



<UNDECIDABLES>

COSBAS Functional Requirements Documentation

Git: <https://github.com/undecidables/Requirements-Documentation>

GitHub Organisation: <https://github.com/undecidables>

The Team:

Elzahn Botha *13033922*
Jason Richard Evans *13032608*
Renette Ros *13007557*
Szymon Ziolkowski *12007367*
Tienie Pritchard *12056741*
Vivian Venter *13238435*

March 2015

Contents

1	Introduction	3
2	Vision and Objectives	3
2.1	Vision	3
2.2	Objectives	3
3	Domain Model	4
4	Appointments	5
4.1	Approve Appointment	5
4.1.1	Description	5
4.1.2	Use Case diagram	5
4.1.3	Pre-/Post-Conditions	5
4.2	Disapprove Appointment	6
4.2.1	Description	6
4.2.2	Use Case diagram	6
4.2.3	Pre-/Post-Conditions	6
4.3	Process Specification for Approve and Disapprove Appointment	7
4.4	Requesting Appointment	7
4.4.1	Description	7
4.4.2	Pre-/Post-Conditions	7
4.5	Cancelling Appointment	7
4.5.1	Description	8
4.5.2	Pre-/Post-Conditions	8
4.6	Use Case diagram for Requesting Appointment and Cancelling Appointment . .	8
4.7	Functionality for Requesting Appointment and Cancelling Appointment	9
4.8	Process Specification for Requesting Appointment and Cancelling Appointment .	9
5	Availability	9
5.1	Use Case Diagram	10
5.2	Module Functionality	10
5.3	Choose Calendar	11
5.3.1	Description	11
5.3.2	Pre-/Post-Conditions	11
5.4	View Availability	11
5.4.1	Description	11
5.4.2	Pre-/Post-Conditions	11
5.5	Set Availability	11
5.5.1	Description	11
5.5.2	Pre-/Post-Conditions	11
6	Biometric Access	12
6.1	Request Access	12
6.1.1	Use Case diagram	13
6.1.2	Pre-/Post-Conditions	13
6.1.3	Process Specification	14
6.2	Register User	14
6.2.1	Description	14
6.2.2	Use Case diagram	15
6.2.3	Pre-/Post-Conditions	15

7	Reporting	16
7.1	Get Visitor Access Exit Times Report	16
7.1.1	Description	16
7.1.2	Service Contract	16
7.1.3	Pre-/Post-Conditions	16
7.2	Get Staff Access Exit Times Report	17
7.2.1	Description	17
7.2.2	Service Contract	17
7.2.3	Pre-/Post-Conditions	17
7.3	Get Not Honoured Appointments Report	17
7.3.1	Description	18
7.3.2	Service Contract	18
7.3.3	Pre-/Post-Conditions	18
7.4	Generate Custom Reports	18
7.4.1	Description	18
7.4.2	Service Contract	19
7.4.3	Pre-/Post-Conditions	19
7.5	Export Report To Specific Format	19
7.5.1	Description	19
7.5.2	Service Contract	19
8	Information Portal	20
8.1	Create Post	20
8.1.1	Description	20
8.1.2	Functional Requirement	21
8.1.3	Service Contract	21
8.1.4	Pre-/Post-Conditions	21
8.2	Get Posts	22
8.2.1	Description	22
8.2.2	Service Contract	22
8.3	Delete Post	22
8.3.1	Description	22
8.3.2	Pre-/Post-Conditions	22
8.4	Edit Post	23
8.4.1	Description	23
8.4.2	Pre-/Post-Conditions	23
9	Authentication	24
9.1	Authenticate	24
9.1.1	Description	24
9.1.2	Pre-/Post-Conditions	24
9.1.3	Functionality	25
9.1.4	Process Specification	26
9.2	Log In	26
9.2.1	Description	26
9.2.2	Pre-/Post-Conditions	26
9.3	Log Out	26
9.3.1	Description	26
9.3.2	Pre-/Post-Conditions	27

1 Introduction

In this section of the document we will identify and address a high level overview of the COSBAS (Computer Science Biometric Access System) system.

2 Vision and Objectives

2.1 Vision

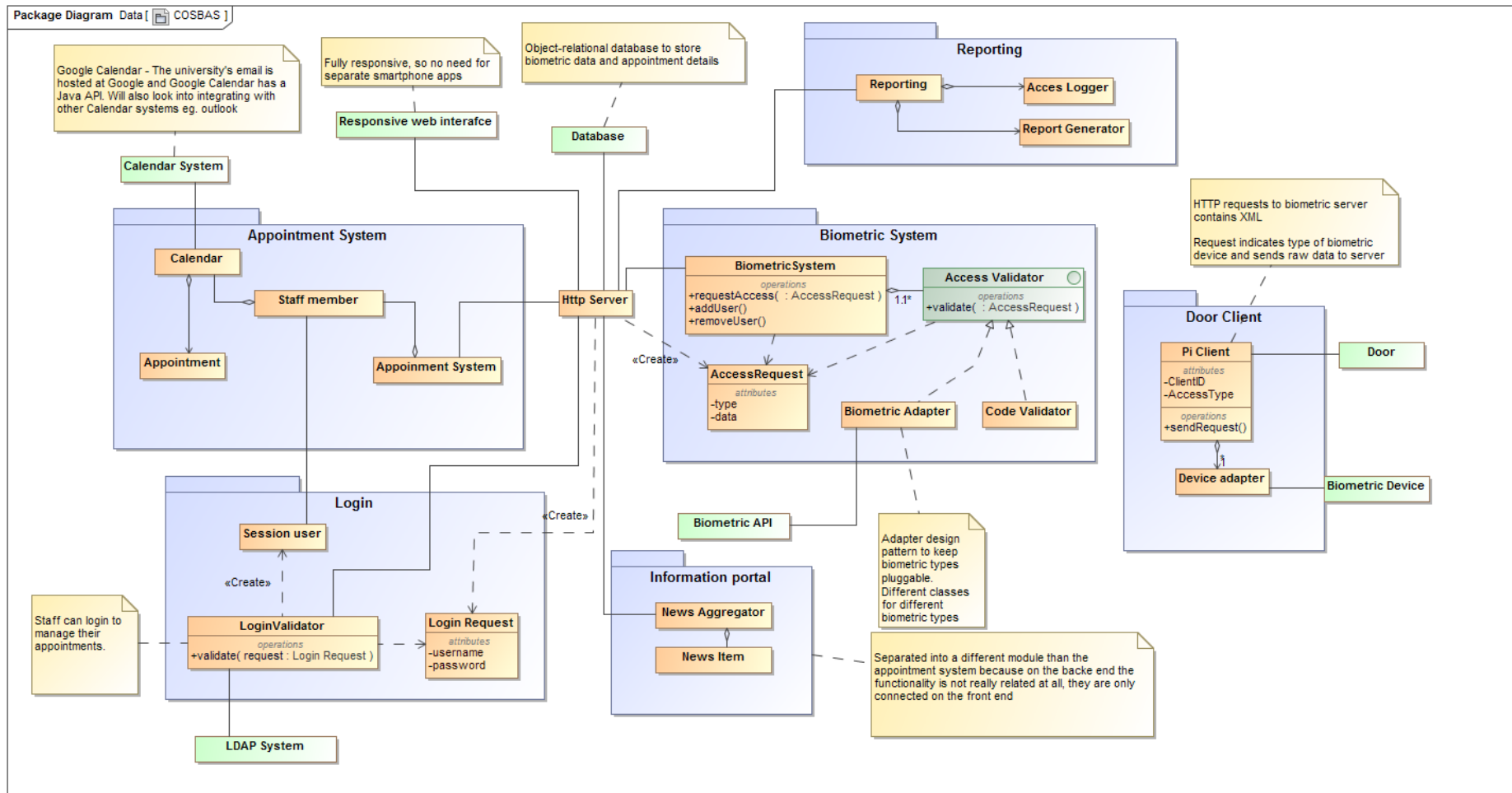
The vision of the COSBAS system is to create a biometric access system that makes use of different biometric devices and the latest mobile technologies to grant access to visitors and staff members. The COSBAS system will also serve an information portal on the availability of staff and their schedules.

2.2 Objectives

The main objectives of the COSBAS system is:

- to provide secure biometric access to not only staff members of the department, but visitors as well.
- to provide information about the availability of the staff members.
- to provide the ability to make appointments by means of a web interface.

