The Online Judge
(The Online Code Judge/Submission Platform)

The Online Judge is a comprehensive platform designed for seamless DSA problem-solving and contest participation. It offers robust authentication with OTP validation, a unified dashboard for different user roles, a fully customized problems table, and dedicated pages for problem-solving and contest-solving. The platform includes a variety of backend routes for efficient user management, problem handling, and contest participation, ensuring a smooth and engaging experience for all users.

Main Features

1. Authentication and Authorization -> Using Next-Auth
2. Dashboard for different users (Admin, general users, problem setters)
3. Code compilation, execution, and submission.
4. Contest with leaderboard.

Tech Stack used:

Frontend:

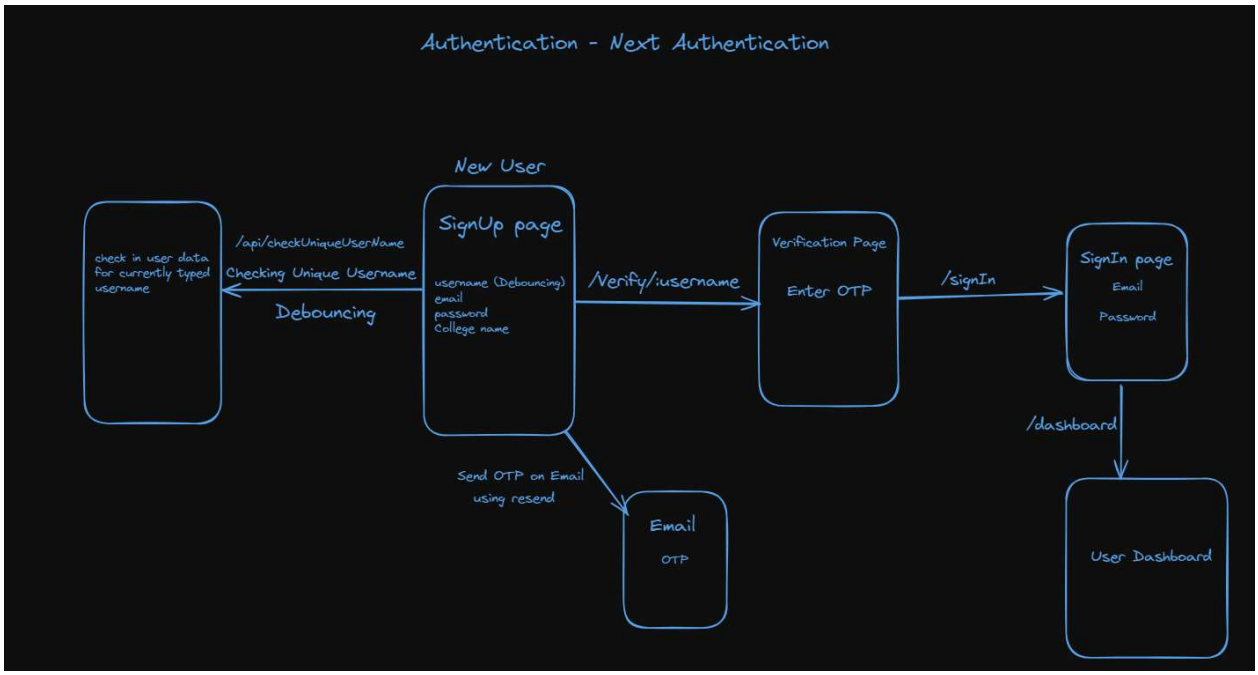
TypeScript, Next.js, tailwindCSS, shadCn,

Backend: TypeScript,Express.js, Node.js, JWT, Bcrypt, Zod for data validation, Docker for containerization,

Database: MongoDB,
Models -> Users, problems, contests, problem setter applications.

