

Lifelog Business Requirements Document

Version 6

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Link to GitHub Repository

<https://github.com/Peace491/Life-Log>

Version History

Date	Version Number	Changes Made
10/11/2023	1	Initial BRD submission.
11/2/2023	2	Second BRD “finalized” draft: Modifications based on feedback from first submission. Added Core components. Added Descoped features.
11/4/2023	3	Implemented feedback delivered by client on 11/4. Modified Logout, Authentication, Default Behaviors, and general formatting.
11/5/2023	4	Readded user permission matrix, adjusted abrupt user story endings, moved the app permission matrix and user permission matrix into appendices, updated color of headers
11/5/2023	5	Updated the way one time password is defined, with respect to input and outcomes.
11/5/2023	6	Added input for account recovery

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Product-Wide Scope

Initially we will deploy the Lifelog application online as a single page web application. There will be support for Chrome desktop version 105.0.5195.127 and later on standard display resolution (1920 x 1080 pixels), and the mobile version of Chrome. The app will initially be deployed specifically to Los Angeles County, meaning it will only cover the Pacific time zone. Lifelog will have an integrated calendar, following the Gregorian calendar. The supported language will be American English. Units of measurement will be the Imperial system. Lifelog uses a 12-hour clock. Lifelog recommends a minimum connection speed of 15 MBps to utilize the application. Lifelog will utilize external data for some of its services, namely a publicly available database of quotes for the “Motivational Quote” feature. Lifelog is also expecting to use some third party services for the “Interactive Geospatial Map” feature, specifically the Google Places API, Google Maps API, and the Map Static API. There will be no direct user to user communication in Lifelog.

Distinct User Types

Root Admin:

- This role is initialized with the system.
- There is only one Root Admin.
- The Root Admin has the following permissions in the persistent data store:
 - Create: The Root Admin has unrestricted table create access
 - Delete: The Root Admin has unrestricted table delete access
 - Read: The Root Admin has unrestricted table read access
 - Write: The Root Admin has unrestricted table write access
- The Root Admin's responsibility is to delegate Admin permissions to admin users.

Admin:

- This role is delegated by the Root Admin to moderate the system once it is online.
- There can be many Admin users.
- The Admin role has the following permissions in the persistent data store:
 - Create: The Admin does not have table create access
 - Delete: The Admin does not have table delete access
 - Read: The Admin has unrestricted table read access
 - Write: The Admin has unrestricted table write access
- The responsibility of an Admin is to utilize the usage dashboard to monitor activity of Normal Users and identify issues with the application

Normal User:

- People who use the app for inspiration, motivation, or to document their goals.
- There can be many Normal User type users
- This role will be granted to any user who has registered an account for the application. They will need to be authenticated to have access to their permissions.
- The Normal User role has the following permissions in the persistent data store:
 - Create: Normal User does not have table create access
 - Delete: Normal User can delete their own user data
 - Read: Normal User can read their own user data
 - Write: Normal User can write to their own user data
- The responsibility of a Normal User is to manage personal LLIs^[3].

Anonymous User:

- People who access the application without being authenticated.
- The Anonymous User role has the following permissions in the persistent data store:
 - Create: Anonymous User does not have table create access
 - Delete: Anonymous User does not have table delete access
 - Read: Anonymous User cannot read their own user data
 - Write: Anonymous Users cannot write to their own data
- This role will be granted to any user who visits the website.
- The responsibility of an Anonymous User is to preview the application and register for a Normal User account

Core Components Requirements

Security

Authentication

A1 User Story: Authentication

As a registered, unauthenticated user, I can attempt to authenticate my account to be identified as a registered user of the system, gaining access to secure features.

Effort Points (Hour) - 100

Complexity Scale: Medium

User Input

Required Input

- Valid security credentials consist of a valid username and valid time-based one-time password (OTP)
- Username
 - The username is the user's email
 - Must be in the [xxxxx@xxxx.xxx](#) format
 - Must not be in used by any other Lifelog account
 - Is not nullable
- OTP is defined in NIST SP 800-63b section 5.1.4.1
 - OTP must be at minimum 8 characters
 - Valid characters will consist of the following:

- a-z
- A-Z
- 0-9
- Is not nullable

App Permissions

- Permission: Write
- Scope: Any unauthenticated user attempting to use the system can attempt to authenticate

Target Audience - Unauthenticated Anonymous Users

Pre-conditions

1. Users must not already have an active authenticated session with the system on the current device, otherwise authentication is not possible.
2. Users must be on Login view or attempting to access a protected resource as defined in Authorization

Success Outcome(s)

- The system requires the user to authenticate
- The user submits valid security credentials as defined in the User Input section
- The user is automatically navigated to the home view upon successful authentication
- If user is already authenticated, the user should not be able to reach Login view or login functionality
- The generated OTP expires in 2 minutes
- The generated OTP is no longer valid upon successful use
- The authentication attempt is logged in the persistent data store

- The log includes the following:
 - Timestamp
 - When the user is successfully authenticated
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “User authentication successful.”

Failure Outcome(s)

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The user does not submit valid security credentials as defined in the User Input section
 1. The email is not in the [xxxx@xxxx.xxx](#) format. In this case, “Email must be in the [xxxx@xxxx.xxx](#) format. Please try again.”. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The email is not in the correct format.”
 2. The OTP is less than 8 characters long. In this case, “OTP must be at least 8 characters long. Please try again.”. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The OTP is too short.”
 3. The OTP contains a character that is outside the scope defined in the

User Input. In this case, “OTP must only contain alphanumeric characters. Please try again.”. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Data
- Log Message: “The OTP contains invalid characters.”

4. The user enters an OTP over 2 minutes old. In this case, “This OTP has expired. Please try again.” is displayed to the user. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Data
- Log Message: “The user provided an expired OTP .”

5. The user leaves one of the fields blank. In this case, “This field must not be empty” is displayed to the user. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Data
- Log Message: “The OTP contains empty fields.”

- The system does not send OTP email. In this case, “OTP email send failed.” is displayed. The system will attempt to asynchronously log the following:

- Log Level: ERROR
- Log Category: Business
- Log Message: “OTP email send failed.”

- The system sends an invalid OTP. In this case, “Invalid OTP used. Please request a new OTP.” is displayed. The system will attempt to asynchronously log the following:

- Log Level: ERROR
- Log Category: Business

- Log Message: “Invalid OTP used. Please request a new OTP.”
- Upon successful authentication, the user is not automatically navigated to the home view
- Upon successful authentication, the user is automatically navigated to a view that is not the home view
- The user submits the credentials for a disabled account. In this case, there is a message saying “Account is disabled. Perform account recovery first or contact system administrator.”. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Invalid Credential. User Account is disabled.”
- The user submits invalid credentials. In this case, there should be a message saying “Invalid security credentials provided. Retry again or contact system administrator.”. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Invalid Credential.”
- The authentication attempt is not logged in the persistent data store, if the user successfully authenticate their account
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The authentication attempt was not recorded to the persistent data store.”
- The authentication attempt is logged, but it does not accurately depict any of

the following information

- Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
- Log Level: Info, Debug, Warning, or ERROR
- Log Category: View, Business, Server, Data, or Persistent Data Store
- Log Message: Context about where the log is coming from

A2 User Story: Invalid Authentication

As an unregistered user, I can attempt to authenticate to gain access to secure features of the system.

Effort Points (Hour) - 50

Complexity Scale: Low

User Input

Required Input

- Security credentials consist of a valid username and valid time-based one-time password (OTP)
- Username
 - The username is the user's email
 - Must be in the [xxxxx@xxxx.xxx](#) format
 - Must not be in used by any other Lifelog account
 - Is not nullable
- OTP is defined in NIST SP 800-63b section 5.1.4.1
 - OTP is changed upon every successful use
 - OTP expires every 2 minutes
 - OTP must be at minimum 8 characters
 - Valid characters will consist of the following:

- a-z
- A-Z
- 0-9
- Is not nullable

App Permissions

- Permission: Read
- Scope: Any unauthenticated user attempting to use the system can attempt to authenticate

Target Audience - Unauthenticated Anonymous Users

Pre-conditions

1. Users must not already have an active authenticated session with the system on the current device, otherwise authentication is not possible.
2. Users must be on Login view or attempting to access a protected resource as defined in Authorization

Success Outcome(s)

- The system requires the user to authenticate
- The user submits valid security credential inputs as defined in the User Input section
- The credentials do not match an existing user account. In this case, the user will receive the message “We’re sorry, an account with these credentials does not exist. Please check your username/password and try again. If you don’t have a Lifelog account, please register!”. The user will stay on the sign in page. They do not have access to secure features of the system.
- The failed authentication attempt is logged in the persistent data store

- The log includes the following:
 - Timestamp
 - When the user is unsuccessfully authenticated
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Business
 - Log Message: “User authentication attempted with presented credentials not linked to an account.”

Failure Outcome(s)

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The user does not submit valid security credentials as defined in the User Input section
 1. The email is not in the [xxxx@xxxx.xxx](#) format. In this case, “Email must be in the [xxxx@xxxx.xxx](#) format. Please try again.”. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The email is not in the correct format.”
 2. The OTP is less than 8 characters long. In this case, “OTP must be at least 8 characters long. Please try again.”. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The OTP is too short.”

3. The OTP contains a character that is outside the scope defined in the User Input. In this case, “OTP must only contain alphanumeric characters. Please try again.”. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The OTP contains invalid characters.”
 4. The user leaves one of the fields blank and tries to submit. In this case, “This field must not be empty” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The OTP contains empty fields.”
- The credentials do not match an existing user account, but the user is still authenticated and has access to secure features of the system.
 - Unrecoverable
 - The failed authentication attempt is not logged in the persistent data store, if the user fails to authenticate their account
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The failed authentication attempt was not recorded to the persistent data store.”
 - The failed authentication attempt is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Log Level: Info, Debug, Warning, or ERROR
- Log Category: View, Business, Server, Data, or Persistent Data Store
- Log Message: Context about where the log is coming from

Authorization

A mechanism for restricting access to protected resources (e.g. functionalities, data, and views) of Lifelog to only valid users

Effort Points (Hour) - 50

Complexity Scale: Medium

App Permissions

- Permission: Read
- Scope: Any user attempting to use the system

Target Audience - Authenticated Users

Pre-conditions

1. User must be authenticated to enforce user-specific restrictions
2. User account must be active (not disabled)

Success Outcome(s)

- The operation and timestamp of each unauthorized access will be recorded by the system
- The system must prevent unauthorized users from viewing, modifying or deleting any protected data (scalar or aggregate data)

- The system must prevent unauthorized users from executing any protected functionality
- The system must prevent unauthorized users from viewing or interacting with any protected views
- Any user access modifications should be active upon the next successful authentication by user
- Access is granted when the user attempts to access a protected functionality within authorization scope
- Access is granted to perform read operations when the user attempts to access protected data within authorization scope.
- Access is granted to perform write operations when the user attempts to modify protected data within authorization scope
- Access is granted to the view when the user attempts to access protected views within authorization scope
- System failures from this feature must not result in the system going offline
- The authorization attempt is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the user is successfully authorized
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: "User authorization successful."

Failure Outcome(s)

Every failure outcome's log will have it's "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss

format, relative to UTC

- Unauthorized access is not recorded by system when authorization fails. In this case, the system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Unauthorized access failed to be recorded by the system."
- User attempts to access a protected functionality outside of authorization scope. In this case, access is denied and a system message is displayed saying "Unauthorized access.". The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Unauthorized access to protected functionality attempted by the user."
- User attempts to access protected data outside of authorization scope. In this case, access is denied and a system message is displayed saying "Unauthorized access to data.". The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Unauthorized access to protected data attempted by the user."
- User attempts to modify protected data outside of authorization scope. In this case, access is denied and a system message is displayed saying "Unauthorized access to data.". The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Unauthorized access to modify attempted by the user."
- User attempts to access protected views outside of authorization scope. In this

case, access is denied and a system message is displayed saying “Unauthorized access to view”. The system will attempt to asynchronously log the following:

- Log Level: ERROR
 - Log Category: Business
 - Log Message: “Unauthorized access to view attempted by the user.”
- User attempts to access protected views within authorization scope, but contains protected data that is not within read scope. Access is granted to the view. Upon completion of automatic navigation to view, a system message is displayed saying “Unauthorized access to data.”, with protected data not visible within the view. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Unauthorized access to read attempted by the user.”
- User attempts to access protected views within authorization scope, but contains protected data that is not within write scope. Access is granted to the view. Upon completion of automatic navigation to view, protected data is visible within the view. Attempts to modify the data will result in a system message saying “Unauthorized access to data.”. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Unauthorized access to view attempted by the user.”
- The authorization attempt is not logged in the persistent data store, if the user successfully authorized their account
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Persistent Data Store
- Log Message: “The authorization attempt was not recorded to the persistent data store.”
- The authorization attempt is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

Logout

L1 User Story: Logout

As an authenticated user when I want to end my session I can logout from all my sessions across this device, to keep my lifelog account secure.

Effort Points (Hour) - 25

Complexity Level - Low

Pre-Conditions:

1. User is in an authenticated active session on the device
2. User must be on view with logout option

Success Outcomes:

- Once the user attempts to end the session, all occurrences of the users session on the device will end

- Any failure outcome will not result in the system crashing or going offline
- Ending the session takes no longer than 3 seconds
- Post session end the user will be automatically returned to the landing page of Lifelog where they will be prompted to login
- The log includes the following:
 - Timestamp
 - When the Lifelog reminder preference change operation is completed
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Log Level: Info
 - Log Category: Business
 - Log Message: “The user has ended their session”

Failure Outcomes:

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- User has failed to end their session
 1. Not all sessions on the device have ended for the user. In this case, a message saying “Logout failed. Please try again or contact an Admin.” is displayed. The system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “A user’s session did not end on all occurrences on this device”

2. None of the current sessions on the device has ended for the user. In this case, a message saying “Logout failed. Please try again or contact an Admin.” is displayed. The system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “A user’s attempt to end session was not successful”
- Post session end the user is not automatically returned to the landing page of Lifelog. The system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “A user was not directed towards the landing page lifelog post logout”
- Ending the session causes the system to crash or going offline.
 - Unrecoverable
- Ending the session takes longer than 3 seconds. The system will asynchronously create a log entry with the following information:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “A user’s session took longer than 3 seconds to end”

L2 User Story: Inactivity

As an authenticated user I will be automatically logged out of the system if I remain inactive for longer than 20 minutes, to keep lifelog secure.

Effort Points (Hour) - 25

Complexity Level - Low

Pre-Conditions:

1. User is in an authenticated active session on the device
2. User is inactive for longer than 20 minutes

Success Outcomes:

- When the user remains inactive for a period of 20 minutes or more then the system will automatically terminate the session, resulting in the user being logged out
- Any failure outcome will not result in the system crashing or going offline
- Automatic termination of the session takes no longer than 3 seconds
- Post session termination the user will be automatically returned to the landing page of Lifelog where they will be prompted to login
- The log includes the following:
 - Timestamp
 - When the session termination operation is completed
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Log Level: Info
 - Log Category: Business
 - Log Message: "User inactivity caused the session to terminate."

Failure Outcomes:

Every failure outcome's log will have it's "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- User inactivity for a period of 20 minutes or more did not cause their sessions to end.
 1. Not all sessions on the current device have ended for the user. The system will asynchronously create a log entry with the following information:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "A user's session did not end on all occurrences on this device"
 2. None of the current sessions on the device has ended for the user. The system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "A user's attempt to end session was not successful"
- Post session end the user is not automatically returned to the landing page of Lifelog. The system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "A user was not directed towards the landing page post logout"
- Automatic termination of the session causes the system to crash or go offline.
 - Unrecoverable
- Automatic termination of the session takes longer than 3 seconds the system will asynchronously create a log entry with the following information:
 - Log Level: Warning

- Log Category: Business
- Log Message: "A user's inactive session took longer than 3 seconds to end"

User Administration

Registration

R1 User Story: Register Normal User Account

As an unregistered user, I can register for a Normal User account to begin my life change journey.

Effort Points (Hour) - 50

Complexity Scale: Medium

User Input

Required Input

- Email
 - Minimum of 3 characters
 - ii. Must be in the format: [xxxxx@xxxx.xxx](#)
 - iii. a-z (case insensitive)
 - iv. 0-9
 - v. May have special characters
 - .
 - -
 - Must not be in used by any other accounts

- User must confirm email address within 2-hours to complete registration
 - The value is not nullable
- Birth date
 - Valid date of births begins January 1st, 1970 and ends at current date
 - The value is not nullable
- Zip Code
 - Must be a valid 5 digit zip code within LA County, see Data Source
 - The value is not nullable

Data Source

Origin

- External

Type

- Snapshot

Details

- Link:
 - https://geohub.lacity.org/datasets/71b2fed2c1f24fc8850f5b7f8d2a320a_26/
- The link contains a downloadable CSV of all zip codes within LA County, this will be stored in the persistent data store

AuthN

- None, publicly available data

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Target Audience - Unauthenticated Anonymous Users

Pre-conditions

1. The user must not have an active authenticated session on the application
2. The user is on the Sign Up View

Success Outcome(s)

- All inputs meets validation requirements in the User Input section
- After confirming the email address, a system message is displayed to the user saying “Registration complete for [email address].” within 3 seconds of confirmation completion. The user is automatically navigated to the home view
- User must not have access to Registration View if currently authenticated
- All user accounts must be stored in a persistent data store
- The registration attempt is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the user account is successfully registered
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “User registration successful.”