4



4 Appointments

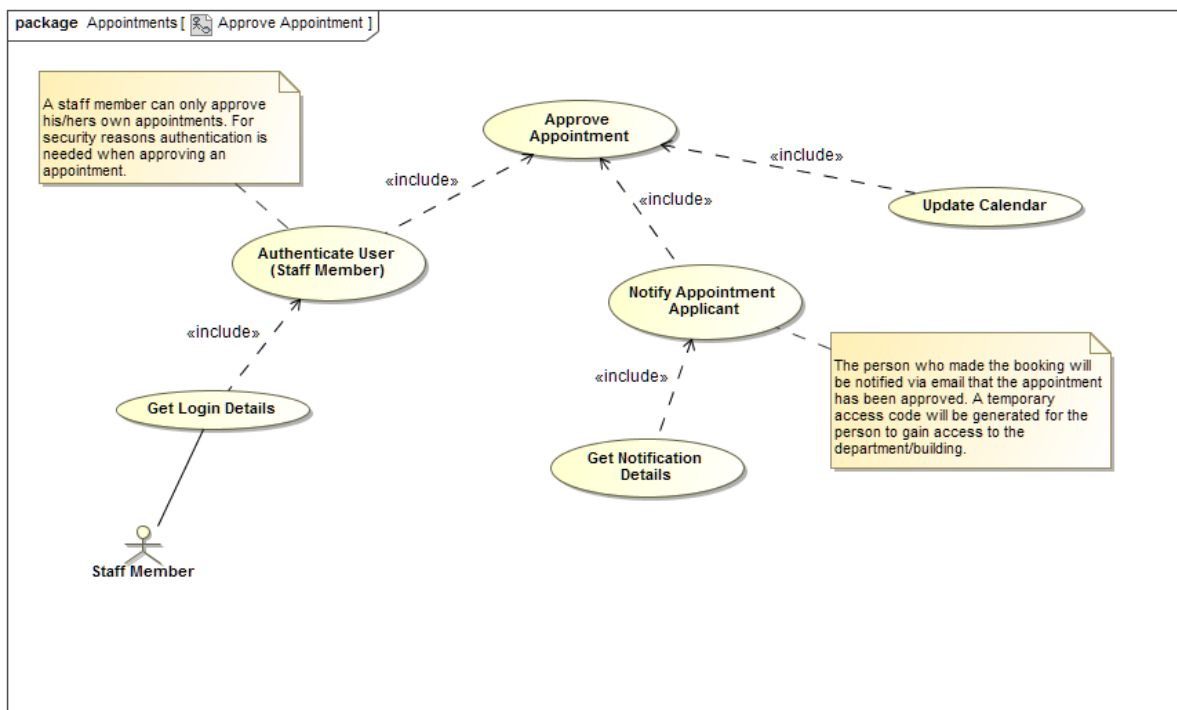
4.1 Approve Appointment

Priority: *Important*

4.1.1 Description

A person can book for an appointment with one of the staff members in the department/building. The particular staff member needs to approve such an appointment. A booking needs to be approved first by a staff member before the guest/visitor can gain access to the department/building.

4.1.2 Use Case diagram



4.1.3 Pre-/Post-Conditions

Pre-conditions:

- Staff member needs to be logged in to approve his/her own appointments.
- There should be a booking before an appointment can be approved.

Post-conditions:

- The staff member will become unavailable during that time.
- An email notification with an temporary access code is sent to the user who booked the appointment.

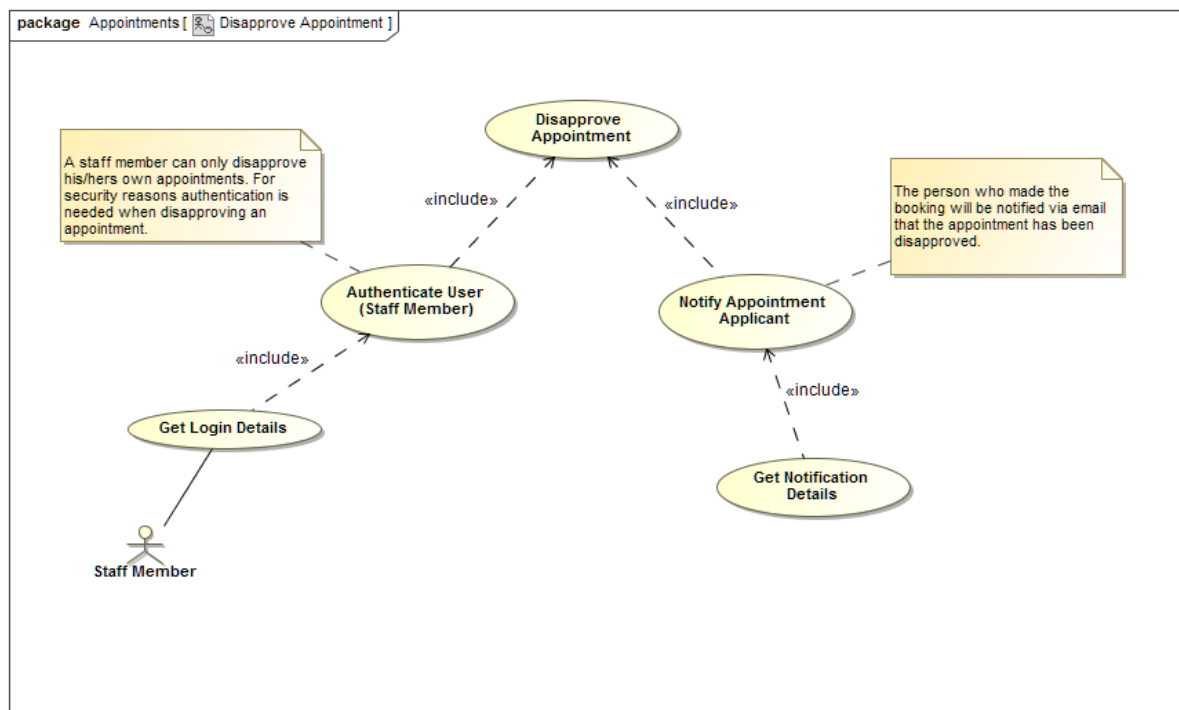
4.2 Disapprove Appointment

Priority: *Important*

4.2.1 Description

An appointment can be disapproved by a staff member. The user who booked for the appointment will be notified that the appointment has been disapproved.

4.2.2 Use Case diagram



4.2.3 Pre-/Post-Conditions

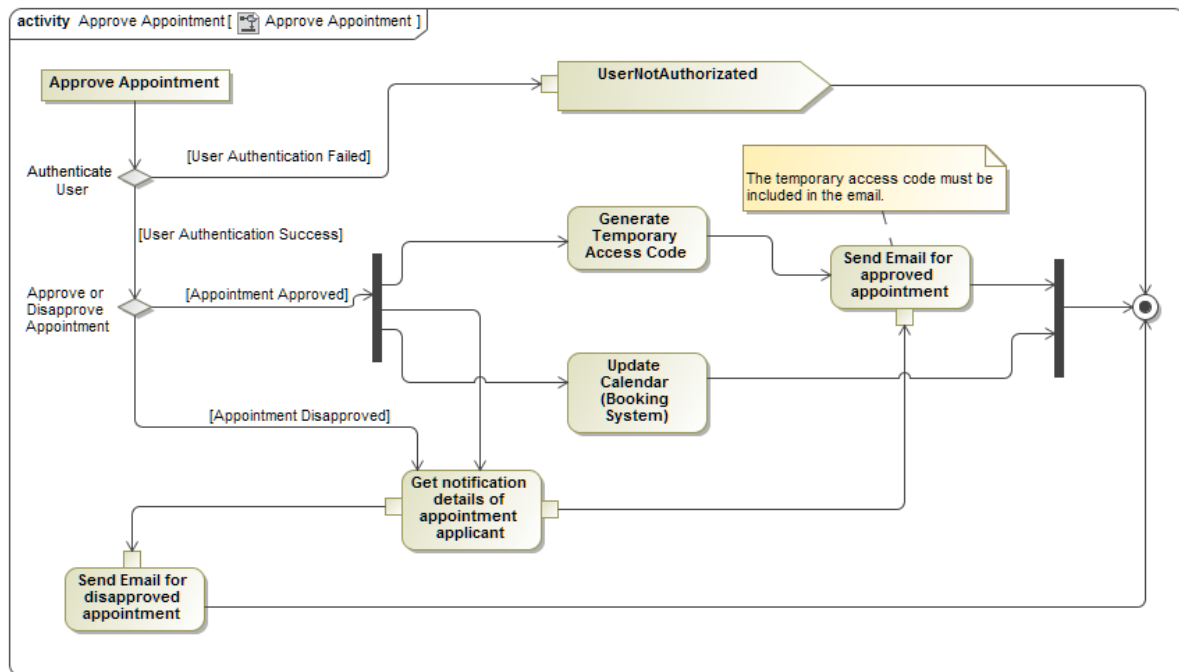
Pre-conditions:

- Staff member needs to be logged in to disapprove his/her own appointments.
- There should be a booking before an appointment can be disapproved.

Post-conditions:

- An email notification informing the user who made the booking that the appointment has been disapproved.

4.3 Process Specification for Approve and Disapprove Appointment



4.4 Requesting Appointment

Priority: *Important*

4.4.1 Description

This functionality allows a user of the system to request an appointment with a staff member that is also using system.

4.4.2 Pre-/Post-Conditions

Pre-conditions:

- Staff member must exist.
- Date and time of the requested appointment must be valid entries.

Post-conditions:

- Appointment will be saved for the staff member to approve or disapprove later on.
- User will receive an appointment identifier.
- Staff member is notified of the requested appointment.

4.5 Cancelling Appointment

Priority: *Important*

4.5.1 Description

This function allows the user to cancel an appointment they have made, or in the case of a staff member, that has been made with them. The user who made the appointment will use the appointment identifier to cancel the booking.

4.5.2 Pre-/Post-Conditions

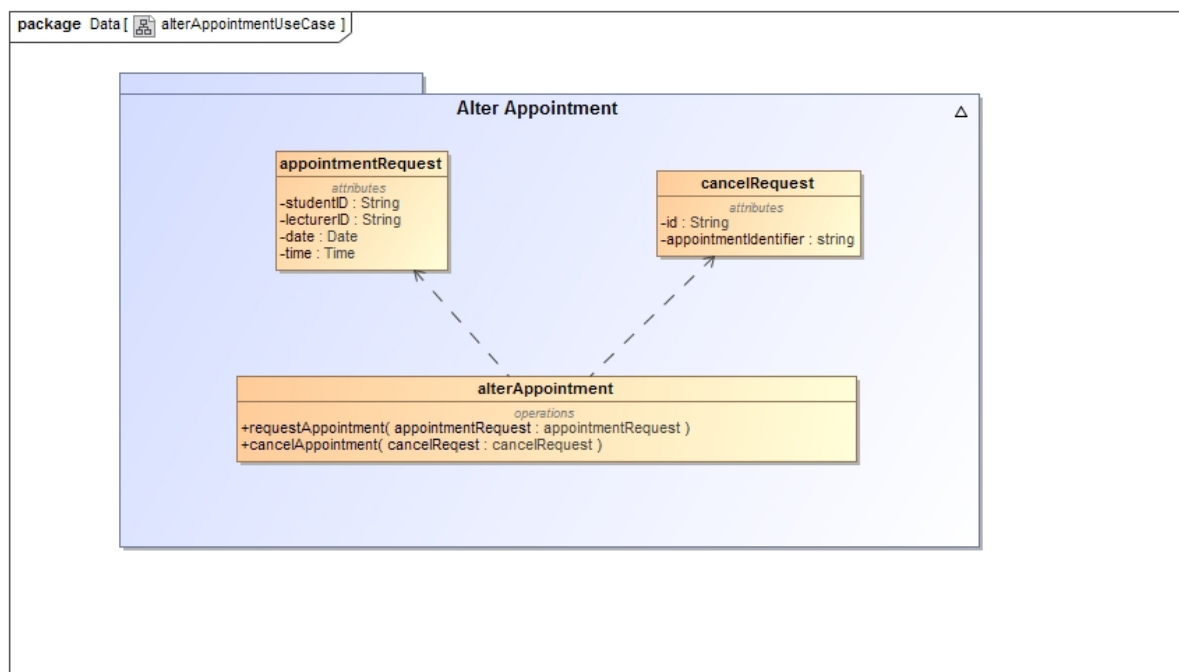
Pre-conditions:

- The appointment must exist.
- The user cancelling the appointment has to be the person that the appointment is with or the person who made it.

