

# IntelliJudge Problem Solving Platform

An Open Source Problem Solving Platform





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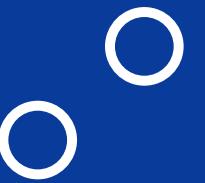
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01

# Introduction *IntelliJudge*

A brief description about our platform and it's details

# Introduction

- Learning programming effectively requires a focus on problem-solving.
- Few platforms allow open contributions of problems by users.
- Our platform makes it easy to share knowledge and contribute problems.
- Contributing and solving problems helps users grow efficiently in programming.



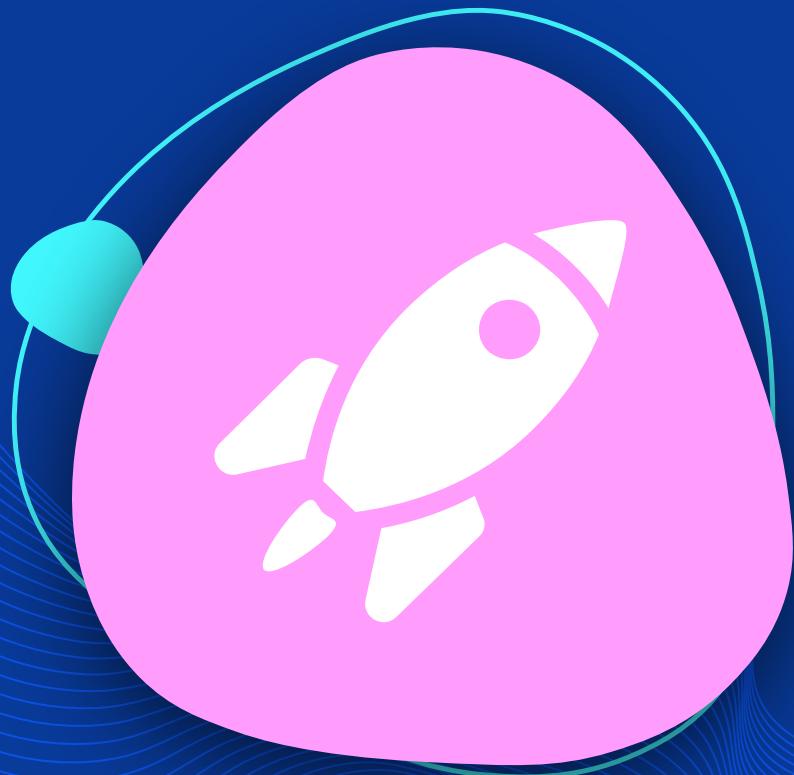


# What *Motivates* us?

"Motivation is what gets you started. Habit is what keeps you going." - Jim Ryun

# Motivation to build

*IntelliJudge*



## Problem-Solving Focus in Hiring

- Leading tech companies (Google, Meta, X, Apple, Amazon) prioritize problem-solving skills in selecting engineers.

## Essential Developer Platform

- A critical resource for developer growth and knowledge exchange

## Our Vision

- Create an engaging, challenging environment to accelerate growth.
- Empower programmers to learn from each other while contributing their knowledge.

# Problem Statement

## Code Contribution

Any programmer can share his knowledge and contribute to our platform.



## Growth Dashboard

Every user can understand and track their own result in personal growth dashboard



## Automated Code Assessment And Result

After solving a problem, code will be checked and tested automatically by compiler and performance result will be generated.

# Research *Objectives*

# Purpose for *Research*

Construct proper guideline and understand setbacks for building such a platform. What was the purpose of previous developers to make their own platform. How they planned and build their platform. Limitations of each research and implementation. Taking decision to work on the idea and making it successful.