Failure Outcome(s)

- All inputs do not meet validation requirements in the User Input section.
 1. The email is not in the [xxxx@xxxx.xxx](#) format. In this case, “Email must be in the [xxxx@xxxx.xxx](#) format. Please try again.”. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Data
 - Log Message: "The email is not in the correct format."
2. The email is shorter than 3 characters. In this case, "Email must be at least 3 characters long. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The email is too short."
 3. The email contains a character that is not in the scope defined in User Input. In this case, "The email must contain only alphanumeric values and '.' or '-' . Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The email is too short."
 4. The date of birth is not a date between January 1st, 1970 and the current date. In this case, "The date of birth must be between January 1st, 1970 and the current date. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The birth date is invalid."
 5. The zip code is not a valid zip code within LA County. In this case, "The zip code must be a valid zip code within LA County. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data

- Log Message: "The zip code is invalid."
- 6. If any of the options is null, and the user tries to submit, "This option must not be empty" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The non-nullable option is null."
- Confirmation email is not sent to the user. In this case, the system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Confirmation email is not sent to the user."
- User completes confirmation after 2 hours. In this case, a system message is displayed saying "Confirmation time period has expired. Register again or contact the system administrator.". The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Confirmation time period has expired."
- User registers with an invalid email. In this case, a system message is displayed saying "Invalid email provided. Retry again or contact system administrator". The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Invalid email provided."
- User registers with an invalid date of birth. In this case, a system message is displayed saying "Invalid date of birth provided. Must be within 1/1/1970 to [current date].". The system will attempt to asynchronously log the following:

- Log Level: ERROR
 - Log Category: Business
 - Log Message: "Invalid date of birth provided."
- User registers with an invalid zip code. In this case, a system message is displayed saying "Invalid zip code provided. Must be a valid zip code within California.". The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Invalid zip code provided."
- User completes confirmation within 2 hours, but the system was unable to assign a system-wide username using the user's email. In this case, a system message is displayed saying "Unable to assign username using this email address. Retry again or contact system administrator.". Account is not created. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Fail to assign username using the user email address."
- User completes confirmation within 2 hours, and the system was able to assign a system-wide username using the user's email, but it took longer than 3 seconds. User Account is created. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Operation exceeded time frame."
- The new user account is not saved in the persistent data store. In this case, "Registration failed. Retry again or contact system administrator." is displayed. The system will attempt to asynchronously log the following:
 - Log Level: ERROR

- Log Category: Persistent Data Store
- Log Message: "The new user account is not saved to the persistent data store."
- The registration attempt is not logged in the persistent data store, if the user successfully registered their account
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: "The registration attempt was not recorded to the persistent data store."
- The registration attempt is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

R2 User Story: Register Admin Account

As the Root Admin, I can register an Admin account to help me monitor the Lifelog application.

Effort Points (Hour) - 50

Complexity Scale: Medium

User Input

Required Input

- Email
 - Minimum of 3 characters
 - ii. Must be in the format: [xxxxx@xxxx.xxx](#)
 - iii. a-z (case insensitive)
 - iv. 0-9
 - v. May have special characters
 - .
 - -
 - Must not be in used by any other accounts
 - User must confirm email address within 2-hours to complete registration
 - The value is not nullable
- Birth date
 - Valid date of births begins January 1st, 1970 and ends at current date
 - The value is not nullable
- Zip Code
 - Must be a valid 5 digit zip code within LA County, see Data Source
 - The value is not nullable

Data Source

Origin

- External

Type

- Snapshot

Details

- Link:

https://geohub.lacity.org/datasets/71b2fed2c1f24fc8850f5b7f8d2a320a_26/

- The link contains a downloadable CSV of all zip codes within LA County, this will be stored in the persistent data store

AuthN

- None, publicly available data

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Target Audience - Unauthenticated Anonymous Users

Pre-conditions

1. The user must be authorized as the Root Admin
2. The Root Admin is on the Admin Console View

Success Outcome(s)

- All inputs meet validation requirements in the User Input section
- After confirming the email address, a system message is displayed to the user saying “Admin registration complete for [email address].” within 3 seconds of confirmation completion. The user is automatically navigated to the home view
- All user accounts must be stored in a persistent data store
- The registration attempt is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the user account is successfully registered
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC

- Log Level: Info
- Log Category: Persistent Data Store
- Log Message: "Admin registration successful."

Failure Outcome(s)

- All inputs do not meet validation requirements in the User Input section.
 1. The email is not in the [xxxx@xxxx.xxx](#) format. In this case, "Email must be in the [xxxx@xxxx.xxx](#) format. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The email is not in the correct format."
 2. The email is shorter than 3 characters. In this case, "Email must be at least 3 characters long. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The email is too short."
 3. The email contains a character that is not in the scope defined in User Input. In this case, "The email must contain only alphanumeric values and '.' or '-'. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The email is too short."
 4. The date of birth is not a date between January 1st, 1970 and the current date. In this case, "The date of birth must be between January 1st, 1970 and the current date. Please try again." is displayed to the user. The

system will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Data
 - Log Message: "The birth date is invalid."
5. The zip code is not a valid zip code within LA County. In this case, "The zip code must be a valid zip code within LA County. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The zip code is invalid."
6. If any of the options is null, and the user tries to submit, "This option must not be empty" is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The non-nullable option is null."
- Confirmation email is not sent to the Root Admin. In this case, the system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Confirmation email is not sent to the user."
 - Root Admin completes confirmation after 2 hours. In this case, a system message is displayed saying "Confirmation time period has expired. Register again.". The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Confirmation time period has expired."

- Root Admin registers the Admin with an invalid email. In this case, a system message is displayed saying “Invalid email provided.”. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Invalid email provided.”
- Root Admin registers with an invalid date of birth. In this case, a system message is displayed saying “Invalid date of birth provided. Must be within 1/1/1970 to [current date].”. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Invalid date of birth provided.”
- Root Admin registers the Admin with an invalid zip code. In this case, a system message is displayed saying “Invalid zip code provided. Must be a valid zip code within California.”. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Invalid zip code provided.”
- Root Admin completes confirmation for the Admin account within 2 hours, but the system was unable to assign a system-wide username using the user’s email. In this case, a system message is displayed saying “Unable to assign username using this email address. Retry again.”. Account is not created. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Fail to assign username using the user email address.”

- Root admin completes confirmation for the Admin account within 2 hours, and the system was able to assign a system-wide username using the user's email, but it took longer than 3 seconds. User Account is created. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Operation exceeded time frame."
- The new admin account is not saved in the persistent data store. In this case, "Admin registration failed. Retry again." is displayed. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "The new admin account is not saved to the persistent data store."
- The registration attempt is not logged in the persistent data store, if the Root Admin successfully registered the Admin account
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: "The Admin registration attempt was not recorded to the persistent data store."
- The registration attempt is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store

- Log Message: Context about where the log is coming from

Account Recovery

AR1 User Story: Account Recovery

As a normal user on lifelog I can submit an account recovery request to regain access to an active or disabled account.

Effort Points (Hour) - 100

Complexity Scale: Medium

User Input

Required Input

- Valid security credentials consist of a valid username and valid time-based one-time password (OTP)
- Username
 - The username is the user's email
 - Must be in the [xxxxx@xxxx.xxx](#) format
 - Must not be in used by any other Lifelog account
 - Is not nullable
- OTP is defined in NIST SP 800-63b section 5.1.4.1
 - OTP must be at minimum 8 characters
 - Valid characters will consist of the following:
 - a-z
 - A-Z
 - 0-9

- Is not nullable

App Permissions

- Permission: Modify
- Scope: Any Normal User or Admin user

Target Audience - All Normal User and Admin user that exist within LifeLog

Pre-conditions

1. Normal Users must not have an active authenticated session, otherwise the user is unable to perform the operation
2. Normal Users must be on account recovery view
3. Only Root Admin can recover Admin user accounts

Success Outcome(s)

- On account recovery view the user must provide username and valid OTP to submit account recovery request
- All Admin Users will be able to view the latest account recovery requests for all Normal Users. Root Admins will be able to view the latest account recovery requests for both Normal Users or Admin users
- Upon successful account recovery action by Admin Users or Root Admin, Normal Users or Admin Users will be able to authenticate into the system.
- Any system failures from this feature must not result in the system going offline
- Normal User or Admin User provides assigned username and valid OTP. Request is made available to Admin users and Root Admin user respectively within 3 seconds. The system message: "Account recovery request sent" displays within 3 seconds of invocation

- The respective admin completes account recovery for the user. The system message: “Account recovery completed successfully” within 3 seconds of invocation. Affected user regains access to the system within 3 seconds of invocation.
- The account recovery attempts are logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the user account is successfully registered
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “account recovery attempt successful.”

Failure Outcome(s)

- The user does not submit valid security credentials as defined in the User Input section
 1. The email is not in the [xxxx@xxxx.xxx](#) format. In this case, “Email must be in the [xxxx@xxxx.xxx](#) format. Please try again.”. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The email is not in the correct format.”
 2. The OTP is less than 8 characters long. In this case, “OTP must be at least 8 characters long. Please try again.”. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data

- Log Message: "The OTP is too short."
- 3. The OTP contains a character that is outside the scope defined in the User Input. In this case, "OTP must only contain alphanumeric characters. Please try again.". The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The OTP contains invalid characters."
- 4. The user enters an OTP over 2 minutes old. In this case, "This OTP has expired. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The user provided an expired OTP ."
- 5. The user leaves one of the fields blank. In this case, "This field must not be empty" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The OTP contains empty fields."
- User provides valid username and valid OTP for user but request is not available to authorized system admin users. A system message displays "Request is not available to admin users try again" to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Server
 - Log Message: "Request unavailable to admins."
- User provides valid username and valid OTP for user but request is available

but message does not display within 3 seconds. A system message displays “Request message didn’t display in 3 seconds” to the user. The system will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Server
 - Log Message: “Account recovery request message didn’t display in 3 seconds”
- The respective admin completes account recovery for the user but the message does not display within 3 seconds. A system message displays “Account recovery successful, message was not displayed in 3 seconds” to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Server
 - Log Message: “Account recovery successful; success message didn’t display in 3 seconds”
- The respective admin completes account recovery for the user and the message does display within 3 seconds. Affected user does not regain access. The message “Account recovery unsuccessful” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Server
 - Log Message: “Account recovery successful; success message displayed in 3 seconds; account did not regain access”
- The respective admin completes account recovery for the user and the message does display within 3 seconds. Affected user does not regain access within 3 seconds. The message “Account recovery successful, user did not regain account within 3 seconds” is displayed to the user. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Server
- Log Message: “Account recovery successful; success message displayed in 3 seconds; account did not regain access within 3 seconds”

Account Deletion

AD1 User Story: Account Deletion

As an authenticated user, I can delete my Lifelog account to remove all my personal data from the application

Effort Points (Hour) - 100

Complexity Scale: Medium

App Permissions

- Permission: Delete
- Scope: Any registered Normal User

Target Audience - All authenticated Normal User

Pre-conditions

1. User must have an active authenticated session
2. User must be on account deletion view
3. User has permission to delete account

Success Outcome(s)

- Only an Admin or Root Admin account can delete another admin account
- All personal identifiable information (PII) along with the user account data is permanently deleted from the persistent data store. A system message displays “Account deletion successful”. Upon acknowledgment of system message, the user is automatically navigated to the home view
- Account deletion cannot be reversed
- The system must not go offline as the result of failures from this operation

Failure Outcome(s)

- The user tries to delete their account and confirms the action, but the system does not delete both PII data or user account data. In this case, “Account deletion failed” is displayed. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “PII and user account data failed to be deleted.”
- Data is not permanently deleted from the system. In this case, the system should notify an Admin user about the issue.
- A system message is not shown or the wrong message is shown after all PII data and user account data is permanently deleted from the system.
- The user is unable to acknowledge the system message “Account deletion successful” after the successful data deletion.
- The user is not automatically redirected to the home view upon acknowledging the system message

Usage Analysis Dashboard

UAD1: Usage Analysis Dashboard

As an authenticated and authorized Admin or Root Admin user, I can view an usage analysis dashboard to monitor Normal User activities on the application.

Effort Points (Hour) - 100

Complexity Scale: Medium

App Permissions

- Permission: View
- Scope: Admin and Root Admin User

Target Audience - Admin and Root Admin users

Pre-conditions

1. Persistent data store must be active
2. Persistent data store must be accessible by the system
3. User must have an active authenticated session on the current device
4. User must be on the Usage Analysis Dashboard View
5. User must be an Admin or Root Admin user

Success Outcome(s)

- Only Admin and Root Admin user can access the dashboard
- All data required for the dashboard is successfully fetched from the persistent data store

- The following Key Performance Indicators (KPIs) are displayed
 - The number of success and failed login attempts per month over selected time span (trend chart)
 - The number of success and failed registrations per month over selected time span (trend chart)
 - Top 3 longest page visits in seconds
 - Top 3 most used feature
 - Two application specific feature metric
- The KPIs can be displayed with the following time spans
 - 6 months
 - 12 months
 - 24 months
- All KPI data must be automatically refreshed in intervals of 60 seconds
- The view must load within 15 seconds upon completion of navigation.
- System failures from this feature must not result in the system going offline

Failure Outcome(s)

- An Admin or Root Admin user is unable to access the dashboard
- The view does not load within 15 seconds upon accessing the dashboard
- All KPI data are not refreshed every 60 seconds
- KPI data refresh takes longer than 60 seconds

User Privacy Control

UPC1 User Story: User Privacy Control

As a user I can view/request my PII data that was collected on me by the system as well as delete my account whenever I want to

Effort Points (Hour) - 25

Complexity Level - Low

Pre-Conditions:

1. User is in an authenticated active session on the device
2. User must be on User Privacy view

Success Outcomes:

- Component must adhere to EULA per GDPR or California Consumer Privacy Act (CCPA) / California Privacy rights Act (CPRA)
- Data is accurate and up to date to the current date
 - Timestamp is recorded in relative to UTC
 - YYYY-MM-DD-hh-mm-ss format
- Authenticated users are only able to view the PII data that was collected on them by the system. the system will asynchronously create a log entry with the following information:
 - Timestamp
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - When a user has viewed/requested for their PII data
 - Log Level: Info
 - Log Category: Business
 - Log Message: "A user accessed their PII data"
- Users are able to delete their account. the system will asynchronously create a log entry with the following information:
 - Timestamp

- When a user has deleted their account
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
- Log Level: Info
- Log Category: Business
- Log Message: "A user deleted their own account"

Failure Outcomes:

Every failure outcome's log will have it's "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Component does not adhere to EULA per GDPR or California Consumer Privacy Act (CCPA) / California Privacy rights Act (CPRA)
- Authenticated users are not able to view the PII data that was collected on them by the system the system will asynchronously create a log entry with the following information:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: "Request for User PII Data was unsuccessful"
- Authenticated users are able to view another user's PII data the system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: business
 - Log Message: "A user was able to access another user's PII data"
- Users are able to delete another user's account. the system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: business

- Log Message: “A user was able to delete another user’s account”

User Management

UM1 User Story: Root Admin

As a Root admin I can use the root admin specific tool to complete my operations

Effort Points (Hour) - 50

Complexity Level - Low

Pre-Conditions:

1. User is in an authenticated active session on the device
2. User must be an authenticated Root admin
3. User must be on user management view

Success Outcomes:

- All operations are saved to our concurrent data store
- The Root admin will only have access to the user management view and features
- The Root admin will have access to view and modify all Admin accounts in the system
- The Root Admin will be able to complete the following operations:
 - Delegating admin role to authenticated accounts
 - Modifying authenticated admin accounts
 - Retracting admin role from authenticated admin accounts
 - Deleting authenticated accounts

- Operation should take no longer than 3 seconds to complete
- Any operation must take effect on the selected Admin's account and be registered within the system
- Any failure outcome will not result in the system crashing or going offline
- Root admin is able to perform a single operation
 - Timestamp
 - When the operation has performed and completed successfully
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Log Level: Info
 - Log Category: Business
 - Log Message: "UM root admin operation was successful"

Failure Outcomes:

Every failure outcome's log will have it's "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All or some operations were not saved to our concurrent data store
 - Log Level: ERROR
 - Log Category: Persistent data store
 - Log Message: "UM root admin operation was not saved."
- The Root admin is not able to access the user management view
 - Log Level: ERROR
 - Log Category: view
 - Log Message: "Root Admin is unable to access UM view"
- The Root admin does not have access to view all or some Admin accounts in the system
 - Log Level: Warning

- Log Category: business
- Log Message: "Root Admin is unable view Admin Accounts"
- The Root Admin operations will be considered a failure if the following occur:
 - Unable to delegate admin role to authenticated accounts
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Root Admin is unable to delegate admin role"
 - Unable to modify authenticated admin accounts
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Root Admin is unable to modify admin accounts"
 - Unable to retract admin role from authenticated admin accounts
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Root Admin is unable to retract admin accounts"
 - Unable to delete authenticated accounts
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Root Admin is unable to delete admin accounts"
 - Operation takes longer than 3 seconds to complete
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "An operation took longer that 3 seconds to complete"
- An operation did not take effect on the selected Admin's account
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "An operation did not take effect on selected Admin's

account”

- An operation did not get registered within the system
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “An operation did not get registered within the system”
- Failure outcome results in the system crashing or going offline
 - Log Level: ERROR
 - Log Category: Server
 - Log Message: “A failure outcome has resulted in system crash or offline status”

UM2 User Story: Admin

As an admin I can use the admin specific tool to complete my operations

Effort Points (Hour) - 50

Complexity Level - Low

Pre-Conditions:

1. User is in an authenticated active session on the device
2. User must be an authenticated Admin
3. User must be on user management view

Success Outcomes:

- All operations/requests are saved to our concurrent data store
- The Admin will only have access to the user management view and features
- The Admin will have access to view all normal user accounts in the system
- The Admin will be able to complete the following operations:

- Able to view normal user accounts activity
- The admin will have unrestricted read access for normal users table
- The admin will have unrestricted write access for normal users table
- Operation should take no longer than 3 seconds to complete
- Any operation must take effect on the selected normal users account and be registered within the system
- Any failure outcome will not result in the system crashing or going offline
- Admin is able to perform a single operation
 - Timestamp
 - When the operation has performed and completed successfully
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Log Level: Info
 - Log Category: Business
 - Log Message: "UM admin operation was successful"

Failure Outcomes:

- All or some operations/requests were not saved to our concurrent data store
 - Log Level: ERROR
 - Log Category: Persistent data store
 - Log Message: "UM admin operation was not saved to the persistent data store"
- The Admin does not have access to the user management view
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "Admin is unable to access UM view"
- The Admin will not have access to view all normal user accounts in the system
 - Log Level: Warning

- Log Category: Business
- Log Message: "Admin is unable view all normal user Accounts"
- The Admin operations will be considered a failure if the following occur:
 - Unable to view normal user accounts activity
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "Admin is unable view all normal user Accounts activity"
 - The admin does not have unrestricted read access for normal users table
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "Admin does not have unrestricted read access for normal users table"
 - The admin does not have unrestricted write access for normal users table
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "admin does not have unrestricted write access for normal users table"
 - Operation takes longer than 3 seconds to complete
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "An operation took longer that 3 seconds to complete"
- Any operation does not take effect on the selected normal users account or is not registered within the system
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "An operation did not take effect on selected normal users"

account”

- Failure outcome results in the system crashing or going offline
 - Log Level: ERROR
 - Log Category: Server
 - Log Message: “A failure outcome has resulted in system crash or offline status”

System Observability

Logging

Internally track Lifelog’s events with vital information about the events, for system inspection.