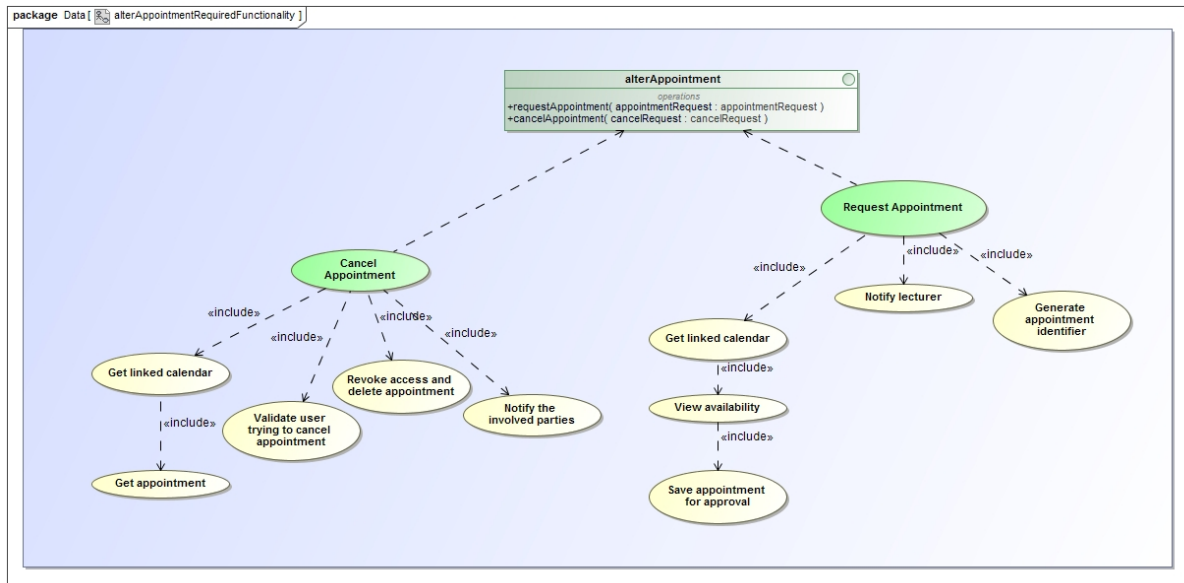
Post-conditions:

- The appointment will be cancelled.
- Both parties are notified.
- Access that was granted for the appointment is revoked.

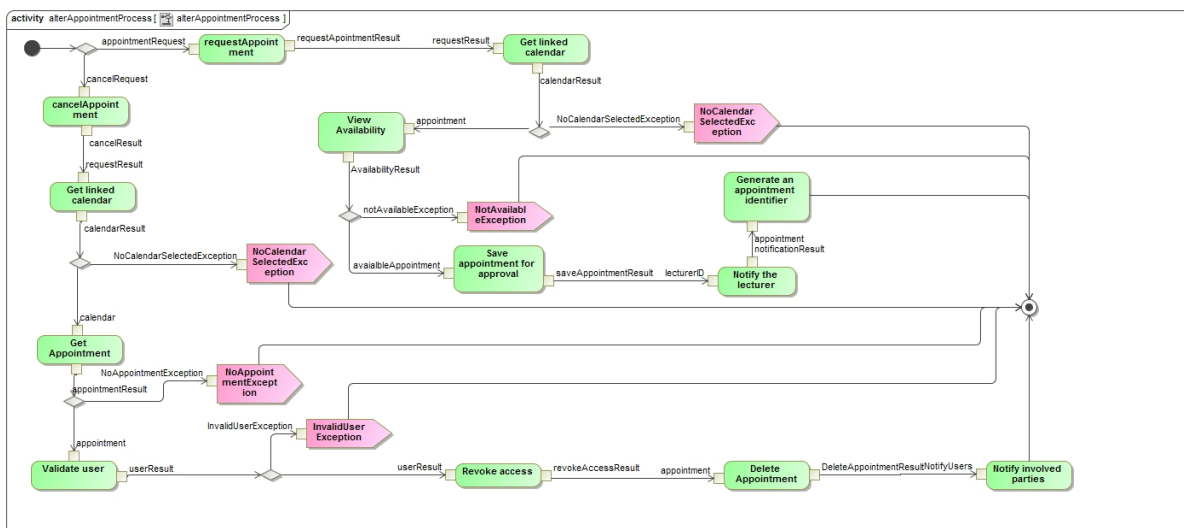
4.6 Use Case diagram for Requesting Appointment and Cancelling Appointment



4.7 Functionality for Requesting Appointment and Cancelling Appointment



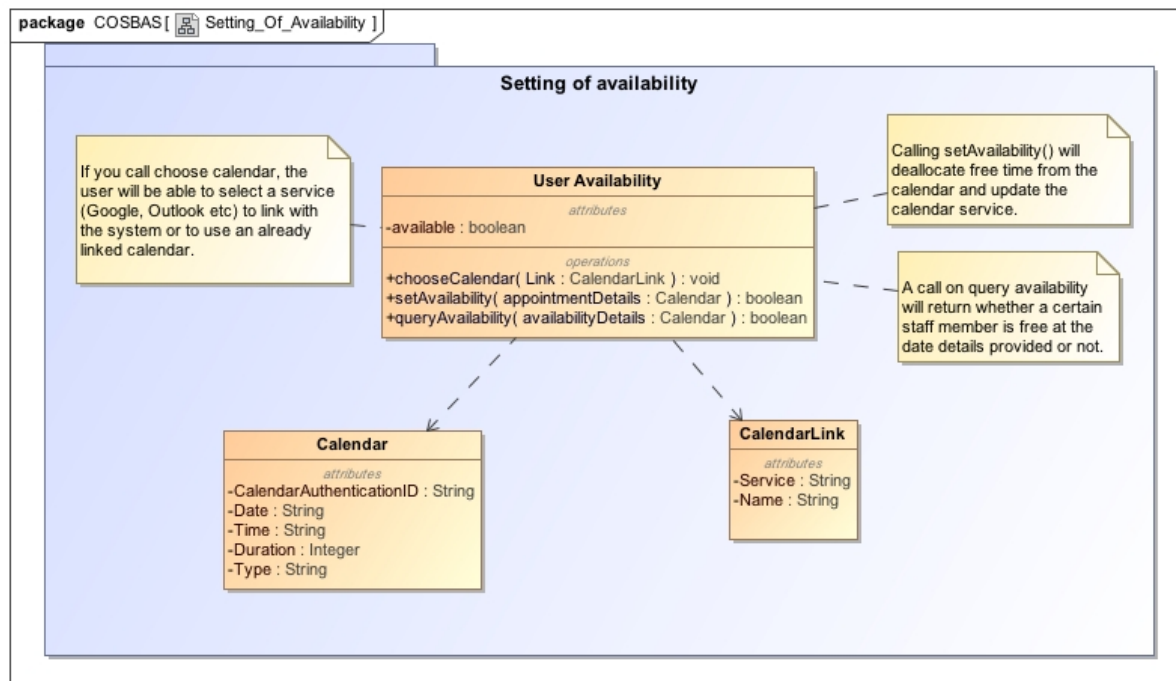
4.8 Process Specification for Requesting Appointment and Cancelling Appointment