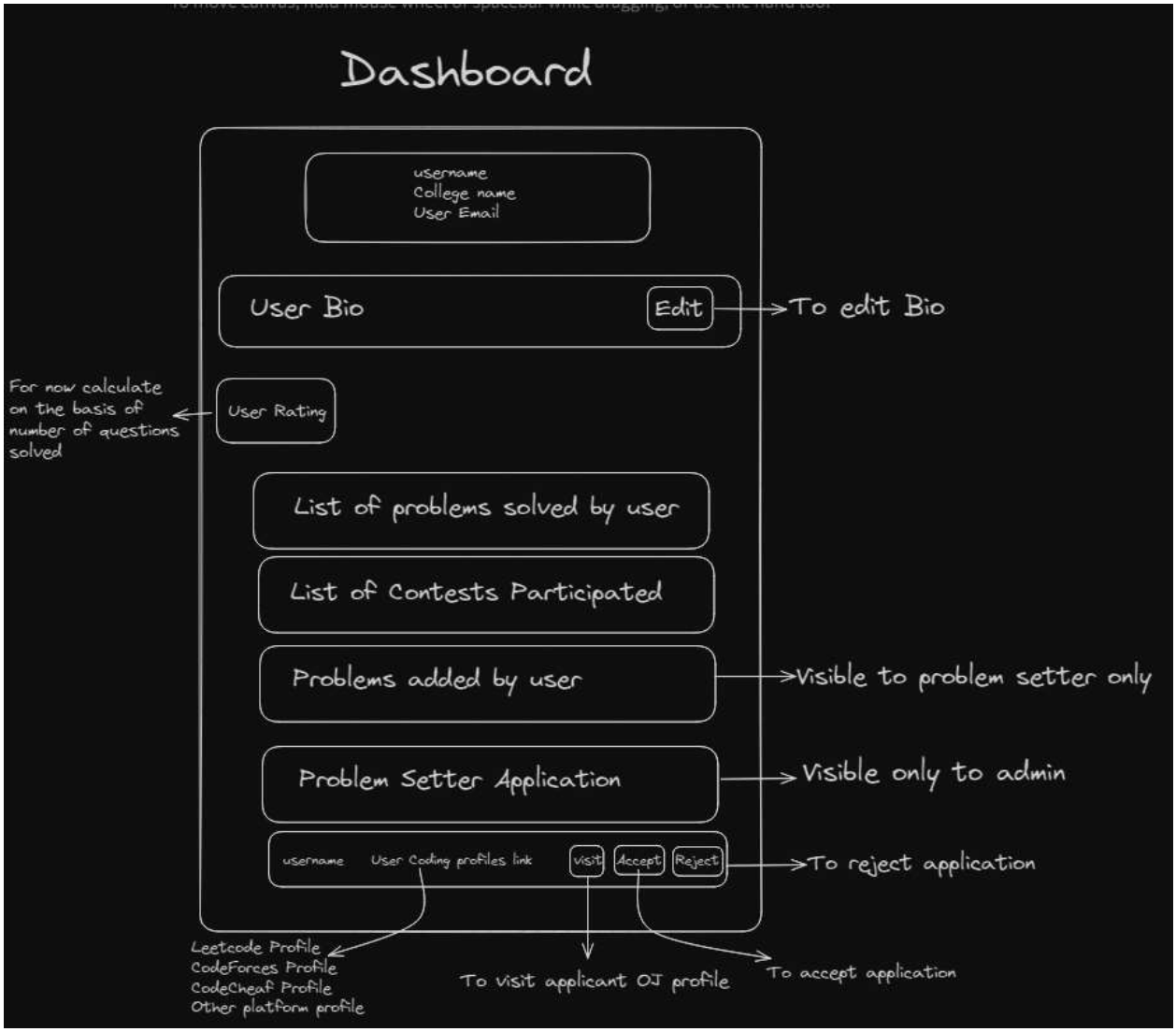
Deployment: Frontend -> On Vercel (https://oj-sigma.vercel.app/),
Dockerised Compiler -> On AWS,
(https://aws.ravikant.tech/),

Authentication



1. Debouncing to verify the unique username, validate email by sending OTP to user email,
   Change password. For sending emails I used -> Resend Email.
2. Routes -> /api/signup -> Create user entry on the database.
   /api/signin -> login the user.
   /api/resetPasseord -> To Change password.
   /api/verifyUniqueUsername -> checking whether a username is unique or not.
   /api/sendVerifyOTP -> sending OTP on the user email.
   /api/verifyOTP -> to verify user OTP.