Effort Points (Hour) - 75

Complexity Level - Low

App Permissions

- Permission : Write
- Scope : The entire Lifelog system

Valid Log Data

- The logs will include a PST timestamp
- Timestamp will be in YYYY-MM-DD-hh-mm-ss format
- Logs will include a log level, valid levels include:
 - Info - general info about system
 - Debug - for developers to debug

- Warning - concerning events
 - ERROR - critical events/failures
- Logs will include a log category, valid categories are:
 - View
 - Business
 - Server
 - Data
 - Persistent Data Store
- Logs will include details, valid details include any significant info to the log like:
 - What process led to the log
 - If the system or a user initiated the process
 - Logs will be as accurate as possible, to create the most robust system possible

Pre-conditions

1. Persistent data store is active
2. Persistent data store is accessible
3. Persistent data store has space for the log entry to be saved

Success Outcome(s)

- Lifelog's system events are logged accurately within 3 seconds
- Lifelog's system failure events are logged accurately in 3 seconds
- User's successful activity is logged accurately in 3 seconds
- User's unsuccessful activity is logged accurately in 3 seconds
- Log is saved to the persistent data store
- Log is immutable
- The following is included in a success log:

- Timestamp:
 - When the operation is completed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
- Log level: Info, Debug, Warning, or ERROR
- Log Category: View, Business, Server, Data, Persistent Data Store
- Log message: Details what the operation was successfully completed

Failure Outcome(s)

- Lifelog's system events are logged in longer than 3 seconds
- Lifelog's system events are not logged
- User's successful activity is not logged within 3 seconds
- User's successful activity fails to be logged
- Logging stops users from utilizing the system in any way
- The logging process completes, but the log is not saved to the persistent data store: The system should not go offline in this case
- The outcome is logged, but it does not accurately depict any of the following information
 - Timestamp: When the operation is completed, YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from
- The logging process failure results in the system going offline
- Saved logs are mutable

Archiving

Offload Lifelog's logs to conserve internal assets

Effort Points (Hour) - 25

Complexity Level - Low

Pre-conditions

1. Persistent data store active
2. Persistent data store accessible by Archival functionality
3. Archive has capacity to store archivable logs.

Success Outcome(s)

- Archival functionality happens at the right time:
 - Starts at 12:00am PST
 - Executes on the first day of the month
- Logs 30 days or older are saved to archive location
- Logs are compressed on archival
- Archived logs are removed from the persistent data store
- Archival process completes within 60 seconds of start
- The following is included in a success log:
 - Timestamp:
 - When the operation is completed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log Category: View

- Log message: “The archival process was successful”

Failure Outcome(s)

- Archive functionality did not start at 12:00am PST
- Archive functionality did not start on the first of the month
- Archive functionality started, but did not archive all archivable logs
- Archive functionality started, but did not remove archived logs from the persistent data store
- Archive functionality started, but did not compress logs
- Archive functionality did not complete within 60 seconds of the operations starting
- Archive failure log is not created
- The following is included in an archival failure log:
 - Timestamp: When the operation encounters an ERROR, YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log level: Warning
 - Log Category: Server
 - Log message: “System failed to archive logs off of the persistent data store.”

Product and Feature Behaviors

Default Behaviors

If the system encounters a failure outcome that is not explicitly defined, it will be handled in this way.

- A generic message will be displayed to the user on failures of user initiated operations: “We’re sorry, [feature] is currently unavailable.”
- A functionality causes the system to crash or go offline
 - Unrecoverable
- If a functionality attempts to access some data, and receives no records from the persistent data store:
 1. If the data requested are not required for a functionality, a message saying, “No record for [requested data] found.” is displayed to the user. The user can continue to use the parts of the functionality that does not interact with the requested data. The system will attempt to asynchronously log the following:
 - Timestamp: When the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “[Functionality/Feature] attempted request [requested records], but found no record.”
 2. If the data requested are required for a functionality, a message saying, “The [functionality] is currently not available. Please try again later or contact Admin user.” is displayed to the user. The user will be prompted

with a link to return to the home page. The system will attempt to asynchronously log the following:

- Timestamp: When the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC
- Log Level: ERROR
- Log Category: Persistent Data Store
- Log Message: “[Functionality/Feature] attempted request [requested records], but found no record.”
- Functionalities will by default adhere to the following timing requirements:
 - 3 Seconds or less: Success, Success log created. Success Log Depicts:
 - Timestamp: when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info
 - Log Category: Business
 - Log Message: “[Feature/Functionality] was successful”
 - 3.1 - 5 Seconds: Tolerable, System proceeds as normal, Warning log will be created. Warning log depicts:
 - Timestamp: when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “[Feature/Functionality] took longer than 3, but less than 5 seconds”
 - 5.1 Seconds or more: Failure, System times out operation, ERROR log created
 - Timestamp: when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: ERROR

- Log Category: Business
- Log Message: “[Feature/Functionality] took longer than 5 seconds, timed out”
- The system will attempt to asynchronously log the following by default when encountering failures:
 - Timestamp: when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “[Feature/Functionality] ERRORed out”

User Form

UF1 User Story^[17]: Create User Form^[16]

As an authenticated user, upon my first sign-in, I can rank the 10 categories of LLI^[3] in order of preference to personalize my recommendation engine’s recommendations.

Effort Points (Hour) - 50 points

Complexity Scale: Medium

User Input

Required Input

- Rankings of the following categories in relation to each other:
 - The categories to be ranked are “Mental Health^[5]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”

- Each category must have a unique ranking
- The rank for a category must be a numerical value between 1-10
- The ranking for a category is not nullable

App Permissions

- Permission: Read and Write
- Scope: Lifelog User Account

Target Audience - Authenticated Normal User logging in for the first time

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is signed in for the first time

Success Outcome(s)

- All inputs meets validation requirements in User Input section
- The user rankings are saved in the persistent data store within 3 seconds of the form submission
- The user rankings are added to the user's account in the persistent data store
- "The User Form is successfully saved." is displayed to the user, if the rankings are successfully saved
- The create operation of the user form is saved to the persistent datastore
- The log includes the following:
 - Timestamp
 - When the User Form is saved to the data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC

- Log Level: Info
- Log Category: Persistent Data Store
- Log Message: “User Form successfully created.”

Failure Outcome(s)

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section
 1. The user inputs a rank to a category that is already assigned to another category. In this case, “Ranking must be unique. Please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The LLI rankings are not unique.”
 2. The user inputs a rank that is not between 1 and 10. In this case, “Ranking must be between 1 and 10. Please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The LLI rankings are not in range.”
 3. The user leaves a rank empty and tries to submit. In this case, “Ranking must not be empty. Please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The LLI rankings are null.”

- The user rankings are not saved in the persistent data store. In this case, a message is displayed saying “The User Form failed to save, please try again later or contact system administrator.”. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The User Form failed to save to the persistent data store.”
- The user rankings are not added to the user’s account in the persistent data store. In this case, a message is displayed saying “The User Form failed to save, please try again later or contact system administrator.”. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The User Form failed to save to the user’s account in the persistent data store.”
- The user rankings are not saved in the persistent data store within 3 seconds but are saved within 5 seconds of the User Form submission. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “Operation exceeded time frame.”
- The user rankings are not saved in the persistent data store within 5 seconds. In this case, “Operation took too long. Please try again later.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “Operation took too long.”
- The User Form completion operation is not logged in the persistent data store,

if the User Form is successfully created for the user in the persistent data store

1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The User Form completion operation was not recorded to the persistent data store.”
- The User Form completion operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

UF2 User Story^[17]: Edit User Form^[16]

As an authenticated user, I can edit my rankings of the 10 categories of LLI in my User Form to tailor the application recommendation to my need

Effort Points (Hour) - 50 points

Complexity Scale: Medium

User Input

Optional Input

- Rankings of the following categories in relation to each other:
 - The categories to be ranked are “Mental Health^[5]”, “Physical Health^[6]”,

“Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”,
“Volunteering^[13]”, and “Food^[14]”

- Each category must have a unique ranking
- The rank for a category must be a numerical value between 1-10
- The default value for a rank of a LLI is the current rank of that LLI
- The ranking for a category is not nullable

App Permissions

- Permission: Read and Write
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the User Profile view

Success Outcome(s)

- All inputs meets validation requirements in User Input section
- Changes to the User Form, if any, are saved in the persistent data store accurately
- “User Form successfully saved.” is displayed to the user if the User Form is successfully updated
- Changes to the User Form, if any, are saved in the data store within 3 seconds
- The User Form edit operation is logged in the data store
- The log includes the following:
 - Timestamp

- When the User Form changes are saved to the data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
- Log Level: Info
- Log Category: Persistent Data Store
- Log Message: "User Form successfully edited."

Failure Outcome(s)

Every failure outcome's log will have it's "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section
 1. The user inputs a rank to a category that is already assigned to another category. In this case, "Ranking must be unique. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI rankings are not unique."
 2. The user inputs a rank that is not between 1 and 10. In this case, "Ranking must be between 1 and 10. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI rankings are not in range."
 3. The user leaves a rank empty and tries to submit. In this case, "Ranking must not be empty. Please try again." is displayed to the user. The system will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI rankings are null."
- Changes to the User Form, if any, are not saved in the persistent data store accurately. In this case, a message is displayed saying "User Form failed to save. Please try again.". The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "The User Form failed to save to the user's account in the persistent data store."
- Changes to the User Form, if any, are not saved in the persistent data store accurately within 3 seconds but are saved within 5 seconds. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: "Operation exceeded time frame."
- Changes to the User Form, if any, are not saved in the persistent data store accurately within 5 seconds. In this case, "Operation took too long. Please try again later." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "Operation took too long."
- The User Form edit operation is not logged in the persistent data store, if the User Form is successfully edited in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system

will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The User Form edit operation was not recorded to the persistent data store.”
- The User Form edit operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

Lifelog Item (LLI) Management

LLI1 User Story^[17]: Create LLI^[3]

As an authenticated user, I can create one LLI^[3] at a time to track my life change progress.

Effort Points (Hour) - 50 points

Complexity Scale: Medium

User Input

Required Input

- Title of LLI^[3]
 - Must only contains alphanumeric values between 1-50 characters long
 - The value is not nullable

- Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[5]”, “Mental Health^[5]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”
 - The option is not nullable

Optional Input

- Description of LLI^[3]
 - Must consist only of alphanumeric values between 0–200 characters long
 - Default to null
- Status of LLI^[3]
 - The valid options are “Active”, “Completed”, “Postponed”
 - The option is not nullable
 - Default to “Active”
- Visibility of LLI^[3]
 - The valid options are “Public”, “Private”
 - The option is not nullable
 - Default to “Public”
- Deadline of LLI^[3]
 - Must be a valid date in the format MM/DD/YYYY
 - The date must be between 01/01/1960 and 12/31/2100
 - Default to null
- Cost of LLI^[3]
 - Must be a numerical value greater or equal to \$0 USD
 - The unit of the cost is USD
 - Cost cannot be non-integers
 - Cost cannot exceed \$1 million USD

- Default to null
- Recurrence
 - The valid options are “On”, “Off”
 - The default option is “Off”
 - The option is not nullable
- Recurrence Frequency
 - This input is only showed if the Recurrence option is “On”
 - The valid options are “Weekly”, “Monthly”, “Yearly”
 - If the Recurrence option is “Off”, the option is null
 - If the Recurrence option is “On”, the default option is “Monthly”
 - If the Recurrence option is “On”, the option is not nullable

App Permissions -

- Permission: Write
- Scope: LLI^[3]

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the LLI^[3] Management view

Success Outcomes

- All inputs meets validation requirements in User Input section
- The LLI title and category must not match the title and category of a LLI that the user has completed within one year prior to the current date
- The new LLI^[3] is saved to the persistent data store within 3 seconds of the

creation confirmation

- The new LLI^[3] is added to the authenticated user's account in the relational database
- "The LLI is successfully created." is displayed to the user, if the LLI^[3] has been created in the persistent data store
- The LLI^[3] creation operation is logged in the persistent data store, when the LLI is saved to the persistent data store
- The log includes the following:
 - Timestamp
 - When the LLI creation form is saved in the persistent datastore
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: "The LLI is successfully created."

Failure Outcomes

Every failure outcome's log will have its "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section.
 1. The title of LLI does not contain only alphanumeric values between 1-50 characters long . In this case, "The LLI title must only contain alphanumeric values between 1-50 characters long, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data

- Log Message: "The LLI title is invalid."
2. The category/categories of the LLI is not one or more options specified in the User Input. In this case, "The LLI category must be valid, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI category is invalid."
 3. The description of the LLI does not contain only alphanumeric values between 1-200 characters long . In this case, "The LLI description must only contain alphanumeric values between 1-200 characters long, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI description is invalid."
 4. The status of LLI is not "Active", "Completed", or "Postponed". In this case, "The LLI status must be either "Active", "Completed", or "Postponed", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI status is invalid."
 5. The status of the LLI is not "Active", "Completed", or "Postponed". In this case, "The LLI status must be either "Active", "Completed", or "Postponed", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Data
 - Log Message: "The LLI status is invalid."
6. The visibility of the LLI is not "Public" or "Private". In this case, "The LLI visibility must be either "Public" or "Private", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI visibility is invalid."
 7. The deadline of the LLI is not between 01/01/1960 and 12/31/2100. In this case, "The LLI deadline must be between 01/01/1960 and 12/31/2100, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI deadline is invalid."
 8. The cost of the LLI is not a numerical value greater or equal to \$0 USD, "The LLI cost must be a numerical value greater or equal to \$0 USD, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI cost is invalid."
 9. The occurrence of the LLI is not "On" or "Off". In this case, "The LLI occurrence must be either "On" or "Off", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data

- Log Message: “The LLI occurrence is invalid.”
- 10. The occurrence frequency of the LLI is not “Weekly”, “Monthly”, or “Yearly”. In this case, “The LLI occurrence frequency must be “Weekly”, “Monthly”, or “Yearly”, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The LLI occurrence is invalid.”
- 11. If any of the non-nullable options is null, and the user tries to submit, “This option must not be empty” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The non-nullable LLI input is null.”
- The LLI title and category match the title and category of a LLI that the user has completed within one year prior to the current date. In this case, “You have completed this LLI within the past year. You can not recreate the same LLI within a year. Please try again later.” is displayed to the user. The LLI is not saved to the persistent data store. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data Store
 - Log Message: “The LLI title and category matches the title and category of a LLI that the user has completed within one year prior to the current date.”
- The new LLI^[3] is not saved to the relational database. In this case, “The LLI fails to save” is displayed to the user. The system will attempt to asynchronously log the following:

- Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "LLI's failed to save into the persistent data store."
- The new LLI^[3] is not saved to the relational database within 3 seconds but is saved within 5 seconds of the creation confirmation. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: "Operation exceeded time frame."
- The new LLI^[3] is not saved to the relational database within 5 seconds. In this case, "Operation took too long. Please try again later." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "Operation took too long."
- The new LLI^[3] is not added to the authenticated user's account in the persistent data store. In this case, "The LLI failed to save to the user's account" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "The LLI failed to save to the user's account in the persistent data store."
- The LLI^[3] creation operation is not logged in the persistent data store, when the LLI is saved to the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Persistent Data Store
- Log Message: “The LLI creation operation was not recorded to the persistent data store.”
- The LLI^[3] creation operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LLI2 User Story^[17]: View LLIs^[3]

As an authenticated user, I can view my LLIs through the LLI Management view to stay focused on my life change journey.

Effort Points (Hour) - 50 points

Complexity Scale: Medium

App Permissions

- Permission: View
- Scope: LLI^[3]

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered

2. The user is authenticated
3. The authenticated user is in the LLI^[3] Management view

Success Outcome(s)

- All LLIs are loaded in the LLI Management view within 3 seconds of the user loading the view
- Each individual LLI item must contain the following:
 - LLI^[3] title
 - Must only contain alphanumeric values
 - Must be between 1-50 characters long
 - The value is not nullable
 - Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[5]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”
 - The option is not nullable
 - Description of LLI^[3]
 - Must consist only of alphanumeric values between 0-200 characters long
 - The value is nullable
 - Status of LLI^[3]
 - The valid options are “Active”, “Completed”, “Postponed”
 - The option is not nullable
 - Visibility of LLI^[3]
 - The valid options are “Public, Private”
 - The option is not nullable
 - Deadline of LLI^[3]
 - Must be a valid date in the format MM/DD/YYYY

- The date must be between 01/01/1960 and 12/31/2100
 - The option is nullable
- Cost of LLI^[3]
 - Must be a numerical value greater or equal to \$0 USD
 - The unit of the cost is USD
 - Cost cannot be non-integers
 - Cost cannot exceed \$1 million USD
- Recurrence
 - The valid options are “On”, “Off”
 - The option is not nullable
- Recurrence Frequency
 - This input is only showed if the Recurrence option is “On”
 - The valid options are “Weekly”, “Monthly”, “Yearly”
 - If the Recurrence option is “Off”, the option is null
 - If the Recurrence option is “On”, the default option is “Monthly”
 - If the Recurrence option is “On”, the option is not nullable
- An option to edit the details
- The data in each LLI item must accurately reflect the data of that LLI in the persistent data store
- If there is a failure in navigating, loading, or rendering the view, the system must not crash
- When the user visits the LLI Management view, the action must be logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the user enters the view
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC

- Log Level: Info
- Log Category: View
- Log Message: “User enters the LLI Management view.”