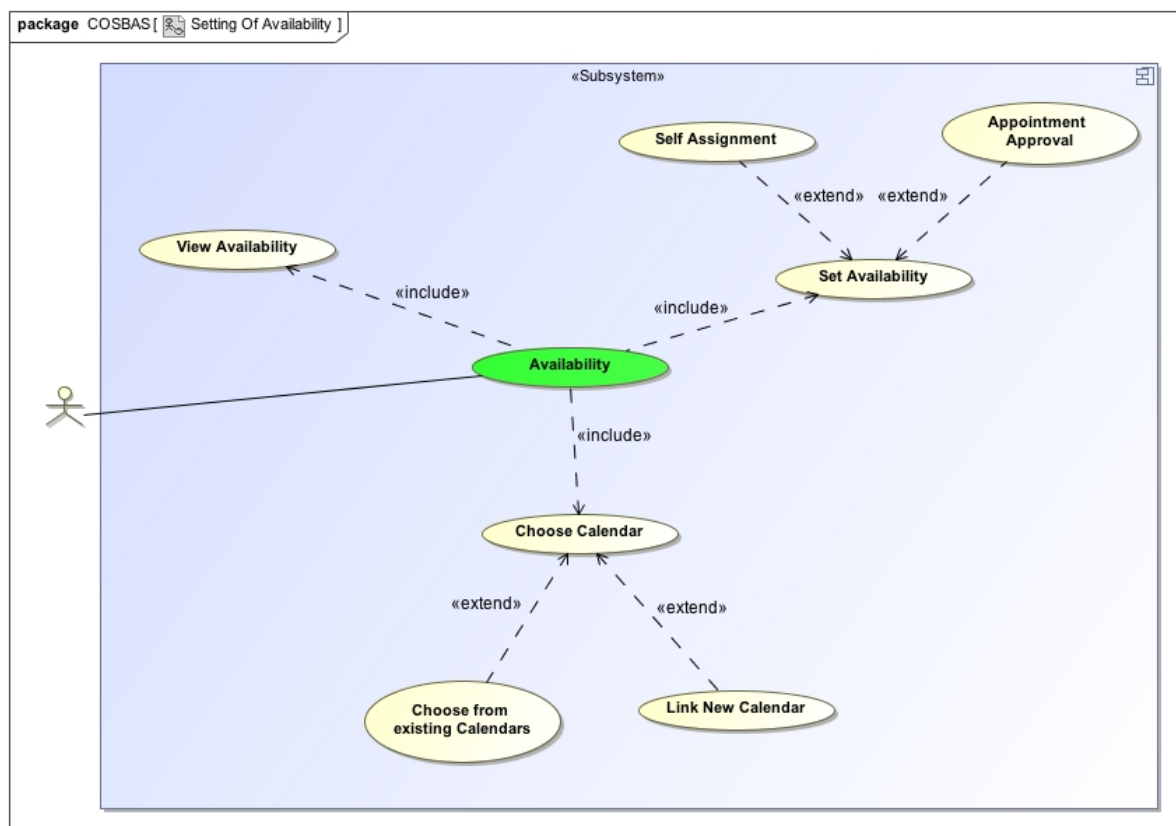
5 Availability

The following functionality of creating and setting availability will only be available to staff members. Users who are not authorised by the system will be granted read-only privileges.

5.1 Use Case Diagram



5.2 Module Functionality



5.3 Choose Calendar

Priority: Important

5.3.1 Description

An authorised user of the system should be able to select which calendar account to associate with the system. If the user chose a linked service, then that service needs to be authenticated.

5.3.2 Pre-/Post-Conditions

Pre-conditions: The user should be logged into the system and already have a calendar account from the linked services (Google & Outlook).

Post-conditions: Once the user has chosen the calendar to associate with the system, all updates in availability will be amended in that specific calendar.

5.4 View Availability

Priority: Important

5.4.1 Description

Both the authorised user and a non-authorised user (or guest) should be able to have a read-only functionality of viewing the availability of the associated staff member on their calendar.

5.4.2 Pre-/Post-Conditions

Pre-conditions: An associated calendar for the staff member should exist.

Post-conditions: Be able to see whether the associated staff member has an appointment at a certain date and time or if they are free for appointments.

5.5 Set Availability

Priority: Important

5.5.1 Description

The authorised user should be able to set whether they are available at a certain date or time or if they have an appointment at a specific date or time. This can be set by the staff member himself/herself or by the approval of an appointment.

5.5.2 Pre-/Post-Conditions

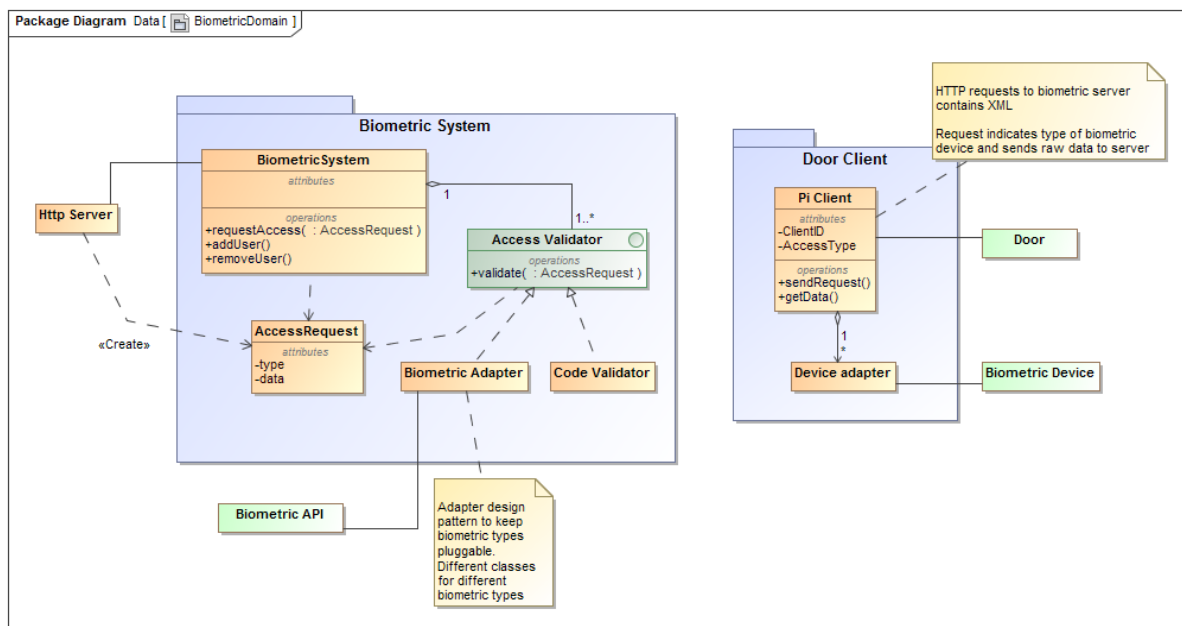
Pre-conditions:

- The user should be logged in.
- A calendar should exist.

Post-conditions: The linked calendar should be updated with the particulars specified by the authorised user. (CRUD of appointments).

6 Biometric Access

This module encapsulates functionality regarding validating biometric data or temporary access code to give staff members or visitors access to the Computer Science Department



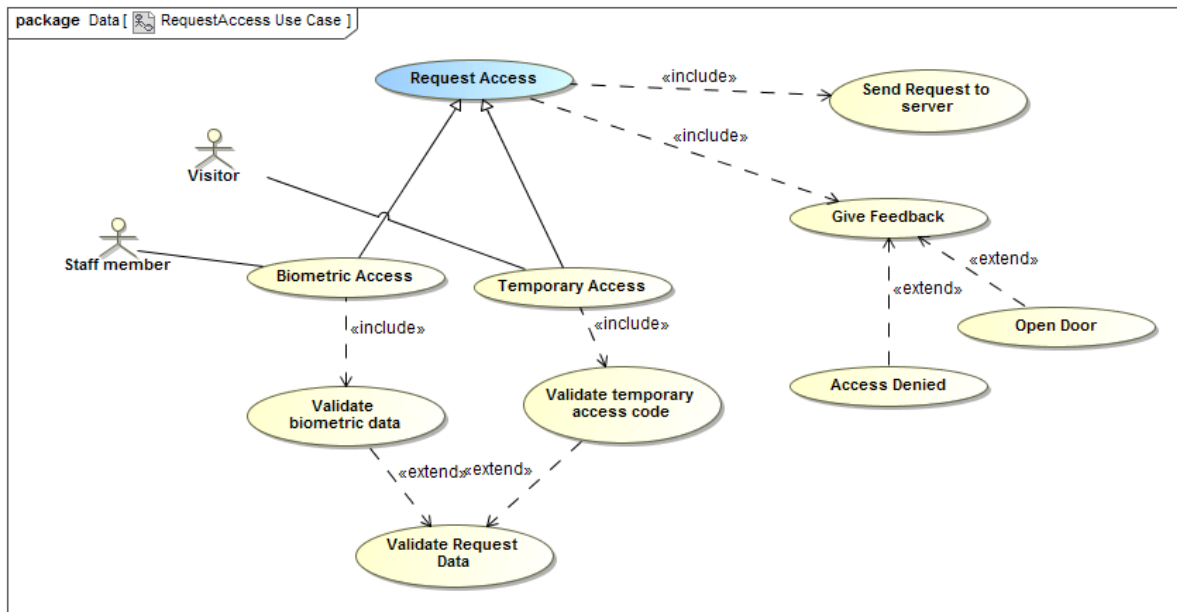
6.1 Request Access

Priority: Critical

Staff Access A staff member can gain access at a door using biometrics.

Visitor Access A visitor can enter the department by entering their temporary access code at the door.

6.1.1 Use Case diagram



6.1.2 Pre-/Post-Conditions

Staff Access Pre-conditions:

- Staff member must be registered on the system.
- Biometric data must validate correctly.

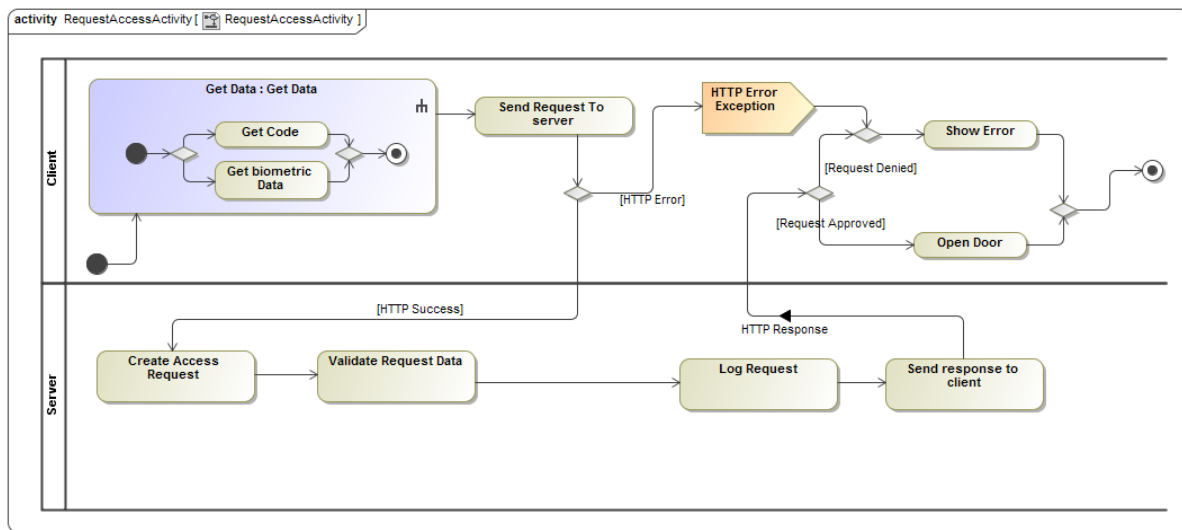
Visitor Access Pre-conditions:

- Visitor needs to have an appointment.
- Temporary access code should be valid.

