

Project Report on Online Code Judge

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Brief Description : Abstract

The underlying principle is to integrate different language compilers to the web interface.

Mainly there are three forms (few more intermediate forms are also present);

- Admin Registration form (the one who host the competition)
- User Registration/ Login form (the one who attempts the problems)
- Competition Arena form (where the user can see the problems, attempts them and submit them)

Admin Registration portal is simply to host the contest. Here Admin will specify the number of problems, language in which he/she wants to conduct the contest, number of test files and test files, duration of the contest and time of the contest.

User registration portal is for the user registration. Once he/she gets registered, after logging in he/she will see the active/running contests, out of them he/she will choose one and attempt the problems.

Competition Arena form is the form where actual contest is hosted, here contestant will attempt problems, compile their codes and submit the solutions and result will be mailed to the user.

Sometime there can be more than two submissions at the same time, to avoid this inconsistency, a simple FIFO queue is used. So that, every execution is done in isolation and every execution gets the complete CPU. Hence it will not bring the inconsistency in the execution time of users.

The forms are developed by using web2py framework and the backend compiler is integrated using Linux shell script. For the registration, authentication , code submission files, test case & answer to test case files SQLite database is used.

Features and Implementation

Explanation of each form

● User Dashboard :

This form show the timeline of the user. Here timeline specifically means the user activity in the past like the problems solved, its result etc. This is sorted from most recent activity to least recent activity. TO just give an on overview, only 3 most recent activities are shown on the page. Still if any user want to check out its past activity, he/she can get it, by clicking on the footer link.

One more panel is there which shows the different contest rankings of the user. If any user wants to view all the solved problems, then he can get it by clicking link in the bottom.

And the third panel on the dashboard shows the statistics of the user problem submission like how many were “Accepted”, how may were “Runtime Error”, etc.

● Running Contests form:

This form displays the current running contests along with the upcoming contests. User can choose from any of the running contest and enter the contest.

● Single Contest form :

This form gets displayed when any user selects a running contest. This form contains the list of the problems along with the success rate of each problem. Success rate essentially means the Accepted solutions vs submitted solution.

This form also contains the current submissions log of the current contest not of the specific question.

● Challenges form :

This form contains the question which user has selected to solve from the contest form. This form contains the upload solution button, using which user can submit the solution of the problem.

This form also contains the leaderboard of recent submissions of the

current problem not of the whole contest.

- Process Submission page :

This page comes up when you submit a solution to some problem. It shows the current submission result like whether the current solution is "Accepted", "Time Limit Exceeded", etc.

- Host/Manage Contest Page:

This link will only be active when you select yourself as the host while signup. This page is for hosting the contest, here you can specify the name of the contest, starting time of the contest and ending time of the contest.

This page also shows the contests hosted by the user on the side panel. If any user wants to change the contest details which he/she has hosted, then he can do this using the link "Manage Contests"

- Add Contest Details page :

This form is used to add the questions in the contest along with the test cases and test case answers.

Features implemented

- While sign up, sign up as a "host"
- User dashboard
- User timeline
- User submission statistics
- Running Contests
- Running Contests logs
- Upcoming Contests
- Single question Contest log
- Checking for "Accepted", "Wrong Answer", "Time Limit Exceeded", "Run Time Error", "Segmentation Fault", "Compile Error" of the submission
- Admin dashboard
- Admin host contest form
- Admin hosted contest manage form

Features not implemented

- More than one test case while hosting a contest is not supported

- Queuing of the submission not supported
- Contest ranking

Bugs

- After submission two records are getting inserted which results in incorrect leaderboard

Git Hub link

<https://github.com/buggynap/codespardha.git>