



Connect Hub

Objective

In Phase 3 of the Connect Hub platform, we will build on the foundation established in Phase 2 by introducing key features to enhance interactivity. These include **chatting** and **interacting with posts**.

Additionally, we'll extend existing functionality to provide a richer user experience, including **Real time Notifications**.

Requirements

1. chatting

Backend:

- **User chat:** User can send messages to his friend.

Frontend:

- After the user chooses a friend to chat with, pop up another window to see all previous messages and a button for sending a message.

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2. Interacting with posts

Backend:

- A user can add many comments in the same post.
- It isn't required to add a comment to a comment.
- store all comments to show up again for any user.
- send notification to the user when any user adds a comment or like to his post.

Frontend:

- Add 3 buttons:
 - show comments
 - When a user presses this button, pops up another window to show all comments for this post.
 - like button
 - When a user presses this button, change the state of this button, change color and increase/decrease the number of likes.
 - add comment button
 - When a user presses this button, pop up another window to make the user add his comment.



3. Notification System

- **Backend:**

- **Notification Types:** Notifications will be triggered by the following actions:
 - **chat:** A user receives messages.
 - **Posts:** A user can be notified when there is a new comment on one of his posts.
- **Fetching Notifications:** try to make it more real. You can do it by using threads that read notification files every specific time or you can use WebSocket technology. If you have another way to implement this feature, feel free to use it.

- **Frontend:**

- Users will be able to see and interact with notifications, such as accepting or declining friend requests and posts, or responding to group-related notifications ,,,,etc.
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Database Management (File-Based)

For Phase 3, we will continue using a **file-based JSON database** to manage the application's data. This format is flexible, easy to access, and supports the new features introduced in Phase 3.

Guidelines for Designing JSON Structures:

- Feel free to **design your own file structures** based on the application requirements.
- Consider **optimization techniques** to ensure the files are structured in a way that minimizes redundant data and improves access speed.
- Think about **relationships** between users and content when designing the file formats (e.g., linking user IDs to their content or friend relationships).
- Ensure the files are structured to accommodate features like filtering expired stories, managing friend requests, and fetching user statuses efficiently.

GitHub and Team Collaboration

GitHub Workflow:

- Use GitHub for version control and collaboration.
- Create branches for tasks (e.g., feature-login, feature-profile-update).
- Submit **pull requests** for review before merging changes.
- Each pull request should be reviewed by at least one team member.

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Diagrams

Update your diagrams for this lab:

1. **Use Case Diagram**
 2. **State Diagram**
 3. **Sequence Diagram**
 4. **Class Diagram**
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Additional Requirements

- The project should follow **SOLID principles**.
 - The implementation must include **creational** design patterns, **structural** design patterns and **behavioral** design patterns.
 - **You must use at least 5 different design patterns to get the mark.**
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Submission Requirements and Policies

Required:

- You are required to solve the above project and deliver a **zipped file** containing all the .java files.
- The **deadline for delivery** is **Friday, December 20, 2024, at 11:00 PM**.

Policy:

- Your code should be **clean, readable, and well-commented**.
- Delivering a **copied submission** will be **severely penalized for both parties**. Submitting nothing is better than submitting a copy.
- **No late submissions** will be accepted.

This ensures fairness and upholds the integrity of the project development process.

Be creative! The required features are only the beginning of what you can do, add more features or spice up the required ones.

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