Groofy Code

Competitive programming platform

Under the supervision of:

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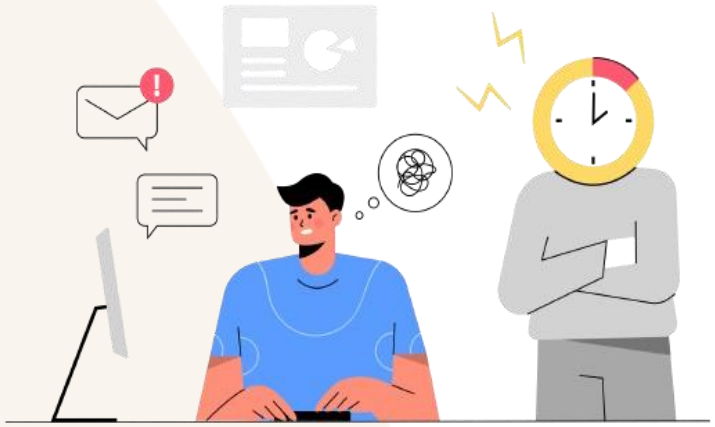
Problem Significance

Introduction & Problem Description



Tasks

Deadlines

Why don’t I know how to implement it ?

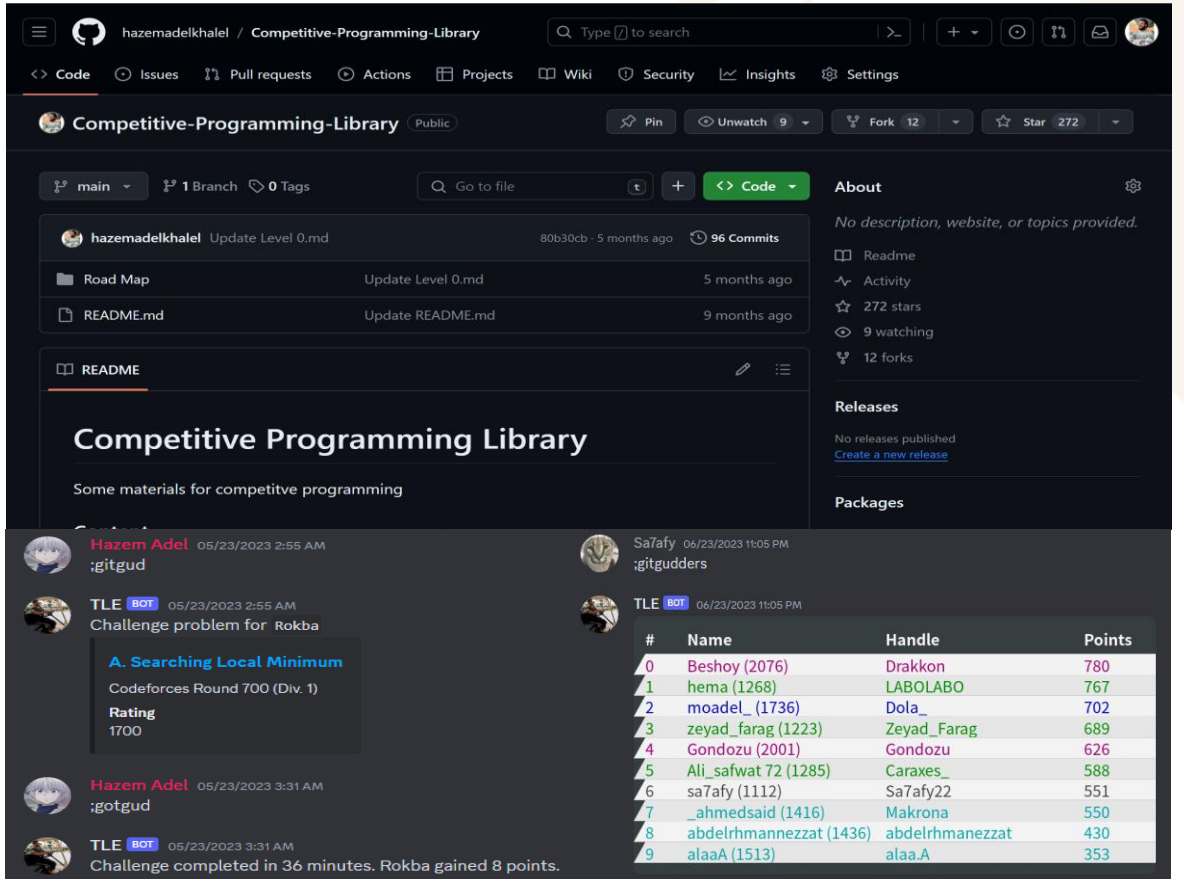
Thinking of the solution

What should I do

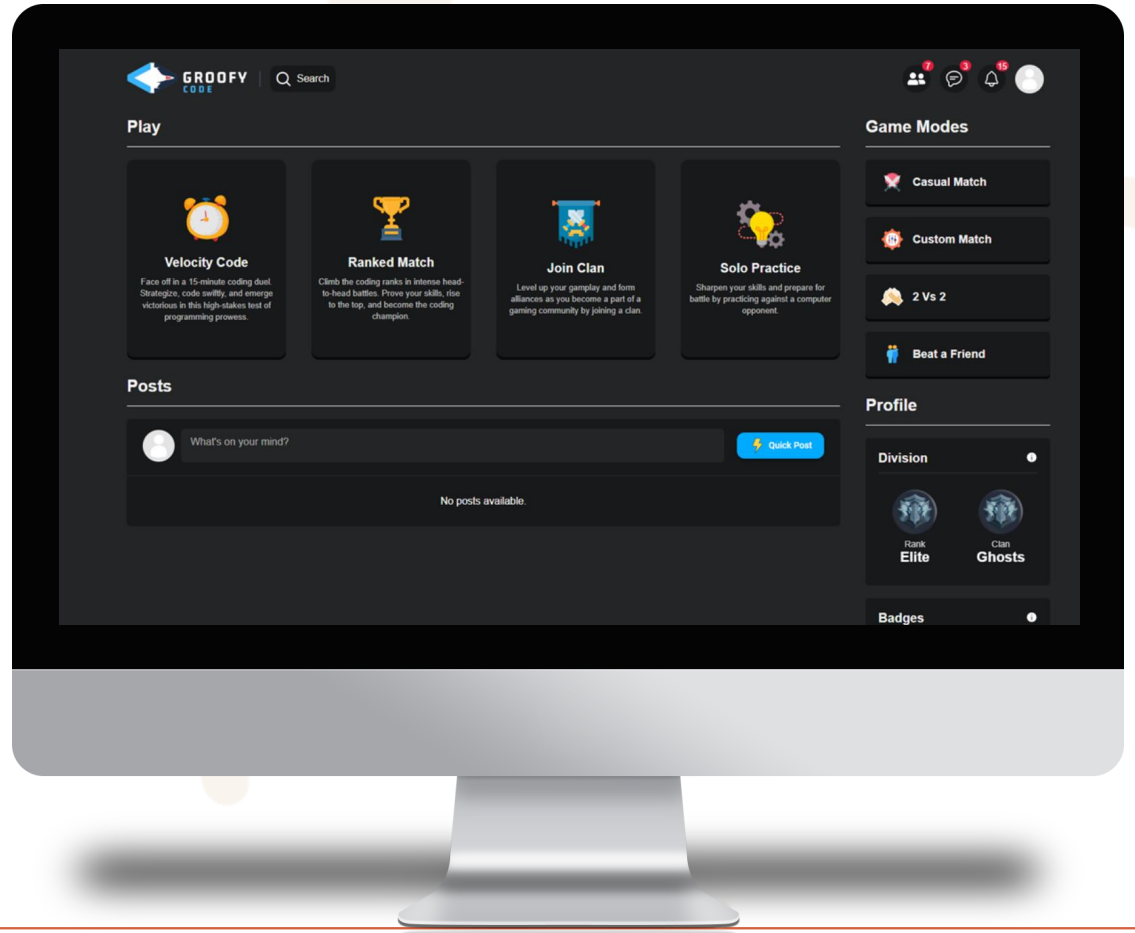
1. Should I solve a lot of problems ?
2. Should I solve hard problems ?
3. What time should I spend in solving ?
4. What about challenging people ?
5. Leetcode ? Codeforces ? ….. etc

