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TIMELINEXPRESS SYSTEM REQUIREMENTS DOCUMENT

DRAFT

TEAM ALPHA

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INTRODUCTION

This document outlines the system requirements for the TimelineXpress software application. It serves as a detailed guide for stakeholders and the development team, clearly defining the features, functionalities, and specifications required for successful implementation. The document covers the primary purpose of the application, system capabilities, anticipated outputs, inputs, underlying processes, performance benchmarks, and security considerations. By ensuring that all requirements are meticulously detailed, this document aims to facilitate clear communication, effective project management, and successful delivery of a user-friendly timeline application.

DESCRIPTION MODEL

Output Requirements: The TimelineXpress application will generate visually appealing and user-friendly timelines that display milestone events and duration events. Users will have the capability to compare and display different timelines side by side, such as historical events versus personal events.

The system will feature a screen listing saved timelines by name, with the most recent timeline displayed first. From this list, users can delete unwanted timelines or open existing ones by double-clicking, which will display the timeline in a browser window, such as Google Chrome or Mozilla Firefox.

Once a timeline's data is entered, it will be stored for later retrieval and use. Detailed reports, including event correlations and summaries, will be available in printable formats or exportable to widely used file formats like PDF and CSV.

Input Requirements: The application will allow users to input and manage data related to timelines and events using intuitive methods such as graphical forms and drag-and-drop features. Controls will be in place to prevent erroneous or duplicate entries through validation rules during the input process.

Using a timeline creation window, users can create new timelines by entering a text-based name and specifying start and end dates. If no end date is provided, the timeline will automatically assume the present day as the end date. Each timeline will have an associated database for storing events, which are displayed on the timeline.

Data for individual events will be managed through an applet window, where users can input a name and a start date. Events without an end date will default to "milestone" type,

while events with both a start date and end date will be classified as “duration” type. The applet provides functionality to specify whether events are “visible” or “hidden” on their respective timelines, as well as options to delete events. Each event will include fields for a “Note/Description” and a “Category”. Users can toggle the visibility of the note/description and assign categories via a drop-down menu. The category menu begins with two predefined entries: “-“ (default unassigned category) and “add category” (for adding new categories). For each timeline, users can define the entries in the category menu.

Processes Requirements: TimelineXpress will process input data by validating and storing it in a relational database, ensuring data integrity and avoiding conflicts or duplicates. The system will provide robust functionality for querying, editing, and deleting entries, as well as executing advanced data filtering and correlation logic to enable users to customize their timeline views (e.g., filtering by time period or event category).

The application will support the creation of multi-layered timelines, where each layer represents a parallel time-axis running concurrently with the original. Adding a layer will generate a new time-axis displayed beneath existing axes. Initially, these layers will have no events, but users can assign specific events to particular layers, facilitating the visualization and comparison of parallel time-based events. Each layer’s time-axis can be displayed or hidden based on user preference.

Additionally, the system will generate timeline visualizations in real time, accommodating the layering structure and ensuring seamless integration of customized timeline views.

Performance Requirements: The system will be designed to ensure rapid and seamless performance. Basic user interactions, such as adding events or generating timelines, will have a response time benchmark of under two seconds. The application will support concurrent access by multiple users without any degradation in performance.

To maintain optimal performance, the system will utilize compact databases with the following restrictions:

- A maximum of 50 timelines per user.
- Up to 10 time-axes per timeline
- A limit of 250 events per timeline, which can be distributed across multiple time-axes.

Security Requirements: Security will be a top priority for TimelineXpress. The system will use secure authentication protocols, including multi-factor authentication (MFA), to safeguard user accounts. Users will log in with a username formatted as a valid email address , and the creation of a new account will require email verification. Passwords must adhere to the following security and complexity requirements:

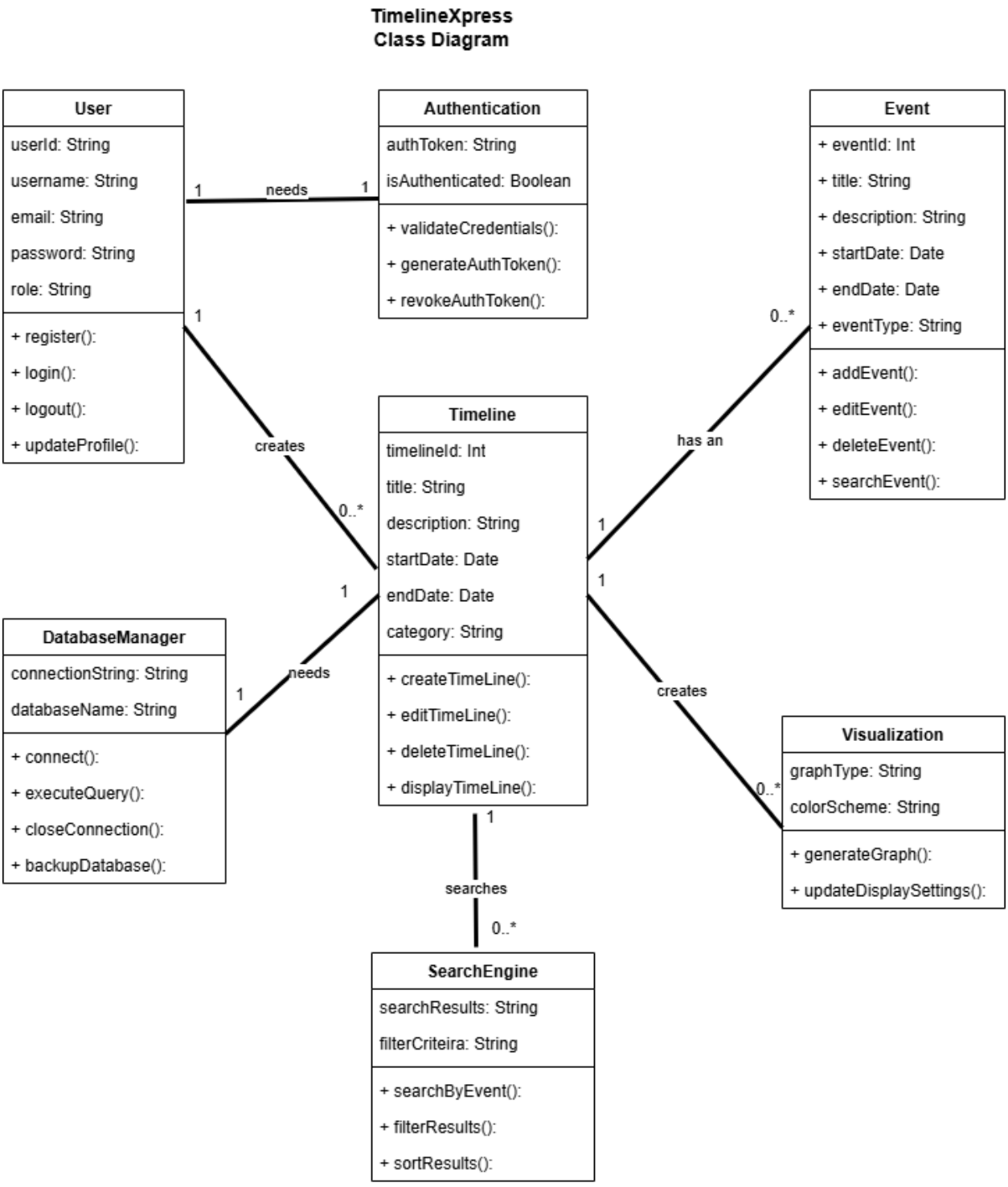
- A minimum length of 10 characters.

- At least one upper-case letter, one lower-case letter, one numeral, and one special character.
- A history of 24 passwords must be maintained before a password can be reused.