Failure Outcome(s)

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All LLIs are not loaded in the LLI Management view. In this case, “The LLI Management view is not available. Please try again later.” is displayed to the user. The user is redirected back to the previous page. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: “The LLI Management view failed to load.”
- All LLIs are not loaded in the LLI Management view within 3 seconds but are loaded within 5 seconds. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “Operation exceeded time frame.”
- All LLIs are not loaded in the LLI Management view within 5 seconds. In this case, “Operation took too long. Please try again later.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “Operation took too long.”
- Each individual LLI item does not contain all the details listed in the Success

Outcome(s)

- The data in each LLI item must accurately reflect the data of that LLI in the persistent data store
- When the user visits the LLI Management view, the action is not logged in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The LLI Management view access was not recorded to the persistent data store.”
- When the user visits the LLI Management view, the action is logged in the persistent data store, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LLI3 User Story^[17]: Delete LLI^[3]

As an authenticated user, I can delete one LLI^[3] at a time to remove a prospective life change, to stay focused on my personally attainable LLI^[3]

Effort Points (Hour) - 50 points

Complexity Scale: Medium

App Permissions

- Permission: Delete
- Scope: LLI^[3]

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the LLI^[3] Management view

Success Outcome(s)

- The LLI^[3] is removed from the persistent data store within 3 seconds of the user initializing the delete action.
- The LLI^[3] is removed from the authenticated user's account in the persistent data store
- "The LLI is successfully deleted" is displayed to the user, if the LLI^[3] has been deleted
- The delete operation is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the LLI is deleted from the persistent data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store

- Log Message: “The LLI is successfully deleted.”

Failure Outcome(s)

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The LLI^[3] is not removed from the persistent data store. In this case, “The LLI is not successfully deleted.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The LLI failed to be deleted from the persistent data store.”
- The LLI^[3] is not removed from the persistent data store within 3 seconds but is removed within 5 seconds of the deletion confirmation. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “Operation exceeded time frame.”
- The LLI^[3] is not removed from the persistent data store within 5 seconds. In this case, “Operation took too long. Please try again later.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “Operation took too long.”
- The LLI^[3] is not removed from the authenticated user’s account in the persistent data store. In this case, “The LLI is not successfully deleted from the user’s account.” is displayed to the user. The system will attempt to

asynchronously log the following:

- Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The LLI failed to be deleted from the user’s account in the persistent data store.”
- The LLI delete operation is not logged in the persistent data store, if the LLI is deleted from the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The LLI delete operation was not recorded to the persistent data store.”
 - The LLI^[3] delete operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LLI4 User Story^[17]: Edit LLI^[3]

As an authenticated user, I can edit one LLI^[3] at a time to manage my life change details, ensuring my goal setting is accurate.

Effort Points (Hour) - 50

Complexity Scale: Medium

User Input

Optional Input

- LLI^[3] title
 - Must only contain alphanumeric values
 - Must be between 1-50 characters long
 - The value is not nullable
 - Default value is current title
- Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[5]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”
 - The option is not nullable
 - Default value is the current category/categories
- Description of LLI^[3]
 - Must consist only of alphanumeric values between 0-200 characters long
 - The value is nullable
 - Default value is the current description
- Status of LLI^[3]
 - The valid options are “Active”, “Completed”, “Postponed”
 - The option is not nullable
 - Default value is the current status
- Visibility of LLI^[3]
 - The valid options are “Public, Private”
 - The option is not nullable
 - Default value is the current visibility

- **Deadline of LLI^[3]**
 - Must be a valid date in the format MM/DD/YYYY
 - The date must be between 01/01/1960 and 12/31/2100
 - The option is nullable
 - Default value is the current deadline
- **Cost of LLI^[3]**
 - Must be a numerical value greater or equal to \$0 USD
 - The unit of the cost is USD
 - Cost cannot be non-integers
 - Cost cannot exceed \$1 million USD
 - Default cost is the current cost
- **Recurrence**
 - The valid options are “On”, “Off”
 - The default option is “Off”
 - The option is not nullable
- **Recurrence Frequency**
 - This input is only showed if the Recurrence option is “On”
 - The valid options are “Weekly”, “Monthly”, “Yearly”
 - If the Recurrence option is “Off”, the option is null
 - If the Recurrence option is “On”, the default option is “Monthly”
 - If the Recurrence option is “On”, the option is not nullable

App Permissions

- **Permission:** Write
- **Scope:** LLI^[3]

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the LLI^[3] Management view

Success Outcome(s)

- All inputs meets validation requirements in User Input section
- The LLI title and category must not match the title and category of a LLI that the user has completed within one year prior to the current date
- Changes to the LLI^[3] attributes are reflected in the persistent data store accurately within 3 seconds of the user initializing the change action
- “The LLI is successfully updated” is displayed to the user, if the LLI details are changed
- The edit operation is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the changes to the LLI are saved to the persistent data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “The LLI is successfully edited”

Failure Outcome(s)

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section.

1. The title of LLI does not contain only alphanumeric values between 1-50 characters long . In this case, “The LLI title must only contain alphanumeric values between 1-50 characters long, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The LLI title is invalid.”
2. The category/categories of the LLI is not one or more options specified in the User Input. In this case, “The LLI category must be valid, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The LLI category is invalid.”
3. The description of the LLI does not contain only alphanumeric values between 1-200 characters long . In this case, “The LLI description must only contain alphanumeric values between 1-200 characters long, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The LLI description is invalid.”
4. The status of LLI is not “Active”, “Completed”, or “Postponed”. In this case, “The LLI status must be either “Active”, “Completed”, or “Postponed”, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Data
 - Log Message: "The LLI status is invalid."
5. The status of the LLI is not "Active", "Completed", or "Postponed". In this case, "The LLI status must be either "Active", "Completed", or "Postponed", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI status is invalid."
 6. The visibility of the LLI is not "Public" or "Private". In this case, "The LLI visibility must be either "Public" or "Private", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI visibility is invalid."
 7. The deadline of the LLI is not between 01/01/1960 and 12/31/2100. In this case, "The LLI deadline must be between 01/01/1960 and 12/31/2100, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI deadline is invalid."
 8. The cost of the LLI is not a numerical value greater or equal to \$0 USD, "The LLI cost must be a numerical value greater or equal to \$0 USD, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Data
 - Log Message: "The LLI cost is invalid."
9. The occurrence of the LLI is not "On" or "Off". In this case, "The LLI occurrence must be either "On" or "Off", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI occurrence is invalid."
 10. The occurrence frequency of the LLI is not "Weekly", "Monthly", or "Yearly". In this case, "The LLI occurrence frequency must be "Weekly", "Monthly", or "Yearly", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI occurrence is invalid."
 11. If any of the non-nullable options is null, and the user tries to submit, "This option must not be empty" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The non-nullable LLI input is null."
- The LLI title and category match the title and category of a LLI that the user has completed within one year prior to the current date. In this case, "You have completed this LLI within the past year. You can not recreate the same LLI within a year. Please try again later." is displayed to the user. The LLI is not saved to the persistent data store. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Persistent Data Store
- Log Message: "The LLI title and category match the title and category of a LLI that the user has completed within one year prior to the current date."
- Changes to the LLI^[3] attributes are not reflected in the persistent data store accurately. In this case, "The LLI failed to update." is displayed to the user. The LLI instance in the data store should not be changed. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "The LLI edits failed to be saved to the persistent data store."
- Changes to the LLI^[3] attributes are not reflected in the persistent data store accurately within 3 seconds but are reflected accurately within 5 seconds of the edit confirmation. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: "Operation exceeded time frame."
- Changes to the LLI^[3] attributes are not reflected in the persistent data store accurately within 5 seconds. In this case, "Operation took too long. Please try again later." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "Operation took too long."
- The LLI edit operation is not logged in the persistent data store, if the edit are made to the LLI in the persistent data store

1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The LLI edit operation was not recorded to the persistent data store.”
- The LLI^[3] edit operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LLI5 User Story^[17]: Filter LLIs^[3]

As an authenticated user, I can filter through the LLIs^[3] attached to my account using their attributes to categorize my life changing goals.

Effort Points (Hour) - 50

Complexity Scale: Medium

User Input

Optional Input

- Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[5]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”,

“Volunteering^[13]”, and “Food^[14]”

- There can be multiple categories selected at the same time
- The option is nullable. When the option is null, all the categories are selected
- Default value is null
- Status of LLI^[3]
 - The valid options are “Active”, “Completed”, “Postponed”
 - There can be multiple statuses selected at the same time
 - The option is nullable. When the option is null, all the statuses are selected
 - Default value is null
- Visibility of LLI^[3]
 - The valid options are “Public”, “Private”
 - There can be multiple visibilities selected at the same time
 - The option is nullable. When the option is null, all the visibilities are selected
 - Default value is the null

App Permissions

- Permission: Read
- Scope: LLI^[3]

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the LLI^[3] Management view

Success Outcome(s)

- The default filter is that all the filter options are null
- All inputs meets validation requirements in User Input section
- The filter results are sorted in the ascending order of the date created of the LLIs
- All LLIs matching the filters are displayed to the user
- All matching LLIs are displayed to the user within 3 seconds
- Each individual matching LLI must contain the following:
 - LLI^[3] title
 - Must only contain alphanumeric values
 - Must be between 1-50 characters long
 - The value is not nullable
 - Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[6]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”
 - The option is not nullable
 - Description of LLI^[3]
 - Must consist only of alphanumeric values between 0-200 characters long
 - The value is nullable
 - Status of LLI^[3]
 - The valid options are “Active”, “Completed”, “Postponed”
 - The option is not nullable
 - Visibility of LLI^[3]
 - The valid options are “Public, Private”
 - The option is not nullable

- Deadline of LLI^[3]
 - Must be a valid date in the format MM/DD/YYYY
 - The date must be between 01/01/1960 and 12/31/2100
 - The option is nullable
- Cost of LLI^[3]
 - Must be a numerical value greater or equal to \$0 USD
 - The unit of the cost is USD
 - Cost cannot be non-integers
 - Cost cannot exceed \$1 million USD
- Recurrence
 - The valid options are “On”, “Off”
 - The option is not nullable
- Recurrence Frequency
 - This input is only showed if the Recurrence option is “On”
 - The valid options are “Weekly”, “Monthly”, “Yearly”
 - If the Recurrence option is “Off”, the option is null
 - If the Recurrence option is “On”, the default option is “Monthly”
 - If the Recurrence option is “On”, the option is not nullable
- An option to edit the details
- The data in each matching LLI item must accurately reflect the data of that LLI in the persistent data store
- The filter operation is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the user searches for the LLIs
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info

- Log Category: Persistent Data Store
- Log Message: “LLI filter is successful.”

Failure Outcome(s)

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The default filter is not that all the filter options are null. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: View
 - Log Message: “The default filter is wrong.”
- All inputs do not meet validation requirements in the User Input section. In this case, “The filter selections are invalid, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The filter options are invalid.”
- The filter results are not sorted in the ascending order of the date created of the LLIs. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: View
 - Log Message: “The filter results are sorted incorrectly.”
- All LLIs matching the filter options are not displayed to the user. In this case, “Failed to get all LLIs from the filter. Please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store

- Log Message: “All LLIs matching the filter options are not displayed to the user.”
- No LLI is found with the filter options. In this case, “No LLI found. Please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The filter options do not match any LLI attached to the user.”
- All matching LLIs are not displayed to the user within 3 seconds but within 5 seconds. In this case, the system will attempt to asynchronously log the following. The matching LLIs are displayed
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “Operation exceeded time frame.”
- All matching LLIs are not displayed to the user within 5 seconds. In this case, “The operation took too long. Please try again later.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The LLI filter operation took too long.”
- Each individual matching LLI item does not contain all the details listed in the Success Outcome(s)
- The data in each matching LLI item does not accurately reflect the data of that LLI in the persistent data store
- The LLI filter operation is not logged in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system

will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The LLI filter operation was not recorded to the persistent data store.”
- The LLI^[3] filter operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LLI6 User Story^[17]: Search LLIs^[3]

As an authenticated user, I can search for any LLIs^[3] attached to my account using their title to quickly find my life changing goals.

Effort Points (Hour) - 100

Complexity Scale: Medium

User Input

Required Input

- LLI^[3] title
 - Must only contain alphanumeric values
 - Must be between 1-50 characters long
 - The value is not nullable

App Permissions

- Permission: Read
- Scope: LLI^[3]

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the LLI^[3] Management view

Success Outcome(s)

- The input meets the validation requirements in User Input section
- All LLIs with the title containing the input are displayed to the user
- All matching LLIs are displayed to the user within 3 seconds
- Each individual matching LLI must contain the following:
 - LLI^[3] title
 - Must only contain alphanumeric values
 - Must be between 1-50 characters long
 - The value is not nullable
 - Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[5]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”
 - The option is not nullable
 - Description of LLI^[3]
 - Must consist only of alphanumeric values between 0-200 characters long

- The value is nullable
- Status of LLI^[3]
 - The valid options are “Active”, “Completed”, “Postponed”
 - The option is not nullable
- Visibility of LLI^[3]
 - The valid options are “Public, Private”
 - The option is not nullable
- Deadline of LLI^[3]
 - Must be a valid date in the format MM/DD/YYYY
 - The date must be between 01/01/1960 and 12/31/2100
 - The option is nullable
- Cost of LLI^[3]
 - Must be a numerical value greater or equal to \$0 USD
 - The unit of the cost is USD
 - Cost cannot be non-integers
 - Cost cannot exceed \$1 million USD
- Recurrence
 - The valid options are “On”, “Off”
 - The option is not nullable
- Recurrence Frequency
 - This input is only showed if the Recurrence option is “On”
 - The valid options are “Weekly”, “Monthly”, “Yearly”
 - If the Recurrence option is “Off”, the option is null
 - If the Recurrence option is “On”, the default option is “Monthly”
 - If the Recurrence option is “On”, the option is not nullable
- An option to edit the details
- The data in each matching LLI item must accurately reflect the data of that LLI in the persistent data store

- The search operation is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the user searches for the LLIs
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “LLI search is successful”

Failure Outcome(s)

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section. In this case, “The search query is invalid, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The search query is invalid.”
- All LLIs with the title containing the input are not displayed to the user. In this case, “Failed to get all LLIs from the search. Please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “All LLIs matching the search query are not displayed to the user.”
- No LLI is found with the search query. In this case, “No LLI found. Please try

again.” is displayed to the user. The system will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The search query does not match any LLI attached to the user.”
- All matching LLIs are not displayed to the user within 3 seconds but within 5 seconds. In this case, the system will attempt to asynchronously log the following. The matching LLIs are displayed
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “Operation exceeded time frame.”
- All matching LLIs are not displayed to the user within 5 seconds. In this case, “The search took too long. Please try again later.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The LLI search operation took too long.”
- Each individual matching LLI item does not contain all the details listed in the Success Outcome(s)
- The data in each matching LLI item does not accurately reflect the data of that LLI in the persistent data store
- The LLI search operation is not logged in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store

- Log Message: “The LLI search operation was not recorded to the persistent data store.”
- The LLI^[3] search operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LLI Recommendation Engine[4]

RE1 User Story^[17]: Get LLI^[3] Recommendation

As an authenticated user, I can use the recommendation engine to have 5 LLI^[3] recommended to me in a random order based on scores generated from only survey results and past LLI^[3] to view.

Effort Points (hours) - 125

Complexity Level - High

App Permissions

- Permission: Read and Write
- Scope: All Lifelog User’s Public LLI

Target Audience - All authenticated normal user(s)

Pre-conditions -

1. The user is registered
2. The user is authenticated
3. The authenticated user has completed the user form^[16]
4. The authenticated user is on the “Recommendation Engine” view

Success Outcomes

- The Recommendation Engine will score each category accurately based on the user’s data, meaning:
 - Each category receives a score greater than 0
 - The user form category ranking will be accurately factored into scoring, based on developer defined score values, with items ranked ‘better’ on the user form scoring more, and items ranked ‘worse’ scoring less.
 - User’s LLI will be accurately factored into the scoring criteria based on their status.
 - Completed LLI worth the most
 - Active LLI worth less than completed, but more than postponed
 - Postponed LLI worth the least
- The 5 recommended LLI must:
 - Have a title that is a non null alphanumeric string of characters of length 1-50
 - Have a title that does not match the title of an LLI the user has set as complete within the last year from the current date.
 - Only have valid categories. Valid categories are:
 - Mental Health
 - Physical Health
 - Outdoor
 - Sport
 - Art

- Hobby
 - Thrill
 - Travel
 - Volunteering
 - Food
- Have its title and category(ies) exist as a public item together in the persistent datastore of LLI
- The 5 recommended LLI^[3] will be of correct categories, meaning:
 - 2 LLI^[3] will have the category of the category scored highest for that user by the recommendation engine
 - 1 LLI^[3] will have the category of the most common category in public user's LLI^[3]
 - 1 LLI^[3] will have the category of the second highest scoring category
 - 1 LLI^[3] will have the category of any category excluding the 2 highest scoring categories
 - The LLI will have one of it's categories scored higher than 2 by the Recommendation Engine
- 5 valid LLI^[3] are pulled from the persistent data store
- The 5 valid LLI^[3] are recommended within 3 seconds
- The recommendation engine operation is logged to the persistent data store when the recommendations are displayed to the user.
- The following is included in the success log:
 - Timestamp
 - When the recommendation engine operation successfully completed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info

- Log Category: View
- Log message: “Recommendation engine accurately provided a user with 5 recommendations”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The Recommendation Engine does not score each category accurately
 1. 3 or less categories do not receive a score greater than 0. The system will try to asynchronously create a log entry with the following information:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “A category did not receive a score greater than 0. There was an issue with the score generation process.”
 2. More than 3 categories did not receive a score greater than 0. The system will display: “The recommendation engine’s scoring process is currently experiencing issues. Please try again later”, and the system will try to create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Multiple categories did not receive a score greater than zero. There was a significant issue causing the scoring process to be interrupted.”
 3. The score of each of the 10 categories must be greater than or equal to the amount of points awarded by the system for the user form ranking.
 - a. The first ranked category must earn greater than or equal to 25 points.

- b. The second ranked category must earn greater than or equal to 18 points.
 - c. The third ranked category must earn greater than or equal to 15 points.
 - d. The fourth ranked category must earn greater than or equal to 12 points.
 - e. The fifth ranked category must earn greater than or equal to 10 points.
 - f. The sixth ranked category must earn greater than or equal to 8 points.
 - g. The seventh ranked category must earn greater than or equal to 6 points.
 - h. The eighth ranked category must earn greater than or equal to 4 points.
 - i. The ninth ranked category must earn greater than or equal to 2 points.
 - j. The tenth ranked category must earn greater than or equal to 1 point.
- If any of the above conditions are not true, the user will receive the message: “We’re sorry, the recommendation engine is currently unavailable. Please try again later!” The system will attempt to asynchronous log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “The recommendation engine was unable to accurately score LLI with user form info.”
- The 5 LLI^[3] are not pulled from the persistent data store.
 - 1. The amount of logs in the persistent data store does not increase by at

least 1. The user will be unable to use the recommendation engine. The user will get a message: “We’re sorry, the LLI datastore is currently unreachable. Please wait and try again later!” . The system will attempt to asynchronously log the following:

- Log Level: ERROR
- Log Category: Persistent Data Store
- Log Message: “The recommendation engine was unable to pull 5 LLI from the persistent data store, there was an issue communicating with the persistent data store.”