Dashboard

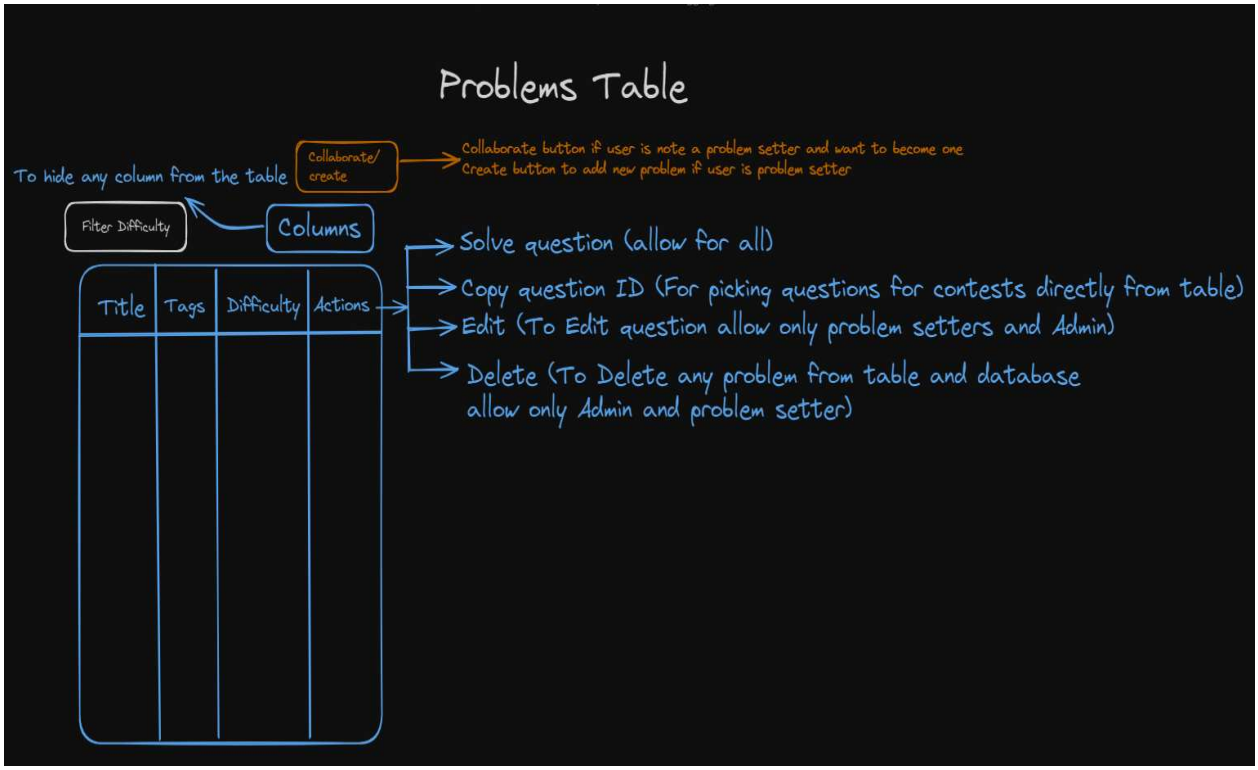


1. Single dashboard of all types of users like normal users, problem setters, and admin.
2. Routes -> /api/updateBio -> To save updated user bio on the database.
   /api/problemAddedByUser/${user.username} -> fetch problem added by user from database if user is a problem setter.