# Literature Review

References	Research Purpose	Algorithm	Research Gap
1	Evaluating system for programming problems, called Online Judge System	N/A	Codes from arbitrary users, compiling and executing them in a shared environment and also validating the behavior
2	Systems designed for reliable evaluation algorithm source code submitted by users, which is then compiled and tested in Homogeneous environment	heuristic algorithm	Include scalability of online judges, security in code evaluation, diversity of test cases, adaptability to programming paradigms, and human-centric aspects, while potential research gaps may involve heuristic algorithm design and generalizability of findings
3	Three-layer recommendation model, incorporating LDA for generating a latent layer of interest, and proposing a three-layer collaborative filtering algorithm for personalized problem suggestions based on user skill levels	content-based filtering	Personalized recommendations, dynamic user behavior, data privacy, evaluation metrics, adaptability to diverse problem domains, and user acceptance in integrating a Three-layer recommendation model and LDA in their online judge platform.
4	Aimed to assess cutting-edge language models trained on coding languages, using match-based and execution-based criteria.	N/A	Robustness to ambiguity in evaluating cutting-edge language models for coding tasks, with a focus on real-world applicability and interpretability.

# Literature Review

References	Research Purpose	Algorithm	Challenges or Research Gap
5	Determine the effectiveness of the Online Judge System in enhancing students' programming abilities and identifies easy/hard introductory programming concepts	Dimension Extraction	Generalizability, student engagement, long-term impact, bias, adaptability to varied concepts, and the integration of online judge systems within educational pedagogy in the context of data-driven analysis on the effects of online judge systems on students' programming abilities.
6	Online judges by implementing a collaborative filtering approach, considering problems solved or not solved, and incorporating specific judge's information to enhance problem recommendation accuracy	N/A	The challenge of user difficulty in finding appropriate problems on online judges, aiming to bridge the gap by implementing a collaborative filtering approach and enhancing recommendation accuracy with specific judge's information.
7	E-Learning in programming by implementing an online judge and contestant system	N/A	Challenges related to assessing students' proficiency in algorithmic problem-solving and identifying potential research gaps in effective online learning methodologies for programming education

