Khmelnytskyi National University

Department of Computer Engineering and Information Systems

**Report**

Laboratory work №1

Discipline: “Object-oriented programming”

Topic: “Introduction to C#. Creating console applications

In C#”

Completed: 1st year student, group CEs-24-1 Maksim Lapko

Name, Surname

Checked: Viacheslav Boiko

Name, Surname

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Purpose: This laboratory work aims to enable students to understand and apply use case analysis as a part of OOAD in the context of Object-Oriented Programming.

**Task 1**

Provide the short description of the domain you are working in. Provide the   
description of your problem domain, what was included and excluded from   
according to the scope of domain.

#### ****Domain****:

The domain of this project is an online social networking platform, where users can interact by creating, editing, and sharing content (posts). The platform also provides moderation features and user management tools for administrators.

#### ****Problem Domain****:

The problem domain focuses on providing a structured platform where users can safely create and manage posts, interact with other users, and manage their personal profiles. It also addresses the need for administrative oversight to ensure content compliance with platform guidelines, user safety, and management of roles and permissions.

#### ****Included in the Scope****:

* **User Registration and Authentication**: Users can create accounts, log in, and manage their profile information.
* **Post Management**: Users can create, edit, delete, view, and like posts.
* **Reporting and Moderation**: Users can report posts for violations, and admins can review and moderate content (edit, delete posts).
* **User Profile Management**: Users can change their password, avatar, nickname, username (login), and email. Admins can manage these attributes for all users.
* **User and Post Search**: Users can search for other users by name or nickname and search for posts by tags.
* **Admin Rights and Permissions**: Admins have different levels of authority for moderating content and managing users, including banning users, assigning roles, and deleting accounts (for level 3 admins).
* **Account Deletion**: Users can delete their accounts, and admins can delete user accounts as well (level 3).

#### ****Excluded from the Scope****:

* **Advanced Social Features**: Features like private messaging, real-time chat, or comment sections are not included.
* **Monetization**: There are no premium accounts, advertisements, or in-app purchases.
* **Third-party Integrations**: Integrations with external services like Google or Facebook for authentication are not included.
* **Notifications and Analytics**: Real-time notifications for post interactions, likes, or in-depth user analytics are not part of the initial scope.

**Task 2**

Determine the main notations of your system for use case analysis. Compose

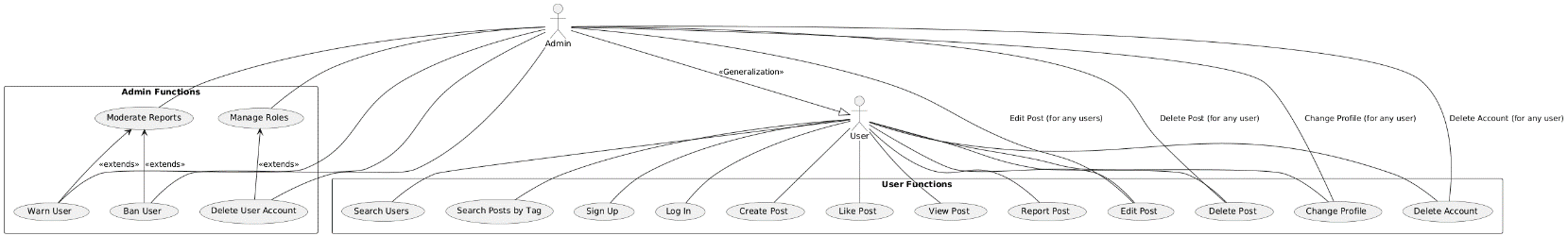
the table with the description of each component.

**Notation description:**

|  |  |  |
| --- | --- | --- |
| **Notation Type** | **Name** | **Description** |
| **Actor** | **User** | A regular user who can register, log in, create/edit/delete/like posts, report posts, manage their profile, search users and posts, and delete their account. |
| **Actor** | **Admin** | Administrators with levels 1-3 who can moderate posts, process reports, manage users and admins, and perform user account management tasks like editing or deleting posts. |
| **Use Case** | **Sign Up** | A user creates an account using email or username with uniqueness verification. |
| **Use Case** | **Log In** | A user logs in and receives a JWT token for future actions. |
| **Use Case** | **Create Post** | A user creates and shares a post. |
| **Use Case** | **Edit Post** | A user edits their post. Admins can edit posts for all users. |
| **Use Case** | **Delete Post** | A user deletes their post. Admins can delete posts for any user. |
| **Use Case** | **Like Post** | A user likes a post. |
| **Use Case** | **View Post** | A user views posts shared by others. |
| **Use Case** | **Report Post** | A user reports a post for violations. |
| **Use Case** | **Change Profile** | A user changes their password, avatar, nickname, username (login), or email. Admins can also change these details for any user. |
| **Use Case** | **Delete Account** | A user deletes their account. Admins at level 3 can delete any user's account. |
|  |  |  |
| **Use Case** | **Search Users** | A user searches for other users by name or nickname. |
| **Use Case** | **Search Posts by Tag** | A user searches posts by tags. |
| **Use Case** | **Moderate Reports** | Admins review and take action on reported posts (delete/edit posts, warn users). |
| **Use Case** | **Warn User** | Admins can issue warnings to users for guideline violations. |
| **Use Case** | **Ban User** | Admins can ban users from the platform. |
| **Use Case** | **Manage Roles** | Admins at level 2 and above can manage user/admin roles (assign, promote, demote). |
| **Use Case** | **Delete User Account** | Admins at level 3 can delete any user’s account. |

**Task 3**

Create a detailed Use Case diagram which may contain all previously described notations.



**Diagrams code:**@startuml

actor User

actor Admin

rectangle "User Functions" {

usecase "Sign Up" as UC1

usecase "Log In" as UC2

usecase "Create Post" as UC3

usecase "Edit Post" as UC4

usecase "Delete Post" as UC5

usecase "Like Post" as UC6

usecase "View Post" as UC7

usecase "Report Post" as UC8

usecase "Change Profile" as UC9

usecase "Delete Account" as UC10

usecase "Search Users" as UC11

usecase "Search Posts by Tag" as UC12

}

rectangle "Admin Functions" {

usecase "Moderate Reports" as UC13

usecase "Warn User" as UC14

usecase "Ban User" as UC15

usecase "Manage Roles" as UC16

usecase "Delete User Account" as UC17

}

Admin --|> User : <<Generalization>>

User -- UC1

User -- UC2

User -- UC3

User -- UC4

User -- UC5

User -- UC6

User -- UC7

User -- UC8

User -- UC9

User -- UC10

User -- UC11

User -- UC12

Admin -- UC13

Admin -- UC14

Admin -- UC15

Admin -- UC16

Admin -- UC17

UC4 -- Admin : Edit Post (for any users)

UC5 -- Admin : Delete Post (for any user)

UC9 -- Admin : Change Profile (for any user)

UC10 -- Admin : Delete Account (for any user)

UC13 <-- UC14 : <<extends>>

UC13 <-- UC15 : <<extends>>

UC16 <-- UC17 : <<extends>>

@enduml

**Conclusions**

We successfully defined the interactions between users, admins, and the core functionalities of the Social Network Y platform. By organizing the system into clear actors and use cases, we ensured that both user and admin roles are well-structured, with a clear distinction of permissions.