Post-conditions:

- User gains access (building door will be opened)
- Access logged

6.1.3 Process Specification



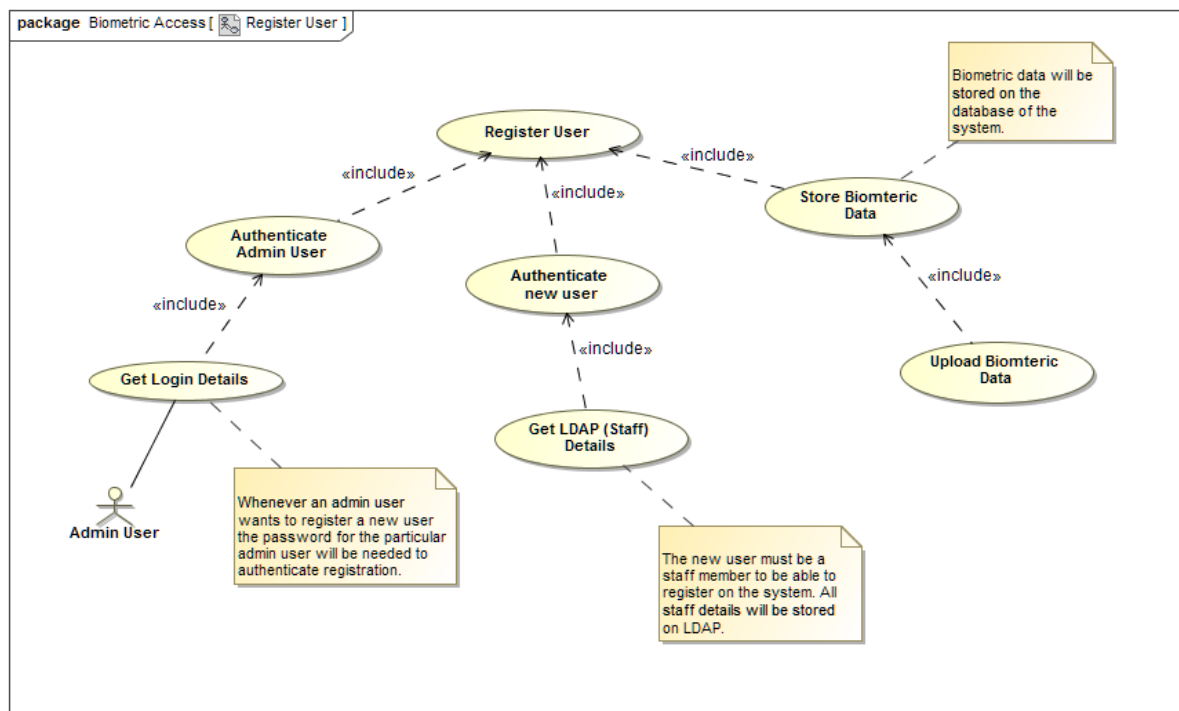
6.2 Register User

Priority: *Critical*

6.2.1 Description

To register a user on the system is the same as to store biometric data of the user on the database. Staff members need to store their biometric data to gain access to department/building. There will be an administrator (admin user) that will handle all the registration of users on the system.

6.2.2 Use Case diagram



6.2.3 Pre-/Post-Conditions

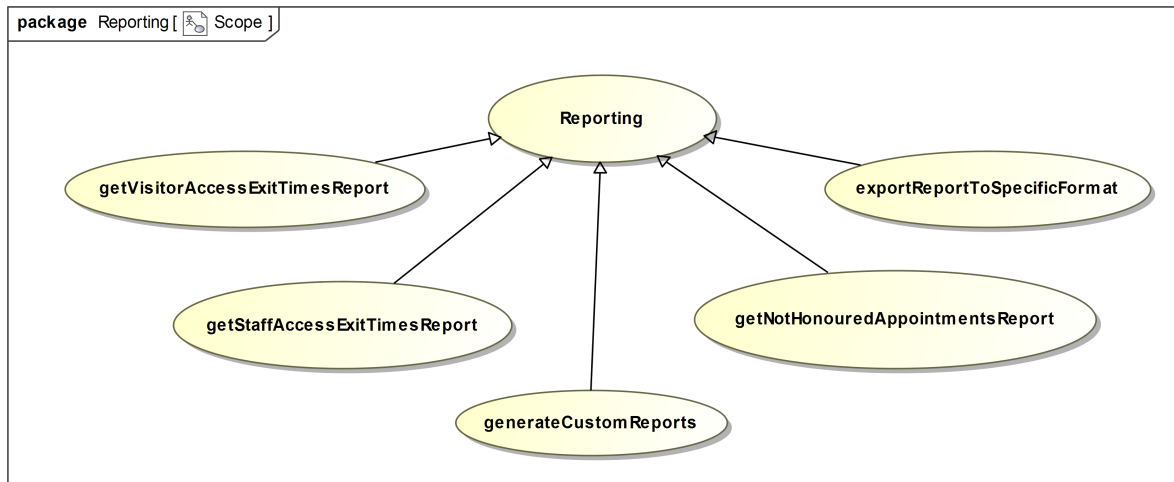
Pre-conditions:

- Administrator (admin user) needs to be logged in to register a user.
- The user being registered should be authenticated by means of LDAP.
- The user being registered must be a staff member.

Post-conditions:

- The staff member is registered on the system with his/hers own biometric data.
- The staff member will be able to gain access to department/building by means of the biometric device.

7 Reporting



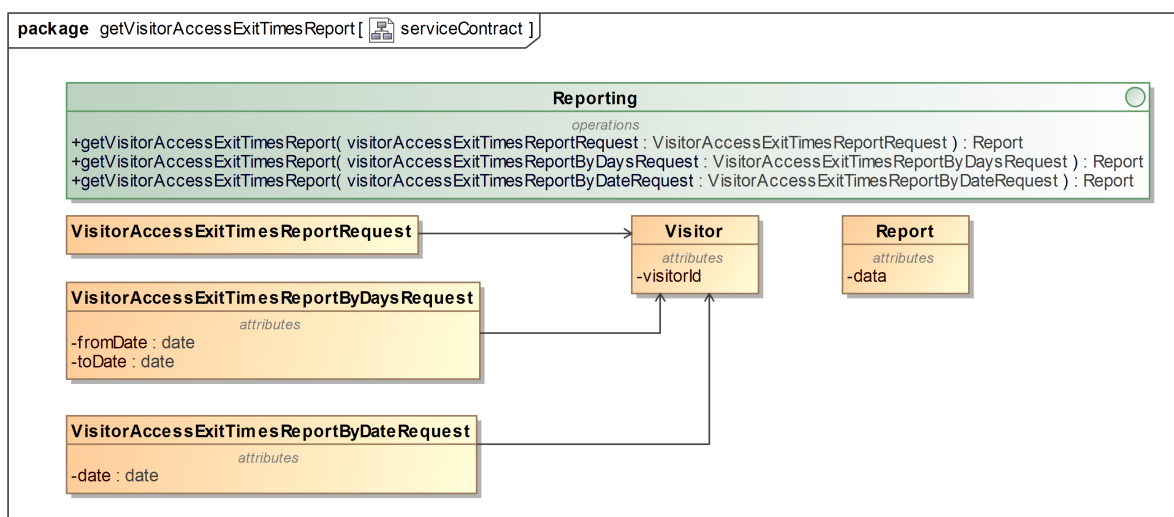
7.1 Get Visitor Access Exit Times Report

Priority: *Important*

7.1.1 Description

The **getVisitorAccessExitTimes** function allows a user to query the access and exit times of a specific visitor.

7.1.2 Service Contract



7.1.3 Pre-/Post-Conditions

Pre-conditions:

- User must be logged in.

- User must have the correct authorization to make use of this function.
- Visitor must exist.
- Date must be valid.

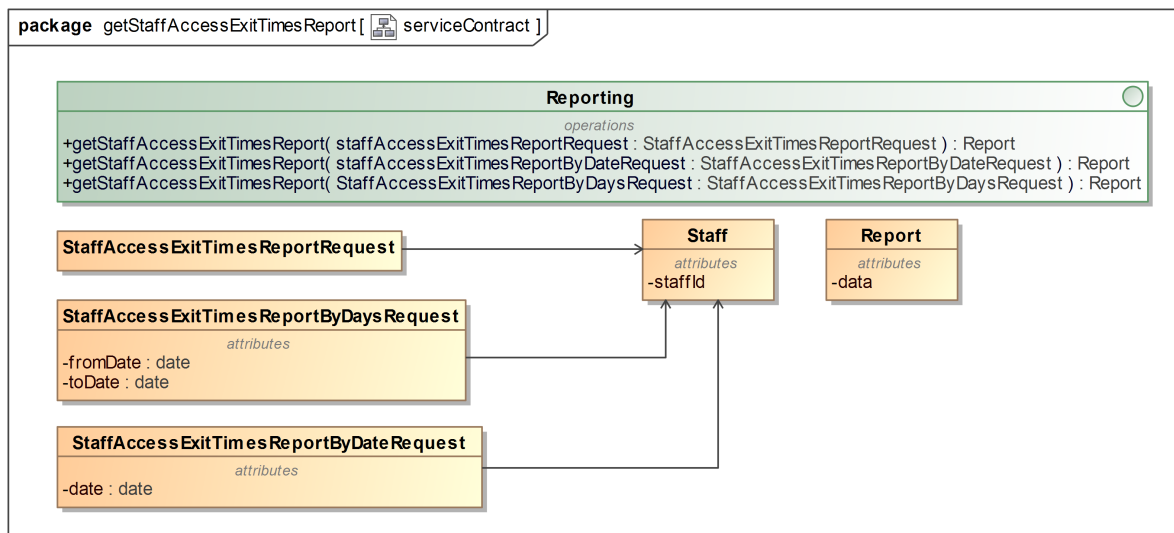
7.2 Get Staff Access Exit Times Report

Priority: *Important*

7.2.1 Description

The `getStaffAccessExitTimes` function allows a privileged user(e.g: Head of Department) to query the access and exit times of a specific staff member.

