[CS319]

Software Design Specification

VR2

Mar 10. 2013

[Team 7]

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1 Introduction

1.1 System Overview

Purpose
This document is written for these parties with the following intent.

- Options Family B.C Organization.
    - intent: provide a comprehensive document stating all of the features that will be included in the **Options Family Resource Program Data Management System**.
- The software development team from the University of British Columbia's CPSC 319.
    - intent : provide the development team with a guideline of the features that will be delivered in the system's implementation.
- Any developers at Family B.C organization
    - intent: provide brief overview of the system functionality, and requirements, so that developers have general idea of the project.

Scope
Name of the Software Product: **Options Family Resource Program Data Management System**

The software product will perform the following tasks:

- Provide a centralized system for tracking individuals parents who attend programs offered by Options throughout greater Vancouver.
- Track assets such as toys, books, video, and pamphlets that have been given or lent to the customers (parents/guardians) and give staff quick access to information about the assets.
- The system will be hosted on the Microsoft Windows Server 2008 R2 operating system and accessible by client machines

The software product will not perform the following task:

- The coordinator at **Options Family Resource Program** mentioned there is the possibility of tablets, however, this system will not be guaranteed to work on Samsung tablets or any other tablets due to compatibility issues and company policies.

The software's benefits, objectives, and goals:

This project is the Options Family Resource Program Data Management System. The main objective is to facilitate the input of client information into the software system, and be able to track and update the client information. It will also track assets that Family B.C Organization has lent to its clients. It will provide a centralized information system so that the amount of work required by

the staff at Options can be minimized, and manual work by pen and paper can be reduced.

1.2 Supporting Materials

General overview of Microsoft Visual Studio and Sql Server are found at:
http://msdn.microsoft.com/en-us/library/52f3sw5c(v=vs.100).aspx
http://www.microsoft.com/en-us/sqlserver/product-info.aspx

General Team website is located at:
http://cs319teamse7en.wordpress.com/

Final version of Software Requirements Specification Document available at:
https://docs.google.com/document/d/1yV1TDELgWYrPoSFZe0iUm9xVVq5kcSGAyPFhPL_9h44/edit

1.3 Definitions and Acronyms

UML - Unified Modeling Language
SRS - Software Requirements Specification, this document which outlines the requirements that the software must fulfill. Entirely design independent.
GUI - Graphic User Interface
UI - User Interface
MVC - Model View Controller
OFRPDMS - Options Family Resource Program Data Management System
Client - Options Community Family
FRP - Family Resource Program
Staff Users - An actual staff of FRP
Admin Users - The administrator/supervisor of all staffs in all locations of FRP
Entry - Table entry in database
Program - Any services offered by Options Community Services
Event - Special activities that happen on a specific day (ie Story Time)

2 Design Considerations

2.1 Assumptions

- The main users of the software are assumed to have a low level of technical knowledge.
- There will only be a maximum of 20 users simultaneously accessing the database.
- The users of this software will enter correct and valid data into the system.

2.2 Constraints

- Operating System
    - Must be hosted on Windows 2008 R2
    - The software should work on Windows
- Platform
    - The database must be SQL Server 2008 R2
- Software availability
    - All software used in the system must already be licensed or freely available

2.3 System Environment

The system will be hosted on a centralized server and be accessible by users from all the centers located in different geographical areas. The hardware that will be used is already operational and hosts the Windows Server 2008 R2 operating system. Therefore, our product will be hosted on Windows Server 2008 R2 with Microsoft SQL 2008 installed.

3 Architecture

3.1 Overview

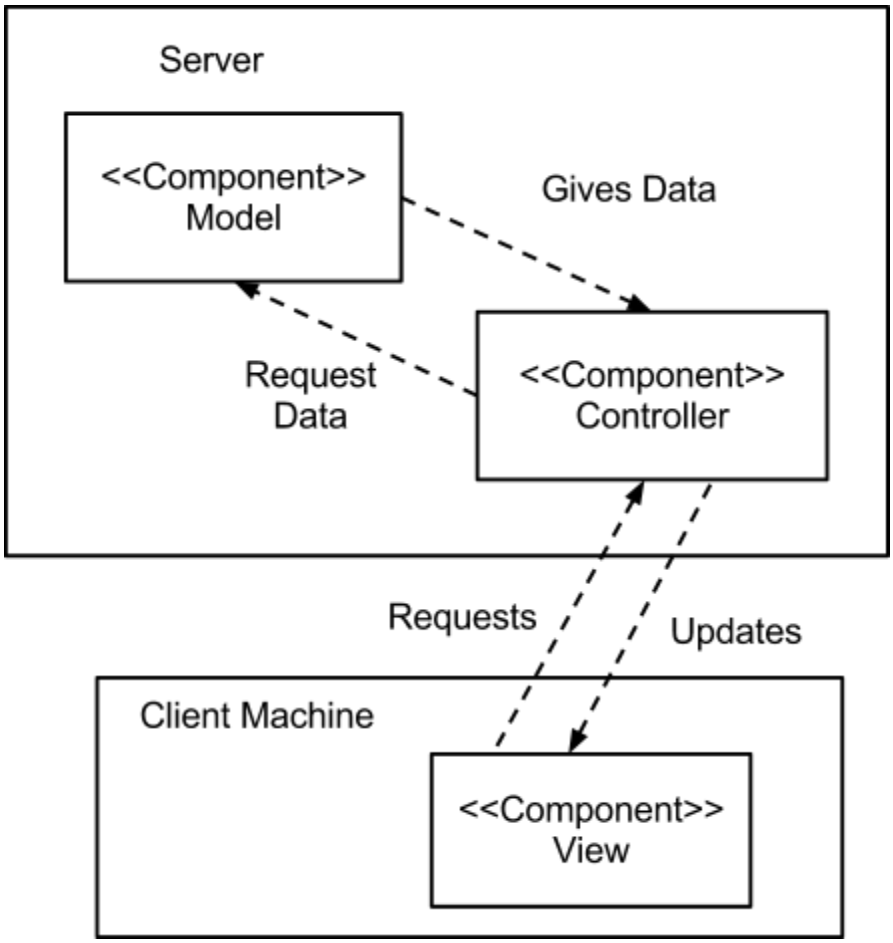
OFRPDMS will use the Model-View-Controller architecture. There are two main levels of infrastructure: the client side, and the server side. The server side will contain the Model component and the Controller component. The Model component is the bridge between the database and the Controller. The Controller will take the inputs sent from the View and use the data to update Model. Conversely, the controller takes data from the model and updates the View. The view component is the GUI that the user will interact with to input data.

3.2 Rationale

The main reason for choosing the Model-View-Controller architecture is because the application can be entirely represented with MVC. The advantage that the MVC architecture offers is that the data, application logic, and presentation of the data are separated. This leads to a highly structured and more easily maintainable code. Lastly, the client can be thin client and thus only needs enough computing power to be able to process a view in a web browser.
Consider this example: the client needs to register a parent. The client would first use a web browser to open the web application and log in. To register a parent, the user would input the necessary data into the parent registeration page (view). This data is sent to and handled by the primary_guardian_controller which relays this to the model and updates the database. When this data needs to be retrieved, it is initiated by the user from the view. The primary_guardian_controller handles this request and then passes the query to the model. The model fetches this data from the database, which is then sent back to the controller to be relayed back to the view and displayed on the browser. Throughout the process, the user only interfaces with the browser view. The logic, data storage retrieval exist on the server and are transparent to the user.

4 High Level Design

4.1 Conceptual View



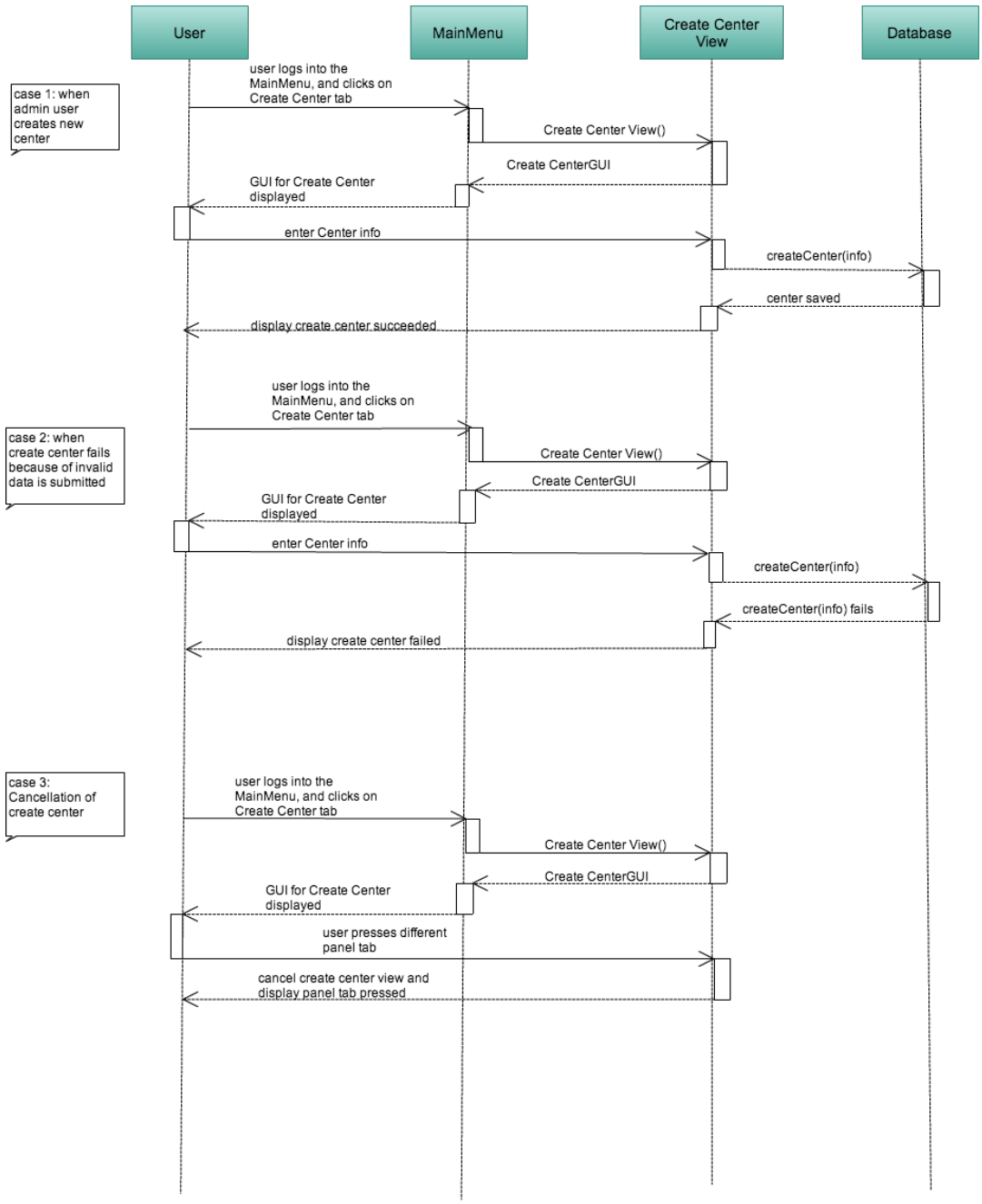
Model	**Controller**	**View**
Primary_Guardian	Primary_guardian_Controller	Register_Parent_View
Secondary_Guardian		
Children		
Allergies_People		
Event	Events_Controller	Create_Sign_In_View
Special_event		
Event_participant	Sign_In_Controller	Sign_In_View
Center	Centers_Controller	Create_Center_View
Accounts	Admin_Controller	Create_account_view
	Staff_Controller	
	Log_in_controller	Log_in_view
Center_Referrals	Referral_controller	Referral_view
Center_Free_Resources	Center_Free_Resources_Controller	Center_Free_Resources_View
	Generate_report_controller	Generate_report_view
Borrower*	***Primary_Guardian_Borrower_Controller****	***Register_Borrower_view****
		Borrower_View*
LibraryItems*	***Borrower_Item_Controller****	***Add_library_item_view****

