

# Inf2-SEPP 2023-24

## Coursework 3

### Requirements and Design

This document contains a description of the self-service portal. This is all information you have seen before in CW1, CW2, and their solutions (particularly, the ambiguities tasks) – it is simply grouped here for convenience.

#### 1 General

- R1. The system shall only be accessible by kiosk machine.
- R2. The system shall only have one user interacting with it at a given time, whether they are a guest (i.e. non-student) or a logged-in student or staff member.
- R3. The system shall interact with the user via a simple text user interface.

#### 2 Logging in

- R4. When first accessing the system, the user shall see options to log in, consult the FAQ, consult webpages, consult a member of staff.
- R5. When not logging in, the user shall be considered a "guest."
- R6. Students, admin staff, and teaching staff shall be able to log into the system via the external records system EASE.
- R7. After log-in, students shall see a "successfully logged in" message, as well as options to log out, consult the FAQ, consult webpages, and consult a member of staff.
- R8. When a user wishes to log in, the system shall connect to EASE via its API function to login with just a username and password. The function will return user data (name, email, role) if the username and password are correct. If not, it will return an error message.

R9. Students and staff shall be able to log out of the system. This shall not use EASE.

### **3 Consult FAQ**

R10. The system shall allow students and guests (from now on referred to as inquirers) to consult the FAQ, which shall contain question-answer pairs divided into topics.

- (a) The system shall store the topics and question-answer pairs. These shall be managed by admin staff (see section 5).
- (b) The topics shall be grouped into a nested hierarchy. Question-answer pairs shall be present at each level of this hierarchy, except at the very top of the FAQ, which shall only contain topics.
- (c) When consulting the FAQ, inquirers shall first be provided with top-most level of the hierarchy (which only contains topics). Inquirers shall then be able to select one of them, in which case the system shall show them the questions-answer pairs in that topic, as well as direct sub-topics (i.e., one level down), if any. When not at in the highest level topic, the system shall also show super-topics (i.e., one level up).
- (d) Inquirers shall be able to go up and down the topic hierarchy, one level at a time.

R11. Inquirers shall be able to request updates for a particular FAQ topic that will notify them if it later gets changed by admin staff.

- (a) Request updates shall be presented to inquirers as another option in addition to navigation options when browsing the FAQ. When updates are made to this topic, e.g., question-answer pairs are added, edited, or deleted (but not sub-topics or super-topics), the system shall automatically email the list of topic question-answer pairs to all inquirers who requested updates on the topic.
- (b) While browsing the FAQ, logged-in students shall be given the option to stop getting updates instead of the option to request updates if they are on a topic that they had previously requested updates for.
- (c) The system shall give a confirmation to logged-in students when they request updates. This confirmation shall specify the topic on which they requested updates, as well as their email address where they would receive these updates.
- (d) While browsing the FAQ, guests shall always be given the options to request updates or to stop receiving updates for the current topic they are at.
- (e) If a guest selects the option to stop receiving updates but has not previous requested updates for that topic, the system shall ask for their email address.

If the entered email is not in the list of subscribers to updates, the system shall show a warning and do nothing.

## 4 Consult Webpages

R12. Inquirers shall have the option to perform a keyword search on the university's webpages using the Lucene library.

- (a) The system shall store the raw text file versions of the webpages. These shall be managed by admin staff (see section 5).
- (b) When consulting webpages, the system shall prompt the inquirer for a search query (which could be keywords and special symbols).
- (c) The system shall return to the inquirer up to 4 of the most relevant paragraphs along with names of the webpages containing those paragraphs (provided that any match). When there are more than 4 paragraphs and/or documents to choose from, any of the choices are fine.
- (d) Pages (or any text from those pages) marked as private by admin staff shall not be returned to guests when performing a keyword search, but shall freely appear to logged-in users (students and staff).

## 5 Managing the FAQ and Webpages

R13. Admin staff shall be given the capability to manage and update the FAQ for the system (needed for requirement R10.).

- (a) Admin staff shall be able to browse the current FAQ and its topic hierarchy in the same way inquirers can: by starting from the top topic and being able to move up and down in the topic hierarchy.
- (b) At each level of the topic hierarchy, admin staff shall be given the option to add a new question-answer pair.
- (c) Admin staff shall optionally be able to choose to create a subtopic for the new question-answer pair (this is required if they are at the root of the FAQ).
- (d) If an admin staff member tries to add an FAQ topic that already exists (two FAQ topics are considered the same if they share the same title and place in the hierarchy), the system shall produce a warning, but keep the old topic and insert the new question-answer pair into it.
- (e) Admin staff shall then be prompted to provide the question-answer pair, which shall then be added to the current topic/subtopic. There shall be no checking for duplicates, and it shall not be possible to delete/change them, only to add new ones.