- Any of the 5 recommended LLI objects are not valid

1. A LLI from the persistent data store has a title that is not a non null alphanumeric string of characters of length 1-50. The user will receive a message: “We’re sorry, the recommendation engine is currently unavailable - our LLI management is experiencing some internal issues. Please try again later!” The system will attempt to asynchronously log the following:

- Log Level: ERROR
- Log Category: Business
- Log Message: “LLI title is not a non null alphanumeric string of characters of length 1-50, indicating that somewhere in system LLI are able to be added with invalid titles.”

2. A LLI fetched from the persistent data store has the same title as an LLI the user has set as complete within the last year. The recommendation engine process will not be aborted. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Business
- Log Message: “LLI fetched from the persistent data store has the

same title as an LLI that has been set as complete by the user within the last year.”

3. A LLI from the persistent data store has a category that does not exist in the set of valid LLI categories (Mental Health, Physical Health, Outdoor, Sport, Art, Hobby, Thrill, Travel, Volunteering, Food). The user will receive a message: “We’re sorry, the recommendation engine is currently unavailable – our LLI management is experiencing some internal issues. Please try again later!” The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “LLI category does not belong to the valid set of LLI categories, indicating that somewhere in system LLI are able to be added with invalid categories.”
4. The LLI’s title and category(ies) do not exist as a public item together in the persistent datastore of LLI. The recommendation engine process will not be aborted. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “LLI’s title and category(ies) do not exist together in the persistent data store of LLI.”
- Any of the 5 recommended LLI does not belong to a valid category
 1. Any of the recommended LLI do not have their highest scoring category scored higher than 2 by the Recommendation Engine. The recommendation engine process will not be aborted. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Business
 - Log Message: "A recommended LLI's highest scoring category did not score more than 2."
2. At least 2 of the 5 LLIs^[3] do not have the category of the category scored highest for that user by the recommendation engine. The recommendation engine process will not be aborted. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "At least 2 of the 5 LLI do not have the category of the category scored highest for that user by the recommendation engine."
 3. At least 1 of the 5 LLI^[3] will have the category of the most common category of public LLI^[3]. The recommendation engine process will not be aborted. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "At least 1 of the 5 recommended LLI does not have the category of the most common category of public LLI."
 4. 1 LLI^[3] will have the category of the second highest scoring category. The recommendation engine process will not be aborted. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: "At least 1 of the 5 recommended LLI does not have the category of the second most common category of public LLI."
 5. 1 LLI^[3] will have the category of any category excluding the 2 highest scoring categories. The recommendation engine process will not be

aborted. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Business
- Log Message: "At least 1 of the 5 recommended LLI does not have a category that isn't one of the 2 highest scoring categories."

- 5 LLI are not recommended within 3 seconds

1. The 5 LLI are recommended in more than 3 seconds, but less than 15 seconds. The user will be able to continue using the recommendation engine. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Business
- Log Message: "The 5 LLI were recommended in longer than 3 seconds, but less than 15 seconds."

2. The 5 LLI are recommended in greater than 15 seconds. The user's recommendation engine interaction will stop, and they will receive the message: "We're sorry, the recommendation engine is having trouble reaching the persistent data store efficiently." The system will attempt to asynchronously log the following:

- Log Level: ERROR
- Log Category: Business
- Log Message: "The 5 LLI were recommended in longer than 15 seconds."

- Outcome is not logged to the persistent data store

1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:

- Log Level: Warning

- Log Category: Persistent Data Store
- Log Message: “The recommendation engine operation was not recorded to the persistent data store.”
- The outcome is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

RE2 User story^[17]: Add Recommended LLI^[3]

As an authorized user, I can add a LLI^[3] recommended by RE1 to my account, saving them as a personal goal.

Effort Points (hours) – 50

Complexity Level – Medium

User Input

The user can modify parts of the LLI recommended by RE1, these are the validation requirements for those modifications on the existing recommended LLI

Optional Input

- Modification of LLI^[3] title
 - Must only contain alphanumeric values
 - Must be between 1-50 characters long
 - Default value is the title of the referenced LLI^[3]
 - Not Nullable

- Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[5]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”
 - Default value is the category of the referenced LLI^[3]
 - Not nullable
- Description of LLI^[3]
 - Must consist only of alphanumeric values between 0-200 characters long
 - Default value is null
- Status of LLI^[3]
 - The valid options are “Active”, “Completed”, “Postponed”
 - Default to “Active”
 - Not nullable
- Visibility of LLI^[3]
 - The valid options are “Public, Private”
 - Default to “Public”
 - Not nullable
- Deadline of LLI^[3]
 - Must be a valid date in the format MM/DD/YYYY
 - The date must be between 01/01/19 AD and 12/31/2100 AD
 - Default deadline is null
- Cost of LLI^[3]
 - Must be a numerical value greater or equal to 0
 - Default cost is null

Pre-conditions -

1. The user is registered

2. The user is authenticated
3. The authenticated user has completed the user form^[16]
4. The authenticated user has activated the recommendation engine

App Permissions

- Permission: Write
- Scope: Lifelog User's LLI

Target Audience - All authenticated normal users

Success Outcomes

- All inputs meets validation requirements in User Input section
- The LLI title and category must not match the title and category of a LLI that the user has completed within one year prior to the current date
- The new LLI^[3] is accurately associated with the authenticated user's account in the relational database
- The LLI^[3] is saved to the persistent data store within 3 seconds
- The add recommendation LLI^[3] operation is logged in the persistent data store
- The following is included in the success log:
 - Timestamp
 - When the recommendation engine add LLI operation successfully completed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log Category: Persistent Data Store
 - Log message: "A user has successfully created an LLI from a recommendation engine recommendation"

Failure Outcomes

Every failure outcome's log will have its "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section. In this case, "The LLI inputs are invalid, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data Store
 - Log Message: "The LLI inputs are invalid."
- The LLI title and category match the title and category of a LLI that the user has completed within one year prior to the current date. In this case, "You have completed this LLI within the past year. You can not recreate the same LLI within a year. Please try again later." is displayed to the user. The LLI is not saved to the persistent data store. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data Store
 - Log Message: "The LLI title and category matches the title and category of a LLI that the user has completed within one year prior to the current date."
- The new LLI^[3] is not added to the authenticated user's account in the persistent data store. In this case, "The LLI failed to save to the user's account" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "The LLI failed to save to the user's account in the

persistent data store.”

- The new LLI^[3] is not saved to the relational database within 3 seconds of the creation confirmation. In this case, “The LLI fails to save” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “LLI’s failed to save into the persistent data store.”
- The LLI^[3] creation operation is not logged in the persistent data store, when the LLI is saved to the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The LLI creation operation was not recorded to the persistent data store.”
- The LLI^[3] creation outcome is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

Lifelog Calendar

LC1 User Story^[17]: View Calendar

As an authenticated user, I can filter the calendar by month to visualize my LLI^[3]

Effort Points (Hour) - 100 points

Complexity Scale: Medium

User Input

Optional Input

- Time period filter
 - Month (Gregorian Calendar)
 - Year (1960 - Current Year)
 - Default value: Current system MM/YY

App Permissions

- Permission: Read
- Scope: Lifelog User Account

Target Audience - All authenticated normal users

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is on the calendar view

Success Outcomes

- When a user creates a new LLI, the calendar populates with their LLI^[3] on the respective deadlines. This happens when they are within the authenticated user's calendar view
- The calendar will be visually impacted by the filter input, defined in the User

Inputs

- The calendar's filter options are correctly shown to the user
- The calendar is filtered and visualized with LLI^[3] on their respective deadlines within 3 seconds
- When in the calendar view the user viewing their LLI^[3] in calendar is logged in the persistent data store
- The following is included in the log:
 - Timestamp
 - When the filtered calendar is displayed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log Category: View
 - Log Message: "User has viewed the calendar"

Failure Outcomes

Every failure outcome's log will have it's "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The calendar does not populate with LLI^[3] on their respective deadlines, in this case the user cannot view the calendar and the message "Calendar did not populate with LLI" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "LLI not shown on calendar"
- The calendar display does not reflect one or more of the user's filter specifications. Users will still be able to go to calendar view and the message "Filter specifications are not met" The system will attempt to asynchronously

log the following:

- Log Level: Warning
 - Log Category: View
 - Log Message: “Calendar filter did not work”
- The calendar is not filtered and visualized with LLI^[3] on their respective deadlines within 3 seconds. When this happens the user cannot go to the calendar view and the message “Calendar did not populate with LLI within 3 seconds” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Data Store
 - Log Message: “Calendar filter did not work”
- The user viewing their LLI^[3] in the calendar is not logged in the persistent data store. This immediately kicks out the unauthorized user and the message “ERROR unauthorized user” is shown. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Data Store
 - Log Message: “Unauthorized User in Calendar View”
- The Calendar view operation is not logged in the persistent data store, when the authorized user is viewing their calendar
- The Calendar view operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LC2 User Story^[17]: Edit LLI^[3] Using Calendar

As an authenticated user I can use the calendar to modify existing LLI^[3], enabling ease of access to existing LLI^[3] through the calendar.

Effort Points (Hour) - 50 points

Complexity Scale: Low

User Input

Optional Input

- LLI^[3] title
 - Must only contain alphanumeric values
 - Must be between 1-50 characters long
 - The value is not nullable
 - Default value is current title
- Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[5]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”
 - The option is not nullable
 - Default value is the current category/categories
- Description of LLI^[3]
 - Must consist only of alphanumeric values between 0-200 characters long
 - The value is nullable
 - Default value is the current description
- Status of LLI^[3]

- The valid options are “Active”, “Completed”, “Postponed”
 - The option is not nullable
 - Default value is the current status
- Visibility of LLI^[3]
 - The valid options are “Public, Private”
 - The option is not nullable
 - Default value is the current visibility
- Deadline of LLI^[3]
 - Must be a valid date in the format MM/DD/YYYY
 - The date must be between 01/01/1960 and 12/31/2100
 - The option is nullable
 - Default value is the current deadline
- Cost of LLI^[3]
 - Must be a numerical value greater or equal to \$0 USD
 - The unit of the cost is USD
 - Cost cannot be non-integers
 - Cost cannot exceed \$1 million USD
 - Default cost is the current cost
- Recurrence
 - The valid options are “On”, “Off”
 - The default option is “Off”
 - The option is not nullable
- Recurrence Frequency
 - This input is only showed if the Recurrence option is “On”
 - The valid options are “Weekly”, “Monthly”, “Yearly”
 - If the Recurrence option is “Off”, the option is null
 - If the Recurrence option is “On”, the default option is “Monthly”
 - If the Recurrence option is “On”, the option is not nullable

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Target Audience - Any authorized User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is on the calendar view

Success Outcomes

- Changes, if any, to the LLI^[3] attributes are accurately reflected in the relational database
- All inputs meets validation requirements in User Input section
- The calendar view contains the reflected changes, if any
- The message “LLI has been successfully changed” would be shown to user
- Changes, if any, are saved to the persistent data store within 3 seconds of the user initializing the change action
- The LLI^[3] change through the calendar is logged in the persistent data store
- The following is included in the log:
 - Timestamp
 - When the LLIs^[3] updates are stored in persistent data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log Category: Edit

- Log Message: “User changed a LLI^[3] using the calendar“

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section.
 1. The title of LLI does not contain only alphanumeric values between 1-50 characters long . In this case, “The LLI title must only contain alphanumeric values between 1-50 characters long, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The LLI title is invalid.”
 2. The category/categories of the LLI is not one or more options specified in the User Input. In this case, “The LLI category must be valid, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: “The LLI category is invalid.”
 3. The description of the LLI does not contain only alphanumeric values between 1-200 characters long . In this case, “The LLI description must only contain alphanumeric values between 1-200 characters long, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Data
 - Log Message: "The LLI description is invalid."
4. The status of LLI is not "Active", "Completed", or "Postponed". In this case, "The LLI status must be either "Active", "Completed", or "Postponed", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI status is invalid."
 5. The status of the LLI is not "Active", "Completed", or "Postponed". In this case, "The LLI status must be either "Active", "Completed", or "Postponed", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI status is invalid."
 6. The visibility of the LLI is not "Public" or "Private". In this case, "The LLI visibility must be either "Public" or "Private", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI visibility is invalid."
 7. The deadline of the LLI is not between 01/01/1960 and 12/31/2100. In this case, "The LLI deadline must be between 01/01/1960 and 12/31/2100, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Data
 - Log Message: "The LLI deadline is invalid."
8. The cost of the LLI is not a numerical value greater or equal to \$0 USD, "The LLI cost must be a numerical value greater or equal to \$0 USD, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI cost is invalid."
9. The occurrence of the LLI is not "On" or "Off". In this case, "The LLI occurrence must be either "On" or "Off", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI occurrence is invalid."
10. The occurrence frequency of the LLI is not "Weekly", "Monthly", or "Yearly". In this case, "The LLI occurrence frequency must be "Weekly", "Monthly", or "Yearly", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI occurrence is invalid."
11. If any of the non-nullable options is null, and the user tries to submit, "This option must not be empty" is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The non-nullable LLI input is null."

- Changes to the LLI^[3] attributes are not reflected in the persistent data store accurately within 3 seconds of the user initializing the change action. In this case, “The LLI failed to update” is displayed to the user. The LLI instance in the data store should not be changed. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The LLI edits though the calendar failed to be saved to the persistent data store.”
- The LLI title and category match the title and category of a LLI that the user has completed within one year prior to the current date. In this case, “You have completed this LLI within the past year. You can not recreate the same LLI within a year. Please try again later.” is displayed to the user. The LLI is not saved to the persistent data store. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The LLI title and category match the title and category of a LLI that the user has completed within one year prior to the current date.”
- The LLI edit operation is not logged in the persistent data store, if the edit are made to the LLI in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The LLI edit operation was not recorded to the

persistent data store.”

- The calendar view doesn’t contain the reflected changes of the user’s modified LLI, if any. In this case, “LLI changes are not shown” will be shown to the user and the user cannot access the Calendar view. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: “LLI modifications are not shown on calendar.”
- The LLI^[3] edit through calendar operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LC3 User Story^[17]: Create LLI^[3] Using Calendar

As a registered user I can click a date on the calendar to create a new LLI^[3], enabling a visual method of LLI^[3] creation.

Effort Points (Hour) - 75 points

Complexity Scale: Medium

User Input

Required Input

- Title of LLI^[3]
 - Must only contains alphanumeric values between 1-50 characters long

- The value is not nullable
- Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[5]”, “Mental Health^[5]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”
 - The option is not nullable

Optional Input

- Description of LLI^[3]
 - Must consist only of alphanumeric values between 0–200 characters long
 - Default to null
- Status of LLI^[3]
 - The valid options are “Active”, “Completed”, “Postponed”
 - The option is not nullable
 - Default to “Active”
- Visibility of LLI^[3]
 - The valid options are “Public”, “Private”
 - The option is not nullable
 - Default to “Public”
- Deadline of LLI^[3]
 - Must be a valid date in the format MM/DD/YYYY
 - The date must be between 01/01/1960 and 12/31/2100
 - Default to null
- Cost of LLI^[3]
 - Must be a numerical value greater or equal to \$0 USD
 - The unit of the cost is USD
 - Cost cannot be non-integers

- Cost cannot exceed \$1 million USD
 - Default to null
- Recurrence
 - The valid options are “On”, “Off”
 - The default option is “Off”
 - The option is not nullable
- Recurrence Frequency
 - This input is only showed if the Recurrence option is “On”
 - The valid options are “Weekly”, “Monthly”, “Yearly”
 - If the Recurrence option is “Off”, the option is null
 - If the Recurrence option is “On”, the default option is “Monthly”
 - If the Recurrence option is “On”, the option is not nullable

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Target Audience - All authenticated Normal Users

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is on the calendar view

Success Outcomes

- All inputs meets validation requirements in User Input section
- The LLI title and category must not match the title and category of a LLI that the user has completed within one year prior to the current date

- The new LLI^[3] is saved to the persistent data store within 3 seconds of the creation confirmation
- The new LLI^[3] is added to the authenticated user's account in the relational database
- "The LLI is successfully created" is displayed to the user, if the LLI^[3] has been created in the persistent data store
- The LLI^[3] creation through the calendar is logged in the persistent data store. When the LLI is saved to the persistent data store
- The following is included in the log:
 - Timestamp
 - When the LLI^[3] is created and stored in persistent data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log category: Persistent Data Store
 - Log Message: "The user created a LLI^[3] using the calendar"

Failure Outcomes

Every failure outcome's log will have it's "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section.
 1. The title of LLI does not contain only alphanumeric values between 1-50 characters long . In this case, "The LLI title must only contain alphanumeric values between 1-50 characters long, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Data
 - Log Message: "The LLI title is invalid."
2. The category/categories of the LLI is not one or more options specified in the User Input. In this case, "The LLI category must be valid, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI category is invalid."
 3. The description of the LLI does not contain only alphanumeric values between 1-200 characters long . In this case, "The LLI description must only contain alphanumeric values between 1-200 characters long, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI description is invalid."
 4. The status of LLI is not "Active", "Completed", or "Postponed". In this case, "The LLI status must be either "Active", "Completed", or "Postponed", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI status is invalid."
 5. The status of the LLI is not "Active", "Completed", or "Postponed". In this case, "The LLI status must be either "Active", "Completed", or "Postponed", please try again." is displayed to the user. The system will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI status is invalid."
6. The visibility of the LLI is not "Public" or "Private". In this case, "The LLI visibility must be either "Public" or "Private", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI visibility is invalid."
7. The deadline of the LLI is not between 01/01/1960 and 12/31/2100. In this case, "The LLI deadline must be between 01/01/1960 and 12/31/2100, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI deadline is invalid."
8. The cost of the LLI is not a numerical value greater or equal to \$0 USD, "The LLI cost must be a numerical value greater or equal to \$0 USD, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI cost is invalid."
9. The occurrence of the LLI is not "On" or "Off". In this case, "The LLI occurrence must be either "On" or "Off", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning

- Log Category: Data
 - Log Message: "The LLI occurrence is invalid."
10. The occurrence frequency of the LLI is not "Weekly", "Monthly", or "Yearly". In this case, "The LLI occurrence frequency must be "Weekly", "Monthly", or "Yearly", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI occurrence is invalid."
11. If any of the non-nullable options is null, and the user tries to submit, "This option must not be empty" is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The non-nullable LLI input is null."
- The LLI title and category match the title and category of a LLI that the user has completed within one year prior to the current date. In this case, "You have completed this LLI within the past year. You can not recreate the same LLI within a year. Please try again later." is displayed to the user. The LLI is not saved to the persistent data store. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data Store
 - Log Message: "The LLI title and category matches the title and category of a LLI that the user has completed within one year prior to the current date."
 - The new LLI^[3] is not saved to the relational database within 3 seconds of the creation confirmation. In this case, "The LLI fails to save" is displayed to the

user. The system will attempt to asynchronously log the following:

- Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “LLI’s failed to save into the persistent data store.”
- The new LLI^[3] is not added to the authenticated user’s account in the persistent data store. In this case, “The LLI failed to save to the user's account” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The LLI failed to save to the user's account in the persistent data store.”
- The LLI^[3] creation through calendar operation is not logged in the persistent data store, when the LLI is saved to the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The LLI creation operation was not recorded to the persistent data store.”
- The LLI^[3] creation operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LC4 User Story^[17]: Write to a Personal Note using Calendar

As an authenticated user, I can choose a personal note on the calendar to write down my goals, accomplishments, thoughts, and feelings.