***Extra features**

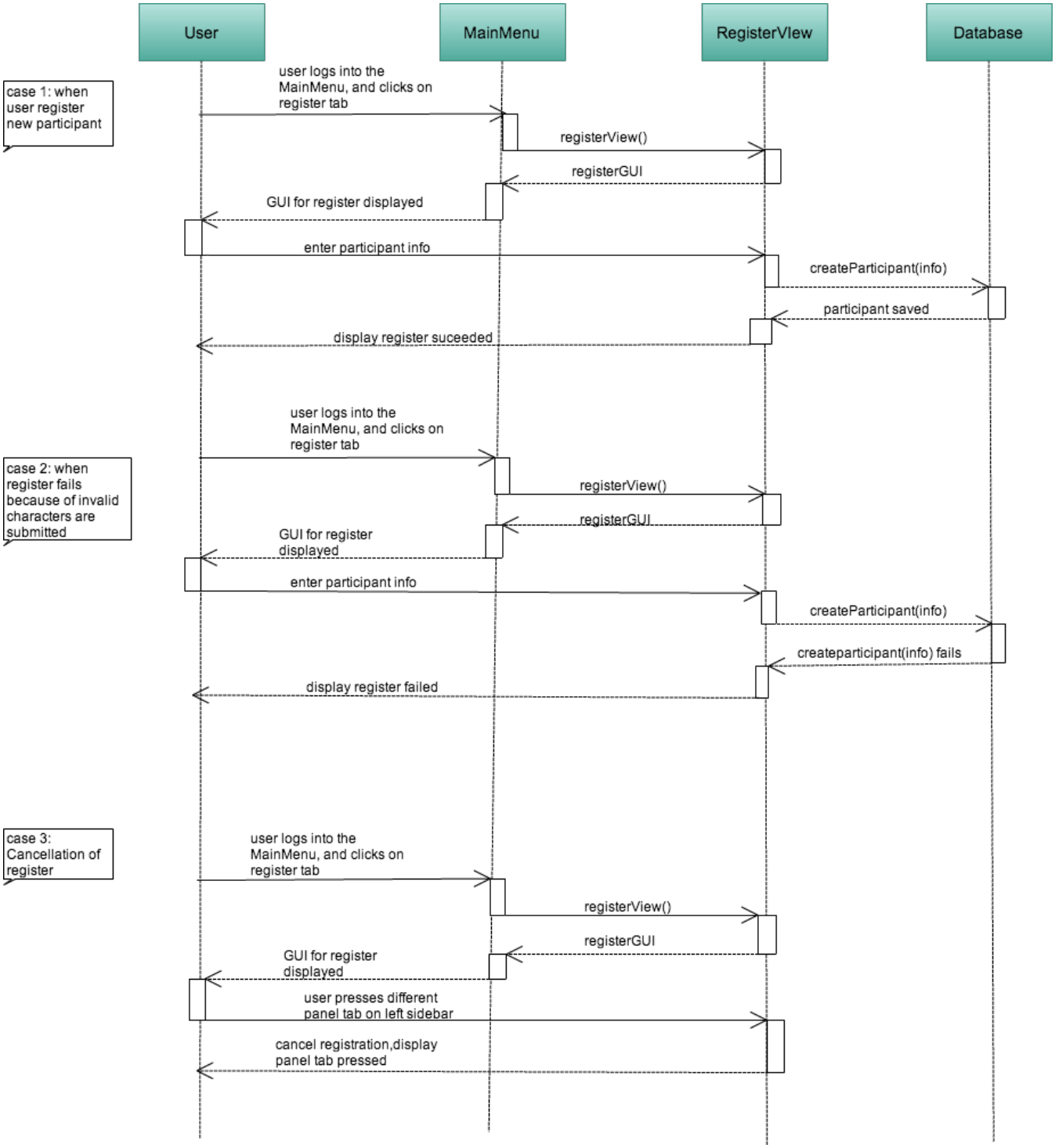
5 Low Level Design

5.1 Sequence Diagrams 1..n

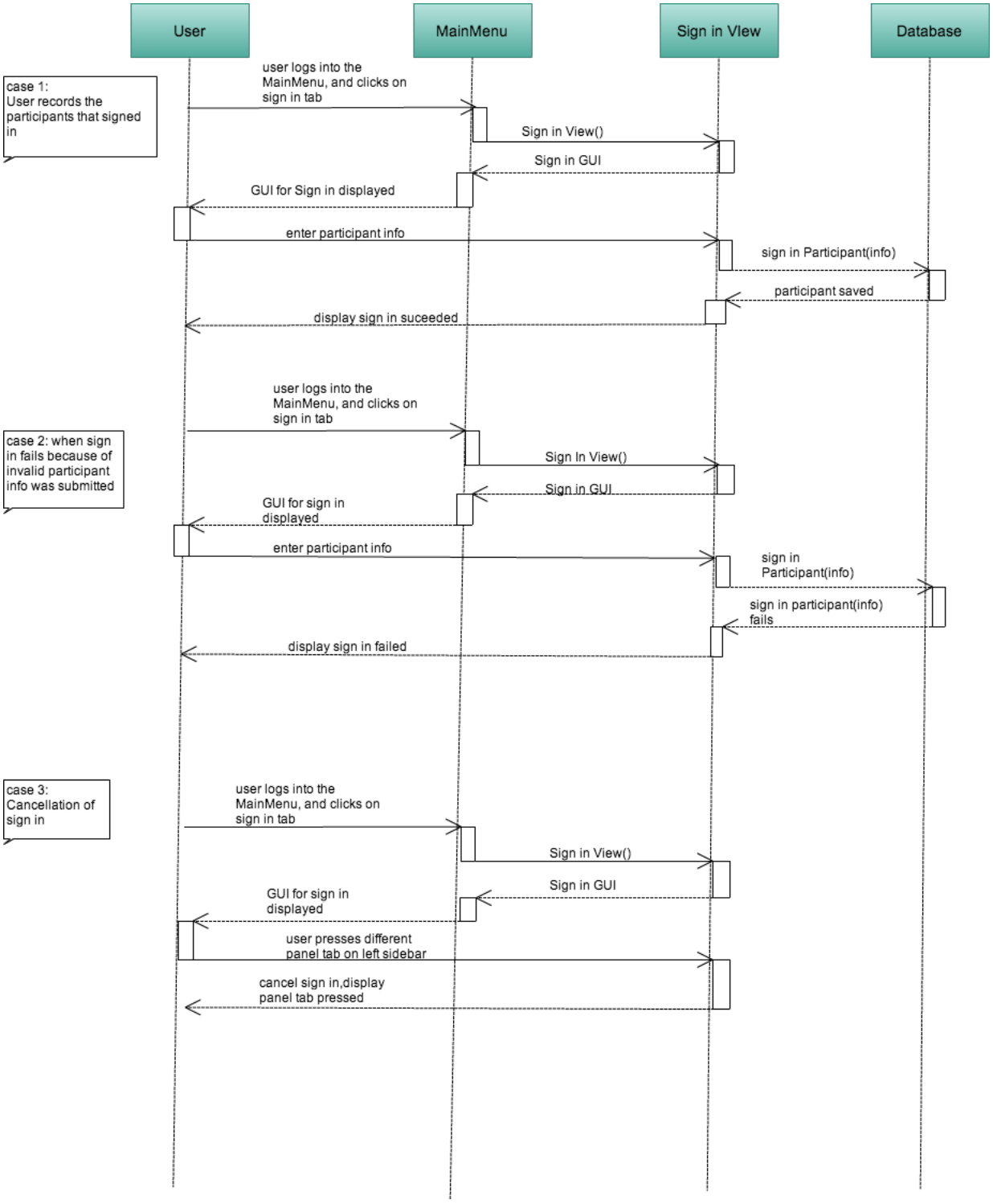
Admins can Create Centers



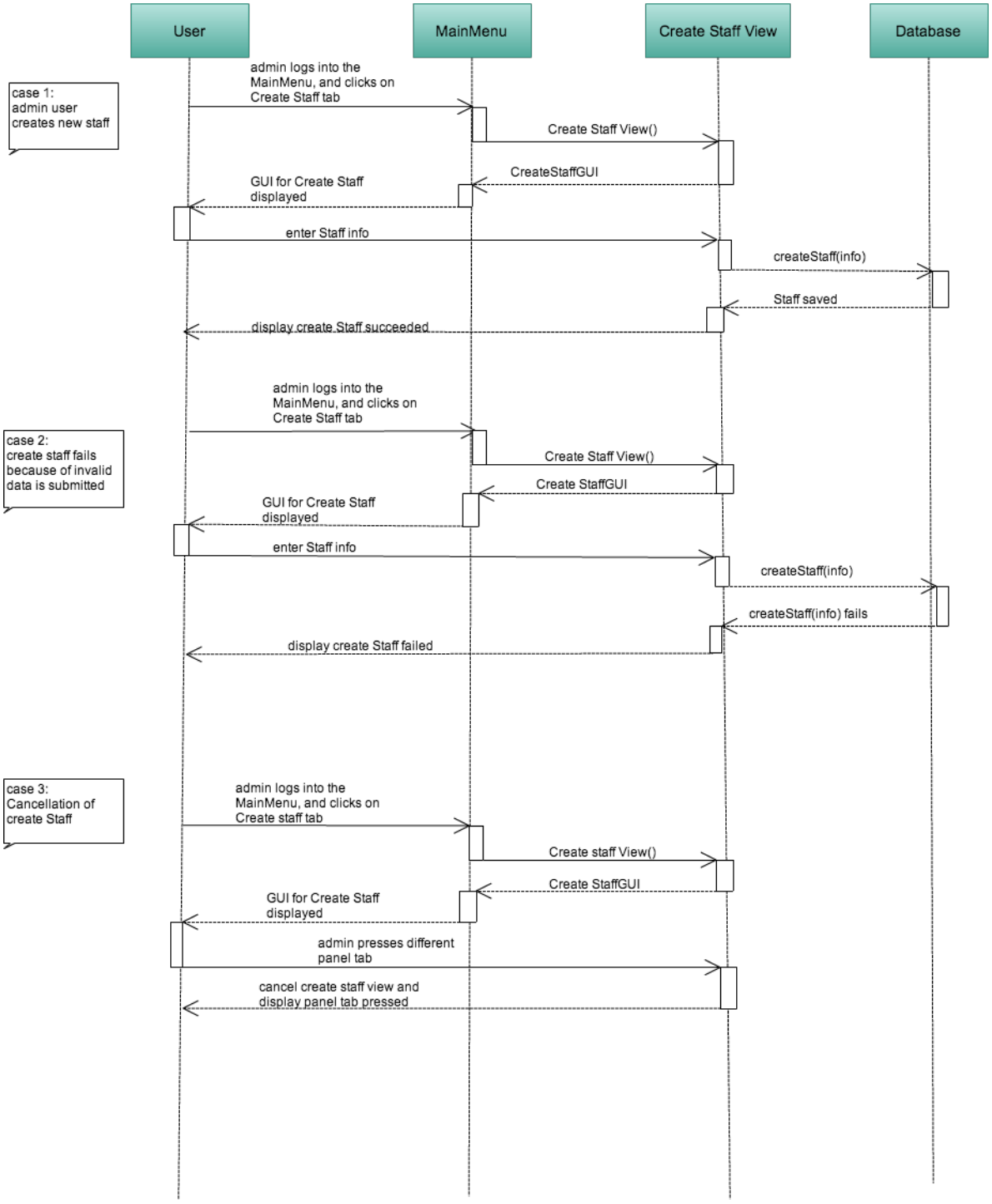