7.2.2 Service Contract



7.2.3 Pre-/Post-Conditions

Pre-conditions:

- User must be logged in.
- User must have the correct authorization to make use of this function.
- Date must be valid.
- Staff member must exist.

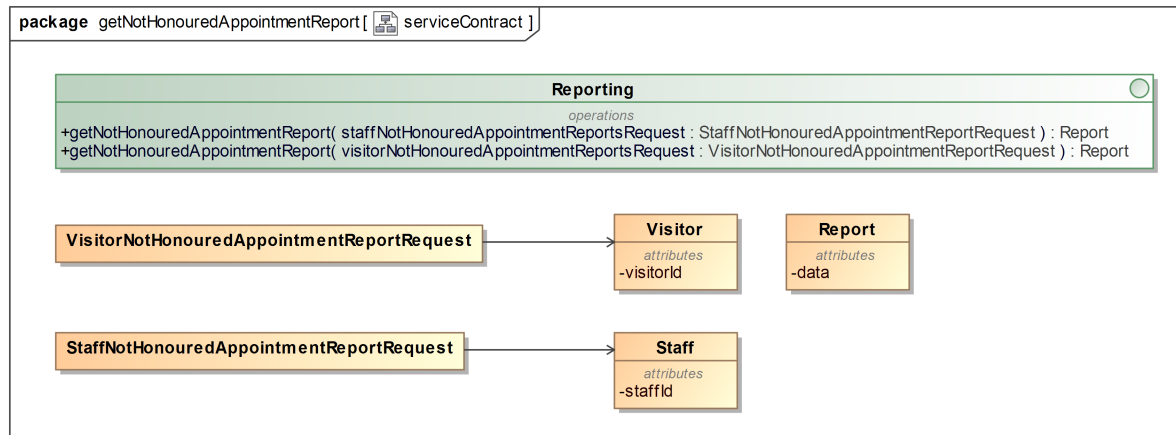
7.3 Get Not Honoured Appointments Report

Priority: *Important*

7.3.1 Description

The `getNotHonouredAppointments` function provides the user with a means of querying a visitor's or staff member's not honoured appointments.

7.3.2 Service Contract



7.3.3 Pre-/Post-Conditions

Pre-conditions:

- User must be logged in.
- User must have the correct authorization to make use of this function.
- Visitor or Staff must exist.

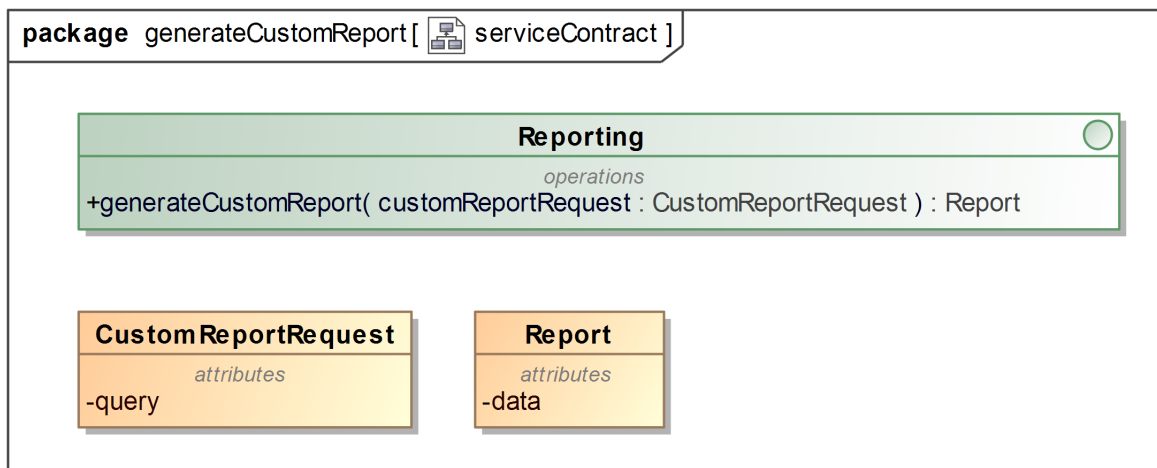
7.4 Generate Custom Reports

Priority: Nice to have

7.4.1 Description

The `generateCustomReports` function allows the user to create a custom report based on a query provided by the user.

7.4.2 Service Contract



7.4.3 Pre-/Post-Conditions

- User must be logged in.
- User must have the correct authorization to make use of this function.
- Query must be valid.

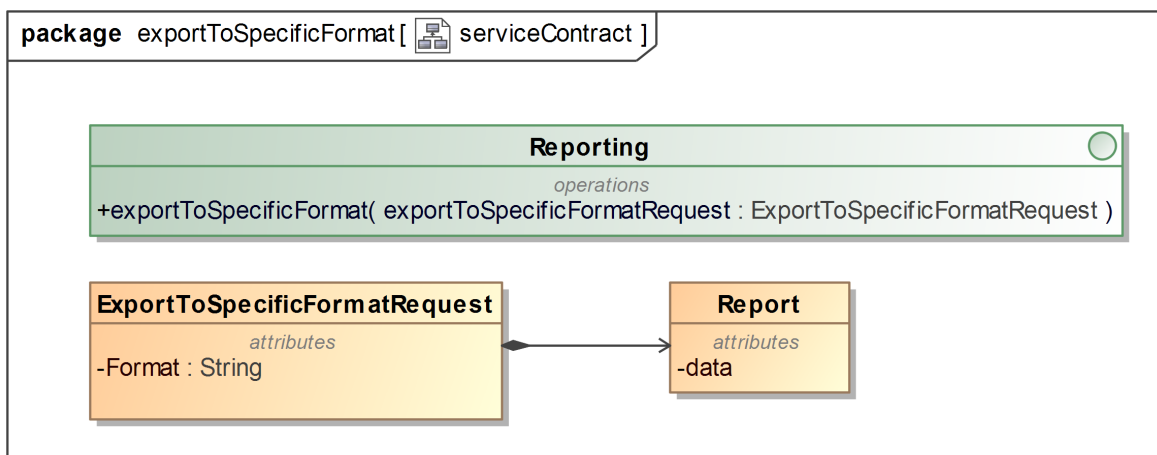
7.5 Export Report To Specific Format

Priority: *Nice to have*

7.5.1 Description

The `exportReportToSpecificFormat` function will allow the user to export a report to a specific format which will be specified by the user.

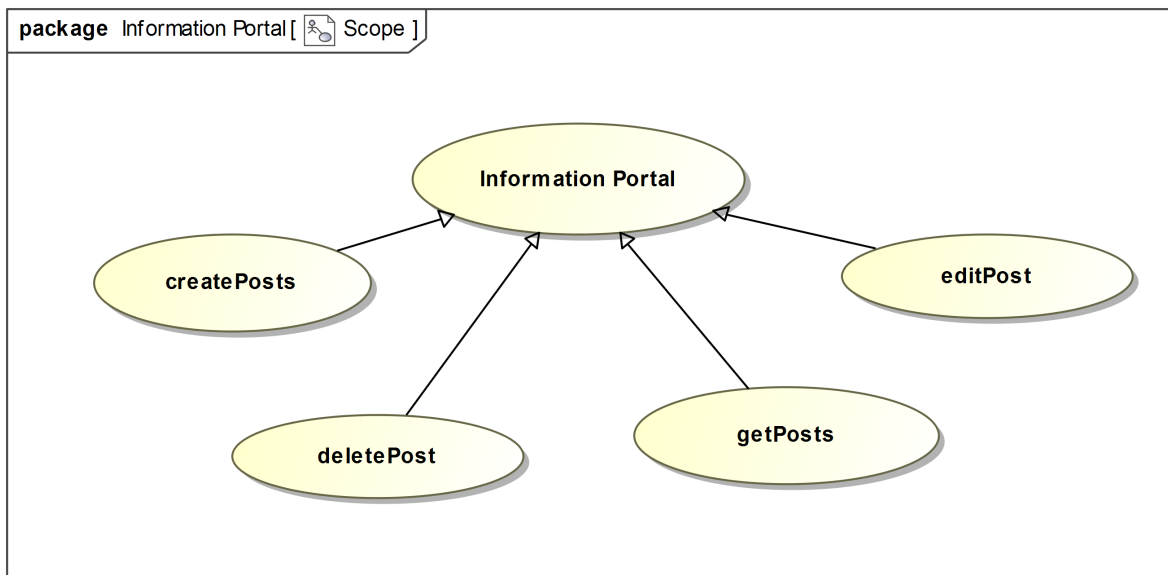
7.5.2 Service Contract



Pre-conditions:

- The format specified by the user is supported by the system.
- User must be logged in.

