IT314 - Lab 6

Grp : 30

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Domain Analysis Model

The following elements make up the Crime and Hazards Measuring Website System's analytical model:

- ❖ **User Interface:**
    - ➢ The website should have an uncomplicated, simple-to-navigate user interface.
    - ➢ The ability for users to enter an address or conduct a property search in a particular region is essential.
- ❖ **Data Collection:**
    - ➢ The website needs to gather information from a range of sources, including crime scene investigations, environmental impact studies, and other pertinent databases.
    - ➢ A complete and current set of data is required.
- ❖ **Data Analysis:**
    - ➢ Percentile ratings for crime safety and hazard safety should be created using statistical analysis of the data that has been collected.
    - ➢ In regard to the city as a whole, these ratings need to give a brief picture of the property's safety profile
- ❖ **Complete Information:**
    - ➢ To get additional information regarding the safety profile of the property, users should have the ability to look further into the data in the other areas of the website.
    - ➢ This data may contain statistics on crime rates, different forms of crime, natural disasters, and other relevant information.
- ❖ **Comparison and evaluation:**
    - ➢ Users should be able to compare various properties and rank them according to their safety profiles using the website.
    - ➢ Results should be filterable by location, cost, and other relevant criteria for users.
- ❖ **Feedback and updates:**
    - ➢ The website should provide a feedback feature that allows visitors to point out errors or submit new details.
    - ➢ To guarantee that the information is current and reliable, the website should also be updated often.

In general, the Crime and Hazards Measuring Website System is intended to give consumers a thorough and user-friendly tool for assessing the safety profiles of properties in a city. The website can assist tenants and purchasers make educated decisions and ultimately increase community safety by offering accurate and current information.