/api/getContest/${contest.contestId} -> fetch contests gived by user.

The question solved by the user is present in the user model only.

Problems Table



1. A fully Customised table, hides any column for better practices.

2. Routes -> /solve/[question_ID] -> Question-solving page.

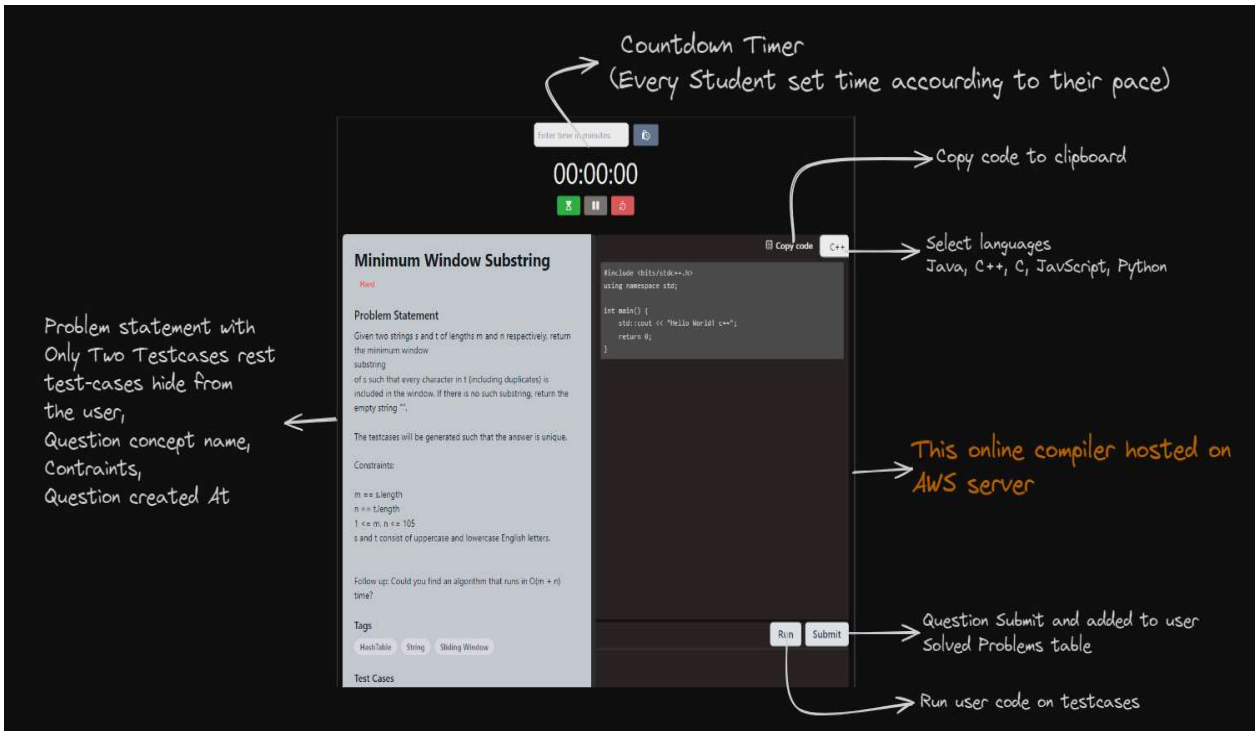
/api/edit/[question_ID] -> Edit question (Allow on problem setters and admin).

/api/delete/[question_ID] -> Delete question (Allow only problem setters and admin).

/problemsetterform -> Form to become a problem setter at OJ if you are not a problem setter.

/create -> To add new problems if you are already a problem setter.

Problem-Solving Page



1. To Code your approaches and execute them through the OJ Compiler.
2. Set a timer according to your speed.
3. Routes -> /api/getProblem/[problem_ID] -> To fetch the problem from the database.