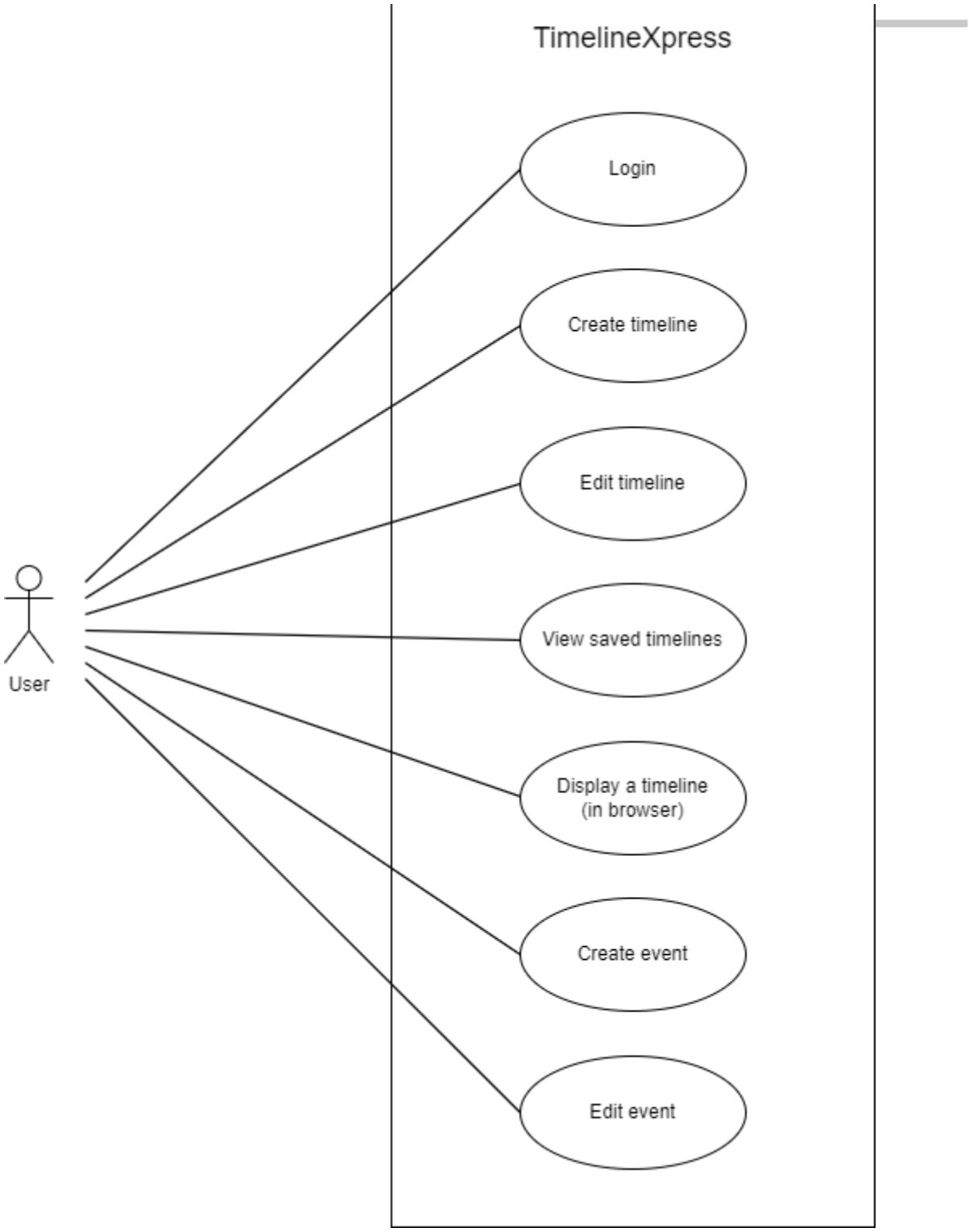
To ensure rapid and secure access management, a third-party identity access management service will handle password-related services, including password resets and login audit capabilities.

All data transmitted between the client and server will be encrypted using HTTPS. The database will implement role-based access controls (RBAC) to restrict access to sensitive data, ensuring appropriate levels of access based on user roles. Additionally, regular security audits and vulnerability assessments will be conducted to maintain the application's integrity.

CLASS DIAGRAM



USE CASE DIAGRAM


TimelineXpress
Login
Create timeline
Edit timeline
View saved timelines
Display a timeline
(in browser)
Create event
Edit event
User

USE CASE SCENARIOS

USE CASE LOGIN

USE CASE TITLE:	Login		
Primary Actor:	User		
Full Description:			
The user logs in to the system to access the system's functionality.			
Stakeholders:	User, administrator		
Preconditions:			
The user has an internet connection.			
The user is a registered with TimelineXpress.			
Trigger:			
The user chooses to login.			
Postconditions:			
The user is connected to the TimelineXpress application and its functionality.			
Main Success Scenario:			
Actor Actions:		**System Response:**	
1. The user provides a valid Id and password.		2. The system validates the user.	
Alternate Scenario:			
Actor Actions:		**System Response:**	
Exceptions:			
Actor Actions:		**System Response:**	
1. User provides incorrect credentials.		2. System responds with: "Account not found, retry and check spelling." After several failed attempts, system responds with: "Account not found. Contact system administrator."	
1. No internet connection.		2. Error message stating: "You are not connected to the internet, please check your connection."	

USE CASE CREATE TIMELINE

USE CASE TITLE:	Create Timeline
Primary Actor:	User
Full Description:	

The user creates a timeline by assigning it with a name, an optional category, an optional description, a starting date and an optional ending date (if none specified, then default to present date).			
Stakeholders:	User		
Preconditions:			
The user must be currently logged in and have enough allotted memory in their account to create another timeline. There are certain information requirements to create the new timeline. The timeline name cannot be duplicated.			
Trigger:			
The user chooses to create a timeline.			
Postconditions:			
The user has created a timeline.			
Main Success Scenario:			
Actor Actions:		**System Response:**	
1. The user chooses to create a new timeline. 3. The user fills out the form menu of timeline data requirements.		2. The system responds with a form menu of timeline data requirements that the user will need to fill out. These form items include timeline name, timeline category, description, start date, end date. 4. The system records the new timeline form information.	
Alternate Scenario:			
Actor Actions:		**System Response:**	
Exceptions:			
Actor Actions:		**System Response:**	
1. The user attempts to create a new timeline when there is not enough allotted system memory to do so.		2. The system responds with a message stating that the user has used all allotted system memory and will need to delete a current timeline to create a new timeline.	

3. The user attempts to create a timeline with a timeline name that already exists.	4. The system responds with a message that states the timeline name already exists and the new timeline will need to be renamed.