Motivation

- [Competitive Programming Library]
- FCAI-ICPC Community
- Discord Bot Challenging
- Website -> Gaming Platform



Our Solution: Groofy Code



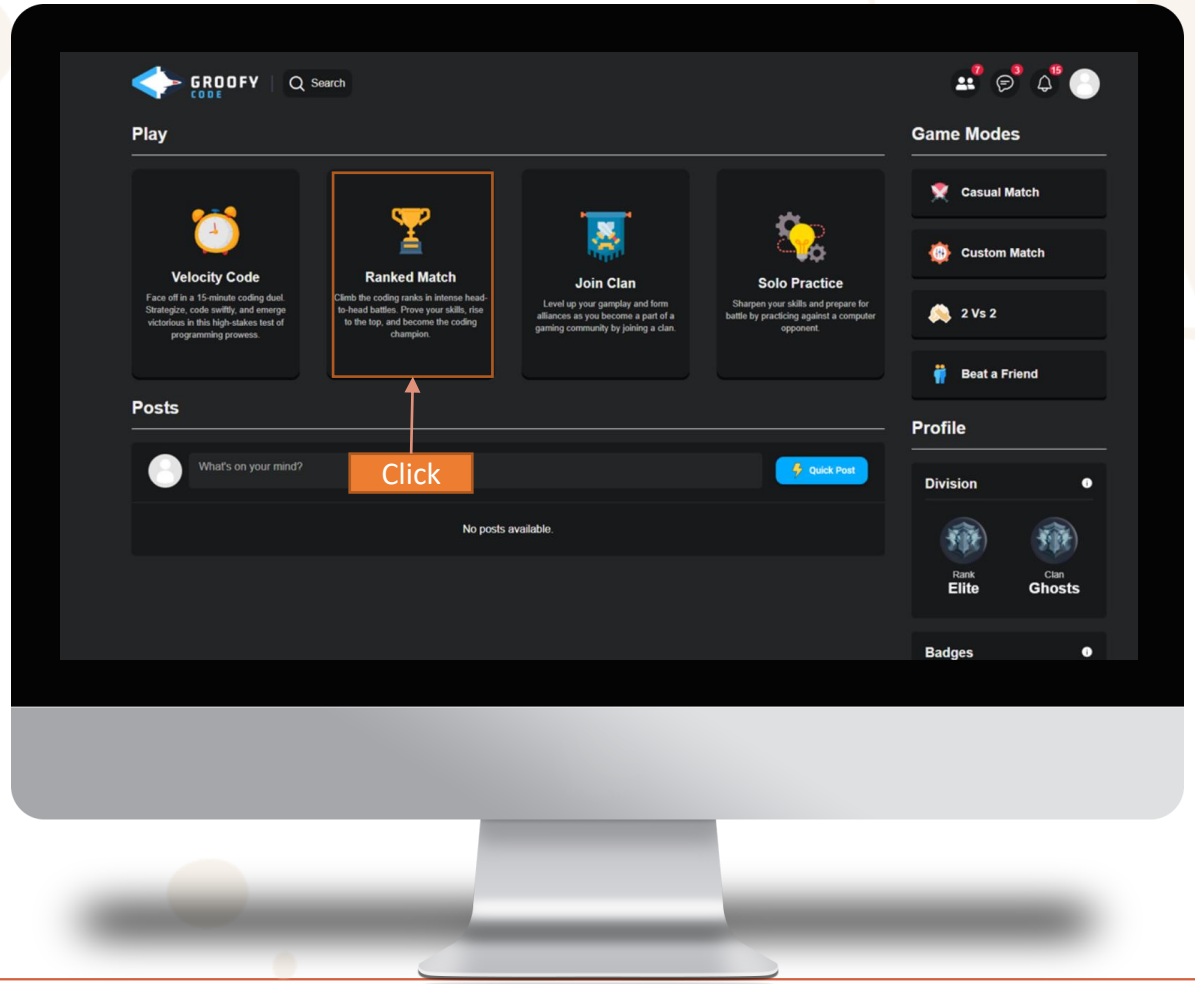
Project Idea

Highlight Features

1. Challenge Mechanism
2. Comprehensive User System
3. Clan Features
4. Interactive Chat System

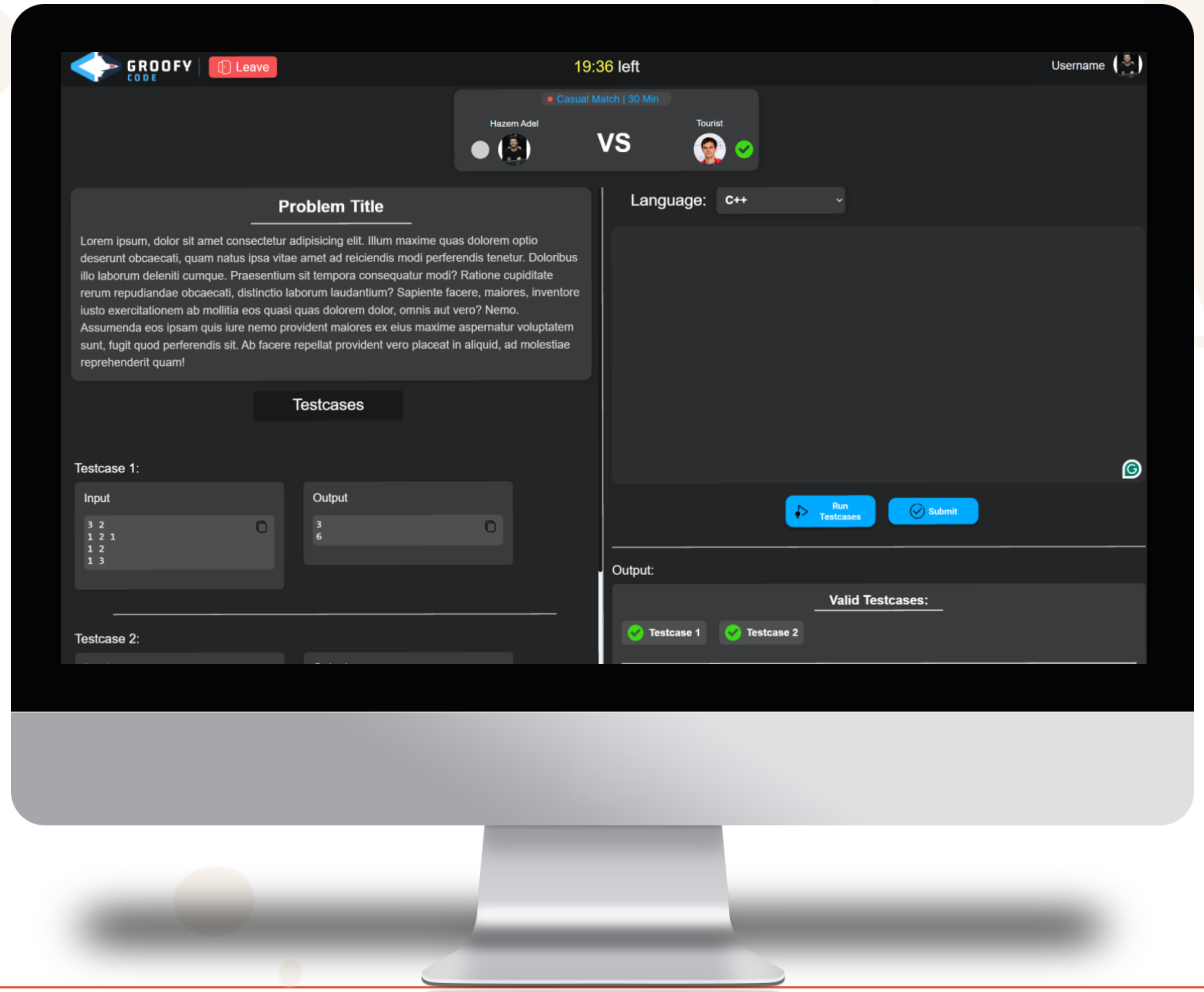