- (f) Upon a successful addition, an email shall be sent from the current admin staff's email to the general admin staff email notifying that an FAQ topic was updated and includes all question-answer pairs in that topic.
  - (g) An email shall then be sent from the general admin staff email to all subscribers that have requested updates for the topic with all Q&As in the topic.
- R14. Admin staff shall be given the capability to manage and update the raw text versions of the university's Webpages for the system (needed for requirement R12.).
- (a) Admin staff shall be given the option browse the webpages. If selected, the system shall provide the list of existing webpage names and an option to add a new page. The staff shall be able to select any of the existing pages to view the full page contents.
  - (b) If admin staff chooses to add a new page, they shall be prompted to provide its title, a raw non-empty text file in .txt format, and whether the webpage is public or private.
  - (c) If an admin staff member tries to add a page with the same title as an existing page, the system shall ask if the user wants to overwrite the existing page, and if confirmed, overwrite the old page with the new one. This is effectively the editing functionality (directly removing or adding pages shall not be possible).
  - (d) Upon a successful addition, an email shall be sent from the current admin staff's email to the general admin staff email notifying that a webpage was updated and includes the entirety of the changed webpage (i.e. the contents of its raw text file).

## 6 Consulting Staff

- R15. Inquirers shall have the option to write an inquiry to general admin staff (not teaching staff).
- (a) When they select the option, the system shall prompt them for a subject and content of the inquiry. The system shall also ask guests for their email address (for logged-in students, their account email address is used instead).
  - (b) When the inquiry is submitted, the system shall give a confirmation message to the inquirer. The inquiry shall be saved in the system, and the email service will notify the general admin staff email that there is a new inquiry, mention its subject line, and ask admin staff to log in to the Self Service Portal to review the inquiry.
  - (c) The system shall store all unanswered inquiries as a list.
- R16. Staff shall be able to answer inquiries in the system.

- (a) All admin staff shall be able to view the list of unanswered inquiries' subject lines, with the option of looking at any of them in detail.
- (b) All admin staff shall be able to reassign any inquiry to someone else, including a particular member of teaching staff, by providing their email address. In this case, the system shall email the member of teaching staff, notify them about the inquiry, mention its subject line, and ask them to log in to the Self Service Portal to review the inquiry. This shall be kept hidden from the original inquirer.
- (c) All admin staff shall be able to provide an answer to any inquiry by providing text as a response to the inquirer.
- (d) All teaching staff shall be able to view and provide an answer to an inquiry reassigned to them by providing text as a response to the inquirer.
- (e) The system shall remove an inquiry from its list of unanswered inquiries once a response has been submitted by staff.
- (f) The system shall not facilitate further communication between the inquirer and the staff member who responded (though they may continue communicating outside the system, via email).

## 7 Other

- R17. The system shall use an external system for sending emails. When it needs an email to be sent, it shall provide the sender, recipient, subject, and message body. The external email system will then handle the sending of the email.
- (a) When inquirers are alerted about updates, the sender is the general admin staff email.
  - (b) When admin staff are alerted about updates, the sender is the person who made the update.
  - (c) When staff are alerted about new inquiries, the sender is the general admin staff email and the inquirer email is in the email subject line.
  - (d) When staff respond to inquiries, the sender is the user responding (so the conversation can continue).
- R18. Notifications (such as answers to queries or FAQ updates) shall not be kept by the system - users can only see them in their university email inbox.
- R19. Whenever there is an error (for example, if a user types an invalid input), the system shall display an appropriate error message and then show the available options to the user again.

R20. The system shall be available 24 hours a day, 7 days a week, apart from kiosk maintenance times on Saturdays at 5-6 pm, and during university closure times (22 December – 3 January).

## 8 Class Model

A sample class model solution is provided in figure 1.