Staff can Register New Participants



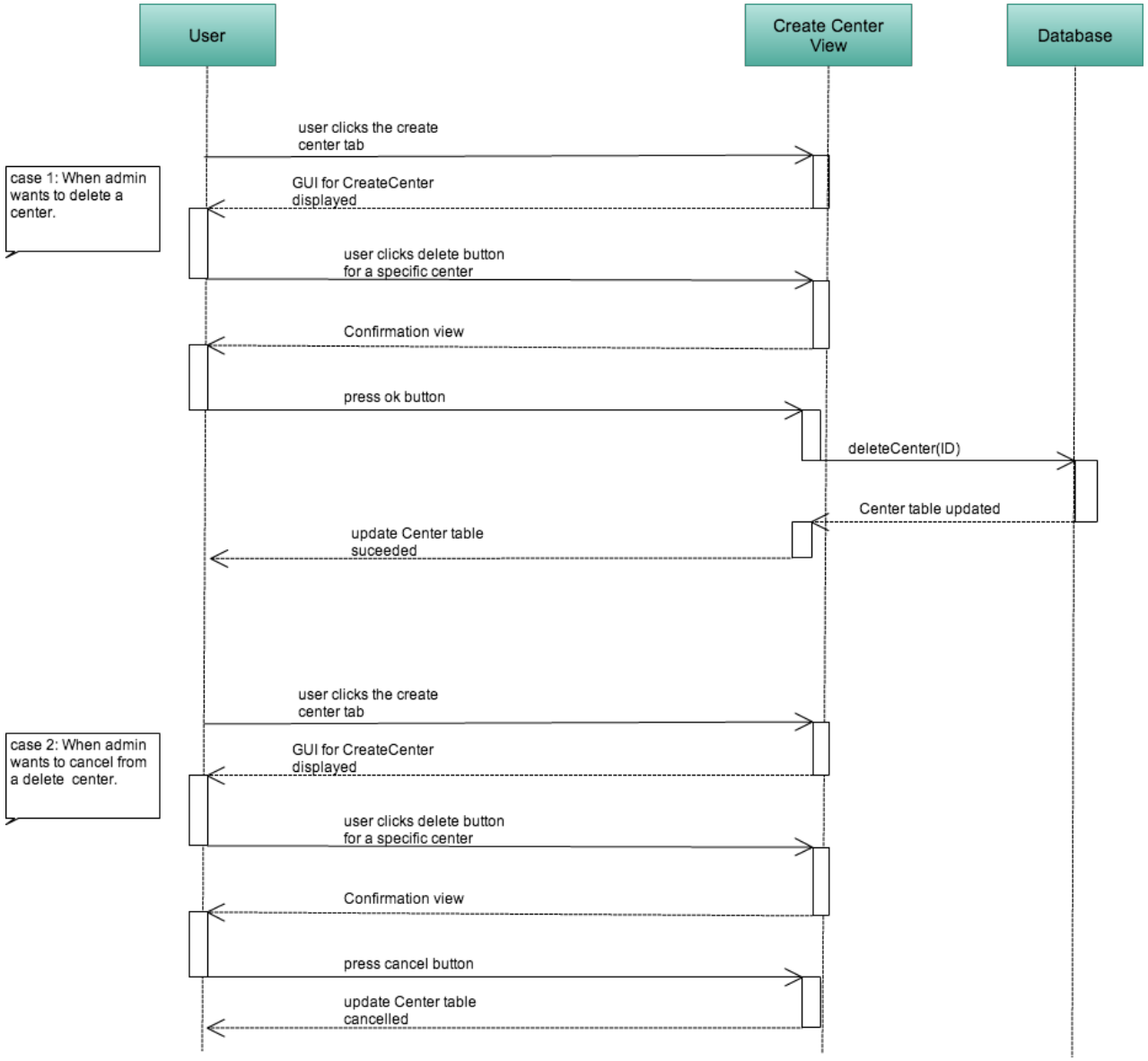
Staff can <u>Sign In Recurring Participants</u>



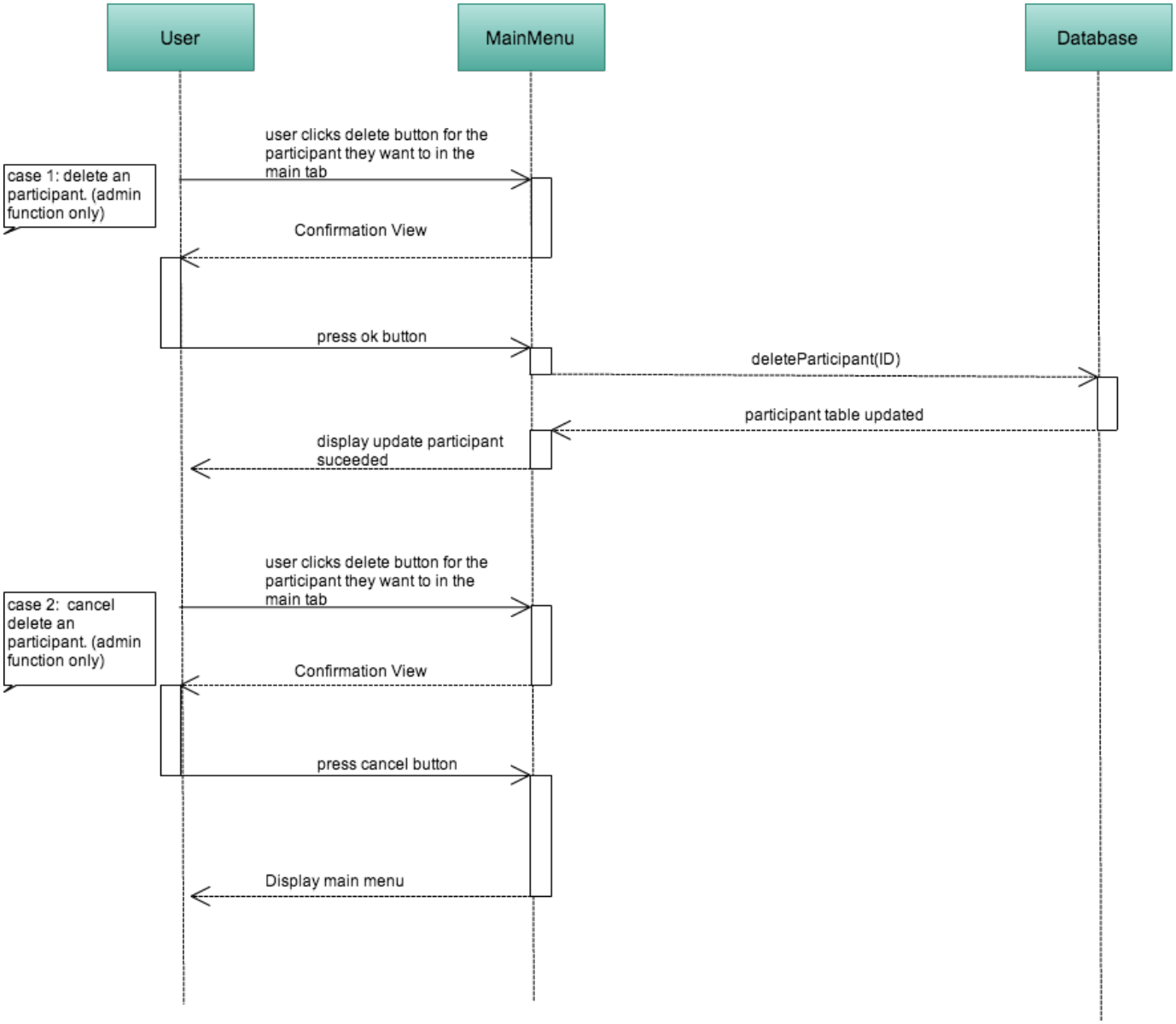
Admins can <u>Create Staff</u> for each center