Effort Points (Hour) - 75 points

Complexity Scale: Low

User Input

Required Input

- User Content
 - Must consist only of alphanumeric values between 0-1200 characters long
 - Default to null

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The user is on Calendar view

Success Outcomes

- The input meets validation requirements in the User Input section
- The notes made get saved to the persistent data store within 3 seconds when the authenticated users writes and saves notes on that specific day.
- The current day is displayed on the Note when the authenticated user decides to use the Note.
 - The Date displayed to the user follows the following format:
 - Default value: Current systems DD/MM/YY
- When the user successfully makes a note though the calendar, the message “Note successfully created with calendar” is shown to user
- The personal log though calendar operation is logged in the persistent data store, when the LLI is saved to the persistent data store
- The log includes the following:
 - Timestamp
 - When the Note is saved in the persistent datastore
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “The note is successfully created though the calendar .”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section. In this case, “The input is invalid, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: Data Store
 - Log Message: “Note input is invalid.”
- The new note is not saved to the relational database within 3 seconds of the creation confirmation. In this case, “The Note failed to save” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “Note failed to save into the persistent data store.”
- The date on the note is incorrect. In this case, “Failed to load date” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: “Note failed to fetch system date.”
- The Note creation is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LC5 User Story^[17]: View the Personal Note though Calendar

As an authenticated user, I can view my personal notes on the calendar to see what thoughts I have put for this day

Effort Points (Hour) - 50 points

Complexity Scale: Low

User Input

Required Input

- Select the day to view corresponding personal note written that day

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Calendar view

Success Outcome(s)

- The input meets validation requirements in the User Input section
- The Personal Notes are loaded in the calendar view within 3 seconds of the user requesting Note for a specific date.
- The Note view though calendar operation is logged in the persistent data store.
- The log includes the following:
 - Timestamp
 - When the user looks at a personal note
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “User is viewing Personal Note though calendar”

Failure Outcomes

Every failure outcome's log will have its "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Note is not loaded in the Calendar view. In this case, "The personal notes aren't available in the calendar. Please try again later" is displayed to the user. The user is redirected back to the Calendar view. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "The Personal Notes in the Calendar failed to load."
- Note is not loaded in the Calendar view within 3 seconds but is loaded within 5 seconds. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: "Personal notes in calendar operation exceeded time frame."
- The data in each personal note must accurately reflect the data of that personal note in the persistent data store. "The personal notes aren't accurate in the calendar. Please try again later" is displayed to the user. The user is redirected back to the Calendar view. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "The Personal Notes in the Calendar are inaccurate."
- When the user is viewing Personal Notes through the calendar, the action is not logged in the persistent data store

1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The note viewing though calendar operation was not recorded to the persistent data store.”
- When the user views a personal note on the calendar, the action is logged in the persistent data store, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

Life Tree

LT1 User Story^[17]: View Tree

As an authenticated user I will be able to view my tree grow as new branches are added with the accomplishment of each LLI during my time on LifeLog, encouraging me to continue my life changing journey and grow together with my tree.

Effort Points (Hour) – 100

Complexity Scale: Medium

App Permissions

- Permission: Read
- Scope: Lifelog User Account

Target Audience - Any authorized User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is on the Life Tree view

Success Outcomes

- When a user has an accomplished LLI, the Life tree visually grows and is added with tree growth.
- Life Tree height and amount of branches is accurately correlated with amount of accomplished LLI
- When a user get on Life Tree View, Life Tree with accurate amount of branches and growth is shown to the Life Tree view within 3 seconds
- When the user views their Life Tree that is logged to the persistent Data store
- The following is included in the log:
 - Timestamp
 - When the Life Tree view is finalized and displayed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log Type : Category
 - Log Message: "The user accessed the Life Tree view"

Failure Outcomes

Every failure outcome's log will have its "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- When a user has an accomplished LLI, the Life tree doesn't visually grow and branches aren't added with tree growth. The message "ERROR with viewing Life Tree" will be shown to the user and User won't be allowed on the Life Tree view. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "Life Tree did not grow "
- Life Tree height and amount of branches is not accurately correlated with the amount of accomplished LLI. "Tree height and branches aren't accurately represented" will be shown to the user and User won't be allowed on the Life Tree view. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "Life Tree Information is inaccurate"
- When a user gets on the Life Tree view, a Life Tree with an accurate amount of branches and growth is shown to the Life Tree view took more than 3 seconds. The message "Viewing Life tree took more than 3 seconds" will be shown to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: View
 - Log Message: "Loading Life Tree took more than 3 seconds"
- When the User views their Life Tree that is not logged to the persistent Data store. The message "Life tree viewing wasn't logged" is shown to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning

- Log Category: View
- Log Message: “Life Tree viewing wasn’t logged”
- The Life Tree view operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LT2 User Story^[17]: View Branch

As an authenticated user I can look at individual branches of my Life tree to see a detailed view of past LLI that I have accomplished on each branch of the tree.

Effort Points (Hour) - 50

Complexity Scale: Low

App Permissions

- Permission: Read
- Scope: Lifelog User Account

Target Audience - Any authorized User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is on the Life Tree view

Success Outcomes

- Branches are accurate to the LLI user has completed
- New Branches that are added will be the latest LLI that user has accomplished and previous branches are past LLI user has accomplished
- User's accomplished LLI is successfully fetched from relational database
- User's accomplished LLI being fetched from relational database and Branch contents being filled with the LLI being fetched will take 3 seconds
- The user viewing a branch is logged in the persistent data store
- The following is included in the log:
 - Timestamp
 - LLI visibly shown on a branch on the Life Tree
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log Type: View
 - Log Message: "User's views a life tree branch"

Failure Outcomes

Every failure outcome's log will have it's "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Branches are not accurate to the LLI user has completed. The message "Branch contents are inaccurate" will be shown to the user and the user will not be able to view branches. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "Inaccurate LLI inside branch "

- New Branches that are added are not the latest LLI that the user has accomplished and previous branches are not past LLI users have accomplished. The message “Branches are in the wrong place” will be shown to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: View
 - Log Message: “Branches are not in order”
- User’s accomplished LLI is not successfully fetched from relational databases. The message “accomplished LLI are not in branches” will be shown to the user and the user will not be able to view branches. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Relational database
 - Log Message: “LLI data was not fetched”
- User’s accomplished LLI being fetched from relational database and Branch contents being filled with the LLI being fetched didn’t take 3 seconds. The message “Loading Branches took more than 3 seconds” will be shown to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Relational database
 - Log Message: “Branch operation took more than 3 seconds”
- The user viewing a branch is not logged in the persistent data store. The message “Viewing branch is not logged” will be shown to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: View
 - Log Message: “Branch viewing is not logged ”
- The Life Tree branch view operation is logged, but it does not accurately depict

any of the following information

- Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
- Log Level: Info, Debug, Warning, or ERROR
- Log Category: View, Business, Server, Data, or Persistent Data Store
- Log Message: Context about where the log is coming from

LT3 User Story^[17]: Write to a Personal Note using Life Tree

As an authenticated user, I can choose a personal note on the Life tree to write down my goals, accomplishments, thoughts, and feelings.

Effort Points (Hour) - 100 points

Complexity Scale: Low

User Input

Required Input

- User Content
 - Must consist only of alphanumeric values between 0-1200 characters long
 - Default to null

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The user is on Life Tree

Success Outcomes

- The input meets validation requirements in the User Input section
- The notes made get saved to the persistent data store within 3 seconds when the authenticated users writes and saves notes on that specific day.
- The current day is displayed on the Note when the authenticated user decides to use the Note.
 - The Date displayed to the user follows the following format:
 - Default value: Current systems DD/MM/YY
- When the user successfully makes a note though the life tree, the message “Note successfully created with life tree” is shown to user
- The personal log though life tree operation is logged in the persistent data store, when the LLI is saved to the persistent data store
- The log includes the following:
 - Timestamp
 - When the Note is saved in the persistent datastore
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “The note is successfully created though the life tree .”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a

timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section. In this case, “The input is invalid, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data Store
 - Log Message: “Note input is invalid.”
- The new note is not saved to the relational database within 3 seconds of the creation confirmation. In this case, “The Note failed to save” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “Note failed to save into the persistent data store.”
- The date on the note is incorrect. In this case, “Failed to load date” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: “Note failed to fetch system date.”
- The Note creation is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

LT4 User Story^[17]: View the Personal Note though Life Tree

As an authenticated user, I can view my personal notes on the life tree to see what thoughts I have put during that time.

Effort Points (Hour) - 100 points

Complexity Scale: Low

User Input

Required Input

- Select the day to view corresponding personal note written that day

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Life Tree view

Success Outcome(s)

- The input meets validation requirements in the User Input section
- The Personal Notes are loaded in the Life Tree view within 3 seconds of the user requesting Note for a specific date.
- The Note view though life tree operation is logged in the persistent data store.
- The log includes the following:

- Timestamp
 - When the user looks at a personal note
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
- Log Level: Info
- Log Category: Persistent Data Store
- Log Message: “User is viewing Personal Note though life tree”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Note is not loaded in the Life Tree view. In this case, “The personal notes aren't available in the Life Tree. Please try again later” is displayed to the user. The user is redirected back to the Life Tree view. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: “The Personal Notes in the life tree failed to load.”
- Note is not loaded in the Life Tree view within 3 seconds but is loaded within 5 seconds. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “Personal notes in Life Tree operation exceeded time frame.”
- The data in each personal note must accurately reflect the data of that personal note in the persistent data store. “The personal notes aren't accurate in the Life

Tree. Please try again later” is displayed to the user. The user is redirected back to the Life Tree view. The system will attempt to asynchronously log the following:

- Log Level: ERROR
 - Log Category: View
 - Log Message: “The Personal Notes in the Life Tree are inaccurate.”
- When the user is viewing Personal Notes through the Life Tree, the action is not logged in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The note viewing through Life Tree operation was not recorded to the persistent data store.”
- When the user views a personal note on the Life Tree, the action is logged in the persistent data store, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

Lifelog Reminders

LR1 User Story¹⁷: Receive Reminders

As a registered user I customize the frequency between weekly, monthly, or never for

receiving my emails. I can also customize my reminder email content based on my as well as the contents of my reminder emails between the choice of being based on my completed LLIs^[3] or planned LLIs^[3], motivating me about my LLI^[3] goals.

Effort Points (Hour) - 50

Complexity Level - Low

User Input

Optional Input

- Email frequency
 - The frequency can be either weekly, monthly or never
 - Default value is weekly
- Contents
 - The contents can be based off of:
 - Completed LLIs^[3] (status completed)
 - Planned LLIs^[3] (status, active or postponed)
 - All LLI^[3]
 - Default value for content focus is Completed LLIs^[3]

App Permissions

- Permission: Read and Write
- Scope: Lifelog User Account

Target Audience - Any authorized Normal User

Pre-conditions

1. The user is registered

2. The user is authenticated
3. The authenticated user is on the Reminders view
4. The authenticated user has agreed to receiving emails from Lifelog

Success Outcomes

- User's preferences are saved in the persistent data store
- User's preference in email frequency is followed, as outlined in user input
- User's preference in email content is followed, as outlined in user input
- The Lifelog reminder preference change operation is logged in the persistent data store after the user is done editing their preferences and exits the view
- The following is included in the log:
 - Timestamp
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - When the Lifelog reminder preference change operation is completed
 - Log Type (Info)
 - Log Category(View)
 - Log message: "User reminder preference was saved successfully"
- When the system sends a Lifelog Reminders email to the user it will be logged
- The following is included in the log:
 - Timestamp
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - When the Lifelog reminder has sent an email to the user
 - Log Type (Info)
 - Log Category(View)
 - Log message: "Lifelog successfully sent a Lifelog Reminders email to the

user”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- User’s preferences were not saved in the persistent data store the system will asynchronously create a log entry with the following information:
 - Log Level: Debug
 - Log Category: Business
 - Log Message: “The quotes have not been recycled”
- User’s preference in email frequency is followed, as outlined in user input the system will asynchronously create a log entry with the following information:
 - Log Level: Debug
 - Log Category: Business
 - Log Message: “The quotes have not been recycled”
- User’s preference in email content is followed, as outlined in user input the system will asynchronously create a log entry with the following information:
 - Log Level: Debug
 - Log Category: Business
 - Log Message: “The quotes have not been recycled”
- When the system has failed to send the user a Lifelog Reminders email
 - Log Level: Debug
 - Log Category: Business
 - Log Message: “The user was not sent a Lifelog Reminders email”

Media Mementos

MM1 User Story^[17]: Upload Media

As an authenticated user I can upload a media file to an LLI^[3], to personalize my experience of accomplishing the LLI^[3].

Effort Points - 100

Complexity Level - Medium

User Input

Required Input

- Media File
 - Must be a .jpg or .png file
 - File must be less than 50MB
 - The total capacity for all media files attached to an LLI^[3] must be below 50MB
 - The total capacity for media attached to all user LLIs^[3] must not exceed 1GB
 - Not nullable

App Permissions

- Permission: Read and Write
- Scope: LLI^[3]

Target Audience - All authenticated normal users

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user selects an LLI^[3] to attach media to

Success Outcome(s) -

- Media file is saved to the persistent data store
- Media file is related to the selected LLI^[3] in the relational database
- All inputs meets validation requirements in User Input section:
 - Only valid file types (.jpg or .png)
 - Media files are within size limits
 - 50mb per file
 - 1gb of total media storage per user
- The media file is saved within 60 seconds
- A message saying “Media has been successfully attached” is displayed
- The upload media operation is logged to the persistent data store
- The following is included in the log:
 - Timestamp
 - When the media upload operation is completed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: View
 - Log message: “The media file upload operation was successful.”

Failure Outcome(s) -

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Media file is not attached to the selected LLI^[3]. The upload media process will be aborted. A message stating “Uploaded media failed to be related to the selected LLI” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The uploaded media file failed to be associated with the LLI”
- The media file is not saved to the persistent data store, “The media file failed to save” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The media file failed to save to the persistent data store”
- The media file is invalid
 1. The media file is larger than 50 mb. The upload media process will be aborted. The user will receive the message: “The media file was larger than 50 mb. Please input a valid file.”
 2. The media file is not a .jpg or a .png. The upload media process will be aborted. The user will receive the message: “The media file was not in a valid format (.jpg/.png). Please input a valid file.”
 3. Uploading this file would require the user storing more than 50mb of files on one LLI. The upload media process will be aborted. The user will receive the message: “Uploading this file would pass the storage capacity of 50mb on one LLI. Please delete some media from this LLI, and try again.”
 4. Uploading this file would require the user personally storing more than 1gb of media files. The upload media process will be aborted. The user

will receive the message: “Uploading this file would pass your personal media storage capacity of 1gb. Please delete some media, and try again.”

- Media file is not uploaded within 60 seconds
 1. The media file is recommended in more than 60 seconds, but less than 90 seconds. The upload media process will be aborted. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “The media file was uploaded in longer than 60 seconds, but less than 90 seconds.”
 2. The media file is uploaded in greater than 90 seconds. The upload media process will be aborted. The user will receive the message: “We’re sorry, the upload media functionality is having trouble reaching the persistent data store efficiently.” The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “The media file took longer than 90 seconds to upload, upload media timed out.”
- Outcome is not logged to the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The media upload operation was not recorded to the persistent data store.”
- The outcome is logged, but it does not accurately depict any of the following

information. The user will be able to continue using the system.

- Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
- Log Level: Info, Debug, Warning, or ERROR
- Log Category: View, Business, Server, Data, or Persistent Data Store
- Log Message: Context about where the log is coming from

MM2 User Story^[17]: View Media

As an authenticated user, I can view media mementos that I have uploaded and attached to my LLIs^[3], allowing me to revisit personal media.

Effort Points - 50

Complexity Level - Medium

App Permissions

- Permission: Read
- Scope: LLI^[3]

Target Audience - All authenticated normal user

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user selects an LLI^[3]

Success Outcomes

- The media attached to the selected LLI^[3] is displayed to the user

- The media displayed belongs to the LLI^[3]
- The media appears to the user within 3 seconds
- The view media operation is logged to the persistent data store
- The following is recorded accurately in the success log:
 - Timestamp:
 - When the view media operation is completed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log Category: View
 - Log message: “The media view operation was successful.”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Media attached to LLI^[3] is not displayed to the user, a message stating: “LLI media view is unavailable” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log level: Warning
 - Log Category: View
 - Log message: “The media attached to the LLI were not displayed”
- The media displayed is not a file that belongs to the LLI^[3].
 - Unrecoverable
- Media file is not viewable within 3
 1. The LLI attached media is viewable in more than 3 seconds, but less than 15 seconds. The view media functionality will not be aborted. The system will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Business
 - Log Message: “The media file was viewable in longer than 3 seconds, but less than 15 seconds.”
2. The LLI attached media is not viewable within 15 seconds. The view media process will be aborted., and they will receive the message: “We’re sorry, the view media functionality has timed out. Please try again later.”
The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “The media view took longer than 15 seconds to access, view media timed out.”
- Outcome is not logged to the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The media upload operation was not recorded to the persistent data store.”
 - The outcome is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

MM3 User Story^[17]: Delete Media

As an authenticated user, I can delete one stored media memento file at a time on an LLI^[3], granting me full control over my media mementos.