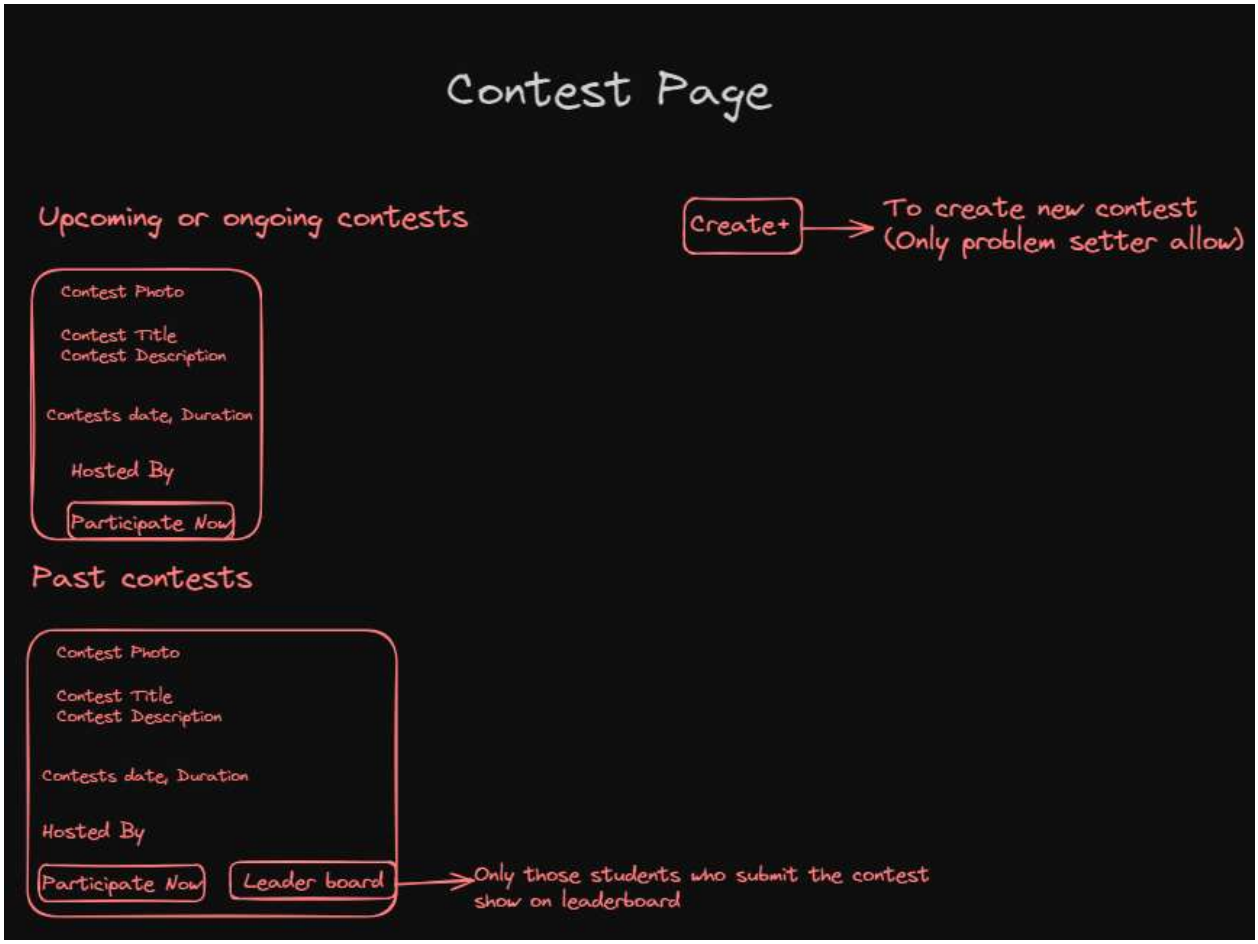
   On clicking the run button

   https://aws.ravikant.tech/execute -> To Compile user's code

   On clicking the submit button

   /api/AddSubmitedProblemsToUser -> to add the submitted problem to the user's problems solved table,

