Lab Session - III

Crime and Hazards Measuring Website

Group: 30

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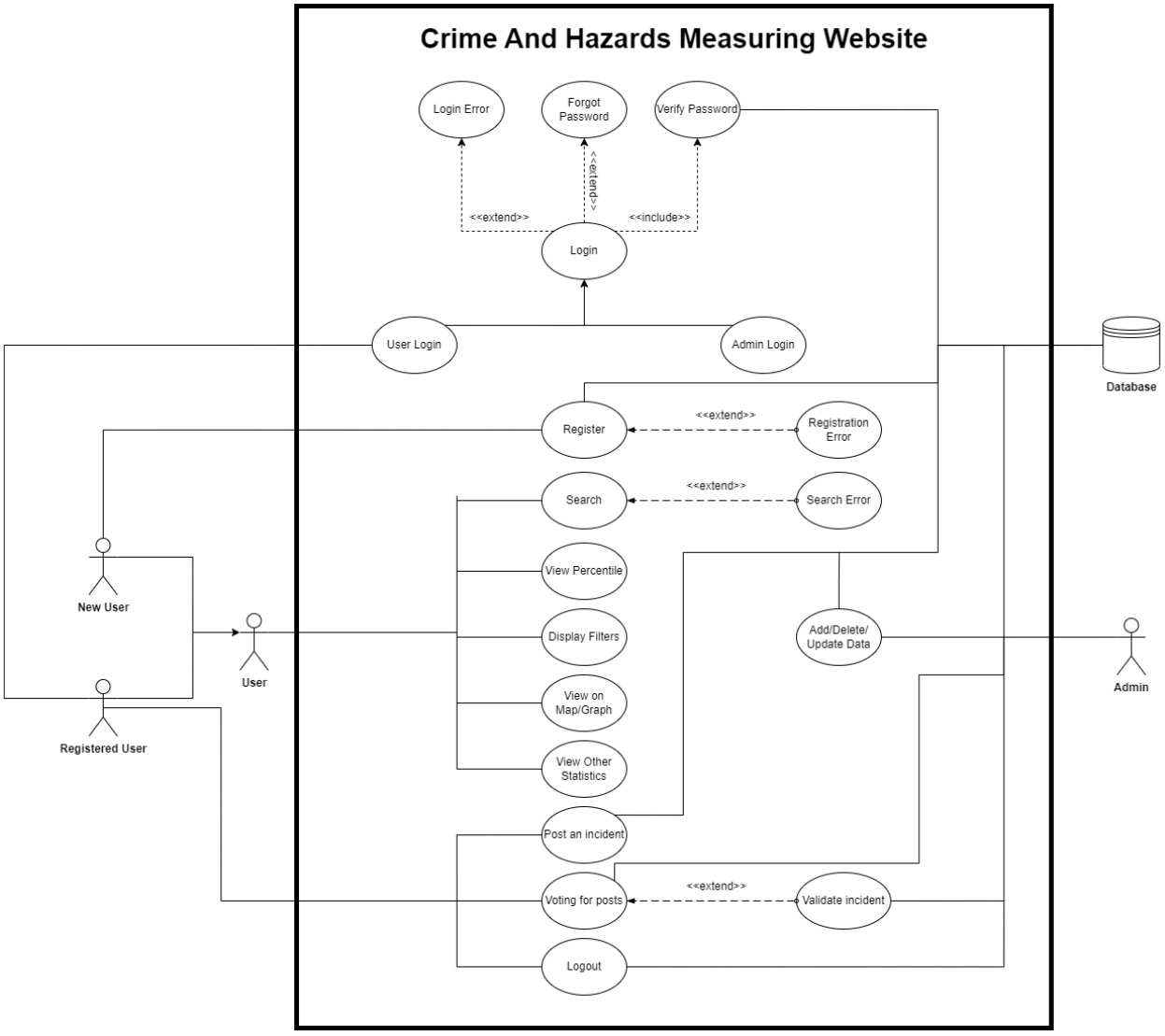
• Use Case Diagram



● Use Case Description

Identifier	UC_1
Use Case	Login
Description	User will Login into the CHMW*
Actors	User, Database system
Pre-conditions	User should be registered
Post-conditions	CHMW* Display Homepage
Flow	1. Users enter the website. 2. System show the main page 3. User select the Login option 4. System requests that the user enter username and password. 5. Users enter the username and password. 6. The system validates the entered username and password and logs the user into the system.
Exception	1. User enter forget password option 2. If User enters an invalid username and/or password, the system displays an error message. The actor can choose to either return to the beginning of the Basic Flow or cancel the login.