8 Information Portal



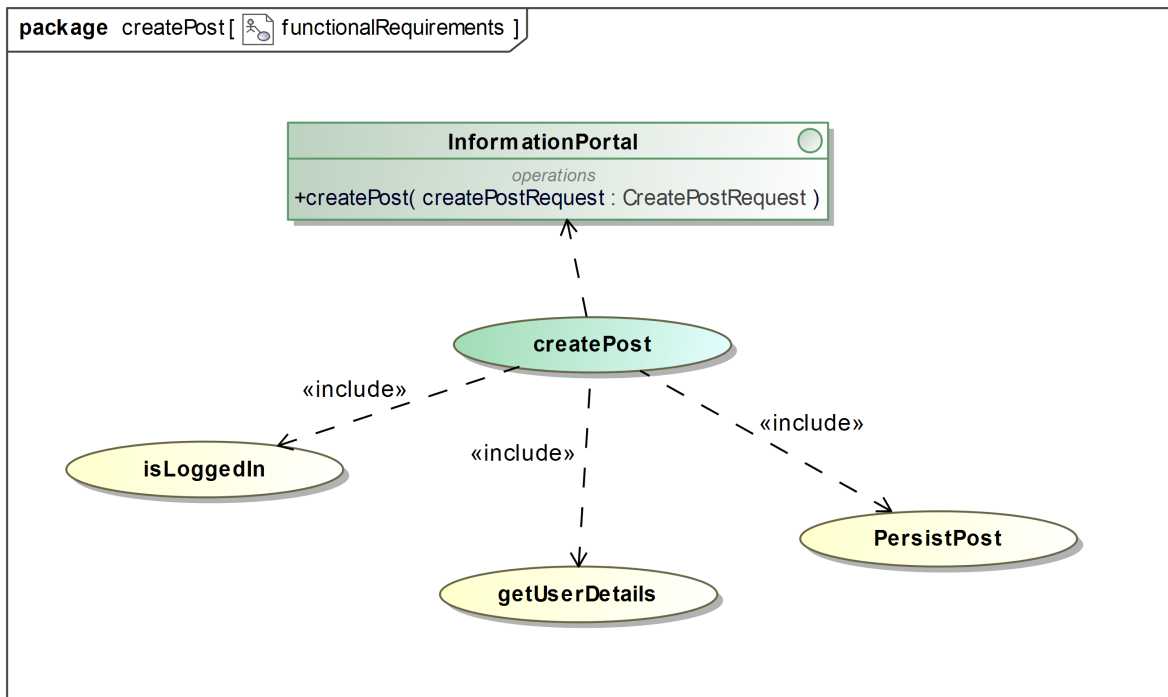
8.1 Create Post

Priority: Important

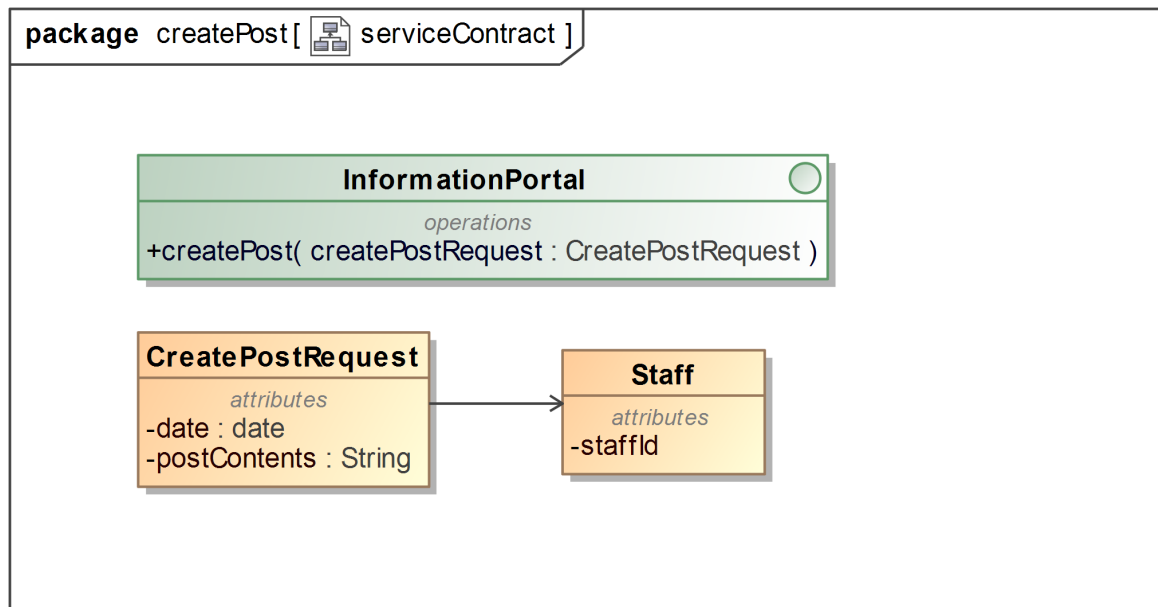
8.1.1 Description

The createPost function allows users of the system to easily create posts which will then be displayed to anyone that visits the Information Portal.

8.1.2 Functional Requirement



8.1.3 Service Contract



8.1.4 Pre-/Post-Conditions

Pre-conditions:

- User must be logged in.

- User must have the correct authorization to make use of this function.

Post-conditions:

- Post will be created and persisted to the database.

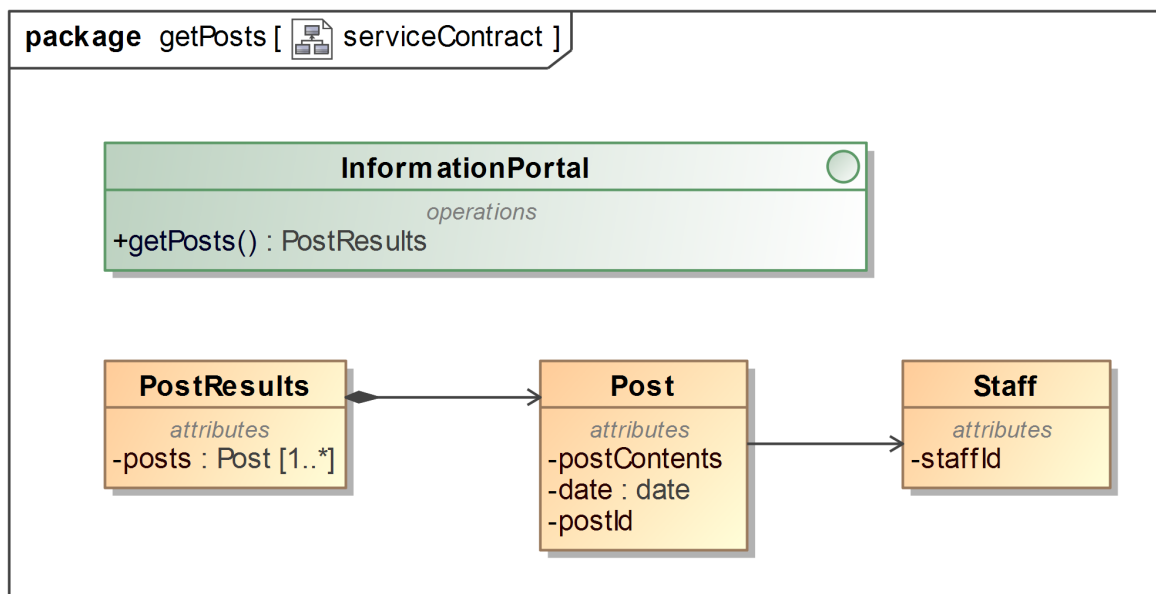
8.2 Get Posts

Priority: *Important*

8.2.1 Description

The getPost function will retrieve posts from the database which will allow the user to view the posts made.

8.2.2 Service Contract



8.3 Delete Post

Priority: *Important*

8.3.1 Description

The functionality provided by `deletePost` allows the user to remove posts from the Information Portal. User must have necessary permissions.

8.3.2 Pre-/Post-Conditions

Pre-conditions:

- User must be logged in.
- User must have the correct authorization to make use of this function.
- Post must exist.

Post-conditions:

- Post will be hidden.

8.4 Edit Post

Priority: Important

8.4.1 Description

The editPost provides functionality to the user that allows them to be able to make changes to posts already created.

8.4.2 Pre-/Post-Conditions

Pre-conditions:

- User must be logged in.
- User must have the correct authorization to make use of this function.
- Post must exist.

Post-conditions:

- Post will be updated.