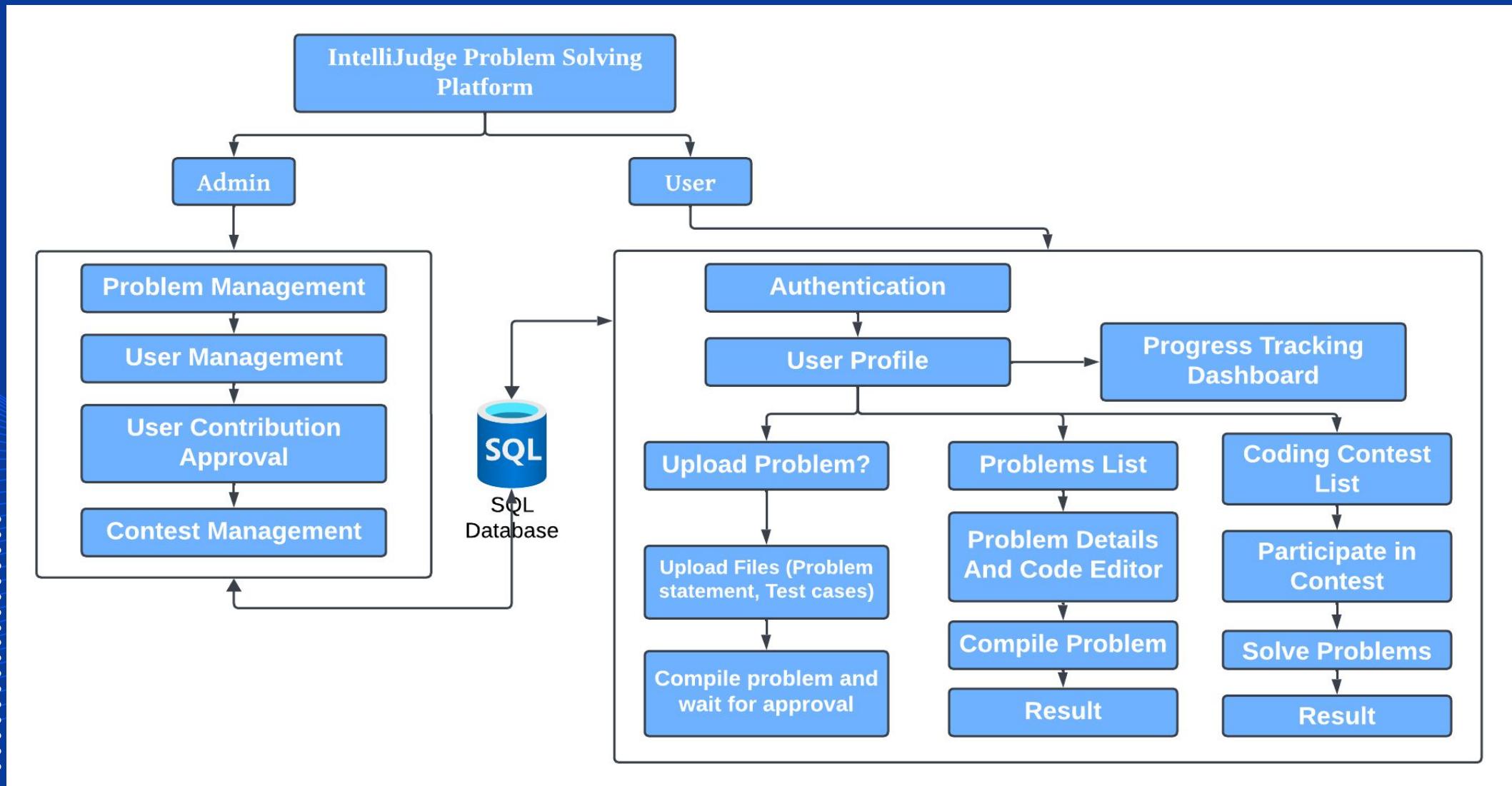
# Literature Review

References	Research Purpose	Algorithm	Challenges or Research Gap
9	Implementation of an automatic programming assignment grading system	N/A	In the secure implementation of an automatic programming assignment grading system, emphasizing the need to address security holes for broader adoption
10	Improve Online Judge platforms by identifying 3,700 bugs, evaluating test suite quality, and emphasizing the need for ongoing efforts in routine updates for enhanced effectiveness.	N/A	Challenges in ensuring the correctness of Online Judge platforms, emphasizing the need for caution in relying on assessment results and suggesting ongoing efforts to address limitations and enhance quality
11	Explainable recommendation system, utilizing matrix factorization with textual explanations and emphasizing Item-based Collaborative Filtering in Amazon product recommendations	N/A	Challenges in achieving effective and interpretable explanations in recommendation systems, emphasizing potential research gaps in enhancing interpretability and accuracy
12	A deep learning-based multimodal movie recommendation system to tackle information overload and enhance accuracy, with a focus on MovieLens datasets	N/A	Challenges in movie recommendation algorithms and explores gaps in achieving enhanced personalization and accuracy with deep learning and multimodal data.