Effort Points - 50

Complexity Level - Low

App Permissions

- Permission: Delete
- Scope: LLI^[3]

Target Audience - All authenticated normal users

Pre-conditions -

1. The user is registered
2. The user is authenticated
3. The authenticated user has uploaded media to their selected LLI^[3]

Success Outcome(s) -

- The media file is deleted from the persistent data store
- The media file is unrelated from the LLI^[3]
- The media file is deleted within 3 seconds
- A message saying that the media file was successfully deleted is displayed to the user
- The delete media operation is logged to the persistent data store
- The following is recorded accurately in the success log:

- Timestamp:
 - When the delete media operation is completed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
- Log level: Info
- Log Category: View
- Log message: “The media delete operation was successful.”

Failure Outcome(s) -

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The media file is not deleted from the persistent data store, a message stating “Media failed to be deleted from the database. Please try again later” is displayed. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent data store
 - Log Message: “Media delete failed, media failed to be removed from the datastore.”
- The media file is not unrelated to the LLI^[3], a message stating “Media failed to be unassociated with LLI. Please try again later” is displayed. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “Media delete failed, media failed to be unassociated with LLI”

- The media file deletion operation is not completed within 3 seconds, a message stating: “Media failed to be deleted within time constraint. Please try again later.” is displayed. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “Media delete failed, timeout”
- Outcome is not logged to the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The media delete operation was not recorded to the persistent data store.”
- The outcome is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

Interactive Geospatial Map

IGM1 User Story^[17]: Create Pins

As an authenticated user, I can create up to 20 pins for each LLI^[3] on the interactive map, to visualize my LLIs^[3] or remember my completed LLIs^[3].

Effort Points (Hour) - 100

Complexity Scale: Medium

User Input

Required Input

- Location(s) to associate the LLI^[3] with

Optional Input

- Date and Time

Data Source

Origin

- External

Type

- API

Details

- We will be using the API to let users search for locations to set the pins
- We will be using the API to generate the interactive map along with the customizable markers/pins

AuthN

- peaceuser1@gmail.com

App Permissions

- Permission: Write, Read
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Interactive Geospatial Map View

Success Outcomes

- The created pin is present on the interactive map
- The location(s) given by the user is saved to the relational database.
- The pin is accurately positioned on the map with a precision of up to 200m of a given location
- The pin is created within 3 seconds
- The user is within the limit of 20 pins for each LLI
- A message “Pin created successfully” is displayed, if the pin is successfully created
- The pin creation is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the pin is saved to the persistent data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log Category: Persistent Data Store
 - A message “Pin creation operation successful”

Failure Outcomes

Every failure outcome's log will have its "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The location(s) given by the user is not saved to the relational database within 3 seconds of creation confirmation. In this case, the message "Pin failed to save. Please try again" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "Pin failed to save into the persistent data store."
- The created pin is not displayed on the interactive map, In this case, the message "Pin failed to load" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "Pin failed to display"
- Registered users attempt to create more than the limit of 20 pins for each LLI. In this case, the message, "Sorry, you have reached the limit of 20 pins for this LLI" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "User attempted to create more than 20 pins for an LLI"
- The Pin creation operation is not logged in the persistent data store, when the Pin is saved to the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The Pin creation operation was not recorded to the persistent data store.”
- The Pin creation is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from
- The pin is not accurately positioned on the map with a precision of up to 200m of given location.
 - Unrecoverable
- If a user given location is not found, a message “This location could not be found. Please check it and try again.” will be displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Server (This would be a API issue)
 - Log Message: “Location provided by the user was not found”

IGM2 User Story^[47]: Delete Pins

As an authenticated user, I can delete one or up to all my pins when I no longer want them on the map.

Effort Points (Hour) - 30

Complexity Scale: low

App Permissions

- Permission: Delete
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Interactive Geospatial Map View

Success Outcomes

- The pin details corresponding to the LLI are removed from the persistent data store
- The pin is deleted from the map
- The pin is deleted within 3 seconds
- A message “Pin successfully deleted” is displayed to the user, if the operation was successful
- The pin deletion is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the pin is deleted in persistent data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log level: Info
 - Log Category: Delete
 - Log Message: “Pin deletion operation successful”

Failure Outcomes

Every failure outcome's log will have its "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The pin details corresponding to the LLI are not removed from the persistent data store within 3 seconds of creation confirmation. In this case, the message "Pin failed to save. Please try again" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "Pin failed to be deleted from the persistent data store."
- The pin is not being removed from the interactive map, In this case, the message "Pin failed to be removed from interactive map " is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "Failed to remove the pin from the interactive map displayed to the user "
- The pin deletion operation is not logged in the persistent data store, if the pin details are deleted from the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: "The pin delete operation was not recorded to the persistent data store."

- The pin deletion operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

IGM3 User Story¹⁷⁴: View Pin Details

As an authenticated user, I can click on one pin at a time to view the details of the corresponding LLI^[3], allowing me to get more in-depth with my LLIs^[3] without leaving my map.

Effort Points (Hour) - 60 points

Complexity Scale: Low

App Permissions

- Permission: Read
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Interactive Geospatial Map View

Success Outcomes

- The view containing the following is displayed:
 - Title of the corresponding LLI^[3]
 - Category of the corresponding LLI^[3]
 - Description of the corresponding LLI^[3]
 - Status of the corresponding LLI^[3]
 - Visibility of the corresponding LLI^[3]
 - Deadline of the corresponding LLI^[3]
 - Cost of the corresponding LLI^[3]
 - The mementos media
 - The date/time if available
 - Name of the location
- The details of the pins are pulled up within 3 seconds.
- The operation to view pin details has been logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the pin is viewable to the user
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UST
 - Log level: Info
 - Log category: Persistent Data Store
 - Log Message: “Pin details retrieval operation success”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The view containing the following is not displayed:
 - Title of the corresponding LLI^[3]
 - Category of the corresponding LLI^[3]
 - Description of the corresponding LLI^[3]
 - Status of the corresponding LLI^[3]
 - Visibility of the corresponding LLI^[3]
 - Deadline of the corresponding LLI^[3]
 - Cost of the corresponding LLI^[3]
 - The mementos media
 - The date/time if available
 - Name of the location
- The pin's corresponding LLI details are not shown.
 1. When the pin details are not shown due to failure to retrieve the details from the persistent data store. In this case, a message, "Failed to load pin details" is displayed to the registered user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data Store
 - Log Message: "Failed to retrieve the pin details from the persistent data store"
 2. When the pin details are not shown due to an issue with displaying the UI component used to show the details to the registered users. In this case, the user will receive a message "Failed to load details, Please try again". The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "Failed to display the pin details to the registered user "

- The operation to view pin details has not been logged in the persistent data store, when the pin details are viewed by the registered user.
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The pin details view operation was not recorded to the persistent data store.”
- The pin detail view operation is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

IGM4 User Story¹⁷¹: Update Pin Location

As an authenticated user, I can update the location of one of my pins one at a time on the interactive map in case I ever change my mind

Effort Points (Hour) – 40

Complexity Scale: Medium

User Input

Required Input

- New location(s) to associate the LLI^[3] with
 - The location must be a valid location within the API

Data Source

Origin

- External

Type

- API

Details

- We will be using the API to let users search for locations to set the pins
- We will be using the API to generate the interactive map along with the customizable markers/pins

AuthN

- peaceuser1@gmail.com

App Permissions

- Permission: Read and Write
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Interactive Geospatial Map View
4. User is viewing pin details

Success Outcomes

- The required user input is a valid location
- The location data of the pin which is stored in the persistent data store is updated
- The pins location change is reflected on the interactive map
- The pin location is updated in the persistent data store within 3 seconds
- A message “location of the pin successfully updated” is displayed to the user, if the pin has been updated
- The user updating the location of a pin is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the pin location update is requested
 - When the pin data fails to be updated to the persistent data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “Updated the pin location to {latitude coordinates and Longitude coordinates}”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The location data of the pin which is stored in the persistent data store is not updated, In this case “Pin location failed to update” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR

- Log Category: Persistent Data Store
 - Log Message: “Failed to update pin location on the persistent data store”
- The pin is not updated when displayed on the interactive map, In this case, the message “Pin failed to update” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: “Failed to update the pins UI component on the interactive map”
- The location given by the user is not saved to the relational database within 3 seconds of creation confirmation. In this case, the message “Pin failed to save. Please try again” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “Pin failed to save into the persistent data store.”
- The user updating the location of a pin is not logged in the persistent data store if the updates are made to the Pin details in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The pin update operation was not recorded to the persistent data store.”
- The pin update operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Log Level: Info, Debug, Warning, or ERROR
- Log Category: View, Business, Server, Data, or Persistent Data Store
- Log Message: Context about where the log is coming from
- If the API does not have accurate information for a user given location , the location of the pin will not be accurate to within 200 meters.
 - Unrecoverable

IGM5 User Story^[17]: Edit LLI^[3] Using Pin

As an authenticated user, I can access one pin at a time to edit the details of my LLI^[3], allowing me to conveniently customize my LLI^[3]

Effort Points (Hour) - 50

Complexity Scale: Low

User Input

Optional Input

- LLI^[3] title
 - Must only contain alphanumeric values
 - Must be between 1-50 characters long
 - The value is not nullable
 - Default value is current title
- Category/Categories of LLI^[3]
 - The valid options are “Mental Health^[6]”, “Physical Health^[6]”, “Outdoor^[7]”, “Sport^[8]”, “Art^[9]”, “Hobby^[10]”, “Thrill^[11]”, “Travel^[12]”, “Volunteering^[13]”, and “Food^[14]”

- The option is not nullable
 - Default value is the current category/categories
- Description of LLI^[3]
 - Must consist only of alphanumeric values between 0–200 characters long
 - The value is nullable
 - Default value is the current description
- Status of LLI^[3]
 - The valid options are “Active”, “Completed”, “Postponed”
 - The option is not nullable
 - Default value is the current status
- Visibility of LLI^[3]
 - The valid options are “Public, Private”
 - The option is not nullable
 - Default value is the current visibility
- Deadline of LLI^[3]
 - Must be a valid date in the format MM/DD/YYYY
 - The date must be between 01/01/1900 and 12/31/2100
 - The option is nullable
 - Default value is the current deadline
- Cost of LLI^[3]
 - Must be a numerical value greater or equal to \$0 USD
 - The unit of the cost is USD
 - Cost cannot be non-integers
 - Cost cannot exceed \$1 million USD
 - Default cost is the current cost
- Recurrence
 - The valid options are “On”, “Off”

- The default option is “Off”
- The option is not nullable
- Recurrence Frequency
 - This input is only showed if the Recurrence option is “On”
 - The valid options are “Weekly”, “Monthly”, “Yearly”
 - If the Recurrence option is “Off”, the option is null
 - If the Recurrence option is “On”, the default option is “Monthly”
 - If the Recurrence option is “On”, the option is not nullable

App Permissions

- Permission: Write
- Scope: LLI

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Interactive Geospatial Map View
4. User needs to be viewing pin details

Success Outcomes

When editing the LLI from the pins, we need to do

- All inputs for editing an LLI meets validation requirements in the User Input section
- Changes to the LLI^[3] attributes are reflected in the persistent data store
- The LLI title and category must not match the title and category of a LLI that the user has completed within one year prior to the current date accurately

- The LLI^[3] view containing the LLI^[3] information reflects the changes within 3 seconds of the user initializing the edit action, if the edits to the LLI attributes are successful
- “LLI successfully updated” is displayed to the user, if the LLI details are updated
- The operation of an user updating their LLI^[3] through a pin is logged to the persistent data store
- The log includes the following:
 - Timestamp
 - Edited LLIs corresponding pin identifier
 - When the LLI^[3] attached to the pin is updated to the persistent data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UST
 - Log level: Info
 - Log Category: Persistent Data Store
 - Log Message: “LLI edit operation performed through pin”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section.
 1. The title of LLI does not contain only alphanumeric values between 1-50 characters long . In this case, “The LLI title must only contain alphanumeric values between 1-50 characters long, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI title is invalid."
2. The category/categories of the LLI is not one or more options specified in the User Input. In this case, "The LLI category must be valid, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI category is invalid."
 3. The description of the LLI does not contain only alphanumeric values between 1-200 characters long . In this case, "The LLI description must only contain alphanumeric values between 1-200 characters long, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI description is invalid."
 4. The status of LLI is not "Active", "Completed", or "Postponed". In this case, "The LLI status must be either "Active", "Completed", or "Postponed", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI status is invalid."
 5. The status of the LLI is not "Active", "Completed", or "Postponed". In this case, "The LLI status must be either "Active", "Completed", or "Postponed", please try again." is displayed to the user. The system will

attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI status is invalid."
6. The visibility of the LLI is not "Public" or "Private". In this case, "The LLI visibility must be either "Public" or "Private", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI visibility is invalid."
7. The deadline of the LLI is not between 01/01/1900 and 12/31/2100. In this case, "The LLI deadline must be between 01/01/1900 and 12/31/2100, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI deadline is invalid."
8. The cost of the LLI is not a numerical value greater or equal to \$0 USD, "The LLI cost must be a numerical value greater or equal to \$0 USD, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI cost is invalid."
9. The occurrence of the LLI is not "On" or "Off". In this case, "The LLI occurrence must be either "On" or "Off", please try again." is displayed to the user. The system will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI occurrence is invalid."
10. The occurrence frequency of the LLI is not "Weekly", "Monthly", or "Yearly". In this case, "The LLI occurrence frequency must be "Weekly", "Monthly", or "Yearly", please try again." is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The LLI occurrence is invalid."
11. If any of the non-nullable options is null, and the user tries to submit, "This option must not be empty" is displayed to the user. The system will attempt to asynchronously log the following:
- Log Level: Warning
 - Log Category: Data
 - Log Message: "The non-nullable LLI input is null."
- The LLI title and category match the title and category of a LLI that the user has completed within one year prior to the current date. In this case, "You have completed this LLI within the past year. You can not recreate the same LLI within a year. Please try again later." is displayed to the user. The LLI is not saved to the persistent data store. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: "The LLI title and category match the title and category of a LLI that the user has completed within one year prior to the current date."
 - Changes to the LLI^[3] attributes are not reflected in the persistent data store

accurately within 3 seconds of the user initializing the change action. In this case, “The LLI failed to update.” is displayed to the user. The LLI instance in the data store should not be changed. The system will attempt to asynchronously log the following:

- Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The LLI edits from the pin failed to be saved to the persistent data store.”
- The LLI^[3] view containing the LLI^[3] information reflects the changes within 3 seconds of the user initializing the edit action, if the edits to the LLI attributes are successful
- The operation of a user updating their LLI^[3] through a pin is not logged to the persistent data store, if the edit are made to the LLI in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The LLI edit operation from the pin was not recorded to the persistent data store.”
- The LLI^[3] edit operation from the pin is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

IGM6 User Story^[17]: View Location Recommendation

As an authenticated user, I can switch the map view to receive location recommendations.

Effort Points (Hour) - 10

Complexity Scale: Low

User Input

Required Input

- User chooses to switch view to the recommendation

App Permissions

- Permission: View
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Interactive Geospatial Map View

Success Outcomes

- The view successfully changes to the location recommendation view within 3 seconds.
- The user switching to the Location Recommendation view is logged in the

persistent data store

- The log includes the following:
 - Timestamp
 - When the view change operation is completed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “Map view changed to Location Recommendation”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The location data of the location recommendation pins are not accurate.
 - Unrecoverable
- Location recommendation view is not loaded within 3 seconds.
 - The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “The Location recommendation view is unavailable, timeout.”
- The user changing to the location recommendation view is not logged in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system

will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The IGSM view Location Recommendation operation was not logged to the persistent data store.”
- The user changing to the location recommendation view is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

Location Recommendation

LoR1 User Story^[17]: Get Location Recommendation

As an authenticated user I can receive up to 3 location recommendations on the Location Recommendation View, to help decide the location of my next LLI.

Effort Points (Hour) - 100

Complexity Level - Medium

Data Source

Origin

- External

Type

- API

Details

- We will be using the API to generate the interactive map along with the pins and recommendation outline

AuthN

- peaceuser1@gmail.com

App Permissions

- Permission: Read
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is on the Maps view
4. The authenticated user is on the Location Recommendation view

Success Outcomes:

- Feature provides a valid recommendation based off user completed LLI pin data
 - Provides up to 3 recommendations, defaulted to one.
- Feature provides a recommendation within 3 seconds from when the user accesses the view
- The recommended outline provided is visible on the view
- The pin is accurately positioned on the map within a precision of up to 200m based on retrieved coordinates from the data store.

- After all previous success outcomes are followed a log will be made accordingly:
 - Timestamp
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - When the Location Recommendation has followed all success outcomes
 - Log Level: Info
 - Log Category: Business
 - Log Message: “Location Recommendation has performed successfully”

Failure Outcomes:

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Feature provides an invalid recommendation
 - Did not provide a recommendation at all
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “A recommendation was not provided at all’
 - Provided more than 3 recommendations
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “More than 3 recommendations were provided’
- Feature did not provide a recommendation within 3 seconds
 - Log Level: warning
 - Log Category: Business
 - Log Message: “Recommendation took longer than 3 seconds to

complete'

- The recommended outline provided is not visible on the view
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "Location Recommendation outline on view was not displayed'
- There is an inaccurate pin placement.
 - Was unable to retrieve coordinates from the data store
 - Log Level: ERROR
 - Log Category: persistent data store
 - Log Message: "Unable to retrieve coordinates from the persistent data store'
 - pin was positioned on the map past a precision of 200m
 - Log Level: debug
 - Log Category: business
 - Log Message: "pin was positioned on the map past a precision of 200m'

LoR2 User Story^[17]: View Recommendation Details

As an authenticated user I can view details of a provided recommendation, to better understand the recommendations.