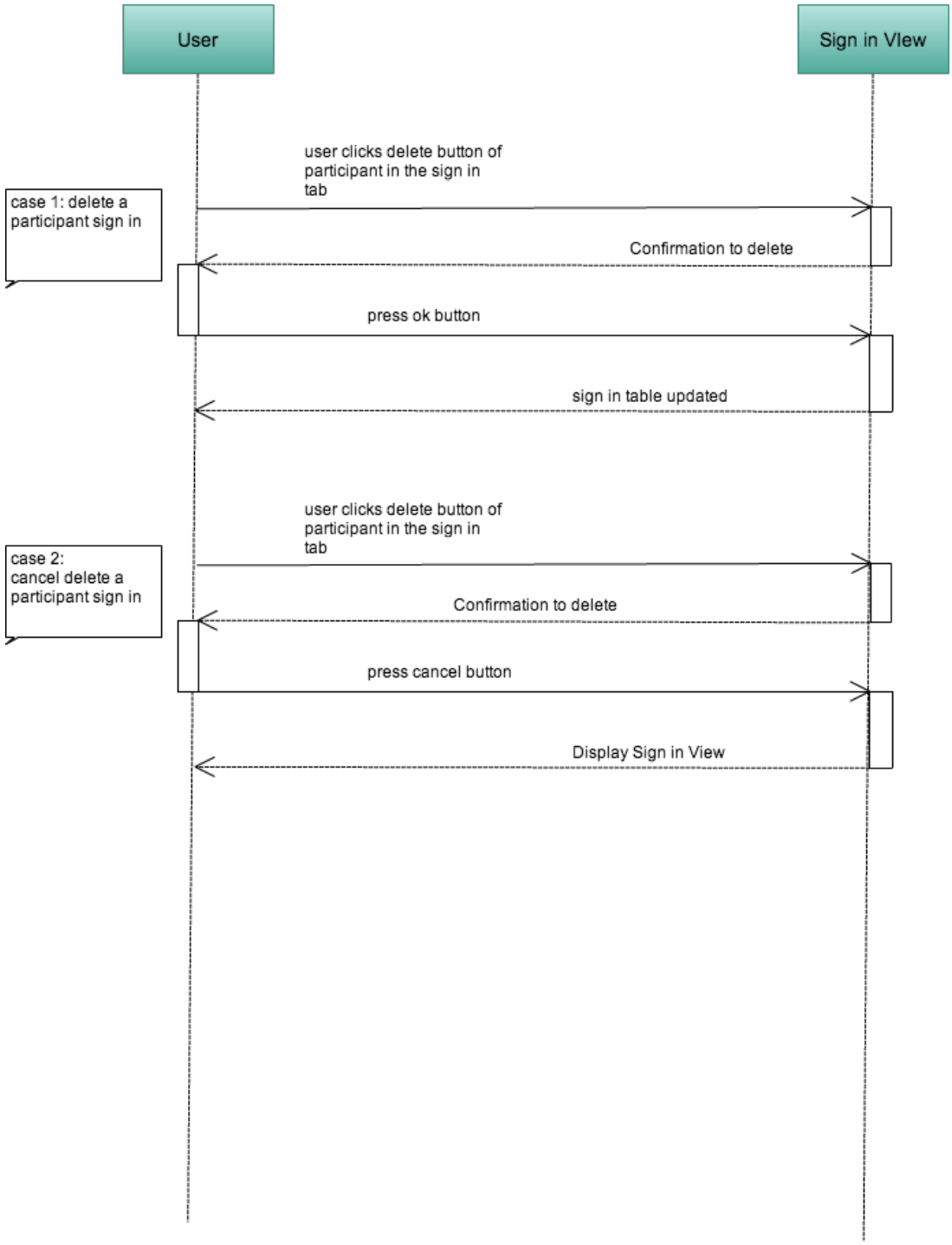
Admins can Delete Centers from database



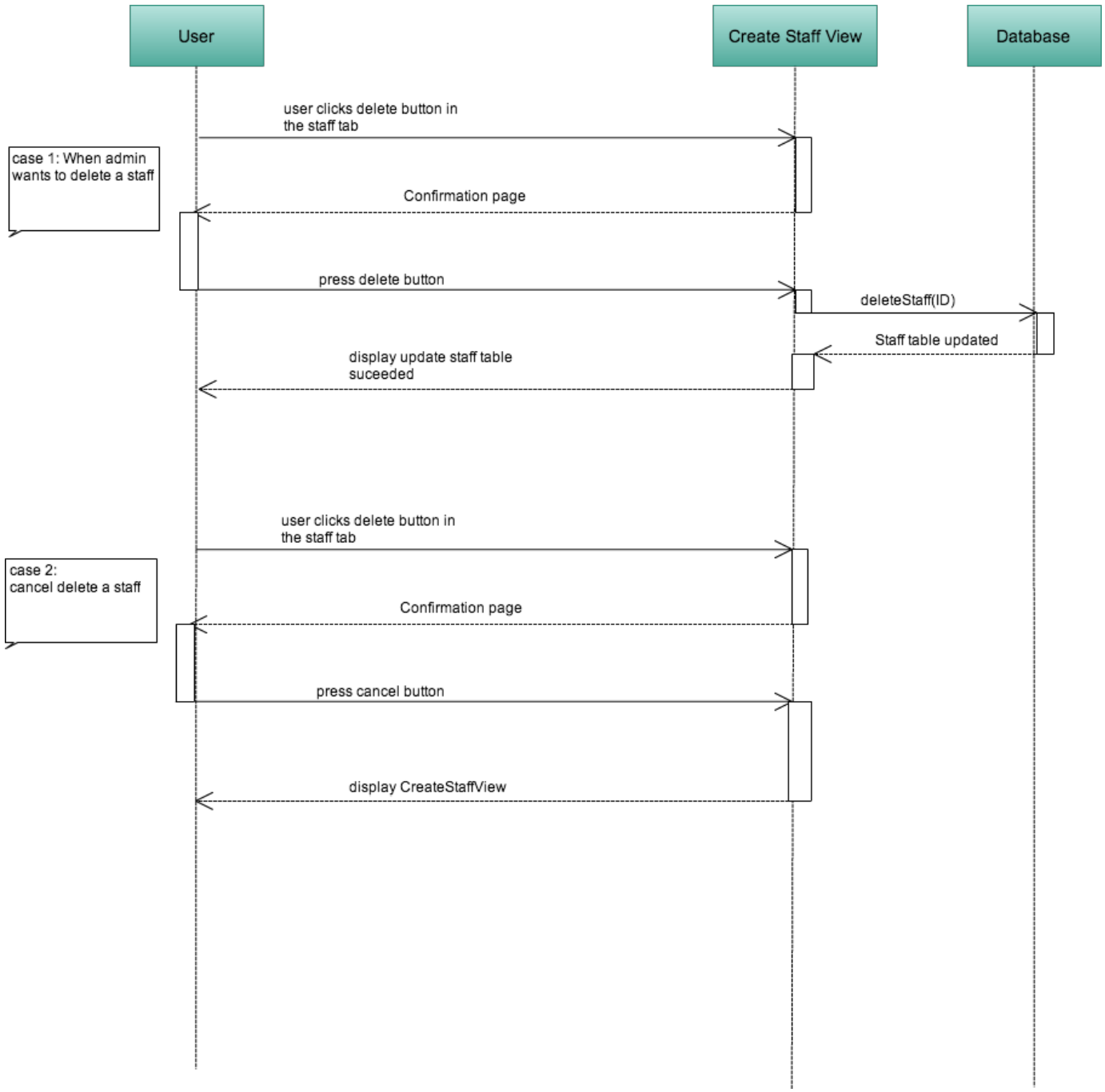
Admin can <u>delete participants</u> from database


User
MainMenu
Database
user clicks delete button for the participant they want to in the main tab
case 1: delete an participant. (admin function only)
Confirmation View
press ok button
deleteParticipant(ID)
participant table updated
display update participant suceeded
user clicks delete button for the participant they want to in the main tab
case 2: cancel delete an participant. (admin function only)
Confirmation View
press cancel button
Display main menu

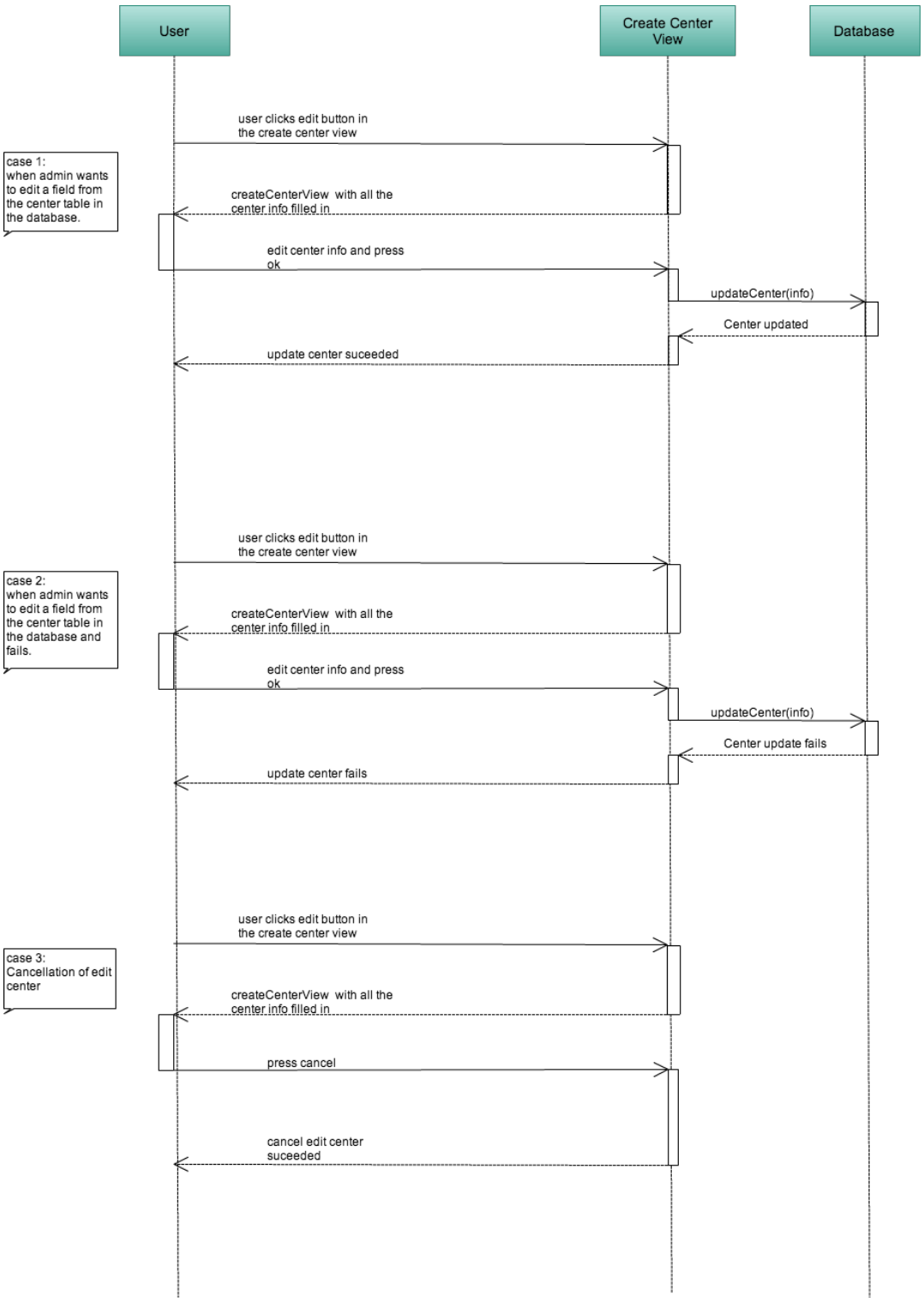
If mistake is made, staff can <u>delete the entry in the sign in table</u> before it stored into the database



