Khmelnytskyi National University

Department of Computer Engineering and Information Systems

**Report**

Laboratory work №5

Discipline: “Software Requirements and Quality Analysis”

Topic: “Analysis and specification of requirements”

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

Name, Surname

Checked: Oksana Onyshko

Name, Surname

Khmelnytskyi, 2024

***Purpose of work:*** To form practical skills in specifying non- functional and functional requirements.

**5.1** **Tasks for laboratory work**

1. Write the introductory part (goals, references).

2. Describe the functional requirements. The requirements are described in a simple narrative form (not in the form of precedents).

3. Describe non-functional requirements. Mandatory categories for consideration are applicability, reliability, performance, serviceability, design limitations.

**5.2 Completion of the task**

***References:***

* Official Go and React documentation for software implementation.

***Functional Requirements***

These requirements define the functionality that Social Network Y should provide. The focus is on the features available to users and admins, ensuring they align with user expectations without delving into implementation details.

1. **User Registration and Authentication**: Users can register an account and log in using email and password. Authentication uses JWT tokens to secure sessions.
2. **User Profile Management**: Users can edit their profile information, including nickname, avatar, username, and email.
3. **Post Management**:
   * Users can create, edit, delete, and view posts.
   * Users can like and comment on posts.
4. **Search Functionality**: Users can search for other users, posts, and tags.
5. **Report Management**: Users can report posts for violations, which are then handled by admins.
6. **Admin Features**:
   * **Post Moderation**: Admins can view, edit, and delete any post.
   * **User Management**: Admins have roles (levels 1-3) and can manage user profiles, change permissions, and ban users as necessary.
   * **Role Management**: Admins of level 2 or higher can assign or modify user roles. Level 3 admins have the authority to moderate other admins to ensure system stability.

Non-functional requirements define the quality attributes of Social Network Y and any limitations impacting its design and performance. These include system applicability, reliability, performance, serviceability, and design constraints.

**Applicability**

* The platform must be compatible with major web browsers (Chrome, Firefox, Safari, Edge) and function on both desktop and mobile devices.

**Reliability**

* Social Network Y must maintain stability under high load, supporting up to 10,000 concurrent users.
* All system failures should be logged, and error messages should guide users to resolve issues or report them effectively.
* System availability should be at least 99.8%.

**Performance**

* **Response Time**: Most user actions (e.g., viewing or posting content) should be completed within 2 seconds.
* **Throughput**: The system must handle a minimum of 100 posts per second under normal conditions.
* **Scalability**: The system should be designed to support easy scaling, allowing additional servers or resources to be added as user demand grows.

**Serviceability**

* The system should allow quick deployment of updates with minimal downtime (no longer than 10 minutes for major updates).
* Code should follow modular principles to facilitate testing, troubleshooting, and maintenance.

**Design Limitations**

* **Architecture**: The platform follows a client-server architecture, with microservices for modular functionality.
* **Technology Stack**: Development will be done using Go, GORM for data modeling, MySQL for database management, and React for the frontend interface.
* **Security**: Sensitive user data (e.g., passwords, emails) must be encrypted both in transit and at rest. Authentication must rely on industry-standard protocols such as OAuth for optional integrations.
* **Role-based Access Control (RBAC)**: User roles are stored as numeric values for simplicity and should be flexible for role management updates without significant refactoring.

**Conclusion:**

In this laboratory work, a well-defined requirements specification is essential to the successful development of any system, ensuring that all user and system needs are understood and documented.