USE CASE EDIT TIMELINE

USE CASE TITLE:	Edit Timeline		
Primary Actor:	User		
Full Description:			
The user edits a timeline by changing the associated information including name, category, description, start date, and end date. The user can also choose to delete a timeline.			
Stakeholders:	User		
Preconditions:			
The user must be currently logged in and have a timeline to edit.			
Trigger:			
The user chooses to edit a timeline.			
Postconditions:			
The user edited a timeline.			
Main Success Scenario:			
Actor Actions:		**System Response:**	
1. The user chooses to edit a new timeline. 3. The user fills out the form menu for timeline data to be edited.		2. The system responds with a form menu of which timeline information that the user will need to fill out for the edit. These form items include timeline name, timeline category, start date, end date. 4. The system records the newly edited timeline form information.	
Alternate Scenario:			
Actor Actions:		**System Response:**	
Exceptions:			
Actor Actions:		**System Response:**	

1. The user attempts to edit a timeline when they currently have no timelines created.	2. The system responds with a message stating that the user has no timelines that can be edited.

Use Case: Display a Timeline

Use Case Title:	Display a Timeline		
Primary Actor:	User		
Full Description:			
A user views one of their saved timelines, zooms in or out, pans left or right along the timeline, adds a layer to, or deletes a layer from a timeline.			
Stakeholders:	User, Administrator		
Preconditions:			
A user has logged into the TimelineXpress application. At least one timeline has been created and saved. A user is viewing a list of their saved timelines.			
Trigger:			
A user wants to view a saved timeline			
Postconditions:			
Timeline is displayed in a browser window.			
Main Success Scenario:			
Actor Actions:		**System Response:**	
1. The user invokes an action to select and view a specific timeline.		2. The system creates a browser window which displays a default view of the chosen timeline.	
3. The user observes the current view of the timeline.			
4. The user saves and exits the timeline			
Alternate Scenario: Zoom-in or zoom-out			
Actor Actions:		**System Response:**	

3A.1 The user wishes to zoom-in (to a shorter timespan with more detail) or zoom-out (to a longer timespan with less detail).	3A.2. The system provides a zoomed-in or zoomed-out view of the timeline, as appropriate.
Alternate Scenario: Pan-left or pan-right	
Actor Actions:	**System Response:**
3B.1 The user wishes to pan-left (towards the past) or pan-right (towards the future) along the current view of the timeline.	3B.2. The system allows for panning left or right along the current view.
Alternate Scenario: add a time-axis layer	
Actor Actions:	**System Response:**
3C.1 The user wishes to add another parallel time-axis (i.e., a layer) on which more events can be populated.	3C.2 The system adds a layer beneath existing layers.
Alternate Scenario: turn-on or turn-off axis display	
Actor Actions:	**System Response:**
3D.1 The user wishes to turn-on or turn-off the display of the time-axis on a particular layer.	3D.2 The system either displays or hides the time-axis on the layer as appropriate.
Exceptions:	
Actor Actions:	**System Response:**
Excpt3C.2. Exceeds maximum of 10 layers per timeline.	Excpt3C.3 The system displays an error message, “exceeds maximum layers”.
Excpt4.1 Exceeds maximum of 50 saved timelines.	Excpt4.2 The system displays an error message, “exceeds maximum number of saved timelines”.

USE CASE VIEW SAVED TIMELINES

USE CASE TITLE:	View Saved Timelines		
Primary Actor:	User		
Full Description:			
The user navigates to a screen in the TimelineXpress application that shows a list of the user’s saved timelines.			
Stakeholders:	User, administrator		
Preconditions:			
The user is logged into the TimelineXpress application. The user is currently viewing the home page of the application.			
Trigger:			
The user chooses to view a list of their saved timelines.			
Postconditions:			

The user is viewing the page that lists the user's saved timelines.			
Main Success Scenario:			
Actor Actions:		**System Response:**	
1. The application provides a way to navigate from the home page to a page that lists the user's saved timelines.		2. The user is viewing the page that lists their saved timelines.	
Alternate Scenario:			
Actor Actions:		**System Response:**	
2A.1 The user deletes a timeline from the list of saved timelines.		2A.2 The application provides a message asking the user to confirm that they want to delete the timeline.	
2A.3 The user confirms that they want to delete the timeline.		2A.4 The list of saved timelines is updated, and the user is viewing the page that lists their timelines.	
Exceptions:			
Actor Actions:		**System Response:**	
Excpt 2A.3 The application provides a way to cancel the "delete timeline" instruction.		Excpt 2A.4 The timeline is not deleted, and the application returns to step 2.	