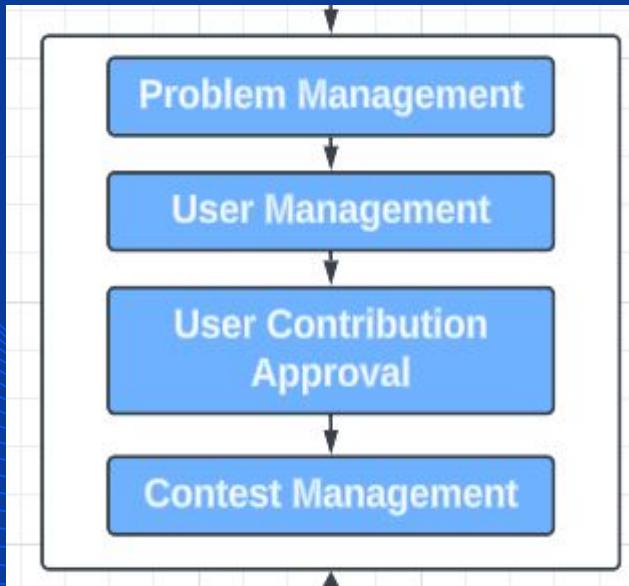
# Literature Review

References	Research Purpose	Algorithm	Challenges or Research Gap
13	Proposed a Programming Assignment Management System with a focus on the assignment submission and evaluation process	N/A	Addressing the complexity and scalability of programming assignment submissions in an educational setting, with potential research gaps in improving the system's adaptability and automation
14	Aiming to develop a framework for adaptive online programming education platforms	N/A	Exploring adaptive learning paths for students, focusing on individual needs and offering personalized problem recommendations with the possibility of further research into improving the adaptability of online education systems
15	Introduced an Automatic Grading System using machine learning techniques to evaluate code submissions	machine learning	Challenges in accurately grading diverse types of code submissions, specifically addressing the limitations in current machine learning techniques for automated code evaluation

# Proposed Model



# Admin Section



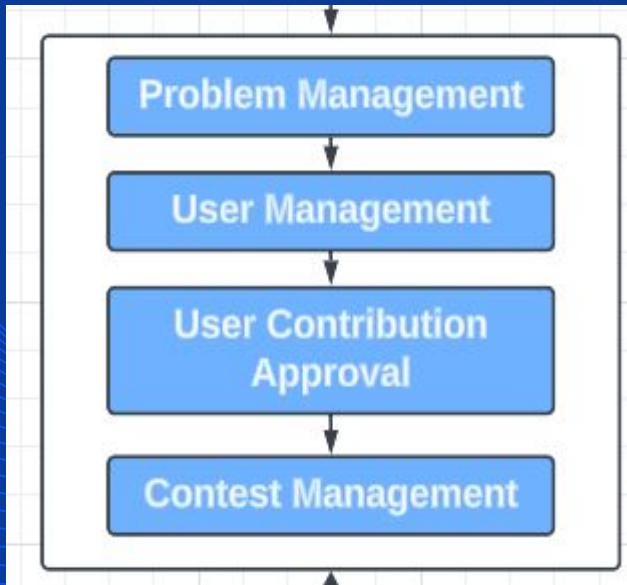
## Problem Management

Admin will upload problem question and setup categories, along with problem levels. Also prepare test case for problems.

## User Management

Every users will be managed by user.

# Admin Section



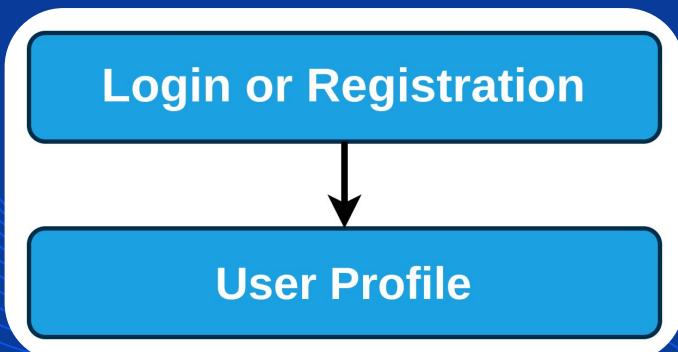
## User Contribution Approval

Users contributed problems will be approved by admin.

## Contest Management

Contest will be created and managed by admin.

# User Section



## Login & Registration

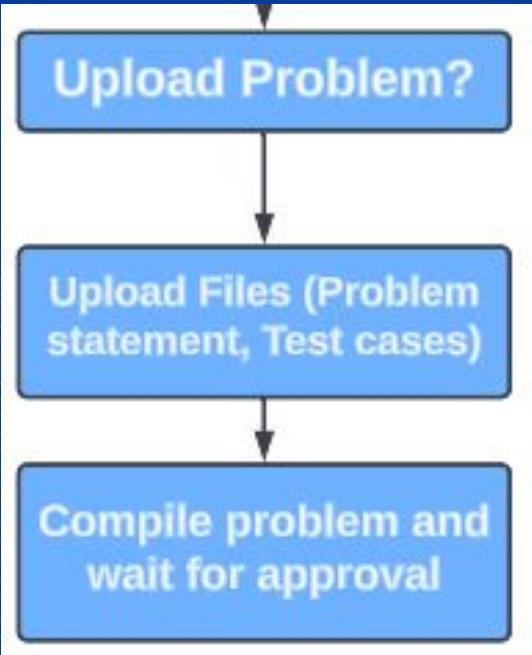
A user need to register to the platform. For tracking their progress and analyzing their activities and preferences.