Boundary Object, Entity Object and Control Object

- **Boundary Object:**
    - The website itself serves as the obvious boundary item for the Crime and Hazards Measuring Website System.
    - The website functions as a border object between the consumers (homebuyers and renters) and the data sources utilized to produce the Crime Safety and Hazard Safety percentile scores.
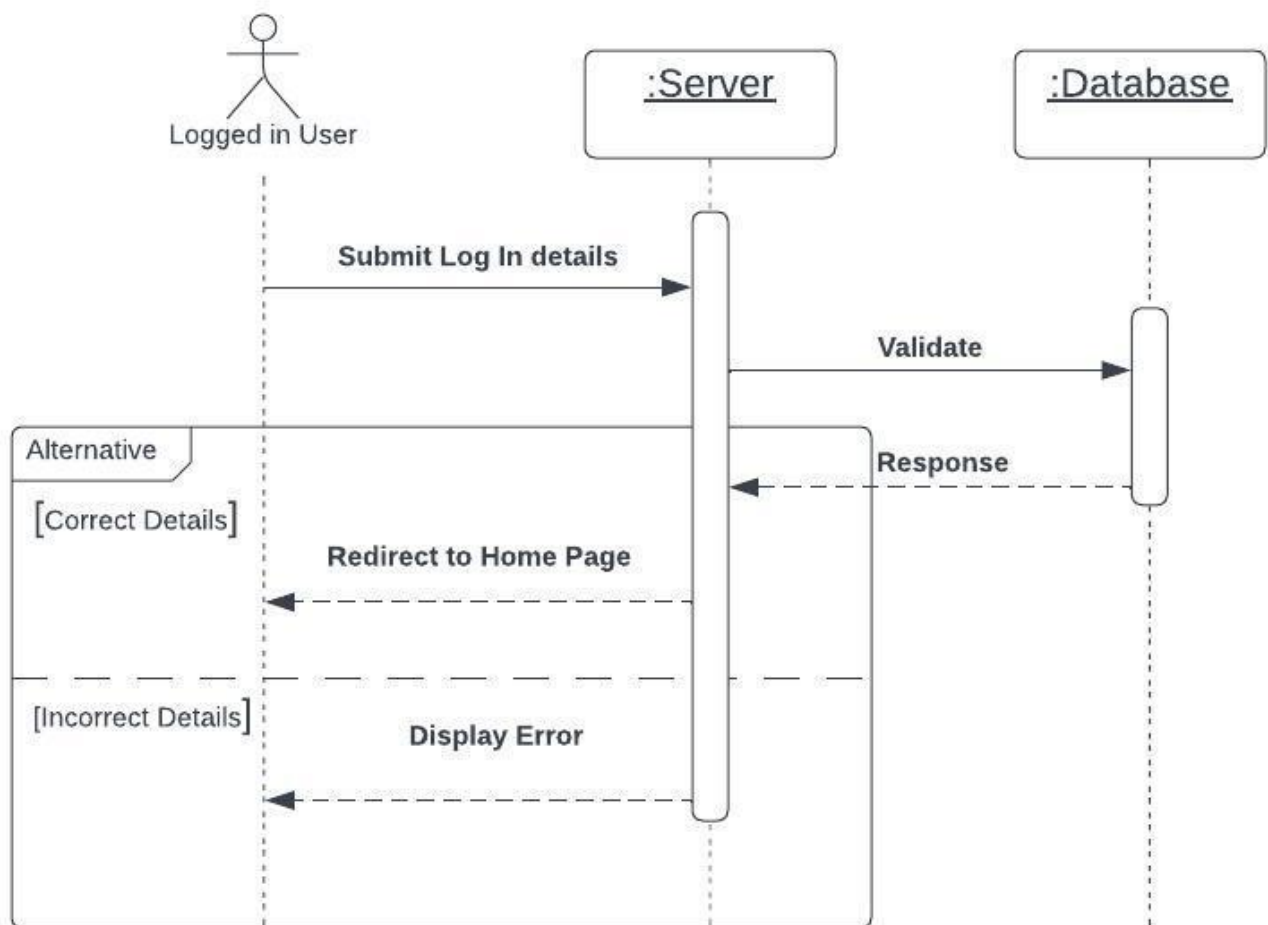
- **Entity objects:**