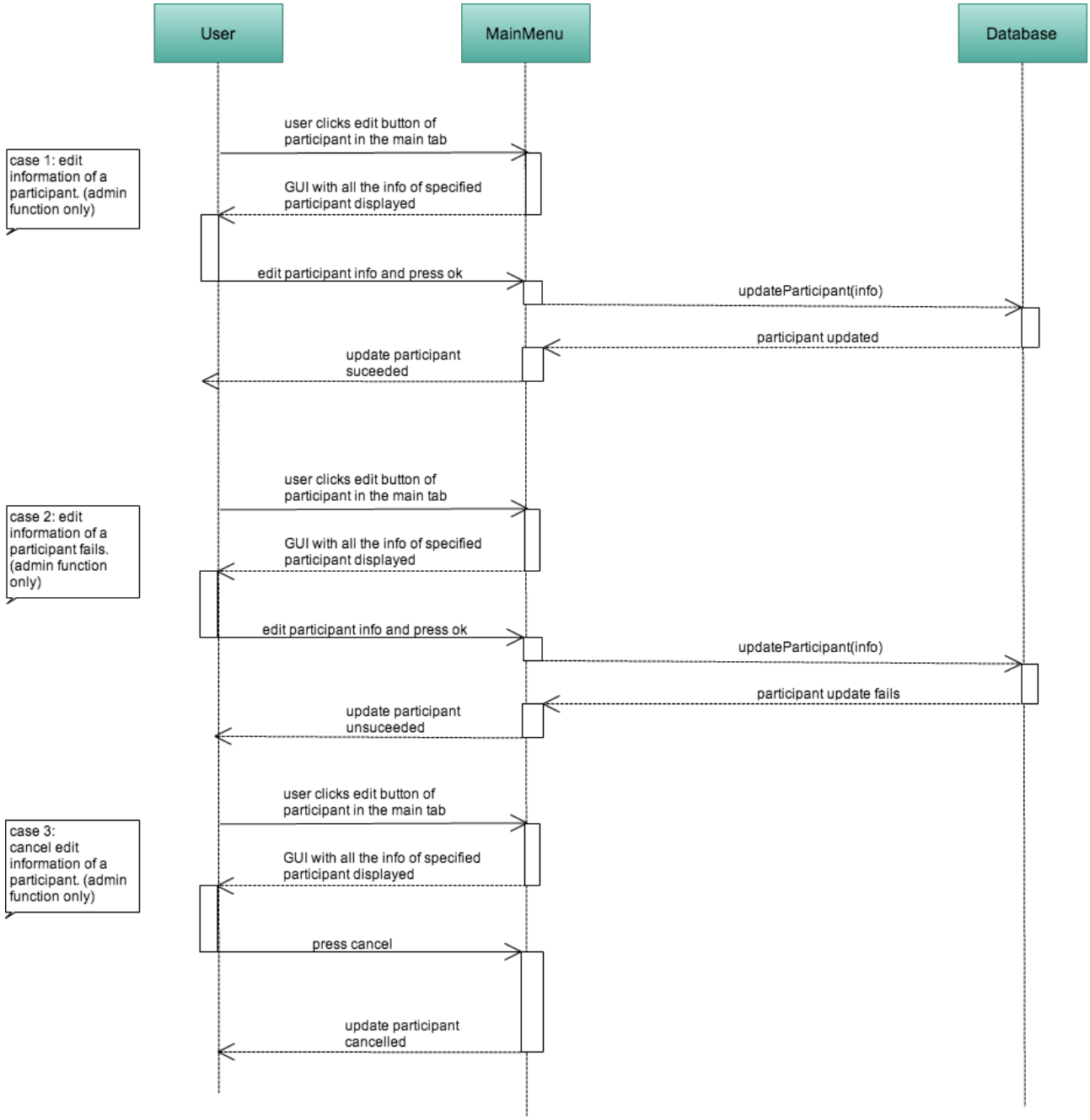
Admins can Delete Staff



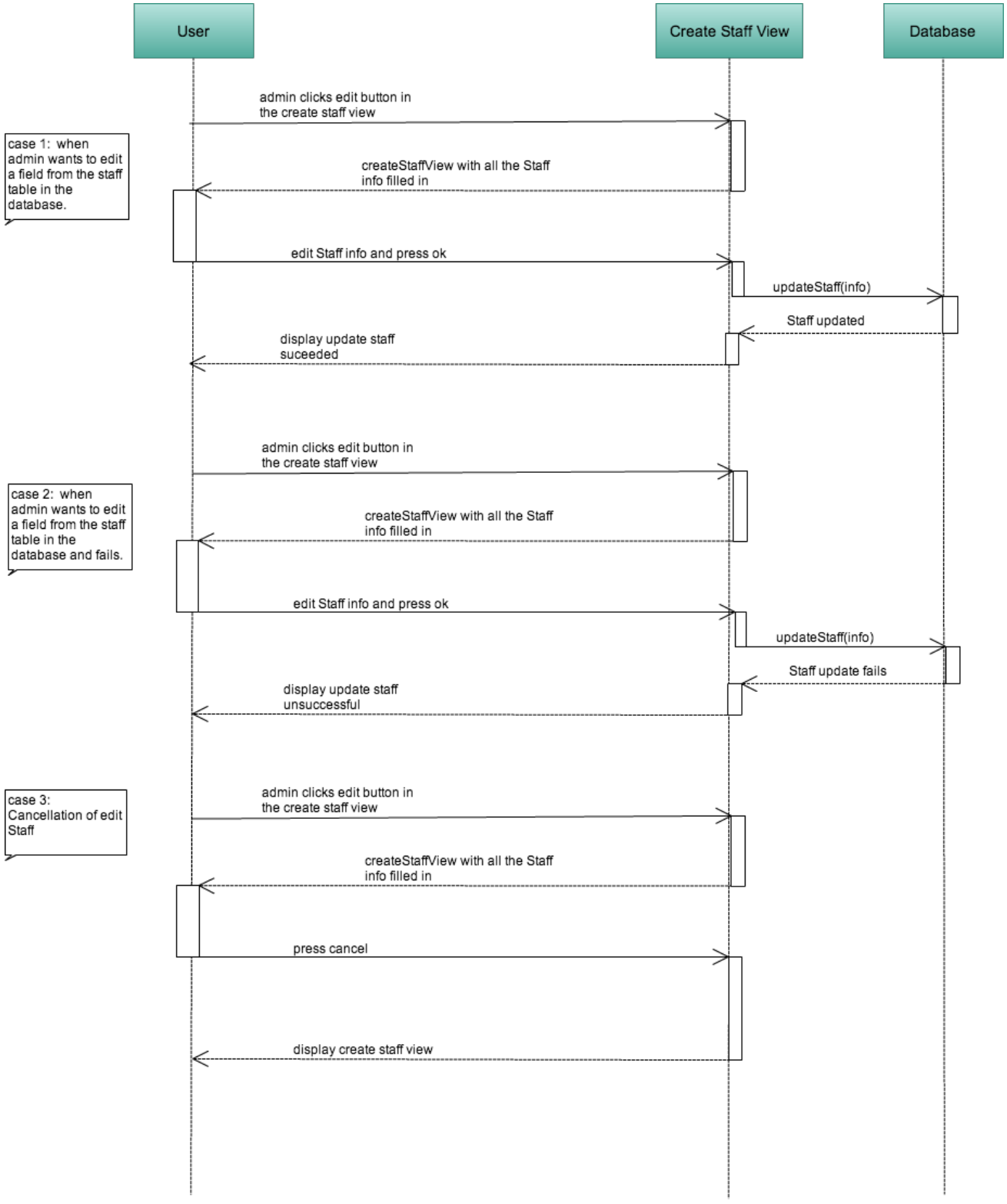
Admins can <u>Edit Center information</u>



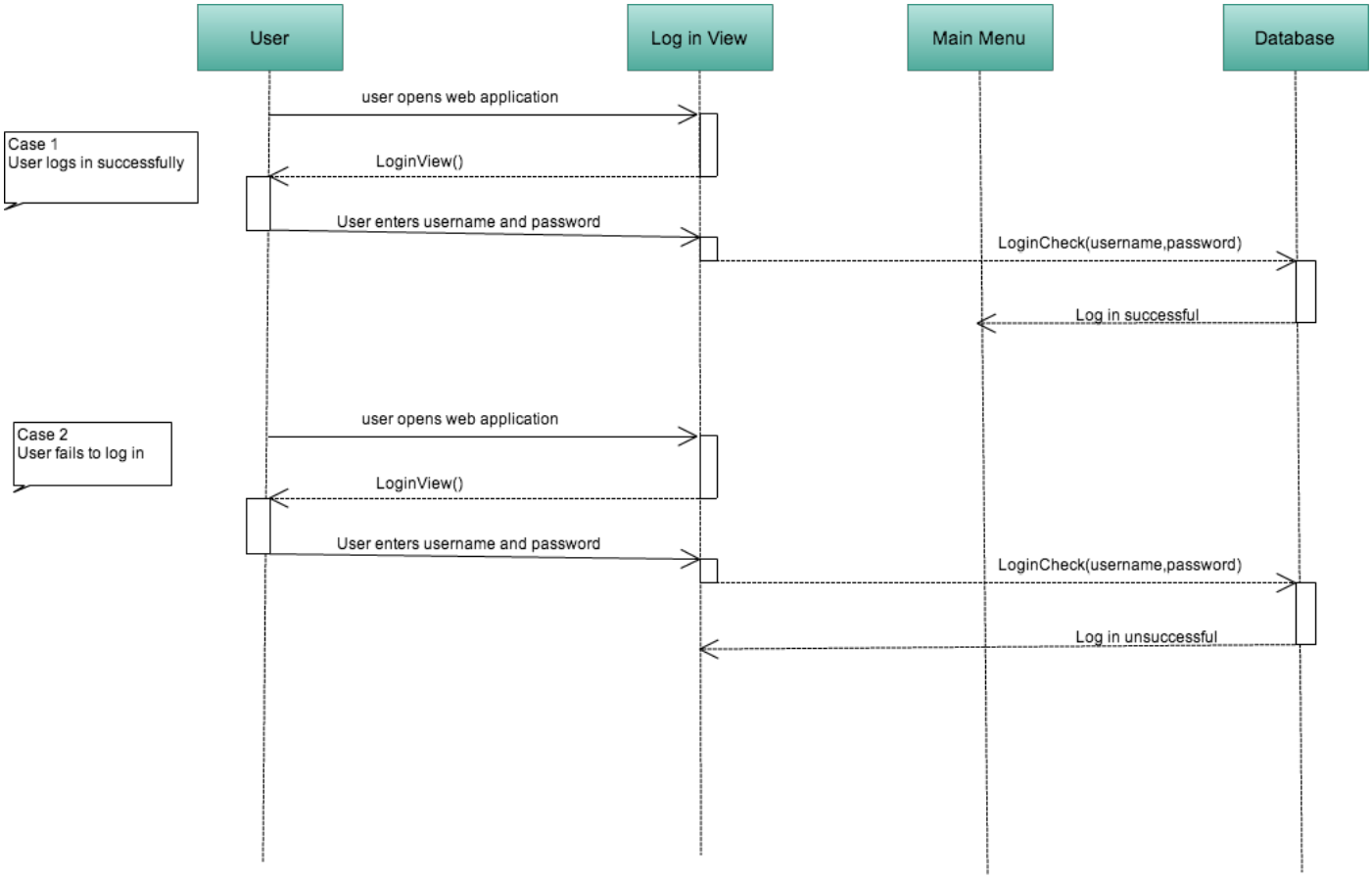
Admins can Edit Participant information



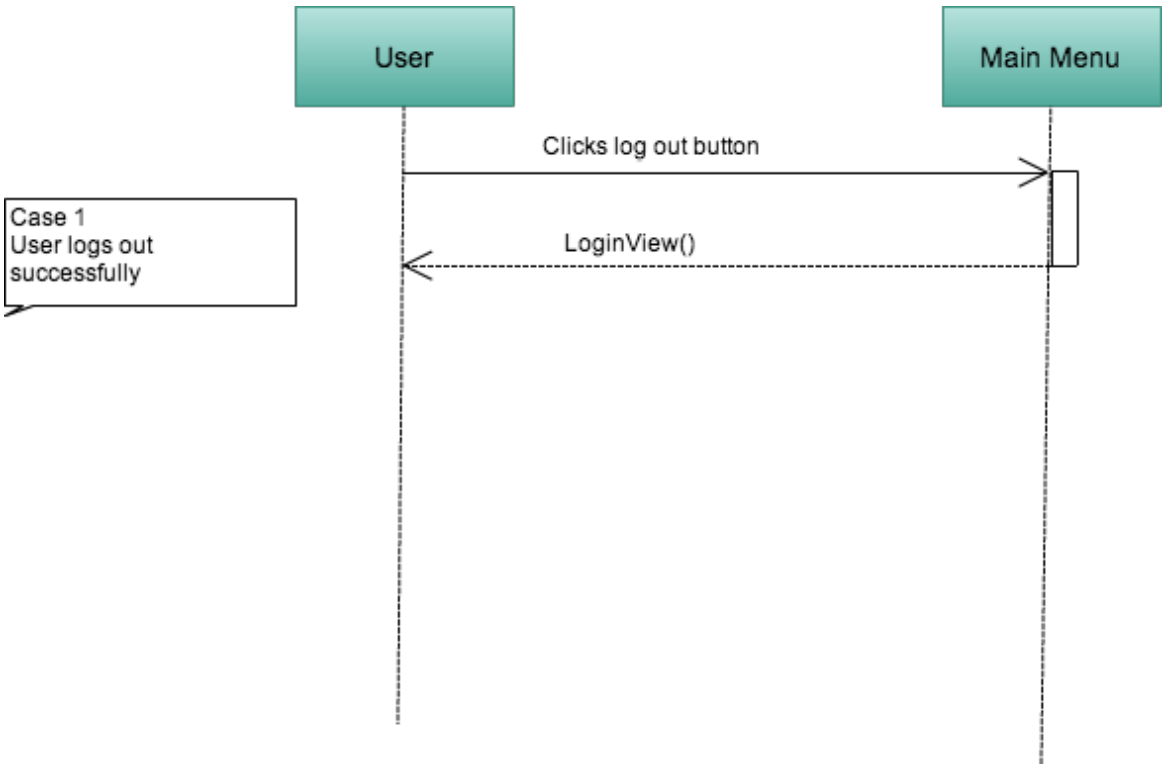
Admins can Edit Staff Information



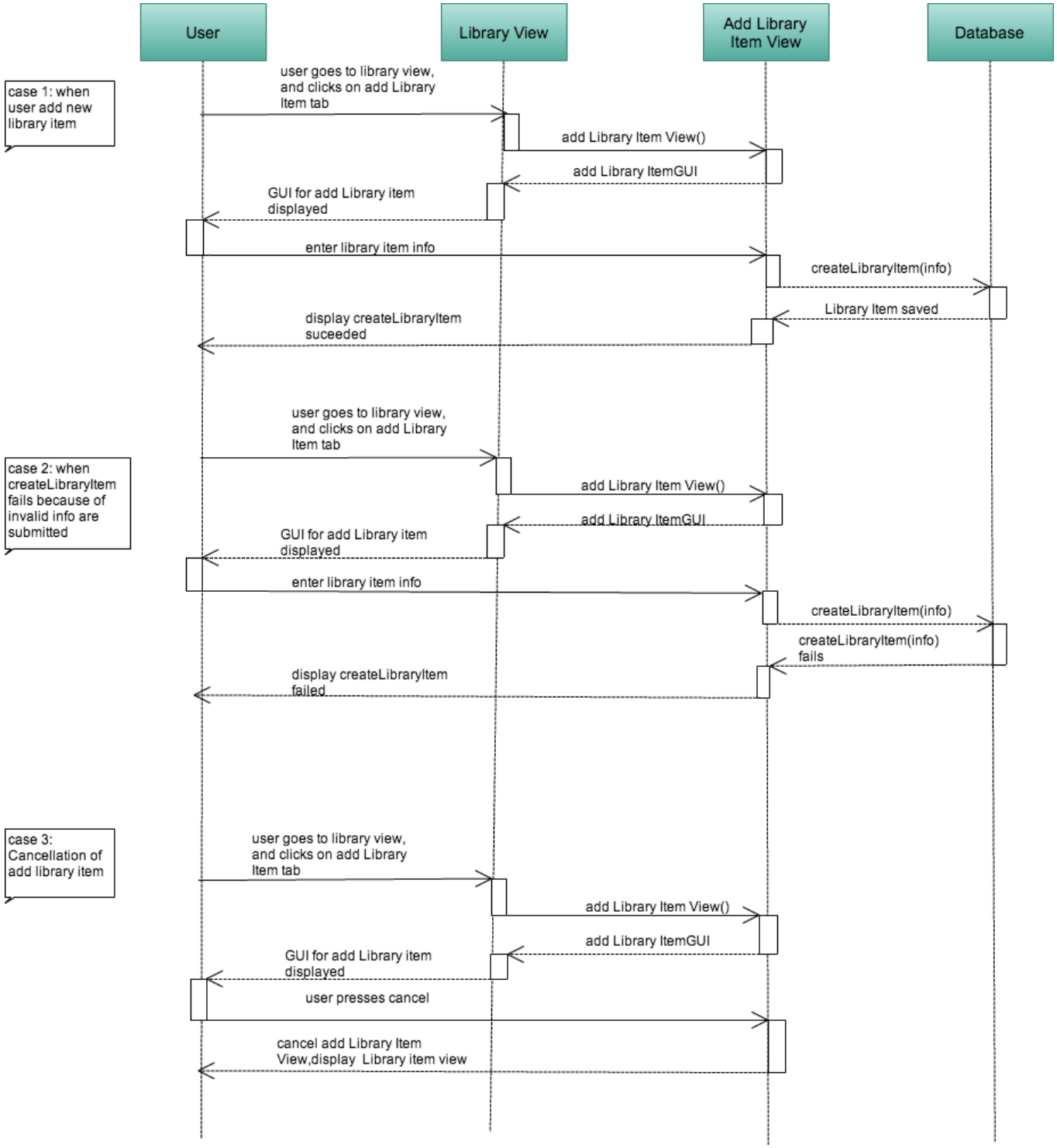
Staff can Log In to the system


User
Log in View
Main Menu
Database
user opens web application
Case 1
User logs in successfully
LoginView()
User enters username and password
LoginCheck(username,password)
Log in successful
user opens web application
Case 2
User fails to log in
LoginView()
User enters username and password
LoginCheck(username,password)
Log in unsuccessful