Match Modes

- Various Coding Challenges
- Difficulty Levels



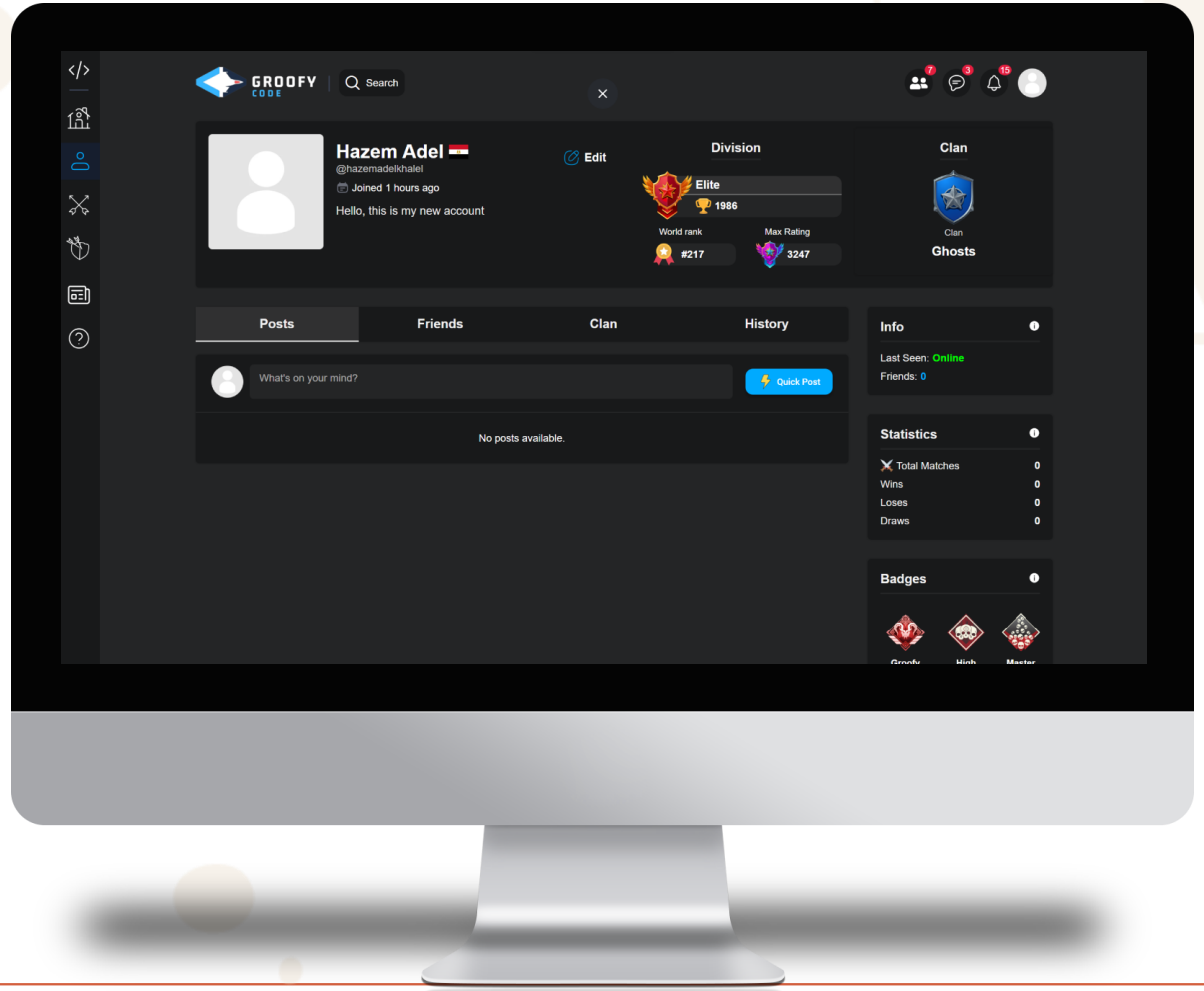
Match Challenge

- Real-time Code Editor
- Submission and Evaluation



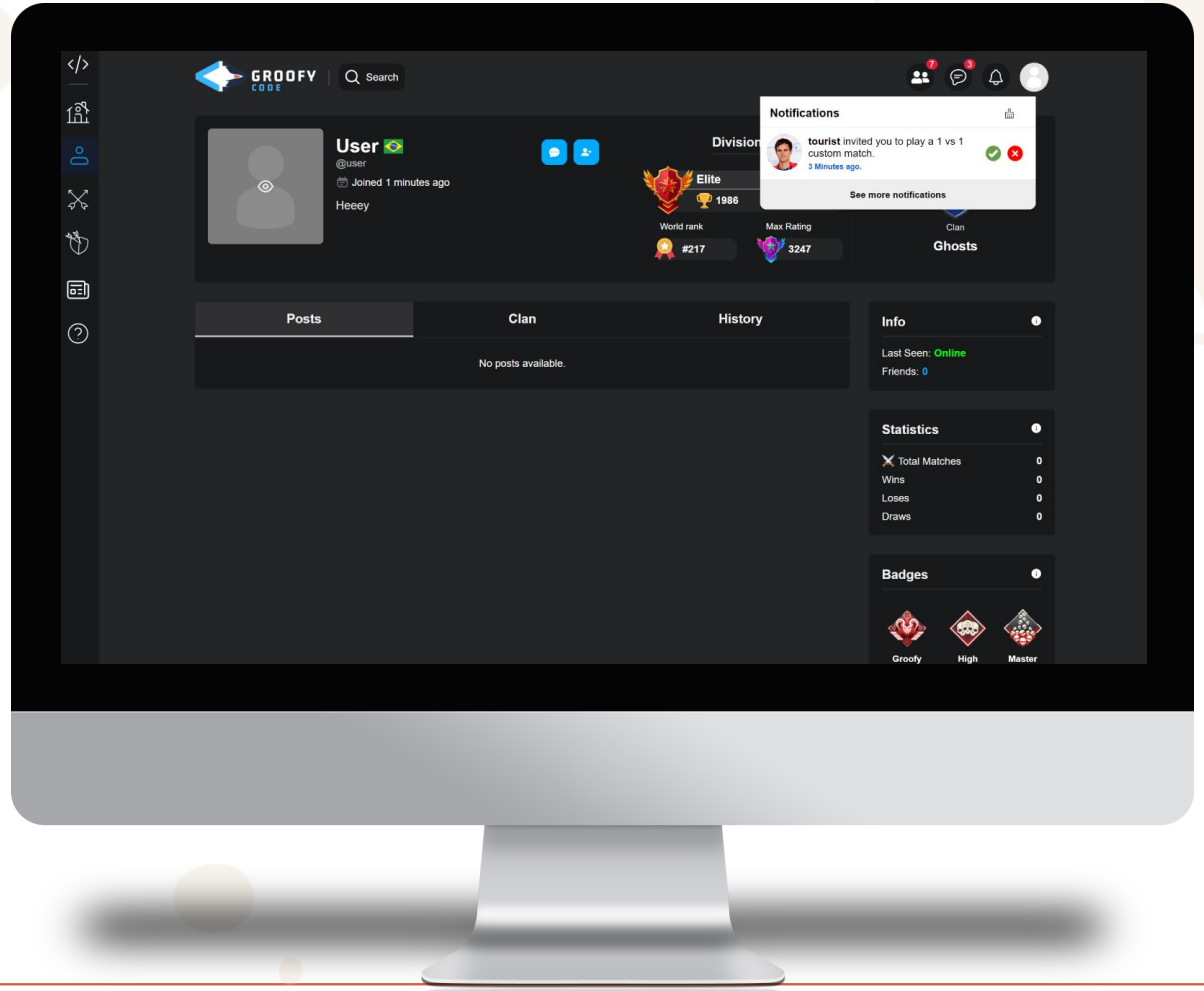
User Profile

- User Registration / Login
- Profile Creation
- Personalized Dashboard
- Insightful User Statistics