Effort Points (Hour) - 50

Complexity Level - low

Data Source

Origin

- External

Type

- API

Details

- We will be using the API to generate the interactive map along with the pins and recommendation outline

AuthN

- peaceuser1@gmail.com

App Permissions

- Permission: Read
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is on the Maps view
4. The authenticated user is on the Location Recommendation view

Success Outcomes:

- The provided recommendation is visible on the view
- The pin is accurately positioned on the map within a precision of up to 200m based on retrieved coordinates from the data store.
- User is able to view details in regards to that recommendation

- Number of completed pins within that recommendation
- Ranking of categories based off of completed LLI within the recommendation
- After all previous success outcomes are followed a log will be made accordingly:
 - Timestamp
 - Timestamp is recorded in relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - When the Location Recommendation has followed all success outcomes
 - Log Level: Info
 - Log Category: Business
 - Log Message: “Location Recommendation has performed successfully”

Failure Outcomes:

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The recommended outline provided is not visible on the view
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: “Location Recommendation outline on view was not displayed’
- There is an inaccurate pin placement.
 - Was unable to retrieve coordinates from the data store
 - Log Level: ERROR
 - Log Category: persistent data store
 - Log Message: “Unable to retrieve coordinates from the persistent

data store'

- pin was positioned on the map past a precision of 200m
 - Log Level: debug
 - Log Category: business
 - Log Message: "pin was positioned on the map past a precision of 200m'
- User is unable to view details in regards to that recommendation
 - Number of completed pins within that recommendation was inaccurate
 - Log Level: debug
 - Log Category: Business
 - Log Message: "Inaccurate number of pins within the recommendation was displayed'
 - Incorrect ranking of categories based off of completed LLI within the recommendation
 - Log Level: debug
 - Log Category: Business
 - Log Message: "ranking of categories based off of completed LLI was incorrect '

LoR3 User Story^[17]: View Pin details

As an authenticated user, I can click on one pin at a time to view the details of the corresponding LLI^[3], allowing me to get more in-depth with my LLIs^[3] without leaving my map.

Effort Points (Hour) - 75

Complexity Scale: Medium

App Permissions

- Permission: Read
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Maps View
4. The authenticated user is in the Location Recommendation View

Success Outcomes

- The view containing the following is displayed:
 - Title of the corresponding LLI^[3]
 - Category of the corresponding LLI^[3]
 - Description of the corresponding LLI^[3]
 - Status of the corresponding LLI^[3]
 - Visibility of the corresponding LLI^[3]
 - Deadline of the corresponding LLI^[3]
 - Cost of the corresponding LLI^[3]
 - The mementos media
 - The date/time if available
 - Name of the location
- The details of the pins are pulled up within 3 seconds.
- The operation to view pin details has been logged in the persistent data store
- The log includes the following:

- Timestamp
 - When the pin data is fetched from persistent data store
 - When the pin is viewable to the user
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UST
- Log level: Info
- Log category (Persistent Data Store)
- Log Message: “Pin details retrieval operation success”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The view containing the following is not displayed:
 - Title of the corresponding LLI^[3]
 - Category of the corresponding LLI^[3]
 - Description of the corresponding LLI^[3]
 - Status of the corresponding LLI^[3]
 - Visibility of the corresponding LLI^[3]
 - Deadline of the corresponding LLI^[3]
 - Cost of the corresponding LLI^[3]
 - The mementos media
 - The date/time if available
 - Name of the location
- The pin’s corresponding LLI details are not shown.
 1. When the pin details are not shown due to failure to retrieve the details from the persistent data store. In this case, a message, “Failed to load

pin details” is displayed to the registered user. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Data Store
- Log Message: “Failed to retrieve the pin details from the persistent data store”

2. When the pin details are not shown due to an issue with displaying the UI component used to show the details to the registered users. In this case, the user will receive a message “Failed to load details, Please try again”.

The system will attempt to asynchronously log the following:

- Log Level: ERROR
- Log Category: View
- Log Message: “Failed to display the pin details to the registered user ”

- The operation to view pin details has not been logged in the persistent data store, when the pin details are viewed by the registered user.

1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:

- Log Level: Warning
- Log Category: Persistent Data Store
- Log Message: “The pin details view operation was not recorded to the persistent data store.”

- The pin detail view operation is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.

- Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
- Log Level: Info, Debug, Warning, or ERROR
- Log Category: View, Business, Server, Data, or Persistent Data Store

- Log Message: Context about where the log is coming from

LoR4 User Story^[17]: View Geospatial Map

As an authenticated user, I can switch from the Location Recommendation view to the interactive geospatial map view, allowing me to better navigate through both maps.

Effort Points (Hour) - 50

Complexity Scale: Low

User Input

Required Input

- User chooses to switch view to the default map

App Permissions

- Permission: View
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Location Recommendation Map View

Success Outcomes

- The view successfully changes to the default map view within 3 seconds.

- The user switching to the default map view is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the view change operation is completed
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “Map view switched to default map view”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The default map view is not loaded within 3 seconds.
 - The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “The default map view is unavailable, timeout.”
- The user changing to the default map view is not logged in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The default map view operation was not logged to

the persistent data store.”

- The default map view operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

Personal Note

PN1 User Story^[17]: Write to the Personal Note

As an authenticated user, I can write down my goals, accomplishments, thoughts, and feelings throughout my personal journey on Life log on a day-to-day basis, to serve as a record of my journey.

Effort Points (Hour) - 100

Complexity Scale: Low

User Input

Required Input

- User Content
 - Must consist only of alphanumeric values between 0-1200 characters long
 - Default to null

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated

Success Outcomes

- The input meets validation requirements in the User Input section
- The notes made get saved to the persistent data store within 3 seconds when the authenticated users writes and saves notes on that specific day.
- The current day is displayed on the Note when the authenticated user decides to use the Note.
 - The Date displayed to the user follows the following format:
 - Default value: Current systems MM/DD/YY
- When the user successfully makes a note, the message “Note successfully created” is shown to user
- The Note creation operation is logged in the persistent data store, when the LLI is saved to the persistent data store
- The log includes the following:
 - Timestamp
 - When the Note is saved in the persistent datastore
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info

- Log Category: Persistent Data Store
- Log Message: "The note is successfully created."

Failure Outcomes

Every failure outcome's log will have its "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section. In this case, "The input is invalid, please try again." is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data Store
 - Log Message: "Note input is invalid."
- The new note is not saved to the relational database within 3 seconds of the creation confirmation. In this case, "The Note failed to save" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: "Note failed to save into the persistent data store."
- The date on the note is incorrect. In this case, "Failed to load date" is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: "Note failed to fetch system date."
- The Notes creation operation is not logged in the persistent data store, if the Notes are saved in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system

will attempt to asynchronously log the following:

- Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The Personal Note edit operation was not recorded to the persistent data store.”
- The Note creation is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

PN2 User Story^[17]: Delete Personal Note

As an authenticated user, I can choose to delete a Personal Note to remove that note from Lifelog.

Effort Points (Hour) - 25

Complexity Scale: Low

App Permissions

- Permission: Delete
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The authenticated user is in the Personal Note view

Success Outcome(s)

- The Personal Note is removed from the persistent data store within 3 seconds of the user initializing the delete action.
- The Personal Note is removed from the authenticated user's account in the persistent data store
- "The Personal Note successfully deleted" is displayed to the user, if the Personal Note has been deleted
- The delete operation is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the Personal Note is deleted from the persistent data store
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: "The Personal Note is successfully deleted."

Failure Outcomes

Every failure outcome's log will have its "Timestamp" field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- The Personal Note is not removed from the persistent data store within 3 seconds of the user initializing the delete action. In this case, "Failed to delete Note in 3 seconds" is displayed to the user. The system will attempt to

asynchronously log the following:

- Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The personal note failed to be deleted in 3 seconds from the persistent data store.”
- The Personal Note is not removed from the authenticated user’s account in the persistent data store. In this case, “Failed to delete Note” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store
 - Log Message: “The Personal Note failed to be deleted from the user’s account in the persistent data store.”
- The Personal Note delete operation is not logged in the persistent data store, if the Note is deleted from the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The Note delete operation was not recorded to the persistent data store.”
- The Personal Note delete operation is logged, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

PN3 User Story^[17]: View the Personal Note

As an authenticated user, I can view a Personal Note to what I have written in the past.

Effort Points (Hour) - 50

Complexity Scale: Low

User Input

Required Input

- Date
 - Select the day to view corresponding personal note written that day

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated

Success Outcomes

- The input meets validation requirements in the User Input section
- The Personal Notes are loaded in the Personal Note view within 3 seconds of the user requesting Note for a specific date.
- The Note view operation is logged in the persistent data store.

- The log includes the following:
 - Timestamp
 - When the user enters the View
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “User is viewing Personal Note”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- Note is not loaded in the Personal Notes view. In this case, “The Personal Note view is not available. Please try again later” is displayed to the user. The user is redirected back to the previous page. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: View
 - Log Message: “The Personal Note view failed to load.”
- Note is not loaded in the Personal Note view within 3 seconds but are loaded within 5 seconds. In this case, the system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “Operation exceeded time frame.”
- Note is not loaded in the Personal Note view within 5 seconds. In this case, “Operation took too long. Please try again later.” is displayed to the user. The

system will attempt to asynchronously log the following:

- Log Level: ERROR
- Log Category: Persistent Data Store
- Log Message: “Operation took too long.”
- The data in each Personal Note must accurately reflect the data of that Personal Note in the persistent data store
- When the user is viewing Personal Notes, the action is not logged in the persistent data store
 1. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The Note viewing operation was not recorded to the persistent data store.”
- When the user visits the Personal Notes view, the action is logged in the persistent data store, but it does not accurately depict any of the following information
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

PN4 User Story^[17]: Edit the Personal Note

As an authenticated user, I can edit my past Personal Note one at a time, to update the records of my journey making them accurate.

Effort Points (Hour) - 50

Complexity Scale: Low

User Input

Required Input

- User Content
 - Must consist only of alphanumeric values between 0-1200 characters long
 - Default to null

App Permissions

- Permission: Write
- Scope: Lifelog User Account

Target Audience - All authenticated Normal User

Pre-conditions

1. The user is registered
2. The user is authenticated
3. The user is on the personal Notes view

Success Outcomes

- The input meets validation requirements in the User Input section
- The edits made to the Personal Notes get saved to the persistent data store within 3 seconds when the authenticated user writes and saves notes.
- Changes to the Personal Notes are reflected in the persistent data store accurately within 3 seconds of the user initializing the change action

- When the user successfully makes changes to the note, the message “Note successfully updated” is shown to user
- The edit operation is logged in the persistent data store
- The log includes the following:
 - Timestamp
 - When the changes to the Note are saved in the persistent datastore
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - Timestamp is recorded relative to UTC
 - Log Level: Info
 - Log Category: Persistent Data Store
 - Log Message: “The note is successfully edited.”

Failure Outcomes

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- All inputs do not meet validation requirements in the User Input section. In this case, “The input is invalid, please try again.” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Data Store
 - Log Message: “Note input is invalid.”
- The edited note is not saved to the relational database within 3 seconds of the creation confirmation. In this case, “The Note failed to save” is displayed to the user. The system will attempt to asynchronously log the following:
 - Log Level: ERROR
 - Log Category: Persistent Data Store

- Log Message: “Edited note failed to save into the persistent data store.”
- The Notes edit operation is not logged in the persistent data store, if the edit are made to the Notes in the persistent data store
 2. The amount of logs in the persistent data store does not increase by at least 1. The user will be able to continue using the system. The system will attempt to asynchronously log the following:
 - Log Level: Warning
 - Log Category: Persistent Data Store
 - Log Message: “The Personal Note edit operation was not recorded to the persistent data store.”
- The edit operation is logged, but it does not accurately depict any of the following information. The user will be able to continue using the system.
 - Timestamp: YYYY-MM-DD-hh-mm-ss format, relative to UTC
 - Log Level: Info, Debug, Warning, or ERROR
 - Log Category: View, Business, Server, Data, or Persistent Data Store
 - Log Message: Context about where the log is coming from

Motivational quote

MQ1 User Story^[17]: View Motivational Quote

As an unauthenticated or authenticated user, I can view a different motivational quote every 24 hours, starting at 11:59pm PST, on the main page of the Lifelog site, motivating me to complete my LLIs^[3].

Effort Points - 75

Complexity - low

Data Source

Origin

- External

Type

- Snapshot

Details

- A publicly available dataset of quotes, complete with authors and tags specifying the type of the quote.

AuthN

- None, snapshot of public data

App Permissions

- Permission: Read
- Scope: Lifelog User Account

Target Audience - All types of users

Pre-conditions

1. The user has access to Lifelog site

Success Outcome(s) -

- The datastore outputs a complete quote with associated author
- The quote is properly displayed on the main page of Lifelog both for authenticated and anonymous users
- The quote is changed exactly at 12:00am PST every day.
- Quotes are recycled after 6 months

- A placeholder message is displayed if the server fails to respond with a motivational quote
- The motivational quote request from the relational database is logged in the persistent data store
- The following is included in the log:
 - Timestamp
 - Timestamp is recorded relative to UTC
 - Timestamp will be in YYYY-MM-DD-hh-mm-ss format
 - When the motivational quote has displayed a quote to the main page view for the user
 - Log type (Info)
 - Log Category(View)
 - Log message: “Motivational Quote has successfully displayed a quote”

Failure Outcome(s) -

Every failure outcome’s log will have it’s “Timestamp” field filled in with a timestamp of when the outcome is encountered, in YYYY-MM-DD-hh-mm-ss format, relative to UTC

- A complete quote with associated author is not outputted/displayed
 1. The quote is not displayed at all or partially to both authenticated and anonymous users the system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: Data
 - Log Message: “A quote from the datastore was not displayed or partially displayed”
 2. The quote did not include the associated author the system will asynchronously create a log entry with the following information:

- Log Level: Warning
 - Log Category: Data
 - Log Message: "A quote from the datastore did not include the associated author"
- 3. Unable to pull a quote from the Data Repository the system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: Data
 - Log Message: "Unidentifiable issue with Data Repository which resulted in ERROR"
- The quote has not changed exactly at 12:00 am PST the system will asynchronously create a log entry with the following information:
 1. The quote has changed prior to 12:00 am PST
 - Log Level: Debug
 - Log Category: Business
 - Log Message: "The quotes has changed prior to 12:00 am PST"
 2. The quote has changed after 12:00 am PST the system will asynchronously create a log entry with the following information:
 - Log Level: Debug
 - Log Category: Business
 - Log Message: "The quote has changed after 12:00 am PST"
 3. The quote has not changed at all the system will asynchronously create a log entry with the following information:
 - Log Level: ERROR
 - Log Category: Business
 - Log Message: "The quote has not been refreshed/changed"
- A previously used quote was re-used prior to the 6 months recycle period the system will asynchronously create a log entry with the following information:

- Log Level: Debug
 - Log Category: Business
 - Log Message: “The quotes have not been recycled”
- A placeholder message is displayed if the server fails to respond with a motivational quote the system will asynchronously create a log entry with the following information:
 - Log Level: Warning
 - Log Category: Business
 - Log Message: “A placeholder message was not displayed in place of a quote”

Appendix I – App Permission Matrix

	Account	User Form	Usage Dashboard	LLI	Recommendation Engine	Calendar	Geospatial map	Personal Note	Media Moments	Life Tree	Motivational Quote	Reminder Emails	Location Recommendation
Create	Can create an account [1]			Can create LLI [4]	Can create LLI from recommendations [2],[3],[4]	Can create LLI [4]	Create pins attached to LLI [4]	Can create a new personal note [4]	Can upload media [4]	Create personal note [4]			Create recommended location pins [4]
Modify	Disable or activate user accounts [2], [3]			Can modify LLI [4]		Can modify existing LLI [4]	Modify existing LLI pins [4]	Can edit personal notes [4]		Modify personal note [4]		Customize email settings [4]	
View	View all PII data [4]	Can view user form [4],[2]	Can view usage dashboard [2], [3]	Can view LLI [4]	Can view Recommendation Engine [2],[3],[4]	Can view existing LLI [4]	View geospatial map and created pins [4]	Can View personal Note [4]	Can view media [4]	Modify personal note [4]	View motivational quotes on landing page [1],[2],[3],[4]	View example reminder email [4]	View recommended locations [4]
Delete	Can delete account [3], [4]			Can delete LLI [4]			Delete previously created map pins [4]	Can delete	Can delete media [4]				
Execute		Can fill out user form [4]			Can execute recommendation operation [2],[3],[4]								

User Types: Anonymous User: [1] Admin User: [2], Root Admin: [3], Normal User: [4]

Appendix II – Roles and Responsibilities Matrix

<i>User Stories</i>	<i>Root Admin</i>	<i>Admin</i>	<i>Normal User</i>	<i>Anonymous User</i>
A1	X	X	X	
A2				X
L1	X	X	X	
L2	X	X	X	
R1				X
R2				X
AR1	X	X	X	
AD1	X	X	X	
UAD1	X	X	X	
UPC1	X	X	X	
UM1	X			
UM2		X		
UF1	X	X	X	
UF2	X	X	X	
LLI1	X	X	X	
LLI2	X	X	X	
LLI3	X	X	X	
LLI4	X	X	X	
LLI5	X	X	X	
LLI6	X	X	X	

RE1	X	X	X	
RE2	X	X	X	
LC1	X	X	X	
LC2	X	X	X	
LC3	X	X	X	
LC4	X	X	X	
LC5	X	X	X	
LT1	X	X	X	
LT2	X	X	X	
LT3	X	X	X	
LT4	X	X	X	
LR1	X	X	X	
MM1	X	X	X	
MM2	X	X	X	
MM3	X	X	X	
IGM1	X	X	X	
IGM2	X	X	X	
IGM3	X	X	X	
IGM4	X	X	X	
IGM5	X	X	X	
IGM6	X	X	X	
LoR1	X	X	X	
LoR2	X	X	X	

LoR3	X	X	X	
LoR4	X	X	X	
PN1	X	X	X	
PN2	X	X	X	
PN3	X	X	X	
PN4	X	X	X	
MQ1	X	X	X	X