CHMW* - Crime and Hazards Measuring Website

Identifier	UC_2
Use Case	Register
Description	Registers new user for system through which one can login
Actors	New User, Database
Pre-conditions	1. Users must be connected to the internet. 2. User should be new, existing user can't re-register

Post-conditions	1. Users will have login credentials to login in the system. 2. New registered user credentials will be saved in the database.
Flow	1. User come to home page of system 2. Clicks Register 3. System asks some user details and ask to create its credentials 4. After this, user will have its login credentials
Exception	1. In step 2,if user is already registered with an email id and tries to register again with the same email id then the system displays an error. 2. In step 3,if user details are not stored in the database due to some internal issues.

Identifier	UC_3
Use Case	Search location
Description	The user will be able to search a particular location on a map/graph and view scores.
Actors	User(New as well as Registered User)
Pre-conditions	1. The user should be on the homepage of the web application.
Post-conditions	1. The location will be displayed on the map/graph till a particular default radius with crime and hazard percentile scores
Flow	1. User Locates the search bar. 2. User enters the name/coordinates of the location.
Alternate Flow	1. User goes to the filter option as in UC_5(display filter). 2. Selects filter by location. 3. User enters the location/coordinates of the location
Exception	1. In step 2 of flow if the user enters wrong coordinates/location then it displays a message of location not found.

Identifier	UC_4

Use Case	View Percentile
Description	The user will be able to view the crime/hazard percentile of the location that they have entered.
Actors	User, Database
Precondition	1. Users must be connected to the internet. 2. The user should know the longitude and latitude coordinates of the locality they want to view.
Post Conditions	1. Users should be able to view the correct percentile of the location they entered.
Flow	1. User clicks on the “view percentile” tab 2. The user enters the latitude and longitude of the location for which they want to find the percentile. 3. Click on the “find index” button.
Alternate Flow	1. User goes to the filter option as in UC_5. 2. Selects filter by location and crime/hazard percentile. 3. User enters the location/coordinates of the location.
Exception	1. The system can not access the database, the system will display a message of “please try again later”.

Identifier	UC_5
Use Case	Display filters
Description	The user will be able to filter out properties according to severity of crime, crime/hazard percentile, price, location and amenities. They will also be able to filter incidents based on their validation status.
Actors	User, Database
Precondition	1. The user must be connected to the internet. 2. The user should know their needs according to which they want to filter data. 3. Drop down menu must be displayed to the user which will show all the filters. 4. The user should be able to select the filters.
Post Conditions	1. Users should be able to see the properties according to the filters they have selected. 2. Users should be able to change the filters.

	3. They should be able to view the filtered out property details.
Flow	1. The user selects whether they want to filter out properties or incidents. 2. The user opens the drop down menu which displays all the filters. 3. User selects the filters according to their requirements. 4. User clicks on the “Apply Filters” button. 5. The system displays all the properties matching the user requirements.
Exception	1. User gets disconnected from the internet. 2. The system cannot access the database.

Identifier	UC_6
Use Case	View on map/graph
Description	Any user can see crime and hazards in property location and the neighborhood.
Actors	Homebuyer/renter, Location Sharing System, Database System
Preconditions	1. The homebuyer/renter has successfully logged in to the website. 2. The homebuyer/renter has entered valid criteria for property of interest.
Postconditions	1. The homebuyer/renter can view property location and surrounding areas on map and make an informed decision based on the data.
Flow	1. System retrieves property location information from the database. 2. The system displays property location on map. 3. The system also shows crime and hazard data in respective areas. 4. Users can zoom in or out or switch between map layers.
Alternate Flow	1. If the property address information is unavailable or invalid, the system displays an error message and prompts the buyer to find another property.
Exceptions	1. Your system may be loading slowly or your map may be rendering incorrectly. In such cases, the system should display an error message and provide an alternative option to display property information.