    - In this system, the properties that are being evaluated for their risk and crime profiles are referred to as entity objects.
    - The data sources utilized to produce the ratings, such as police records and environmental evaluations, might be included as additional entity objects.
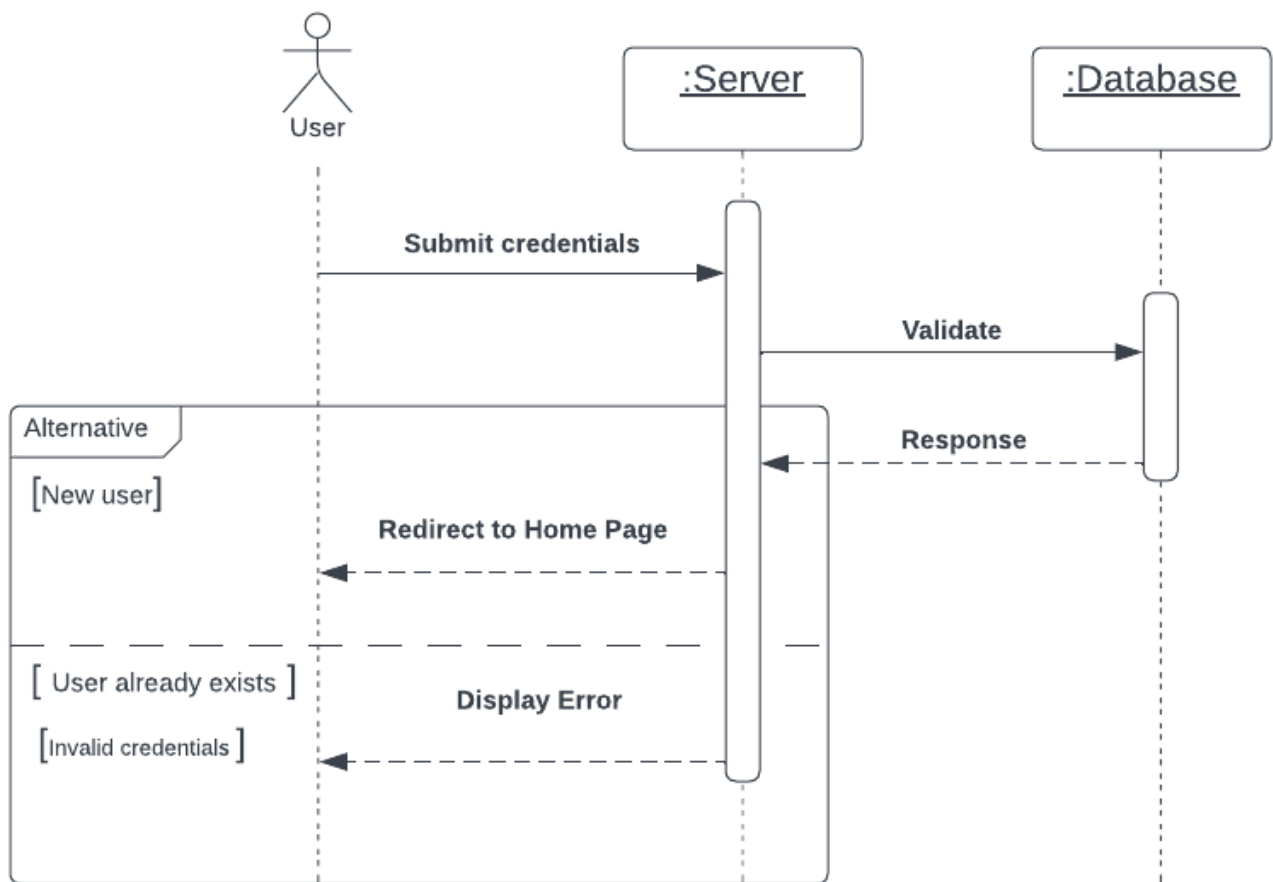
- **Control Objects:**
    - The algorithms and statistical techniques used to gather and examine the data serve as the system's control objects.