Use Case Create Event

Use Case Title:	Create Event		
Primary Actor:	User		
Full Description:			
The user creates an event that can be displayed on a timeline. Information such as date, names, text description are associated with the event.			
Stakeholders:	User, administrator		
Preconditions:			
The user must be logged in to the app. The user must have permission to create an event.			
Trigger:			
Authorized user or creates an event.			
Postconditions:			

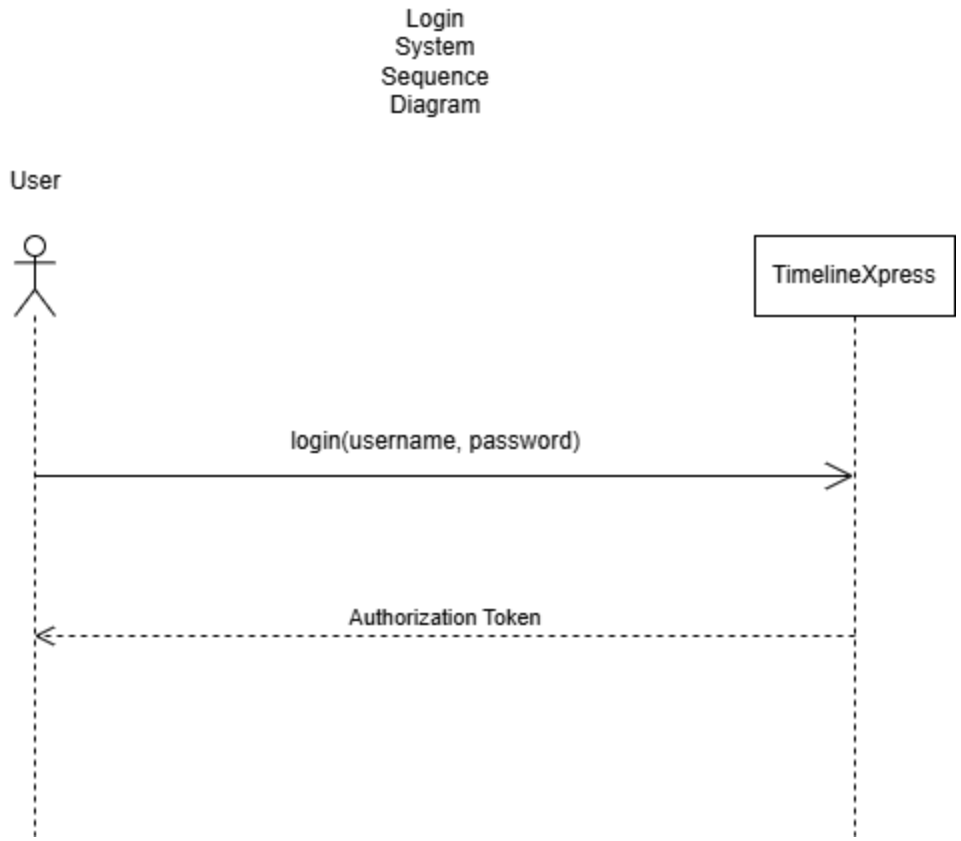
The event is created and saved in database. The user received confirmation that the event was created. The event is visible on a timeline. The event has proper tags and features.	
Main Success Scenario:	
Actor Actions:	**System Response:**
1. The user selects to create a milestone type event.	2. The app prompts the user to fill out necessary information for the event such as: a. Event title b. Event description c. Date and Time
3. User commits the event data.	4. System updates database and provides feedback.
Alternate Scenario:	
Actor Actions:	**System Response:**
1. The user selects to create a duration type event.	2. The app prompts the user to fill out necessary information for the event such as: a. Event title b. Event description c. Start date d. End date
3. User commits the event data.	4. System updates database and provides feedback.
Exceptions:	
Actor Actions:	**System Response:**
Except2.1 If the user provides invalid or incomplete information, for example missing name, the app prompts them to back fix the error with a message like "Please enter a valid name"	Except2.2 The app prompts user to fix the error with a message like "Please enter a valid name".

Use Case Edit Event

Use Case Title:	Edit event
Primary Actor:	User
Full Description:	
The user modifies the details of an existing historical event within the app's database.	