All Contest Listing Page

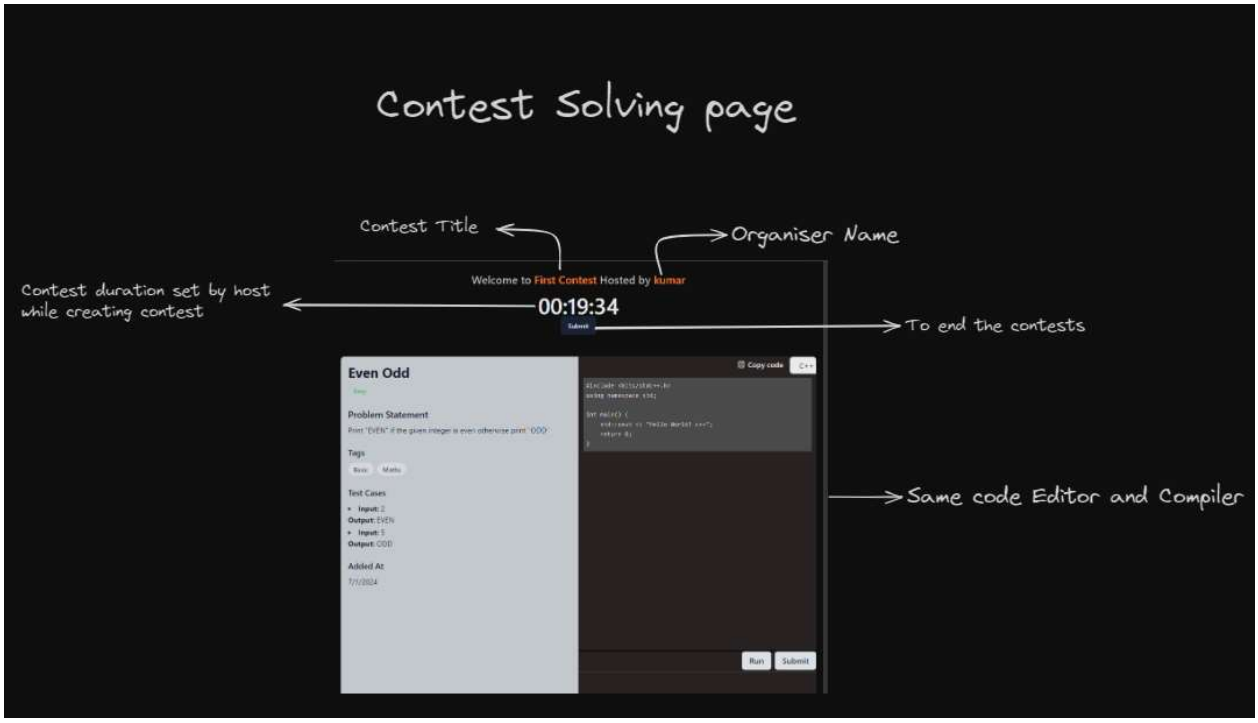


1. We are listing all contests both completed, upcoming, and ongoing contests here.
2. Routes -> on clicking participate Now -> /contest/[contest_ID] -> solving contests.

   On clicking the leaderboard we get a list of all participants with their ranks based on their marks.
3. Marks are calculated based on the number of test cases passed for a particular problem each test case contain equal marks.

4. Create button -> Only problem setter and admin can see this button to create a new contest.

Contest Solving Page



1. The contest host sets the timer.
2. Routes -> On clicking the run button
3. https://aws.ravikant.tech/execute -> To Compile user's code
4. On clicking the submit button
5. /api/AddSubmitedProblemsToUser -> to add the submitted problem to the user's problems solved table, /api/addProblemOfContestGivenByuser -> to add the submitted problem to the user's contest solved table.
6. On clicking submit -> End Contest and save to the user contest solved table.