesting a refill.

Postconditions:

- The count of pill remaining is updated
- Any necessary refill requests are made

Alternative Flows:

- If at step 2 the user clicks Snooze and supplies a time (less than 2 hours), the system closes the reminder, waits the specified time and begins again at step 1
- If at step 2 the user clicks 'I did not take my pills' the system skips aborts any changes and exits the use case



Domain Description Class Diagram