    - These control objects guarantee that the data is correct and up-to-date and that the Crime Safety and Hazard Safety percentile ratings are produced using the proper statistical techniques.
    - As it regulates the user's access to the data and the system's operation, the website itself might potentially be regarded as a control object.
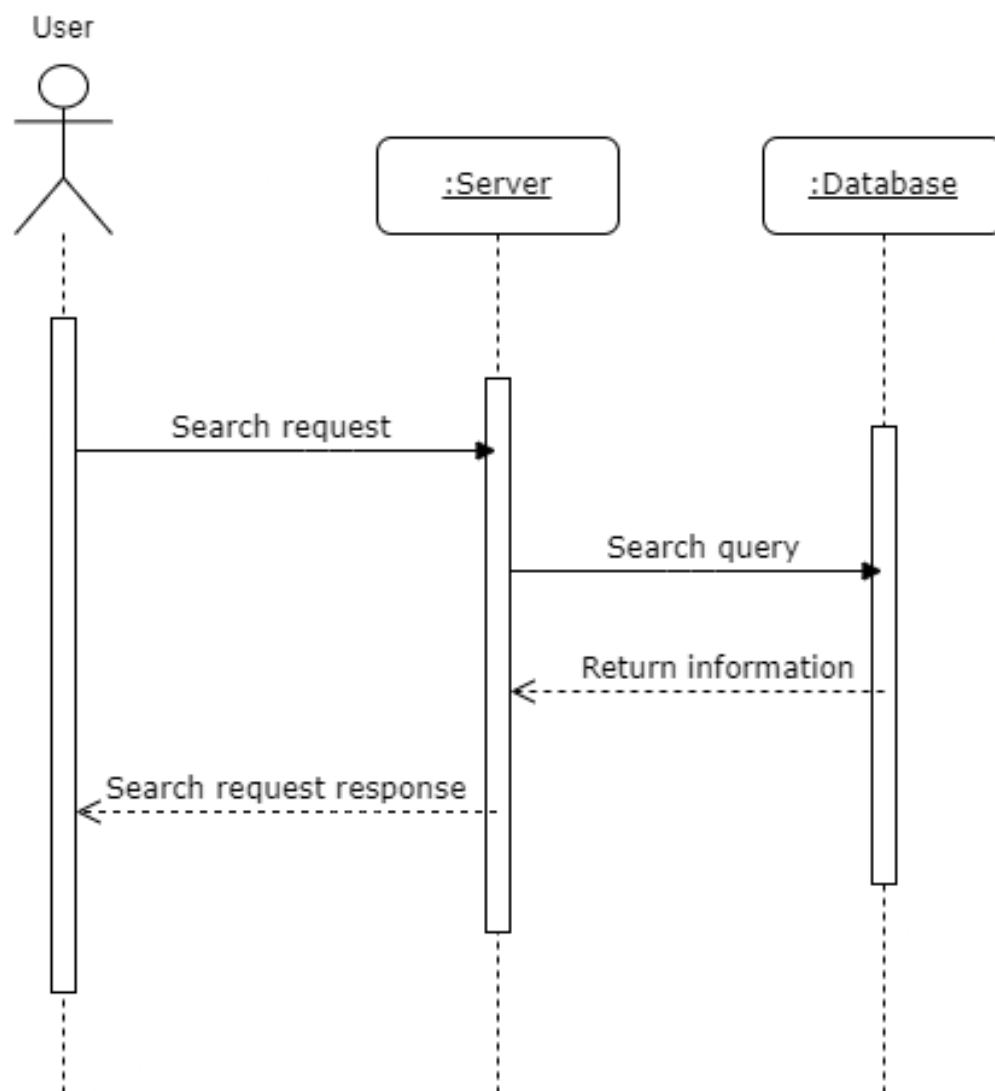
Login Sequence Diagram:

Registration sequence diagram:
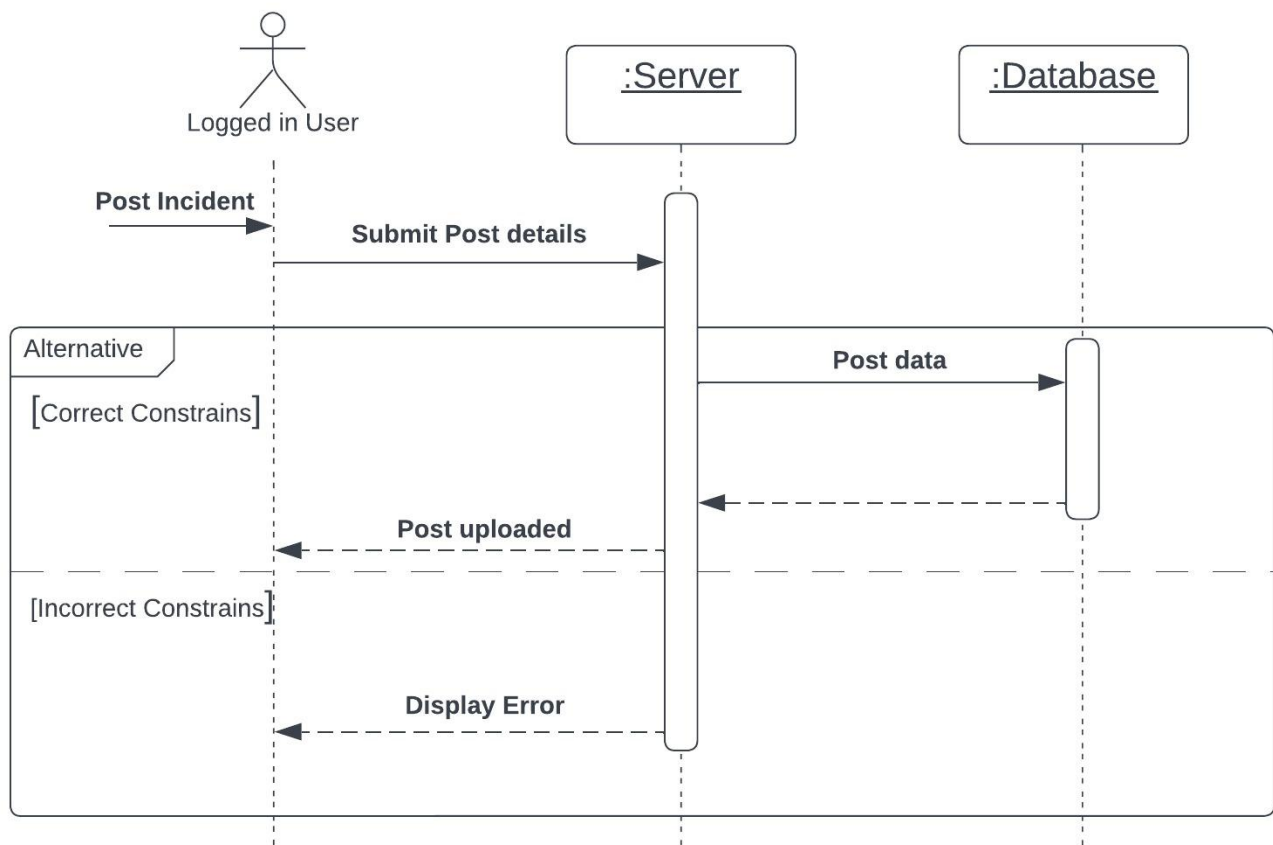