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## Connect Hub

### Objective

In Phase 2 of the Connect Hub platform, we will build on the foundation established in Phase 1 by introducing key features to enhance interactivity and group management. These include **Search**, **Group Management**, and a revamped **Notification System**.

Additionally, we'll extend existing functionality to provide a richer user experience, including **Group Suggestions**, **Interactive Notifications**, and a **Personalized News Feed**.

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### **Requirements**

#### **1. Search Functionality**

##### **Backend:**

- **User Search:** Users can search for others by username. The system will return a list of users with their basic details.
  - **Actions for Search Results:**
    - **Add Friend:** Send a friend request.
    - **Remove Friend:** Remove an existing friend.
    - **Block User:** Block someone, whether they are friends or not.
    - **View Profile:** View the user's profile.

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- **Group Search:** Users can search for groups by group name. The system will return matching groups.
  - Actions for Search Results:
    - **Join Group:** Join the group.
    - **Leave Group:** Leave the group (the group will no longer appear in suggestions or the newsfeed).
    - **View Group:** View the group and its posts (for existing group members).

#### Frontend:

- Add a **search bar** to allow users to search for both users and groups.

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## 2. Group Management

#### Backend:

- **Group Creation:**
  - Users can create **groups**, and each group will have the following properties:
  - **Name:** A name to identify the group.
  - **Description:** A short description that summarizes the group's purpose.
  - **Group Photo:** A photo or image representing the group (can be uploaded by the creator).

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- **Group Permissions:**

- **Primary Admin (Creator):**

- Promote or demote other admins.
    - Remove any group member.
    - Manage group posts (add, edit, or delete).
    - Delete the group.

- **Other Admins:**

- Approve or decline new membership requests.
    - Remove normal members.
    - Manage posts (add, edit, or delete).
    - **Cannot** change the primary admin or delete the group.

- **Normal Users:**

- Post content in the group.
    - Leave the group.

- **Group Deletion:**

- If a user leaves a group, it will be removed from their news feed and group suggestions.

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### Frontend:

- Show a **list of groups the user has joined** in their **News Feed**.
- Admin-specific UI:
  - **Primary Admins:** Access buttons to promote/demote members, manage posts, and delete the group.
  - **Other Admins:** Access buttons to manage posts and members, but without the ability to change the primary admin.
- Normal User UI:
  - Options to **Join** or **Leave** groups.
  - Post content in the group.

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### 3. Notification System

- **Backend:**
  - **Notification Types:** Notifications will be triggered by the following actions:
    - **Friend Requests:** A user sends or receives a friend request.
    - **Group Activities:** A user is added to a group, their group status changes, or a new post is added in a group.
    - **New Posts:** A user can be notified of new posts in groups they belong to.
  - **Fetching Notifications:** Notifications will only appear after a **refresh**.

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- **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.

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### News Feed Page (Extension to Phase 1)

In Phase 2, we will extend the News Feed Page from Phase 1 by adding the following new features:

- **Group Suggestions:**

The News Feed will now include a section displaying **groups the user is not a member of** but may be interested in joining.

- **Interactive Notifications:**

Users will be able to see and interact with **notifications** in the News Feed. These notifications include friend requests, group activities (e.g., new posts or member changes), and other relevant updates. Users can accept or decline friend requests, view posts, or join/leave groups directly from the notifications.

- **Groups the User is Already a Member Of:**

The News Feed will show a list of **groups** the user is already a member of, with updates on recent posts, new activities, and group interactions.

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## Database Management (File-Based)

For Phase 2, 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 2.

### 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.
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## 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

Your following diagrams must be updated:

1. **Use Case Diagram:**

- Illustrates user interactions with searching, joining, and managing groups, friend requests, and posts.

2. **State Diagram:**

- Shows user states (online, offline, blocked, member, admin) and transitions between them.

3. **Sequence Diagram:**

- Depicts frontend-backend interactions for login, content creation, friend requests, and group management.

4. **Class Diagram:**

- Displays the structure of users, groups, posts, notifications, and friendships, along with their relationships.

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## Additional Requirements

- The project should follow **SOLID principles**.
  - The implementation must include creational **design patterns** and structural **design patterns**.
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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 13, 2024, at 11:59 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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