We use three packages for the three components of MVC, as well as an 'external' package for the interfaces to the external systems. The mock implementations for the external systems are only provided in this solution as they are part of the instructions for CW3, but otherwise implementations for these systems should be provided by the external systems themselves and thus not be part of the class model for our system. The controller component was split into different concrete Controller classes for different types of human actors, all inheriting from an abstract Controller class to be able to benefit from polymorphism. The concrete controllers would each launch functionality corresponding to the use cases for the different human actors, and manage interaction between the view and model classes in doing it (i.e. application logic). Moreover, a MenuController class is used to convert user menu choices into calls to action for the concrete controllers. The model classes are used to store data ('data class' bad smell but unavoidable in the absence of a database) and also for some domain logic– handling how page search would be done. The SharedContext class maintains the current state. The view component includes an interface imposing the methods for obtaining user input and displaying results that all concrete views should contain. This is for this release implemented by a single class representing a text user interface view, but one for a GUI should also be added in subsequent releases.



## 9 Sequence Diagrams

Sample sequence diagrams for the use cases for all team sizes are provided in figures 2-5.



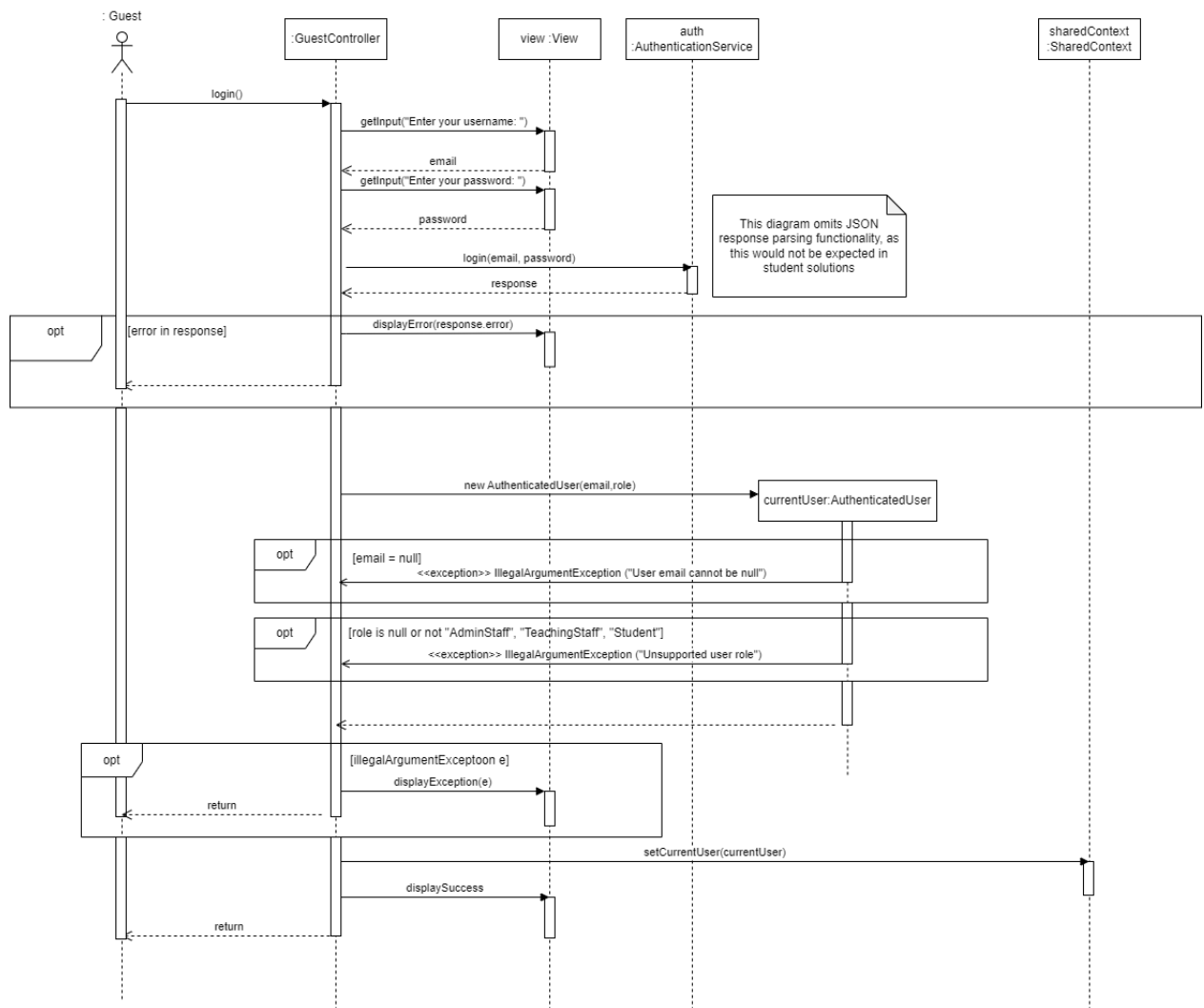


Figure 2: Login sequence diagram

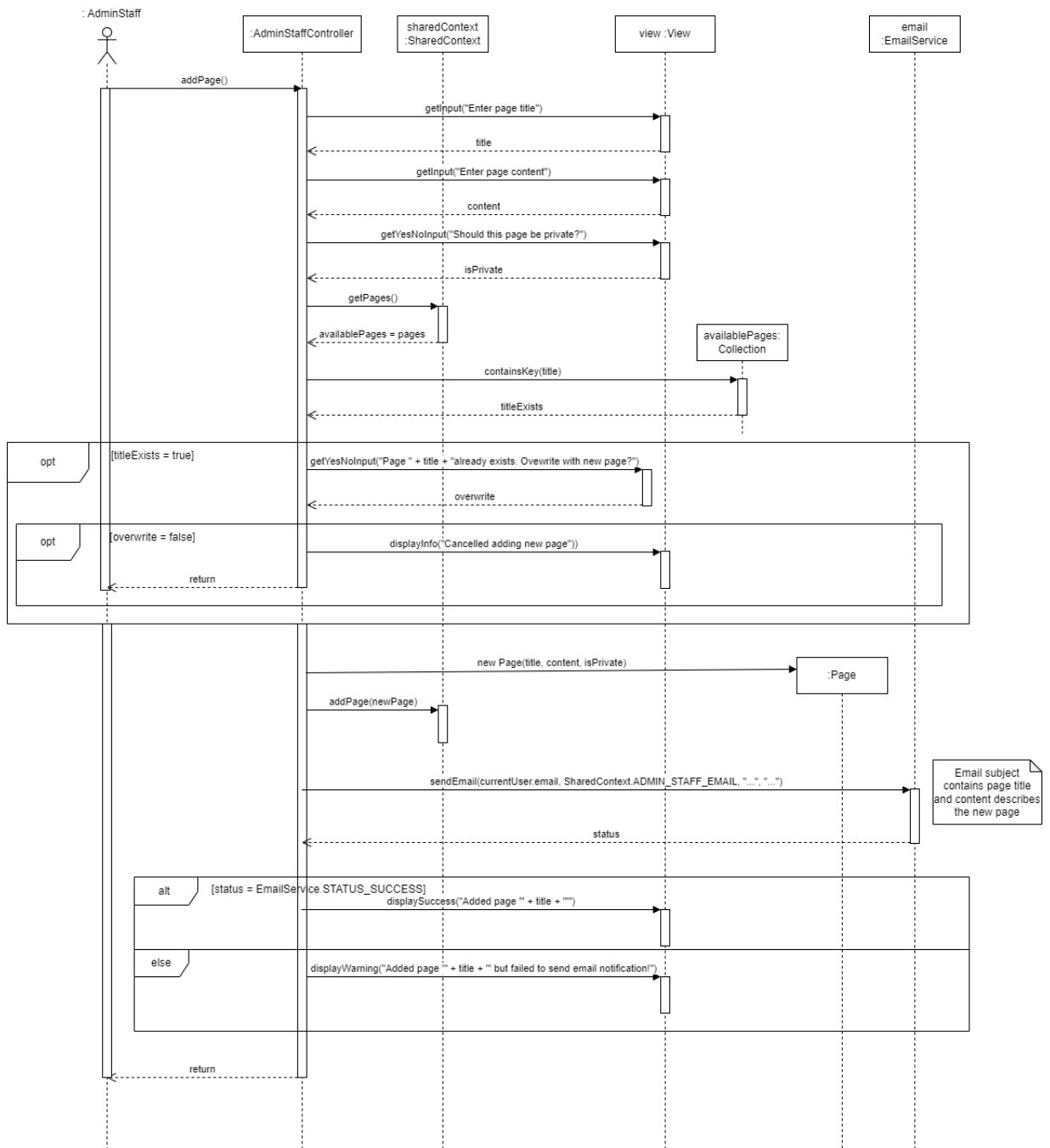


Figure 3: Add page sequence diagram

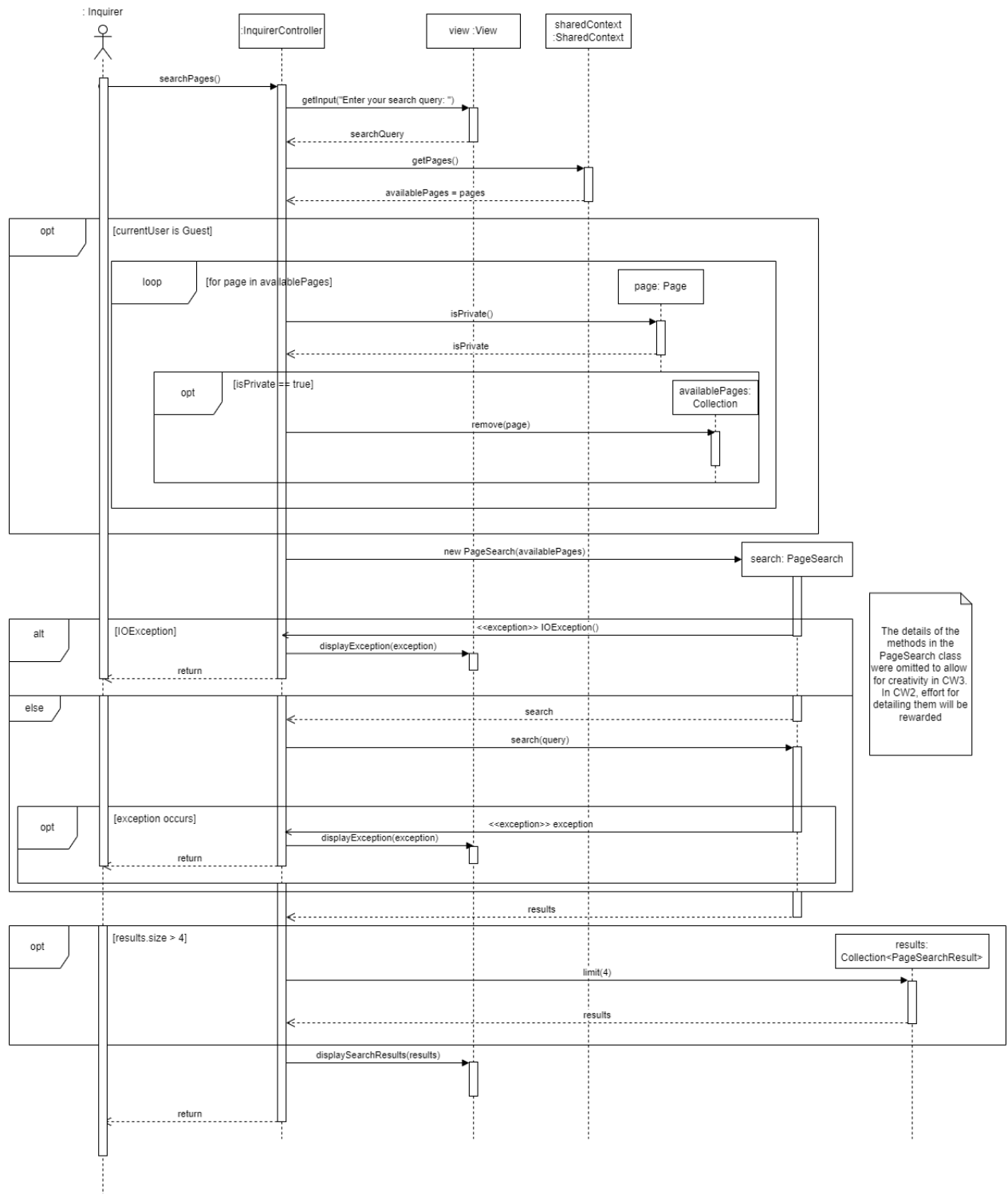
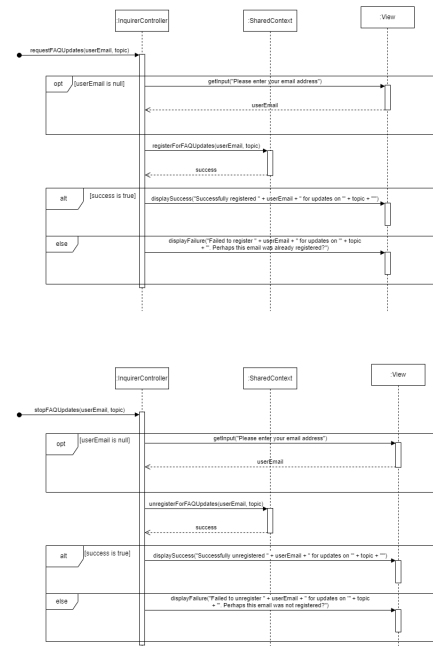


Figure 4: Search pages sequence diagram



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