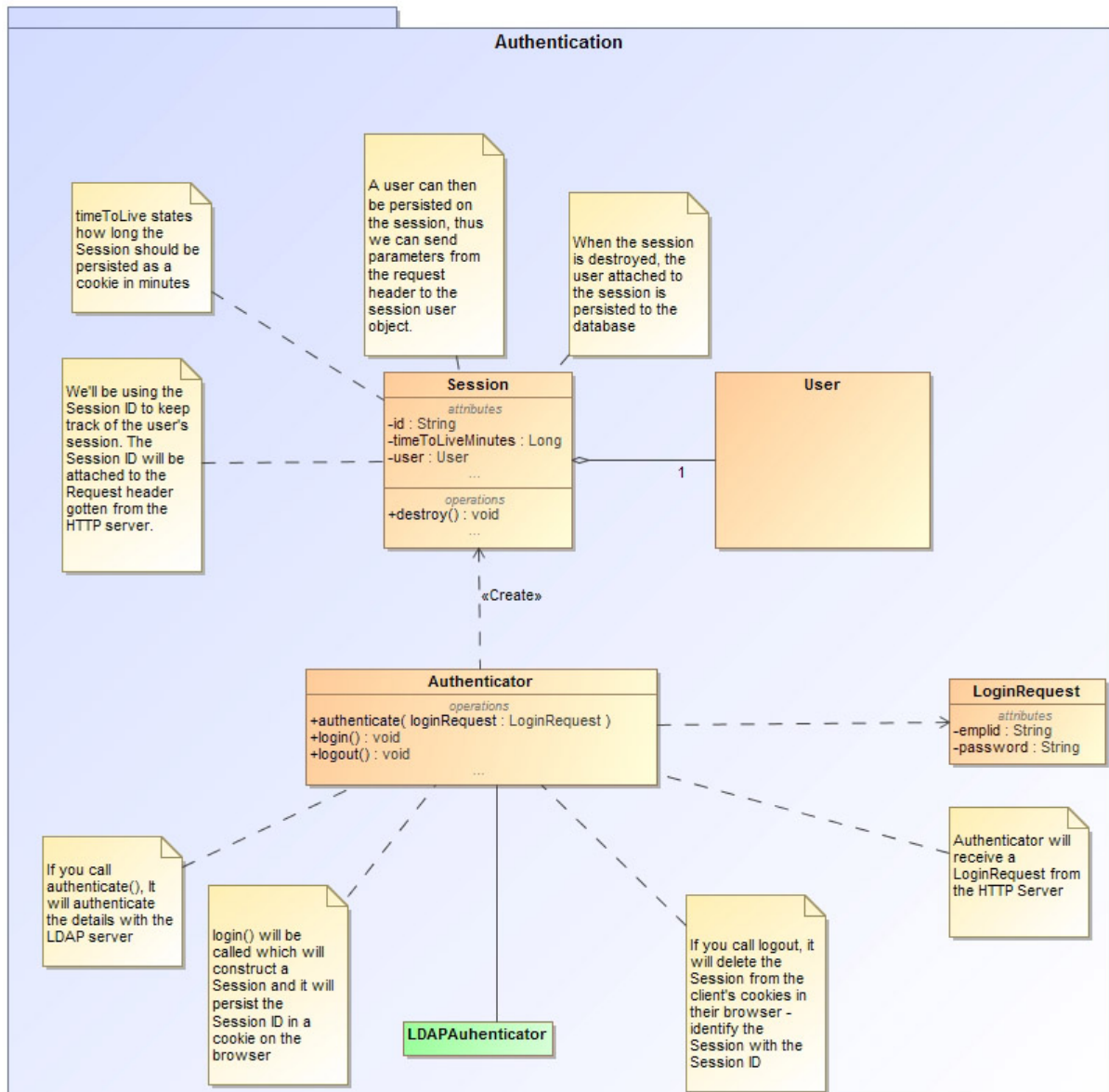
9 Authentication

9.1 Authenticate

Priority: *Critical*

9.1.1 Description

The following section will describe functionality around logging staff members in and out of the web-portal. Note: The use case, process specification and data structure requirements posted in Authenticate encapsulates all use cases under the authentication functionality.



9.1.2 Pre-/Post-Conditions

Pre-conditions:

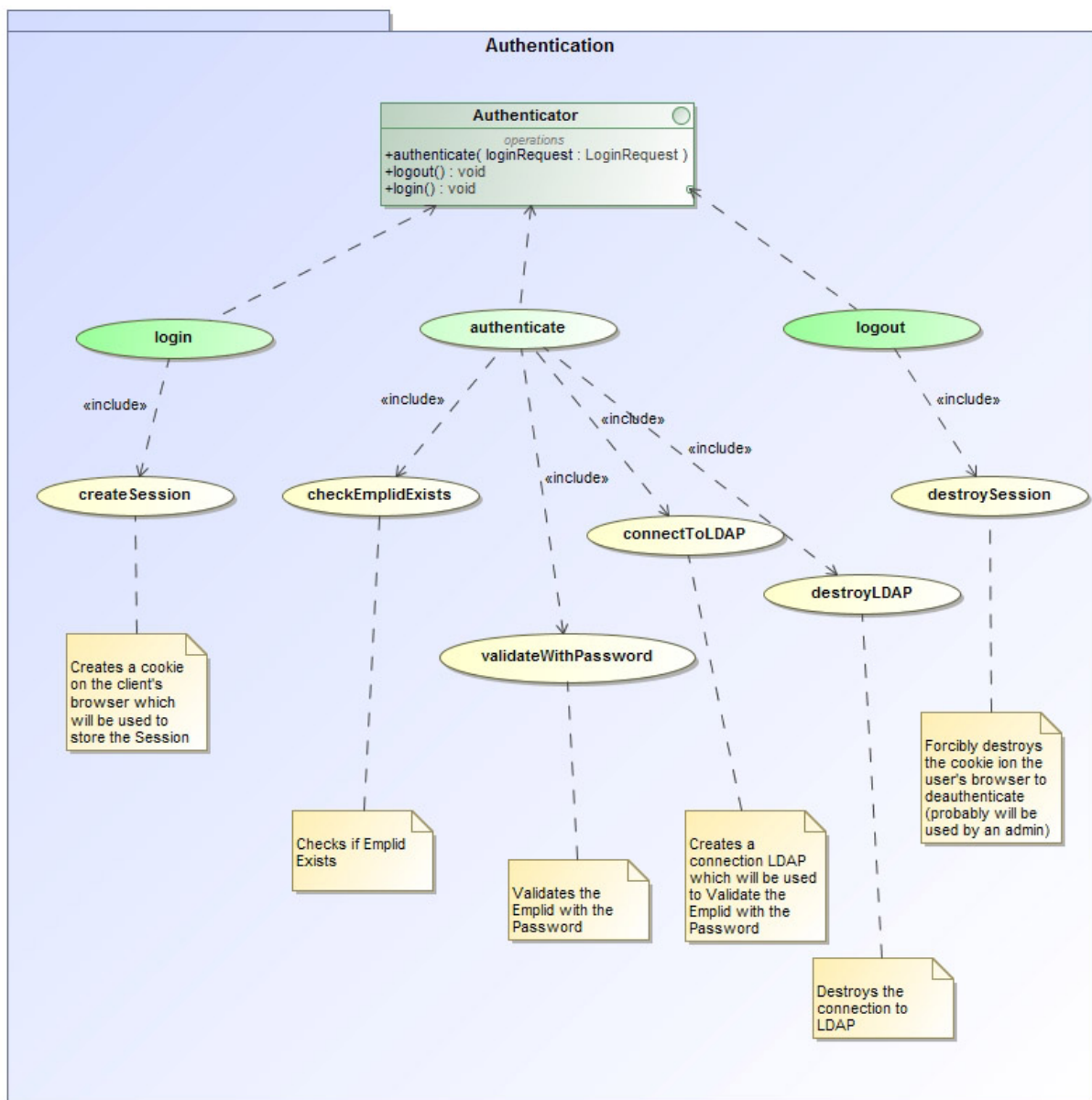
- A user must have an EMPLID from the University of Pretoria

- A user must have an associated password for their EMPLID from the University
- A successful connection to LDAP is important
- A user must be registered as a staff member on LDAP
- A successful validation response after an LDAP authentication is needed to authenticate a user

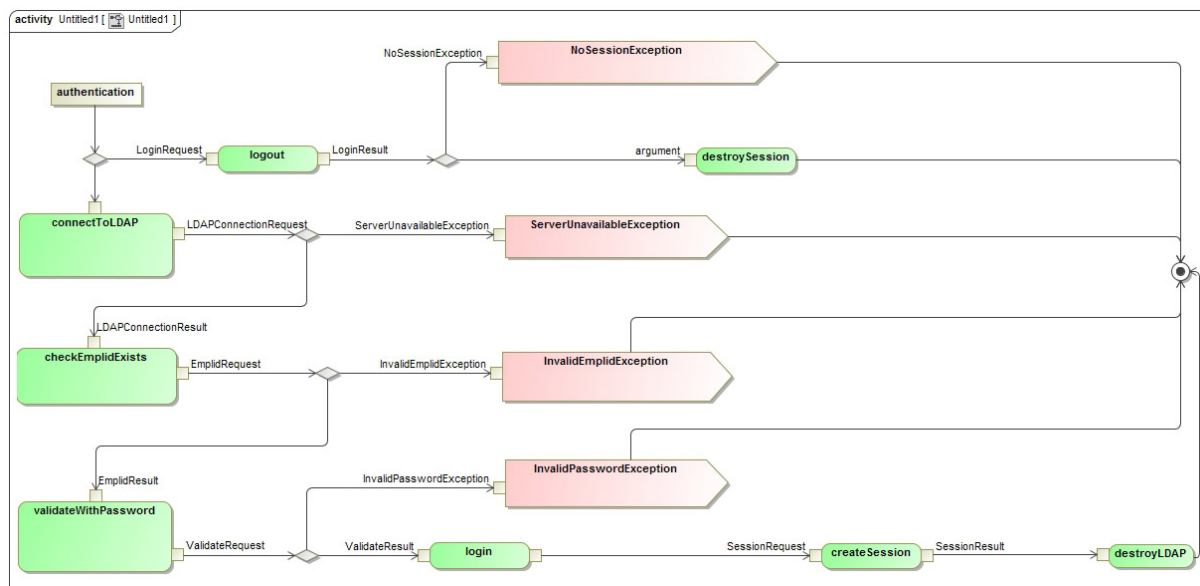
Post-conditions:

- A user is successfully authenticated on the server

9.1.3 Functionality



9.1.4 Process Specification



9.2 Log In

Priority: *Critical*

9.2.1 Description

A user must be logged into the system once they have been authenticated. A user is logged in by creating a cookie containing the session ID.

9.2.2 Pre-/Post-Conditions

Pre-conditions:

- A user must have been successfully authenticated by the system to be logged in.

Post-conditions:

- A user is successfully logged in and can thus access features which require authentication.
- A user is taken to the booking management page on the website

9.3 Log Out

Priority: *Critical*

9.3.1 Description

The system must be able to log a user out. A user is logged out by destroying the cookie containing their session ID.

9.3.2 Pre-/Post-Conditions

Pre-conditions:

- The user must be logged in.

Post-conditions:

- A user is successfully logged in and can thus access features which require authentication.
- A user is taken to the booking management page on the website