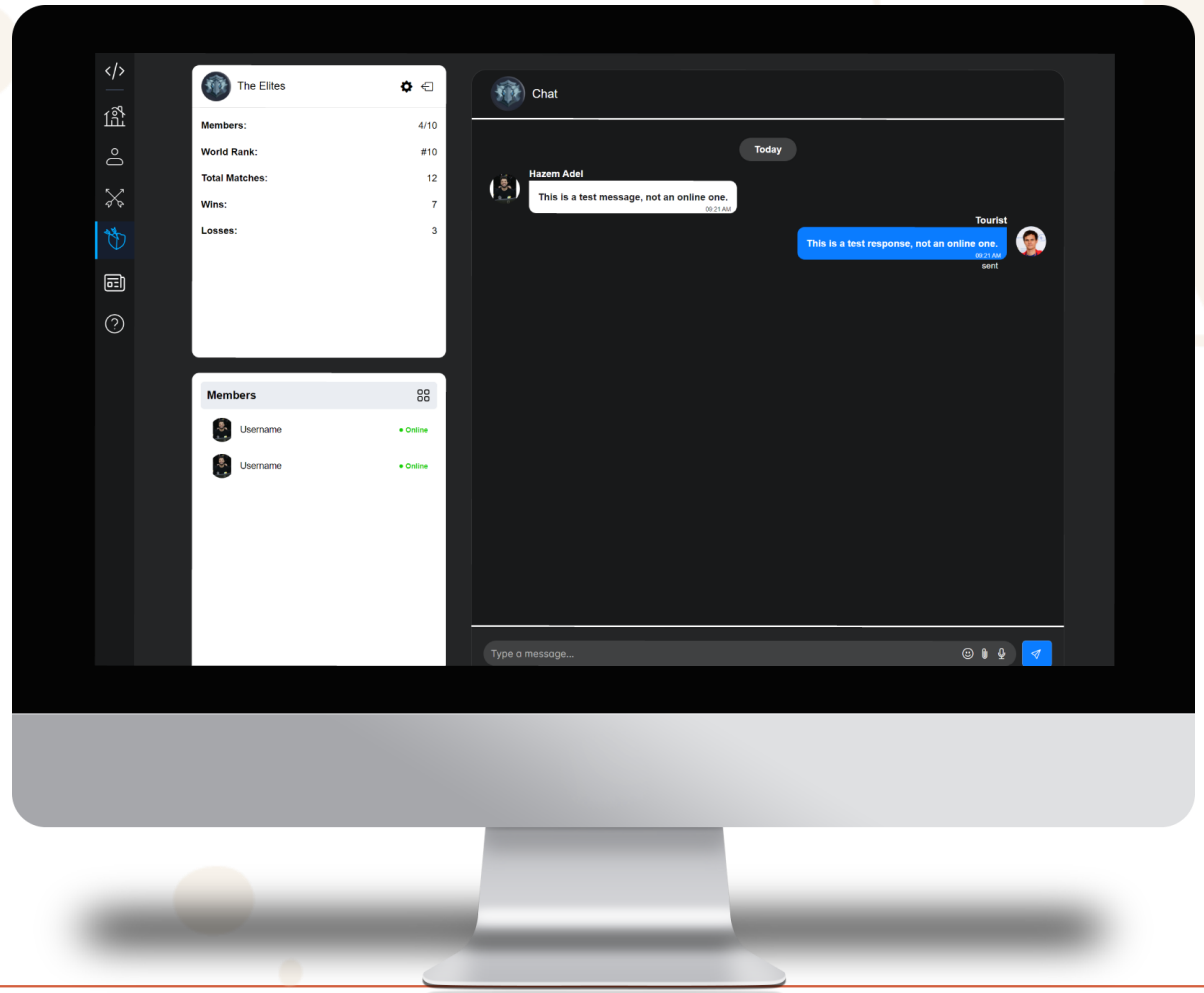
User Interactions

- View users’ profile
- Friend Requests
- Notification system
- Invite a Friend to Match/Clan
- Posts



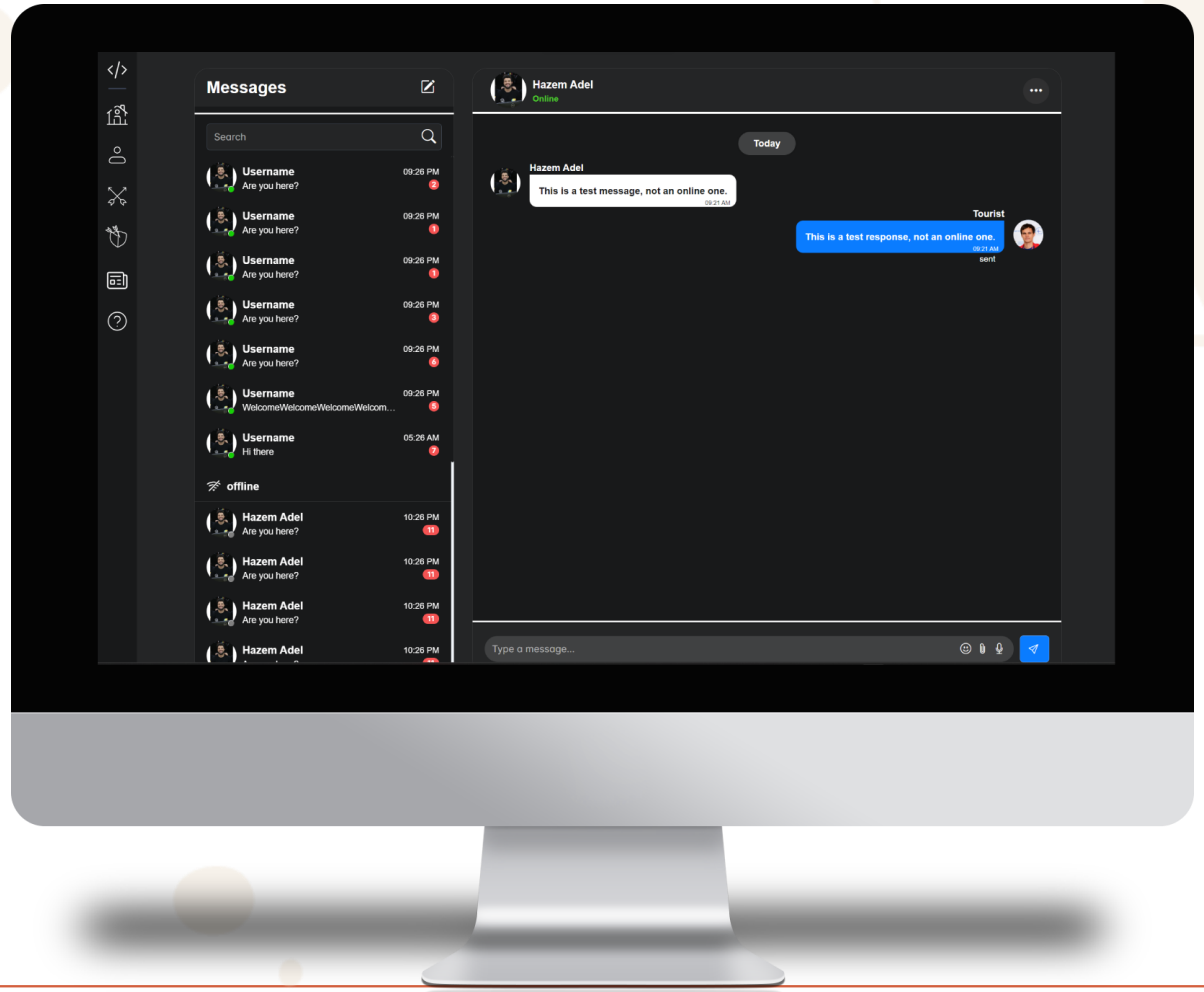
Clan Feature

- Viewing Clan members
- Collaborate with people
- Messaging members
- Play with them