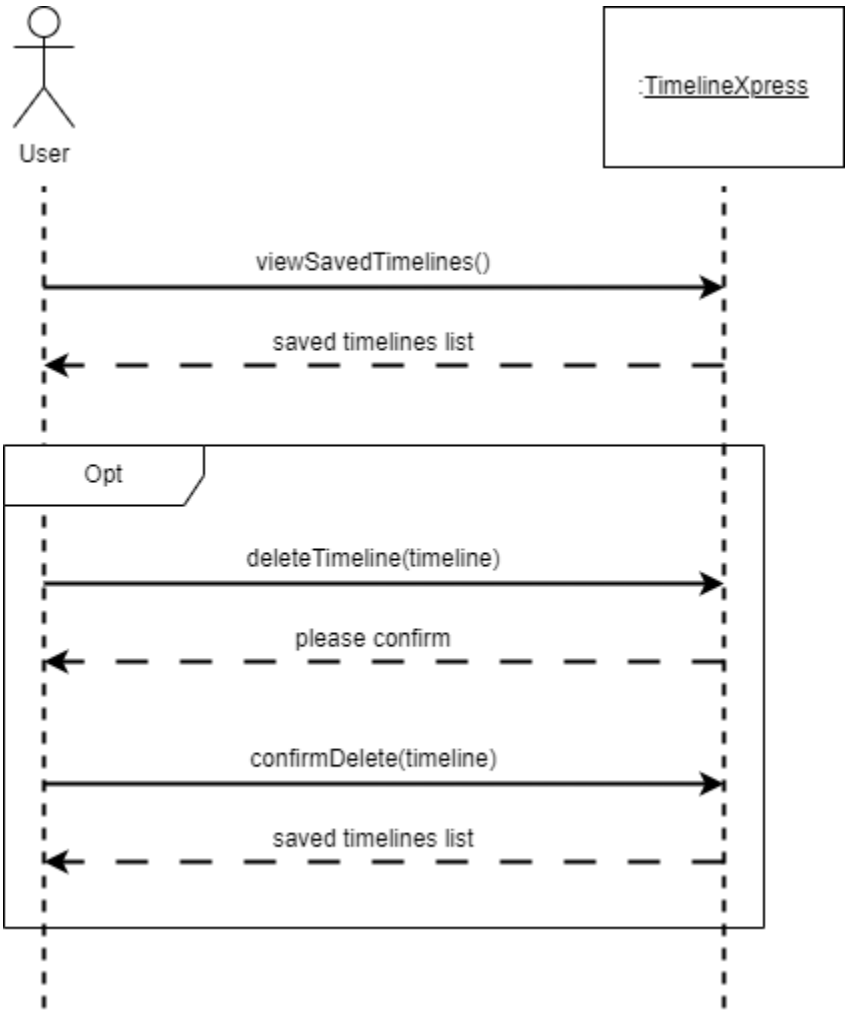
Stakeholders:	User, administrator		
Preconditions:			
The user must be logged in to the app. The user has already added at least one event to their history timeline or database.			
Trigger:			
User edits an event for required correction or update.			
Postconditions:			
The event is successfully updated with new information (name, date, description, etc.). The event appears with updated details in the user's timeline view.			
Main Success Scenario:			
Actor Actions:		**System Response:**	
1. User wants to edit an event.		2. The app prompts the user to edit/fill out necessary information for the event such as: a. Event title b. Event description c. Start date d. End date	
3. User commits the event data.		4. System updates database and provides feedback.	
Exceptions:			
Actor Actions:		**System Response:**	
Except2.1 If the user provides invalid or incomplete information, for example missing name, the app prompts them to back fix the error with a message like "Please enter a valid name"		Excdpt2.2 The app prompts user to fix the error with a message like "Please enter a valid name".	