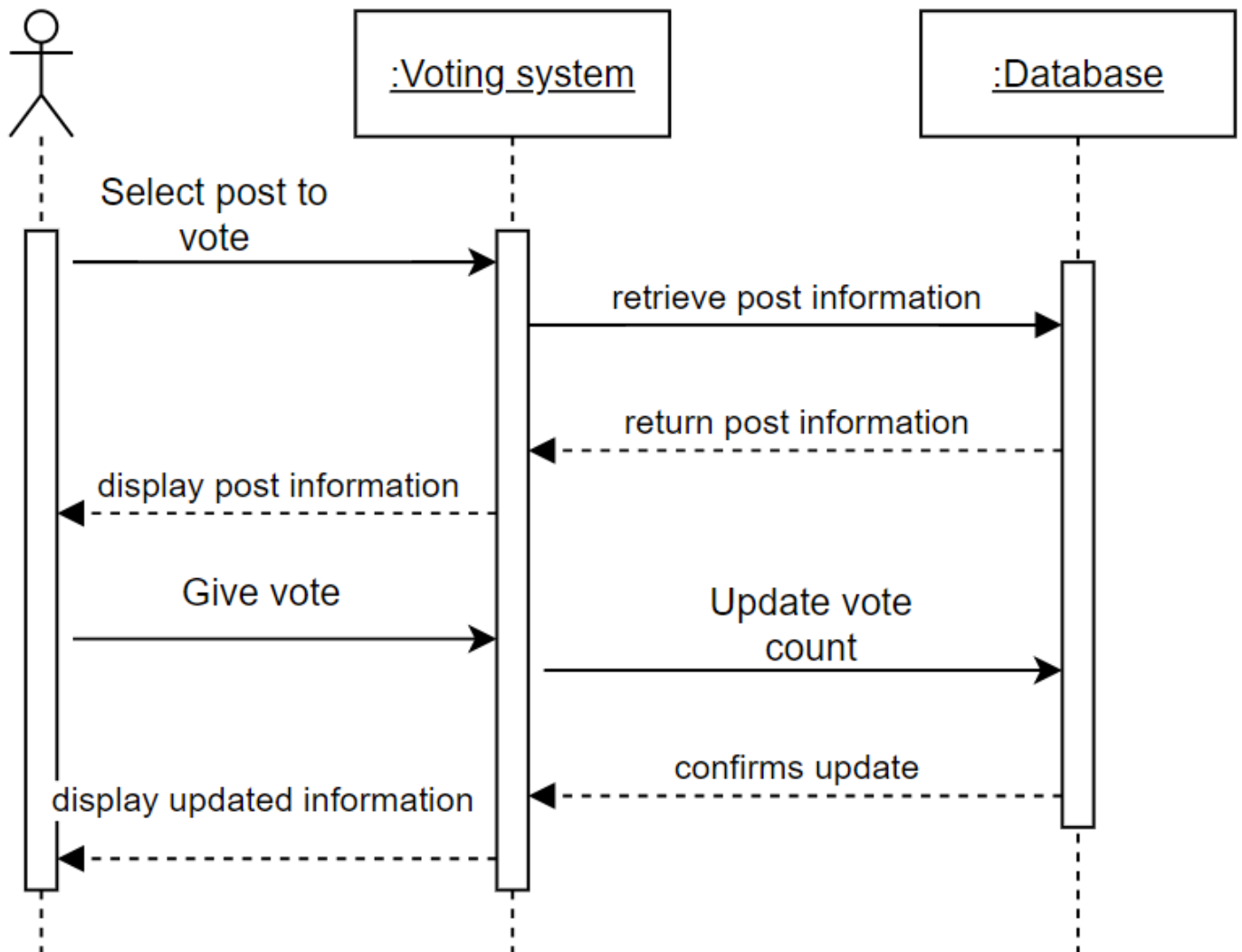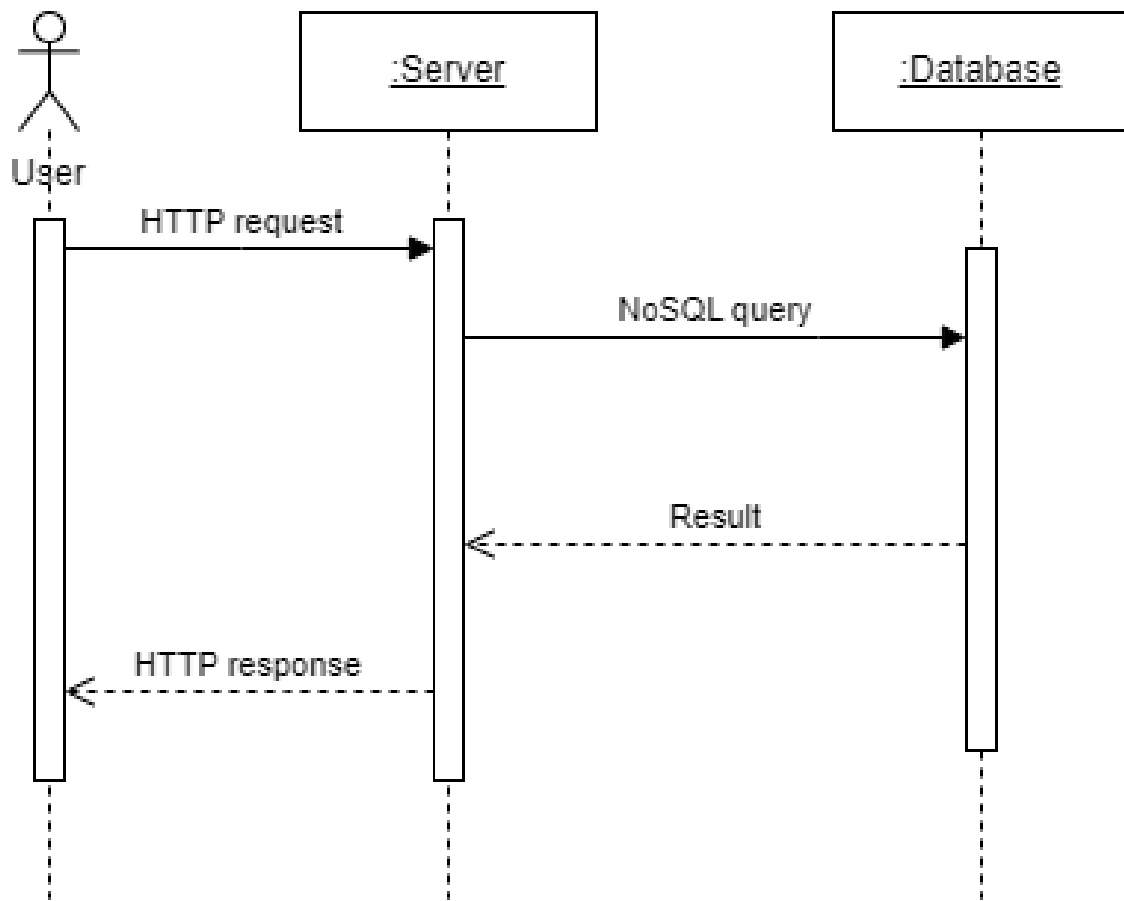
Search sequence diagram:

User

:Server

:Database

Search request

Search query

Return information

Search request response

Post Incident sequence diagram:

Voting for post sequence diagram:

User filter sequence diagram:

Class Diagram

User
User

- Name : string
- Phone Number : integer
- Email Address : string
+ Address : string
+ DOB : string

+ Search()
+ View Percentile()
+ Display_Filters()
+ View_on_Maps()
+ View_Other_Statistics()

Address
Address

+ Street:string
+ City : string
+ State : string
+ Postal Code : integer
+ Country : string

0..*   lives at   1

New User
New User

+ Register()

1

Registered User
Registered User

+ Login()
- Post_an_incident()
- Voting_for_posts()
- Logout()

1   Verify Password   0..*

Admin
Admin

- Name : string
- Phone Number : integer
- Email Address : string
- Address : string
- DOB : string

- Add_Data()
- Update_Data()
- Delete_Data()
+ View_on_Maps()
+ View_Other_Statistics()

0..*

Registration Process

High Level System Design

Our project makes use of an N-Tier system architecture where the application is divided into User-layer, server-layer and the Database layer.

- **User Layer**:
  - The Client interacts with this layer.
  - It consists of all the webpages that are available for the user to interact with.
  - It is made with giving the user's comfort the utmost importance.

- **Server Layer**:
  - This layer consists of the server application which for this project is programmed in python with extensive use of the Django module.
  - It is designed such that each webpage request can be answered in the minimum amount of time.

- **Database Layer:**
  - The layers store all the information/data essential for working of the application.
  - It is situated farthest from the user and can be accessed only through the server layer with proper authentication thereby ensuring data security.
  - We will be using MongoDB as our database solution.

SubSystems:

User Authentication and Authorization:
- Subsystem responsible for user authentication, registration, and account management.
- It should guarantee safe identification and permission.

Property Data Collection:
- Subsystem responsible for gathering information about properties from sources like public records and real estate websites.
- To obtain the necessary data, this subsystem might integrate APIs and scrape data.

Crime and Hazard Data Collection:
- Data collection on crime and hazards is the responsibility of a subsystem that gathers information from local police departments, government organizations, and meteorological services.
- To obtain the necessary data, this subsystem might integrate APIs and scrape data.

Data Storage and Retrieval:
- Subsystem responsible for storing and retrieving information on hazards, crimes, and property.
- The data should be kept in a database or data warehouse by this subsystem.

Scoring Algorithm:
- Subsystem that determines the criminal and hazard safety scores for each property.
- It should make use of a score formula that considers a number of variables, including the likelihood of natural disasters, crime rates, and other dangers in the vicinity of the property.