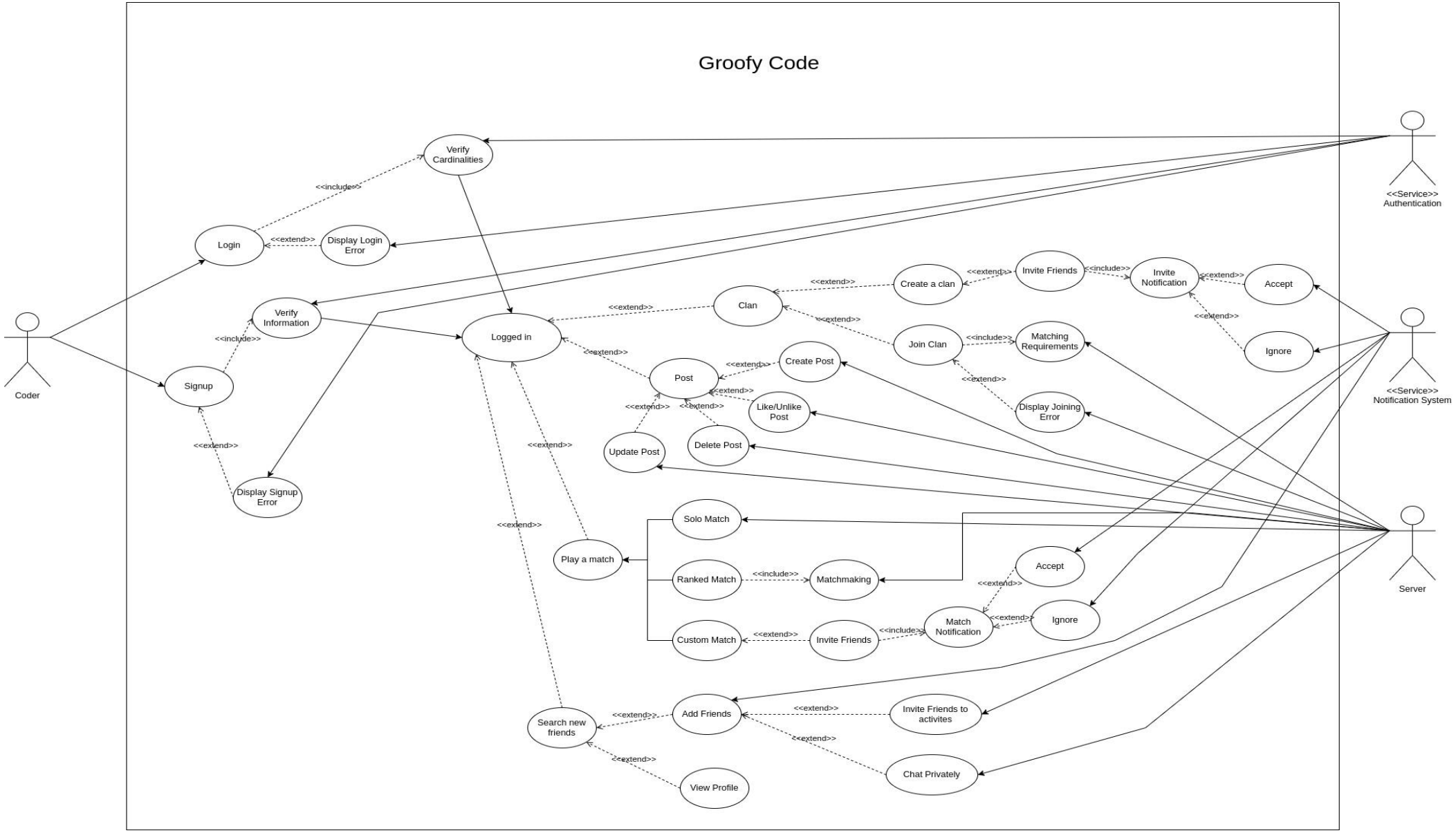


Chat System

- Viewing Friends
- Message a user
- Search for a friend

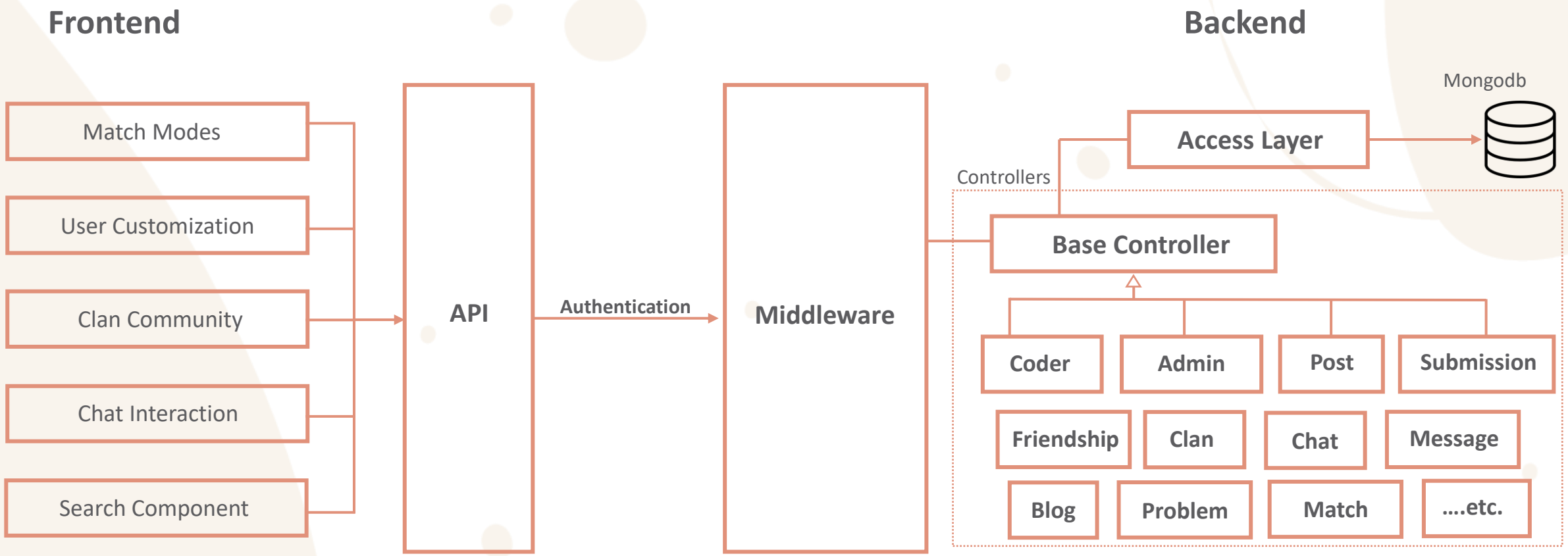


Use Case Diagram



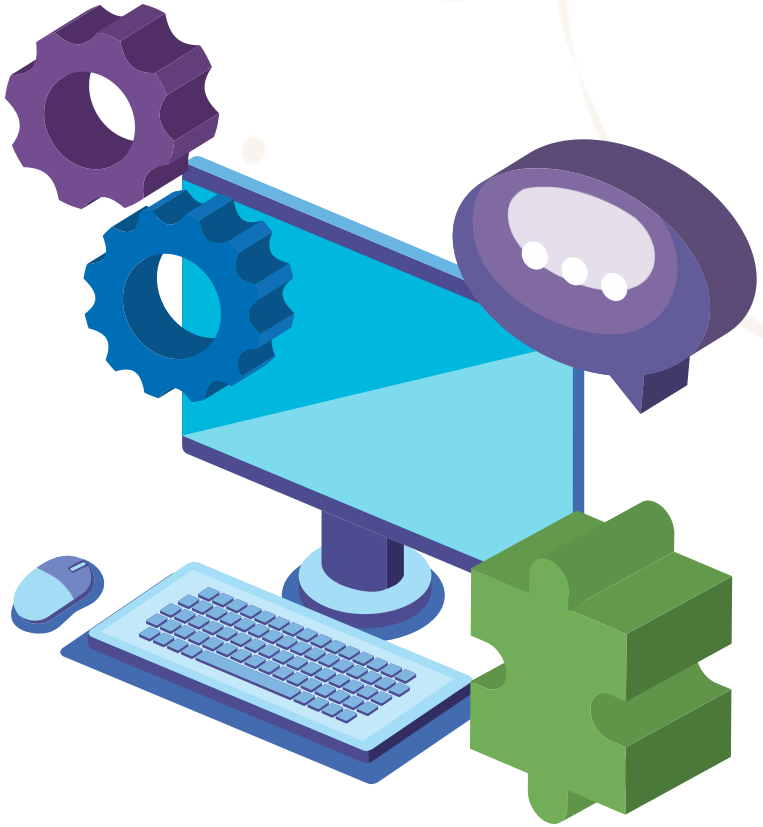
Project Specifications

Architecture

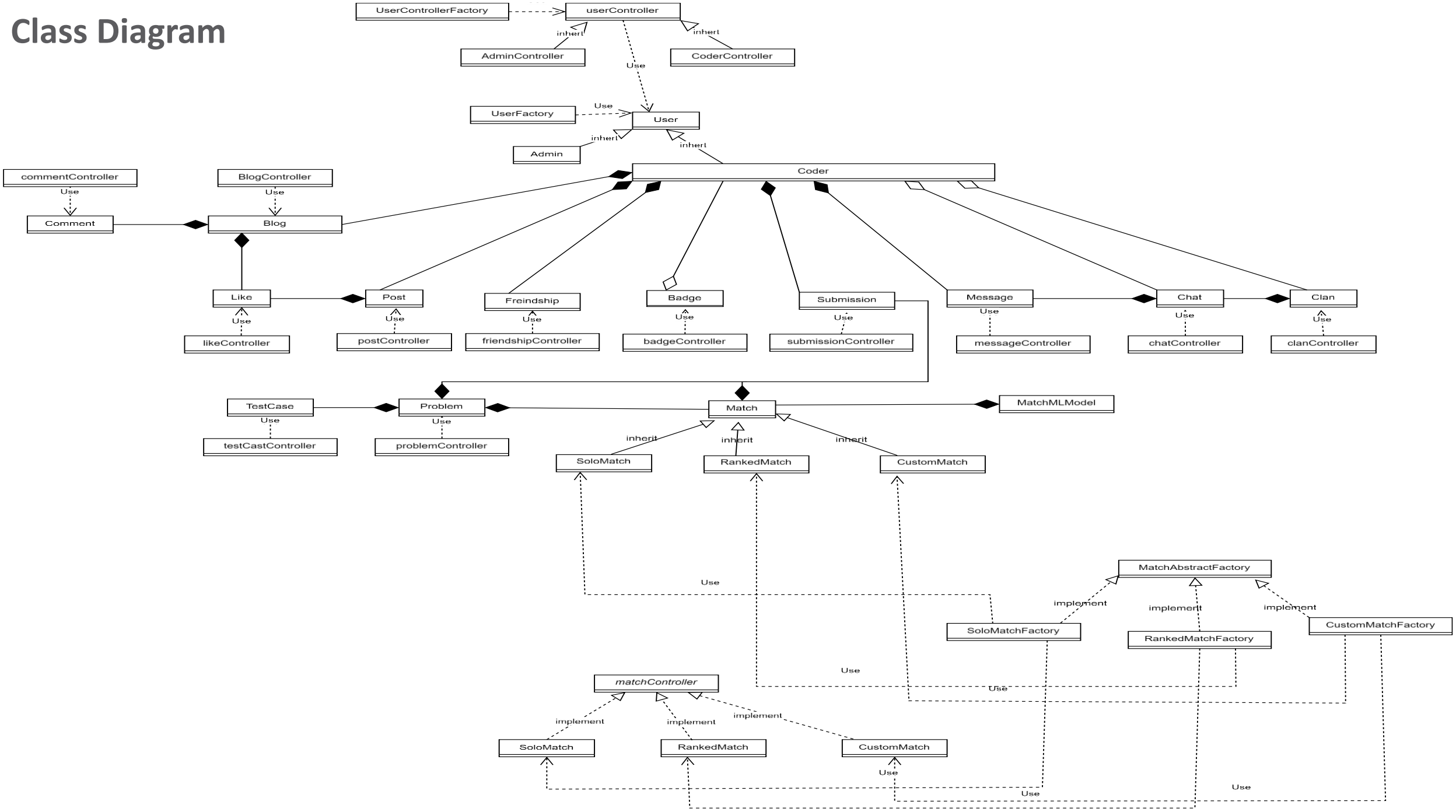