Identifier	UC_7
Use Case	View Other Statistics
Description	Access more crime and risk-related statistics beyond the standard mapping and visualization options.
Actors	User(Registered and New), Database
Precondition	Data must be gathered and saved by the system.
Postcondition	1. Mapping and visualization to analyze crime and risk-related statistics. 2. Record user actions and filters.
Flow	1. User chooses from the system's menu to "See Additional Statistics." 2. When further search parameters or filters are required the system prompts the user to enter them. 3. Request submission done when user provides the search filters 4. Based on the user's search criteria, the system retrieves and processes the data. 5. The system produces a visual representation of additional statistics.
Alternate flow	1. The system will block access and display an error message if the user is not permitted to examine more statistics.
Exception	1. An error notice in response to invalid search criteria or filters. 2. Issue an error message and ask the user to change their filters if unable to find relevant data.

Identifier	UC_8
Use Case	Voting for a post
Description	The user will be able to upvote or downvote a post
Actors	User
Pre-conditions	1. Users should have a valid account. 2. Users must be logged in.
Post-conditions	1. The web page should display the total count of votes. 2. The upvote count of the corresponding post should be updated in the database.

Flow	1. Log in to the account. 2. Click on the upvote or downvote button.

Identifier	UC_9
Use Case	Post an incident
Description	The user will be able to post information about any criminal or hazardous event in the neighborhood.
Actors	User,Database
Pre-conditions	1. User should be logged into his account. 2. A short description about the event should be written. 3. Time and location where the incident occurred should be provided and details should be valid (Ex - time should not be in future or location should exist in real world).
Post-conditions	1. Other users should be able to read and vote on the incident(UC_8). 2. Incident should be validated once the vote threshold is crossed.
Flow	1. User logs into account if not logged in. 2. User clicks on post incident functionality and provides all the relevant information. 3. User clicks on the submit/ post button. 4. The system checks if all constraints(description, location, time etc details are provided) are met and posts the incident.
Exception	1. Authorization of User fails. a. Error message pops up. b. User redirected to login page 2. Insufficient or Incorrect Information is entered. a. Warning is given and the user is requested to correct the mistake.

Identifier	UC_10
Use Case	Manage data

Description	Administrators will have the capabilities to add, update and delete data entries based on the requirement.
Actors	System administrators
Pre-conditions	1. Admins should be logged in as administrator. 2. Any alteration of the entries should be done only after it has been posted(UC_9) verified by the relevant authority and the entry has crossed the vote threshold(UC_8).
Post-conditions	1. A system log must be generated stating what was changed or added. 2. Deleted entries should not be deleted but archived.
Flow	1. Admin logs in. 2. Admin opens the database record. 3. Based on the requirement: a. Add entry: i. Perform UC_9 b. Update entry: i. The new data has been verified and has surpassed the vote threshold(UC_3). ii. New details are entered. c. Delete entry: i. Check if the entry is older than 6 months and has less votes than the threshold. ii. The authorities are informed of the old entry and that it is going to be deleted. iii. The entry instead of being deleted is moved to the archived section. 4. All the changes are pushed onto the database and a system log is generated.
Exception	The person logged in is from the emergency department, they can directly make the required changes to the entries and verify them.

Non-Functional Requirements with justifications:

1) **Performance:**
   - In today's world of short time-spans and high speed internet connection a user may find it difficult to access and work with a

slow website hence the latency and loading time for the site should be as low as possible for all its available functionalities.

2) **Scalability:**
    - As time passes, the population of any place would increase, so in order to accommodate the new users the system should have the necessary hardware support.
    - Since the older entries would be archived instead of deleted, there has to be enough storage available to allow new entries to be added.

3) **Usability:**
    - The system must have an easy-to-use interface, be intuitive for users, and be as simple as possible to utilize.
    - If a non technical user finds the interface hard to use, he/she may leave the website.

4) **Reliability:**
    - System must be available and it must be dependable having little downtime and a low rate of mistakes and malfunctions.
    - All the updates displayed on the web page should be updated on the server database also and data provided should be consistent for all users.

5) **Compliance:**
    - The system must adhere to all applicable legal and regulatory requirements, including security guidelines and data privacy regulations.
    - As the users will be posting and providing possible private information about their neighborhoods or their personal identification information for authentication purposes the storage and handling of data should be done with utmost care, following rules and regulations to avoid any legal liabilities.

6) Maintainable:
    - Rolling out new updates should be easier for the developers to do.
    - Minor changes should not affect the system adversely.

7) Recovery:

- The system should be able to recover lost data in case of failures.
- The system should have backup stored at some other location in order to recover lost data if any.

8) **Incident Validation:**
   - Incidents posted should be verified as soon as possible so users can judge the reliability of information provided on the website.
   - This is required to prevent people from spreading false information about certain communities or neighborhoods.