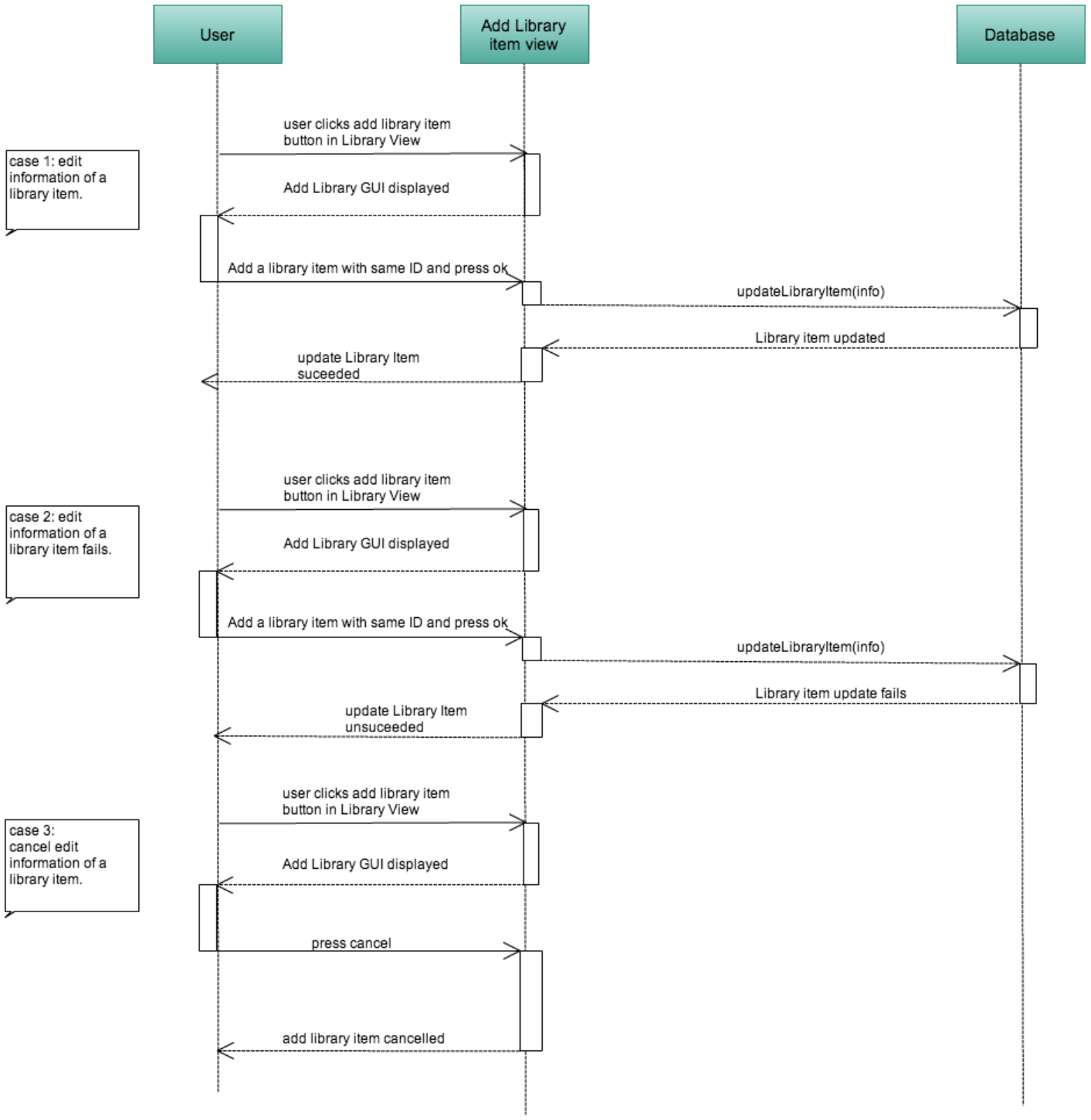
Staff users can Log out of the system



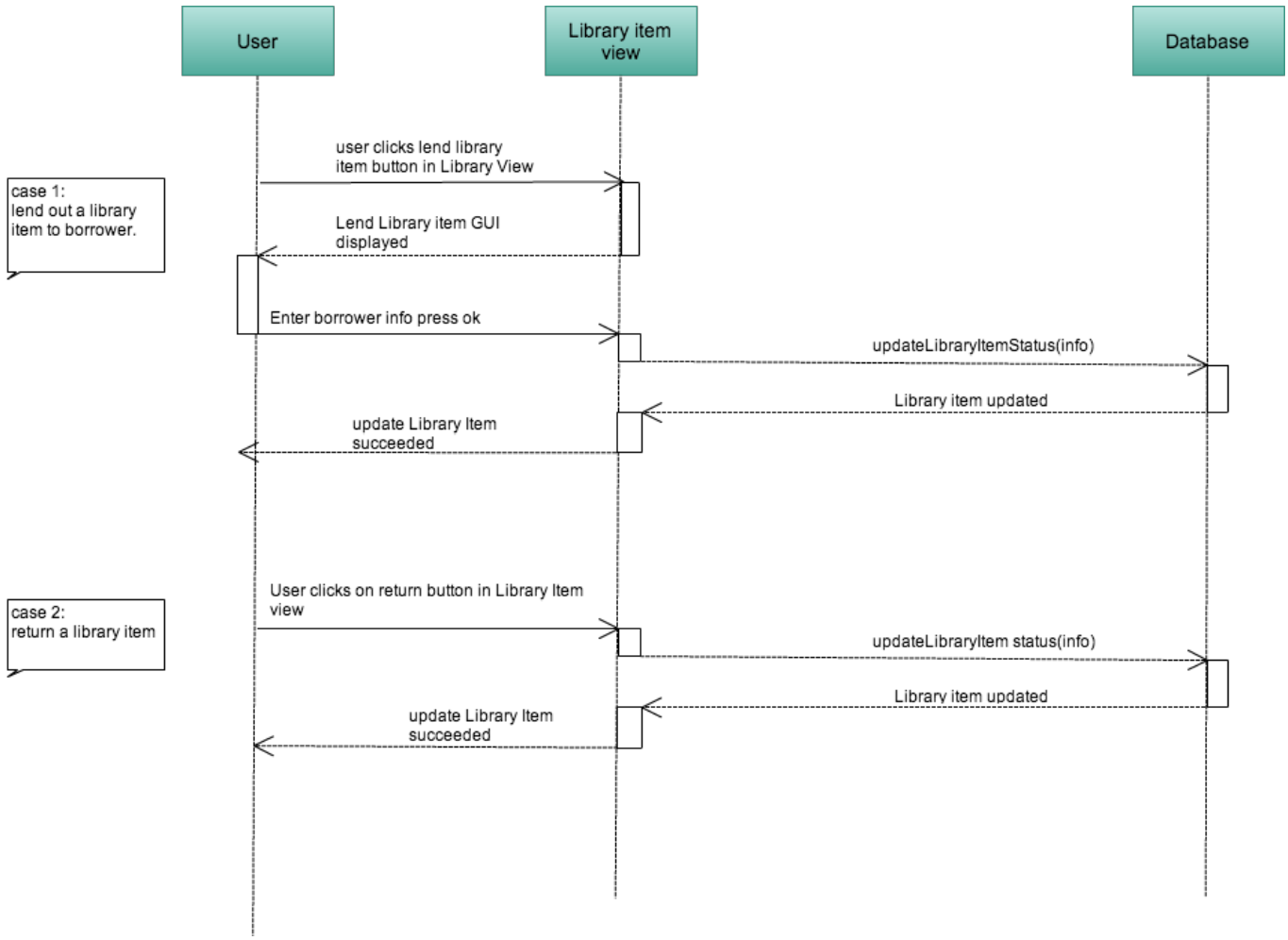
Staff users can add a library item*



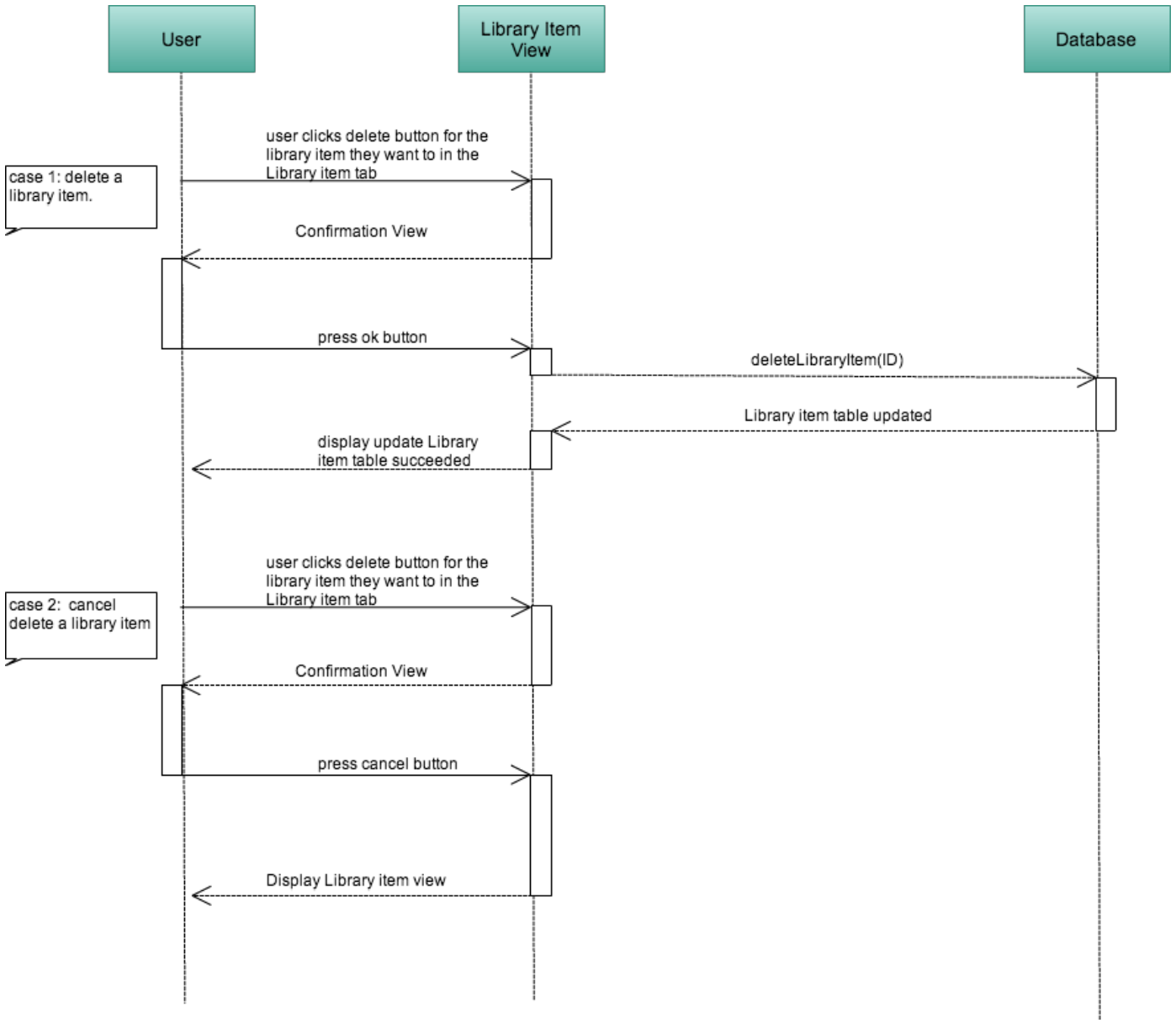
Staff users can Edit a library item detail*