Design Patterns & SOLID Principles

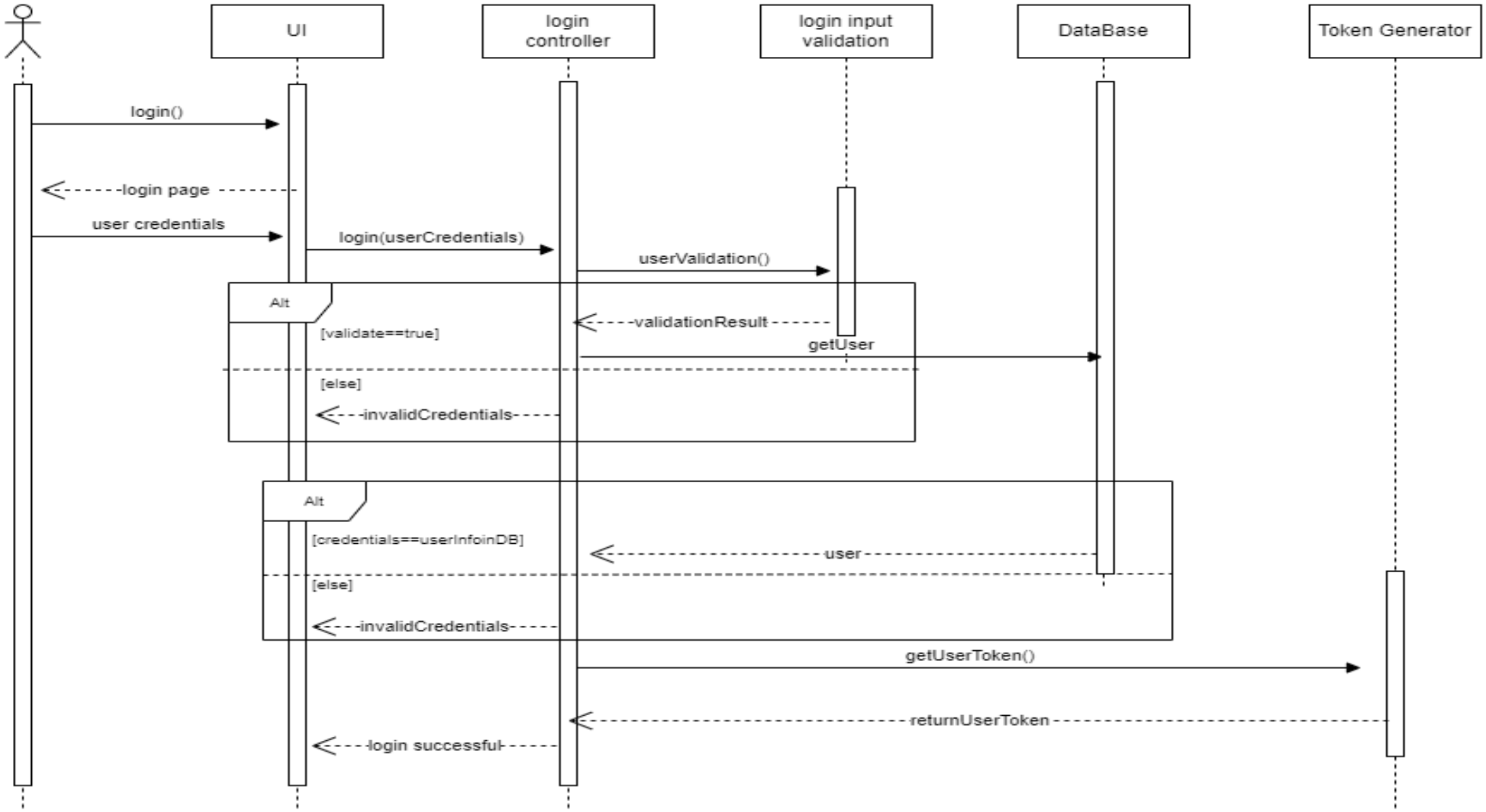
- Strategy Pattern
  - Match Controller
- Singleton
  - Controllers
- Abstract Factory
  - Match with Controller



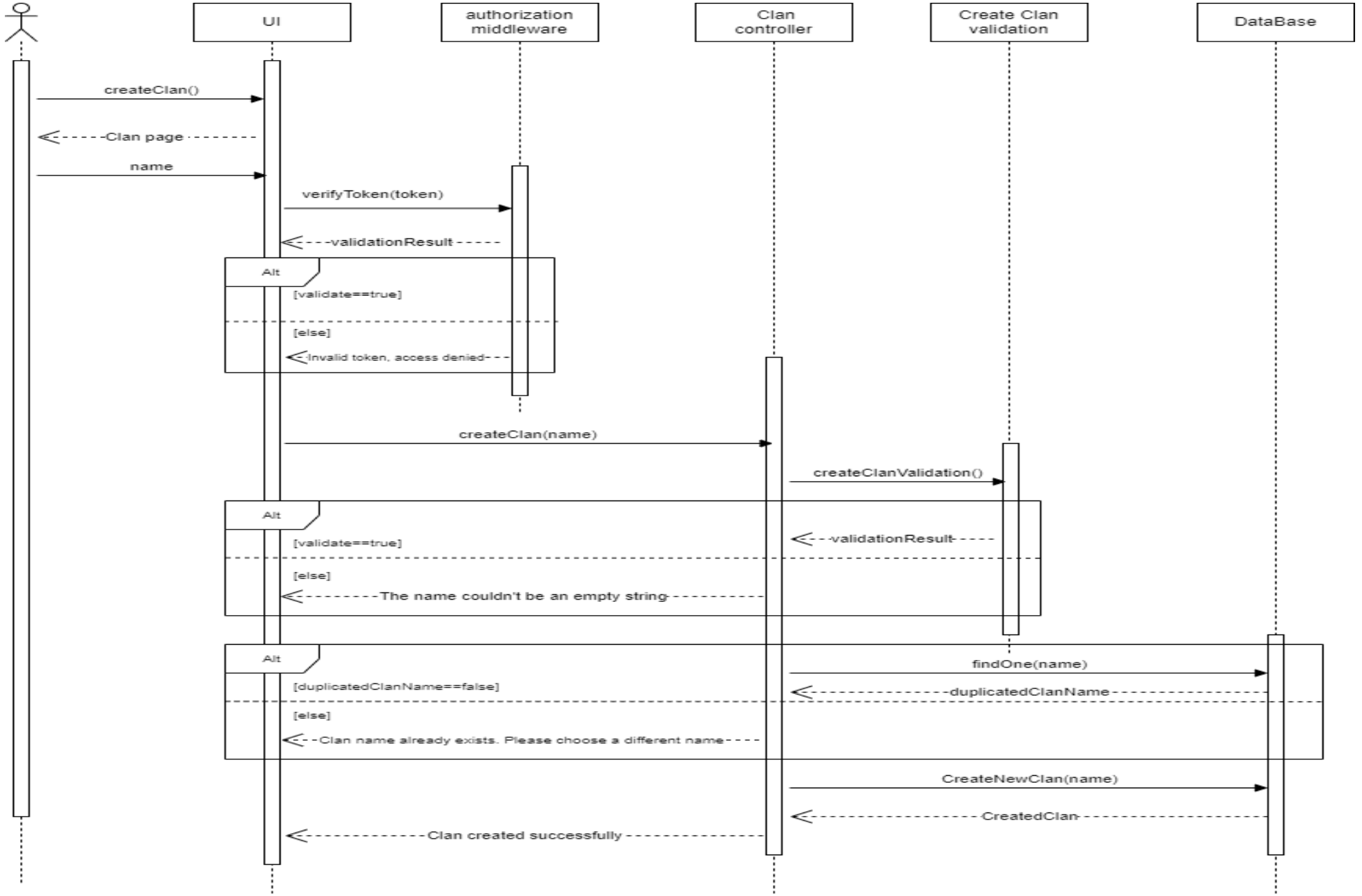
Class Diagram



Login Sequence

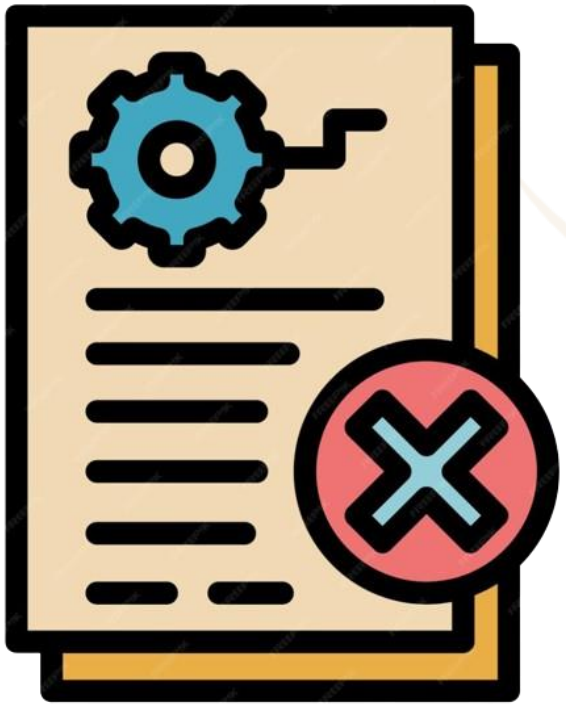


Clan Sequence



Non-Functional Requirements

- Scalability
  - Stable Server
  - Event-Driven & Non-Blocking I/O Backend
- Useability
  - Friendly User Interface
- Portability
  - Media Queries
- Performance
  - Single Page Application
  - Caching



Traditional
VS
Machine Learning

Why Machine Learning ?