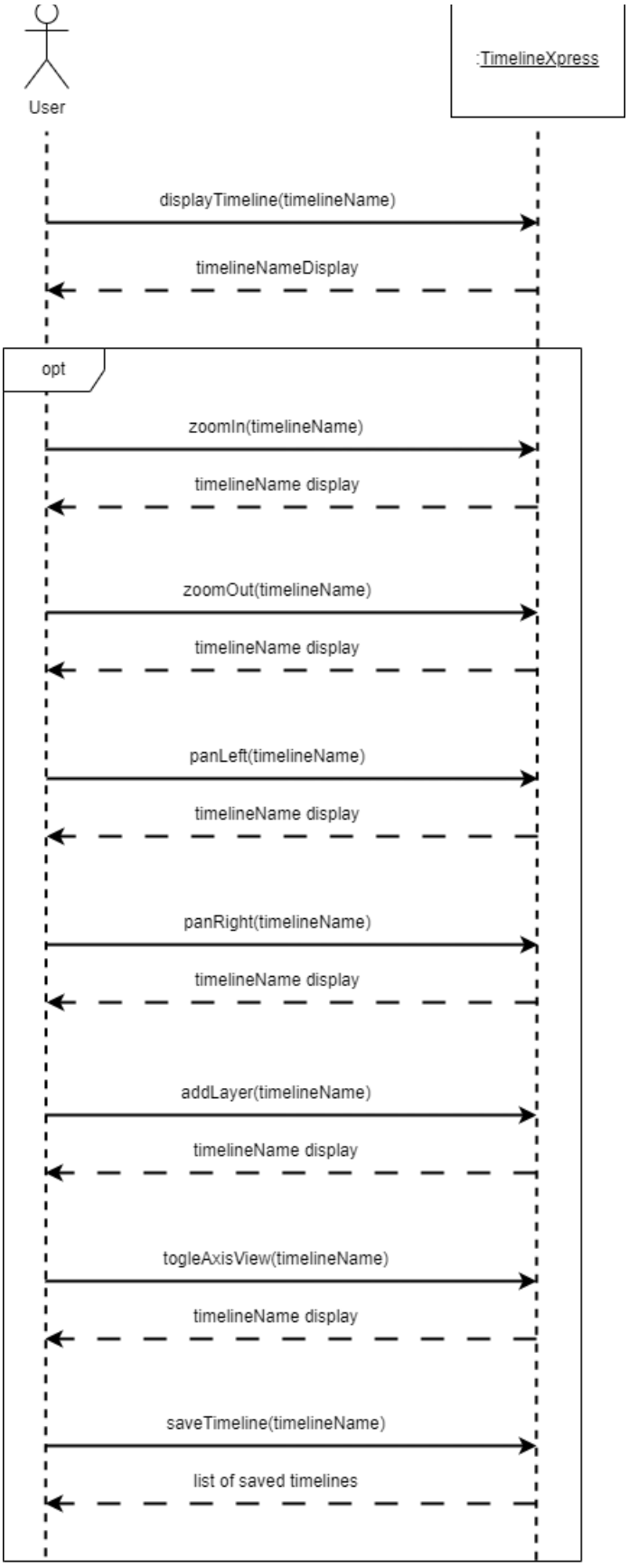
SYSTEM SEQUENCE CHARTS

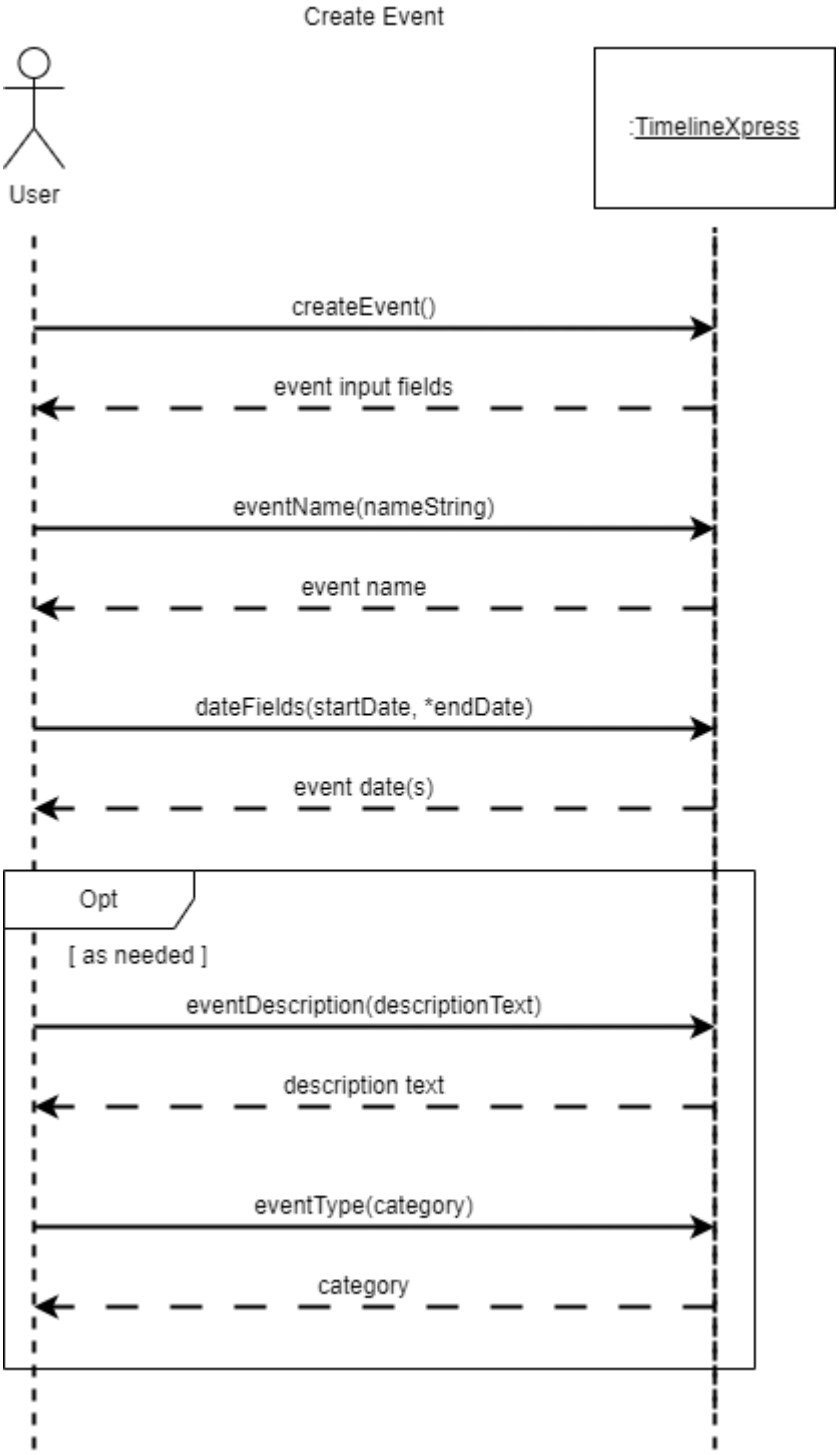


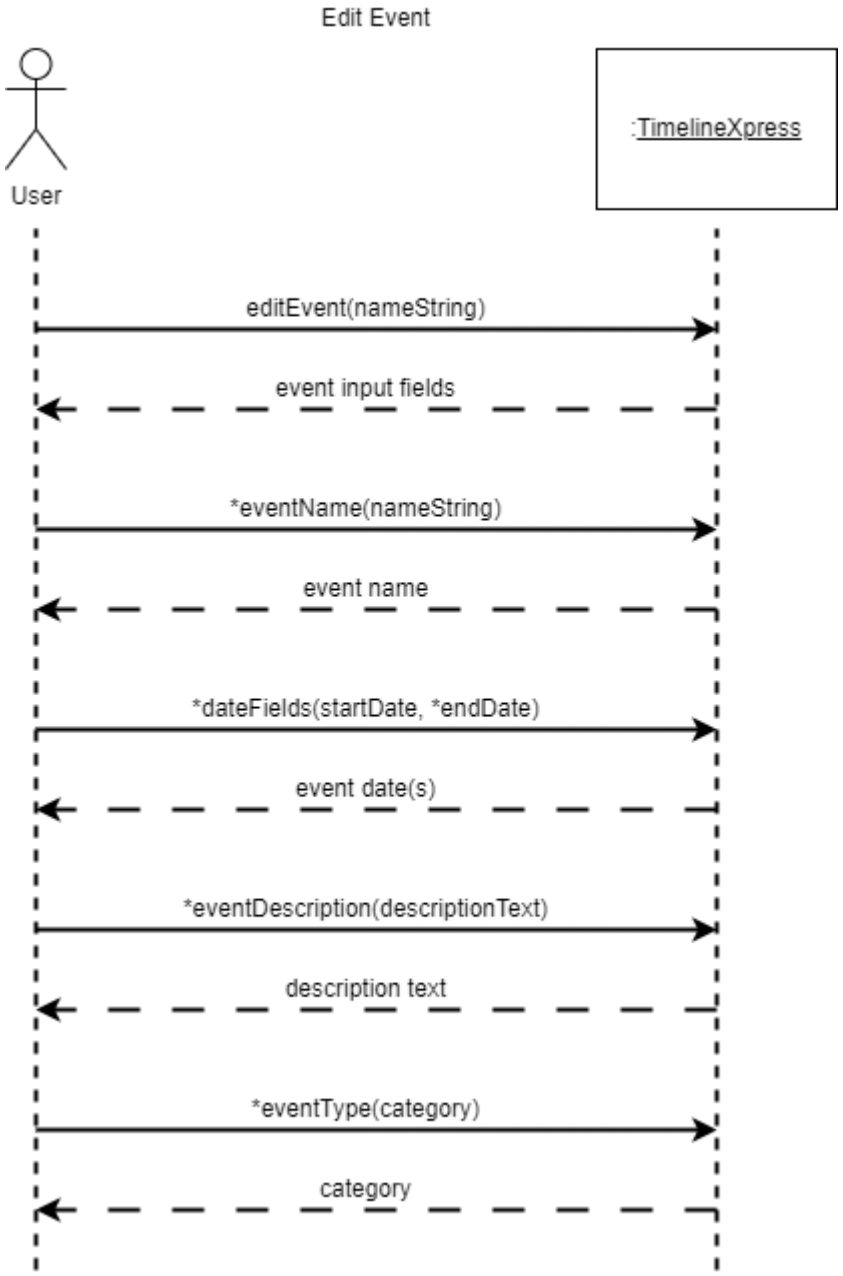
Create Timeline
System
Sequence
Diagram

Edit Timeline
System
Sequence
Diagram


User
:TimelineXpress
viewSavedTimelines()
saved timelines list
Opt
deleteTimeline(timeline)
please confirm
confirmDelete(timeline)
saved timelines list


User
:TimelineXpress
displayTimeline(timelineName)
timelineNameDisplay
opt
zoomIn(timelineName)
timelineName display
zoomOut(timelineName)
timelineName display
panLeft(timelineName)
timelineName display
panRight(timelineName)
timelineName display
addLayer(timelineName)
timelineName display
togleAxisView(timelineName)
timelineName display
saveTimeline(timelineName)
list of saved timelines


Create Event
User
:TimelineXpress
createEvent()
event input fields
eventName(nameString)
event name
dateFields(startDate, *endDate)
event date(s)
Opt
[as needed]
eventDescription(descriptionText)
description text
eventType(category)
category


Edit Event
User
:TimelineXpress
editEvent(nameString)
event input fields
*eventName(nameString)
event name
*dateFields(startDate, *endDate)
event date(s)
*eventDescription(descriptionText)
description text
*eventType(category)
category