Staff users can Lend/return library item*

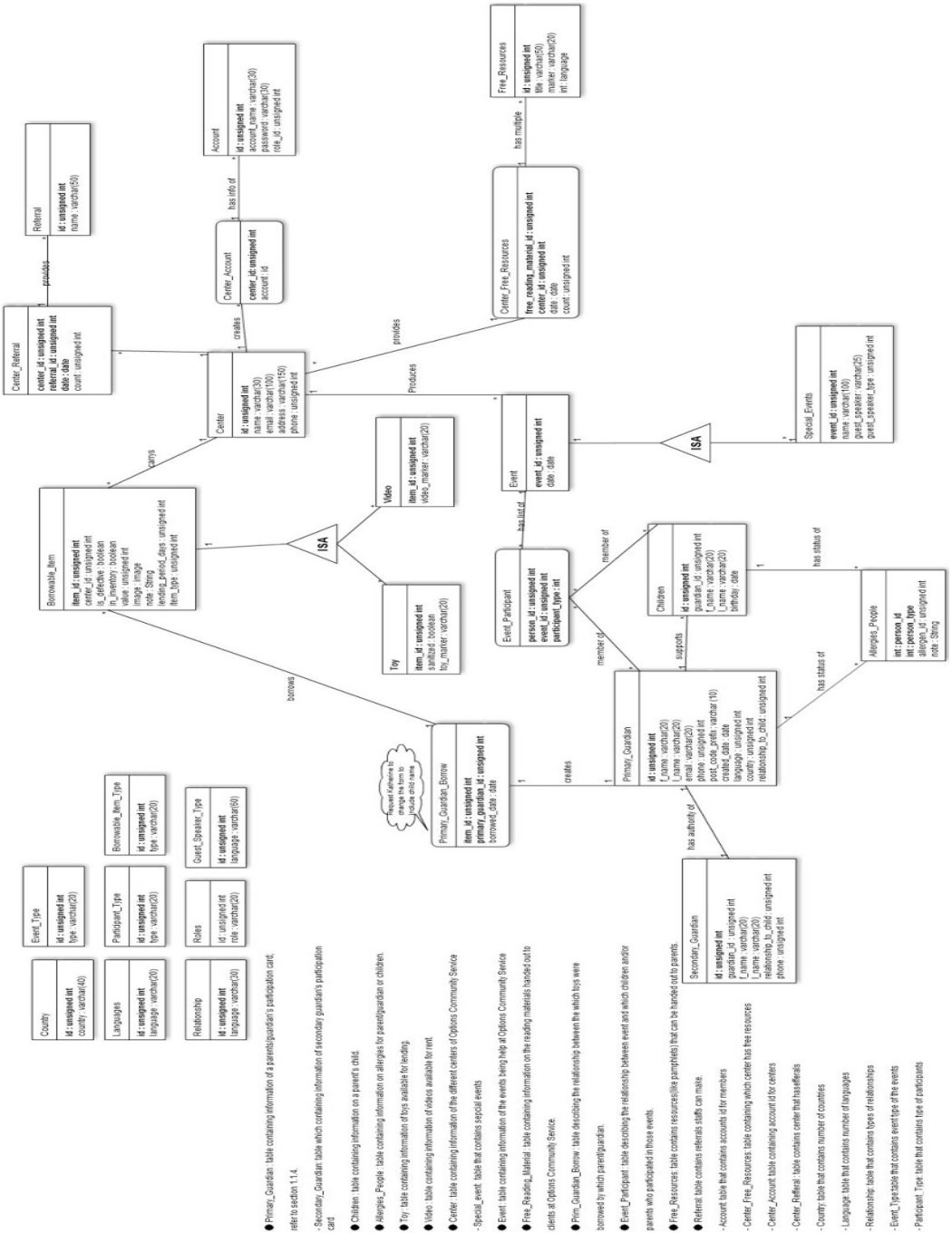


Staff users can <u>delete a library item*</u>



***Extra Features**

5.2 ER Diagram



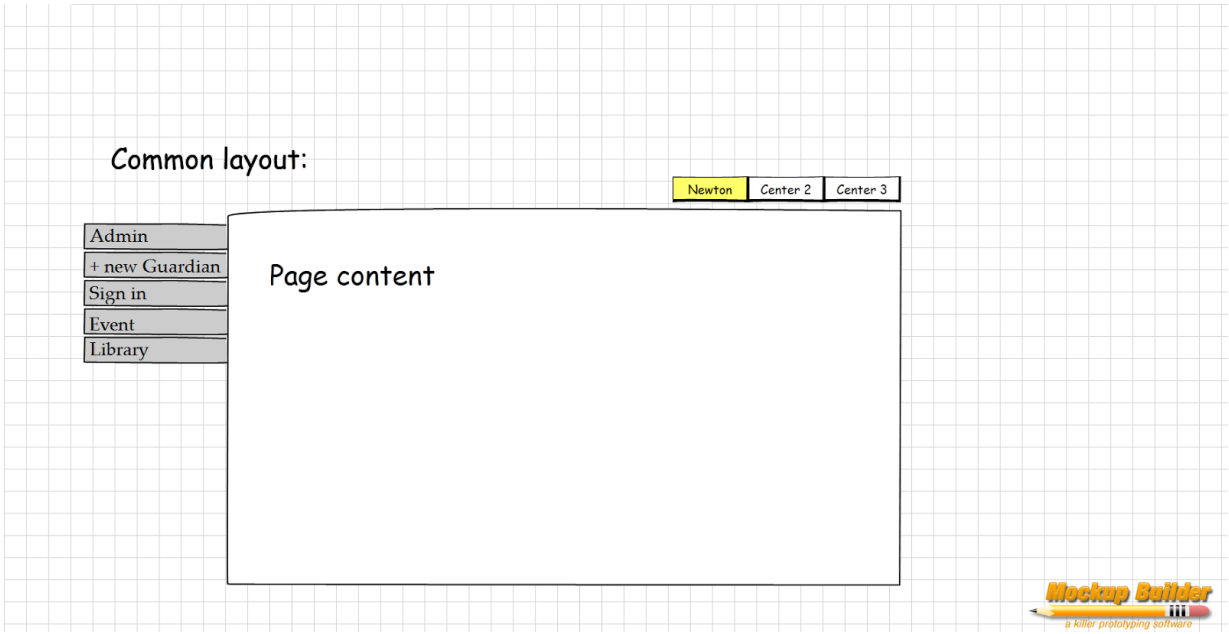
- Primary_Guardian : table containing information of a parent/guardian's pratticipation card. refer to section 1.1.4.
- Secondary_Guardian: table which containing information of secondary guardian's participation card
- Children : table containing information on a parent's child.
- Allergies_People : table containing information on allergies for parent/guardian or children.
- Toy: table containing information of toys available for lending.
- Video : table containing information of videos available for rent.
- Center: table containing information of the different centers of Options Community Service
- Special_event : table that contains especial events
- Event : table containing information of the events being help at Options Community Service
- Free_Reading_Material :table containing information on the reading materials handed out to clients at Options Community Service.
- Prim_Guardian_Borrow :table describing the relationship between the which toys were borrowed by which parent/guardian.
- Event_Participant :table describing the relationship between event and which children and/or parents who participated in those events.
- Free_Resources :table contains resources(like pamphlets) that can be handed out to parents.
- Referral :table contains referrals staffs can make.
- Account :table that contains accounts id for members
- Center_Free_Resources :table containing which center has free resources
- Center_Account :table containing account id for centers
- Center_Referral : table contains center that hasreferrals
- Country :table that contains number of countries
- Language :table that contains number of languages
- Relationship :table that contains types of relationships
- Event_Type:table that contains event type of the events
- Participant_Type :table that contains type of participants

6 User Interface Design

6.1 Application Control

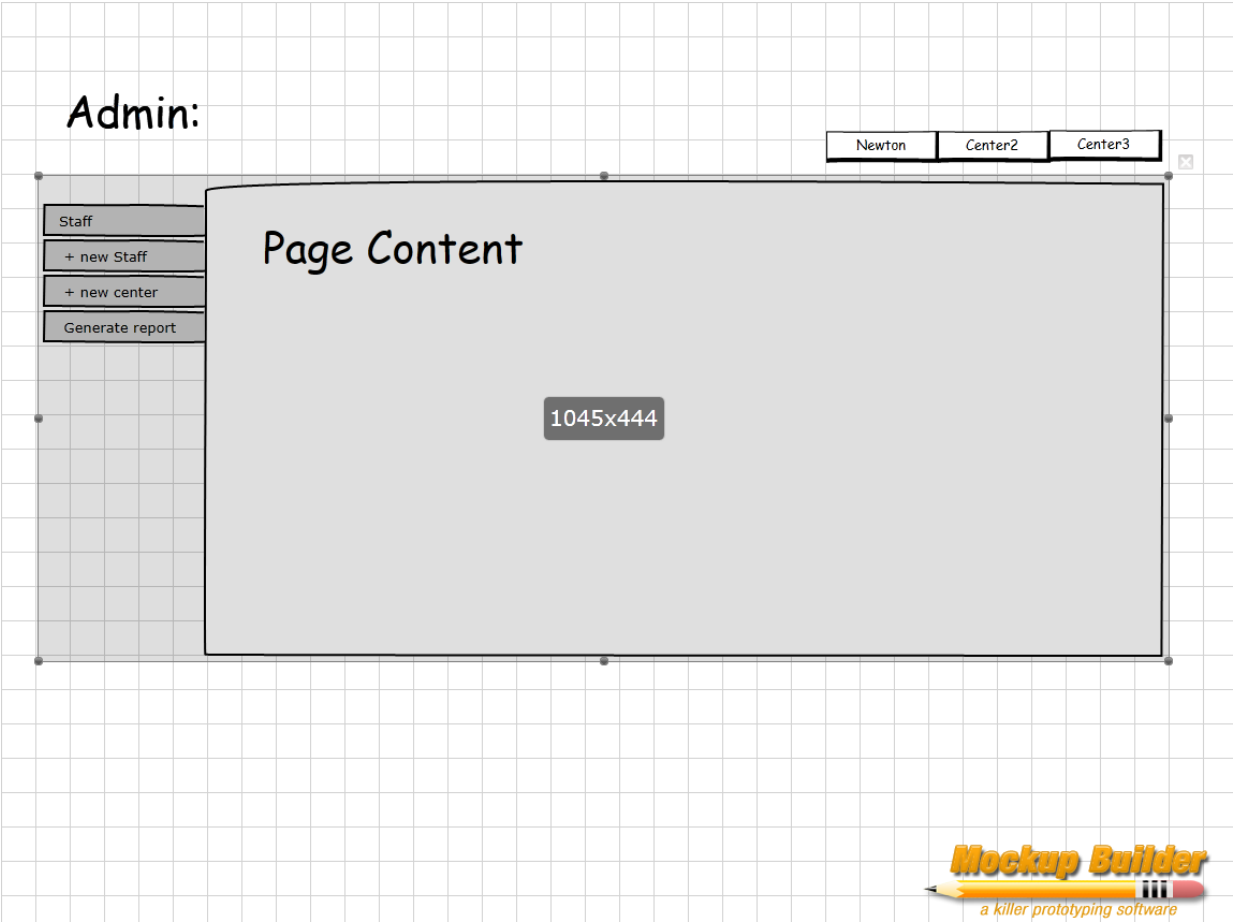
6.1.1 Common layout

This is the default template for staff user and admin user. The page content will be changed base on which tab is seleted. Only Admin user can click on the Admin tab. After the admin tab is clicked, the common layout will be changed to admin layout.



6.1.2 Admin layout

This page will be shown when the Admin tab is clicked. Only admin user can click this tab.