- The Slow Improvement Problem
- Quantity vs Quality
- Reason for Slow Improvement
- Finding Suitable Problems for Individual Abilities
- Leveraging Machine Learning
- Matchmaking Problem

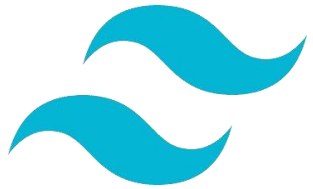
Our Model

- Problem Nature
- Recommendation System Type
- Similarity Scores Metrics and Implementation
- Solo Practicing Considerations
- Data Collection Methodology
- Feature and Target Variables
- Model Selection

Technologies and Libraries Used

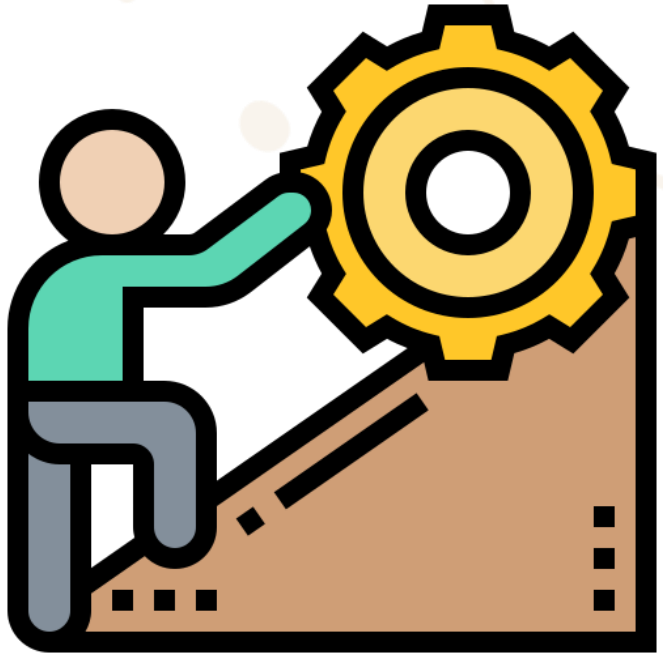
- Backend

- Frontend



Challenges

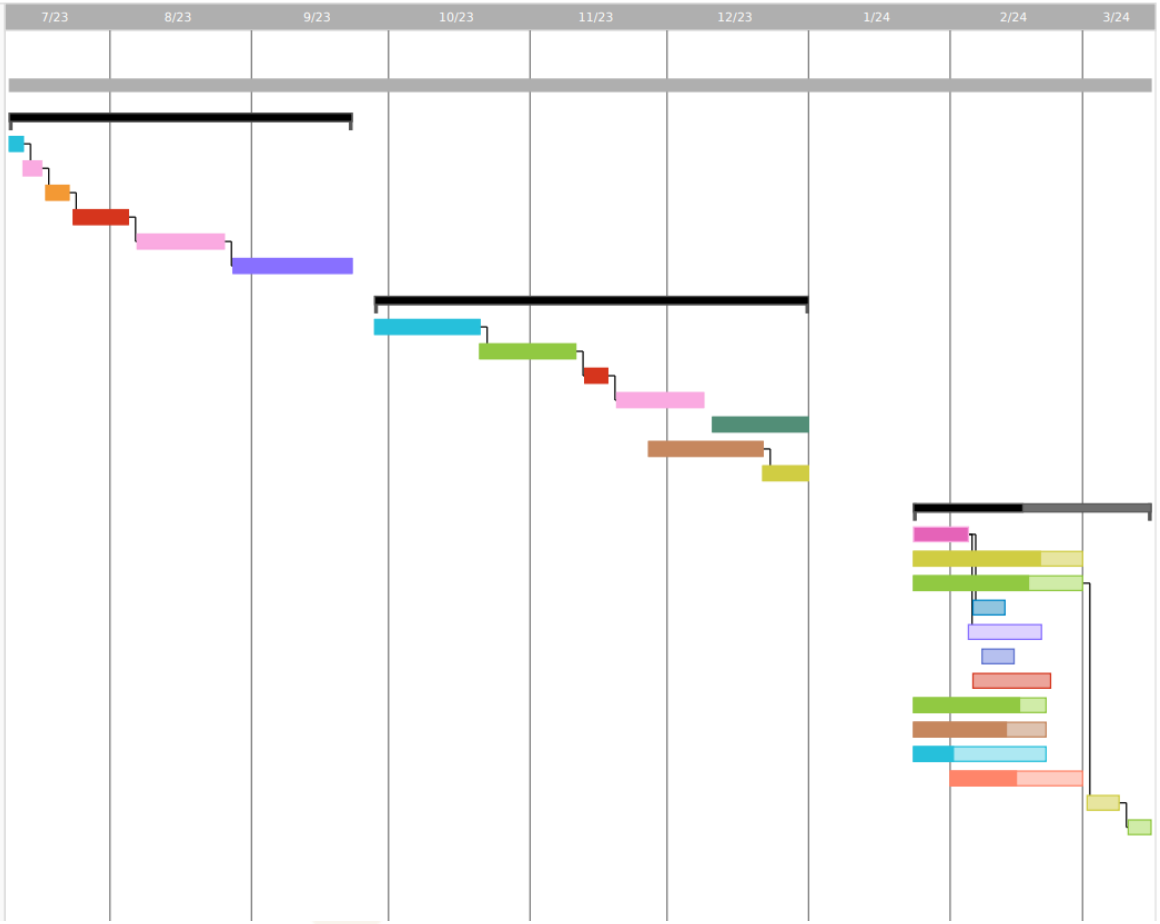
- Lack of hands-on experience with used technologies.
- Integration with already existing website such as Codeforces, Codemirror and judge0
- Time & Collaboration constraints due to studies and work commitments
- Nodejs VS Java Spring boot



Time Plan

Gantt Chart

Groofy Code	start	end	69%
Planning	**10/07/23**	**22/09/23**	**100%**
Create Plan	10/07	12/07	100%
Add dependencies	13/07	16/07	100%
Use Fun Colors	18/07	22/07	100%
Set The Baseline	24/07	04/08	100%
Balance workloads	07/08	25/08	100%
Design System Architecture	28/08	22/09	100%
Sprint 1	**28/09/23**	**31/12/23**	**100%**
Login	28/09	20/10	100%
Logout	21/10	10/11	100%
Signup	13/11	17/11	100%
Post CRUD operations	20/11	08/12	100%
Users can view and edit their profiles	11/12	31/12	100%
Authentication system	27/11	21/12	100%
Verification and Security	22/12	31/12	100%
Sprint 2	**24/01/24**	**15/03/24**	**46%**
TCP Sockets	24/01	04/02	0%
Solo Match	24/01	29/02	75%
Add user Friend	24/01	29/02	68%
Handle user status [online - offline]	06/02	12/02	0%
Messaging another friend	05/02	20/02	0%
Notification Box	08/02	14/02	0%
Handle multiple users' connection	06/02	22/02	0%
Create Clan	24/01	21/02	80%
Clan Settings	24/01	21/02	70%
Invite people to clan	24/01	21/02	30%
Chat system for Clan	01/02	29/02	50%
History appears in user profile	02/03	08/03	0%
Submit a problem and see its results	11/03	15/03	0%



Conclusion

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- Groofy Code aims to be a feature-rich and interactive online coding challenge platform.
- Encouraging users to improve their coding skills, compete in challenges, and foster a sense of community through clans and social features.

With a dedicated and skilled development team, we are confident in delivering a high-quality platform that will be a valuable resource for coding enthusiasts.

Questions ?

Thank you!