6.1.3 Basic UI element rule

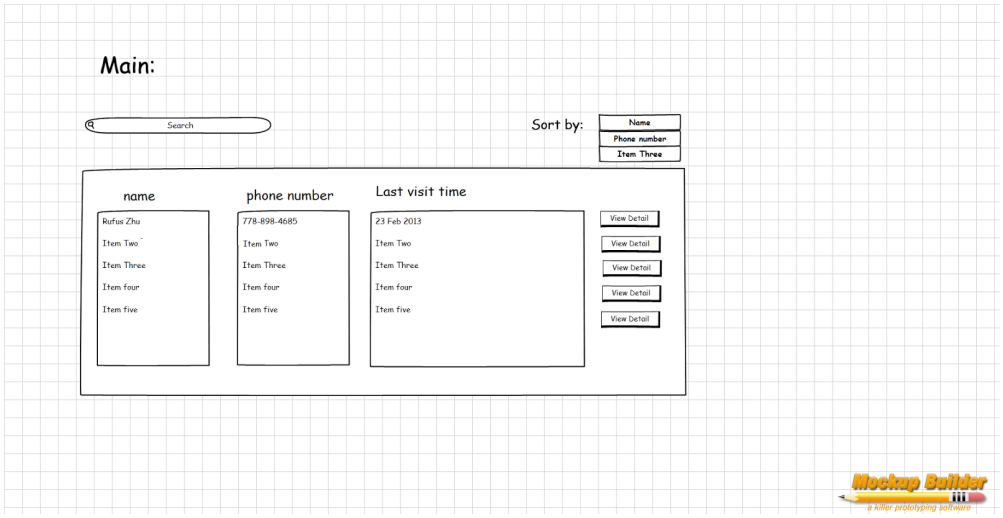
Page Tabs: The tab being seleted should be highlighted in yelow.

Center Tabs: Each center should has its own theme color(being defined when the center is created) . When a center is selected, that center's theme color should be displayed as backgroud color.

6.2 Screen 1..n

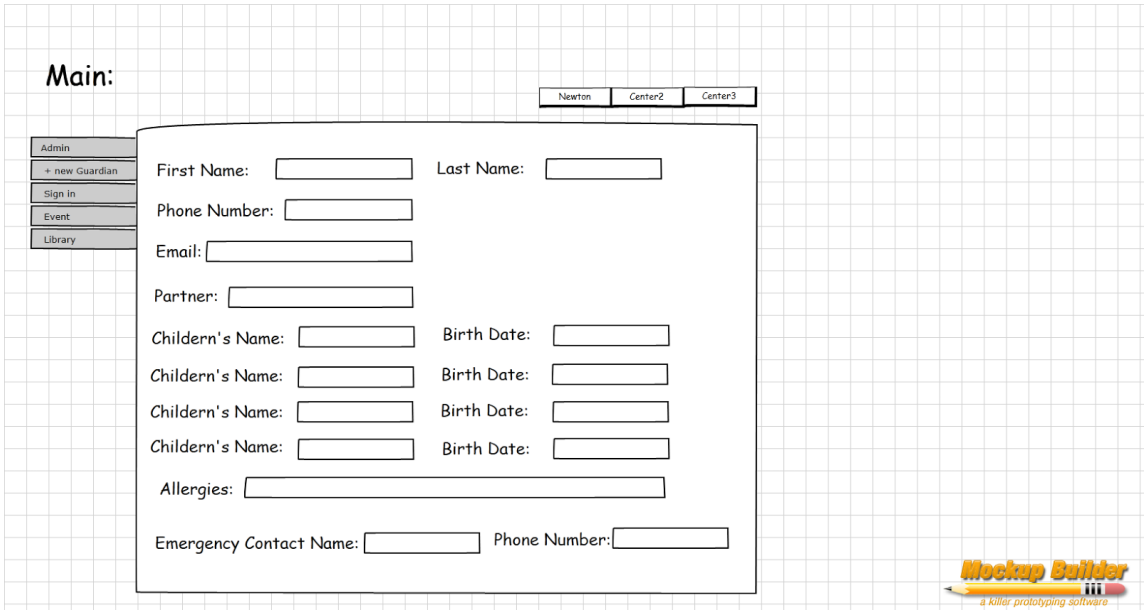
6.2.1 main page

This page will be shown when no tab is selected. All of the primary guardians in the database will be shown in a list.



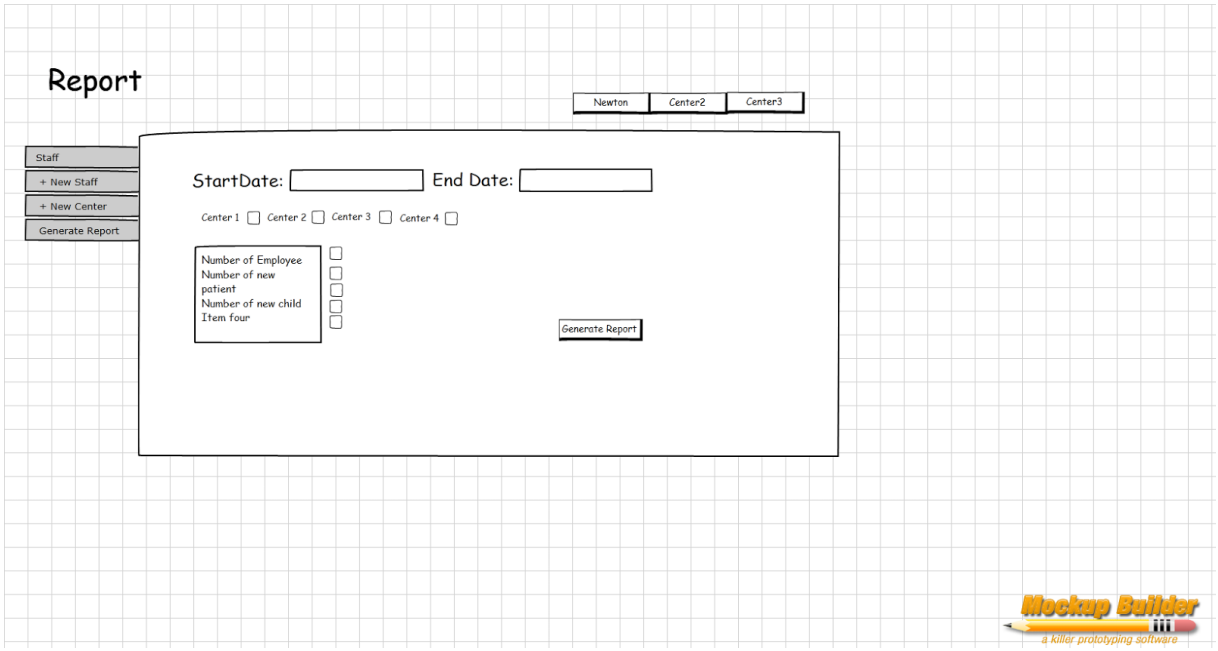
6.2.2 + new guardian

This page will be shown in the “page content” of common layout when the + new guardian tab is clicked. User can use this page to register a new patient to the database.



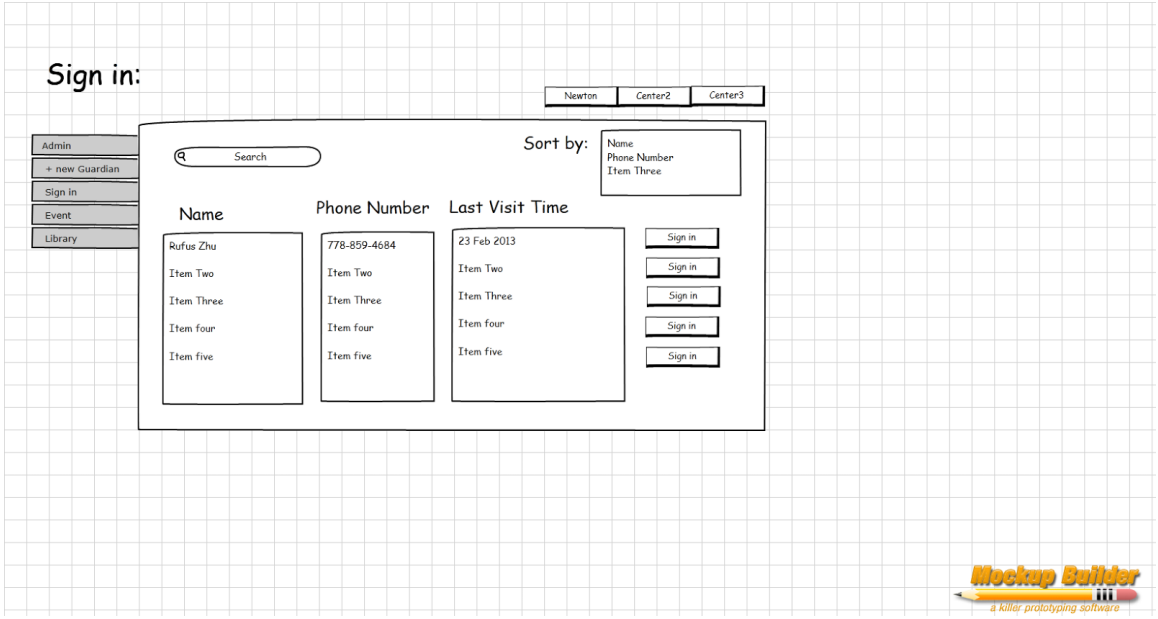
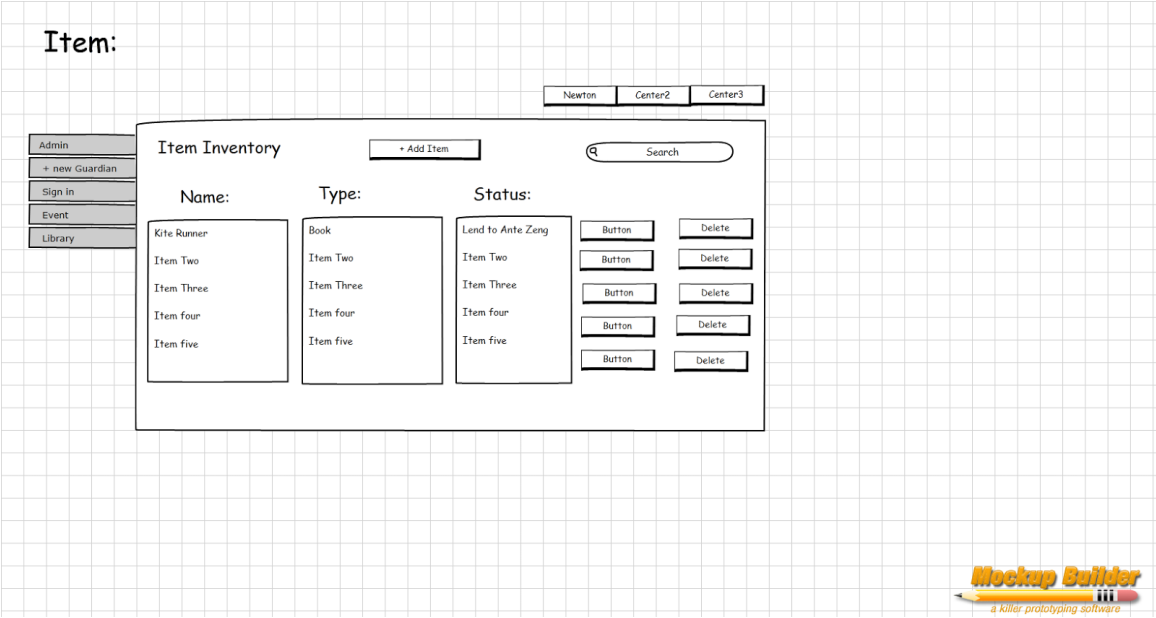
6.2.3 Generate report

This page will be shown in the “page content” of admin layout when the Generate report tab is clicked. Only admin user can click this tab.



6.2.4 Sign in

This page is for guardians to sign in. All of the primary guardians in the database will be shown in a list. It also has a search feature to find the guardians quickly.



6.2.6 Library item (Library item includes video, books, and toys)
This page will be shown when the library tab is selected. All of the items in the database will be shown in a list. It also has a search feature to find the items quickly.