## User Profile

Users can see their progress and every details in their profile section. They can understand their way of growth and contribution to the platform.

# User Section

## Upload Problem



Any user can upload their own made problem with test case.

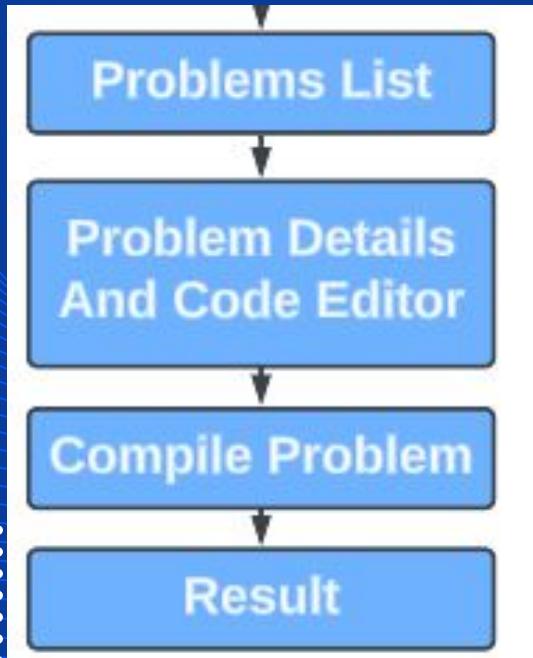
## Upload Files

User will upload problem and test case file of their custom problem. They can see their contribution in user profile section.

## Automated Problem Assessment

Users uploaded problems will be assessed by automated internal compiler of our platform. And the result will be shown, if it's accepted then it will be listed to the problem set.

# User Section



## Problem List

All Problem will be shown in the list.

## Problem Details & Code Editor

User will read problem details and solve problem in code editor.

## Compile and Result

After submitting code compiler will run the program and output of result will be shown.

# User Section



## **Coding Contest**

Any user can participate in contest to improve competitive programming.

## **Participate in Contest**

User can compete with other users by participating in contest.



Presenting our  
*IntelliJudge*

# Admin Panel

The screenshot displays the Admin Panel interface. On the left, a sidebar lists navigation items: Intelli Judge (with a graduation cap icon), Dashboard, Coding Challenge, User Contribute, Coding Submission, Coding Contest, and Sliders. The main area is titled "Dashboard" and features four summary cards: "Total Users" (0), "Total Active Users" (0), "Total General Users" (0), and "Total Referral Users" (0). A search bar at the top is labeled "Type text...". The bottom of the screen shows copyright information: "© Intelli Judge" and "Crafted with ❤️ by Intelli Judge".

Intelli Judge

Dashboard

Coding Challenge

User Contribute

Coding Submission

Coding Contest

Sliders

Type text...

Dashboard

Total Users 0

Total Active Users 0

Total General Users 0

Total Referral Users 0

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# Coding Challenge



Intelli Judge

Dashboard

Coding Challenge

User Contribute

Coding Submission

Coding Contest

Sliders

≡

Type text...

Add New Coding Challenge

### Coding Challenge List

SI No	Title	Level	Type	Action
1	Longest Common Prefix	BEGINNER	NUMBER	
2	Reverse String	INTERMEDIATE	STRING	
3	Search Insert Position	INTERMEDIATE	ARRAY	
4	Single Number	BEGINNER	NUMBER	
5	Single Number	BEGINNER	NUMBER	
6	Single Number	BEGINNER	NUMBER	
7	Two Sum	EXPERT	NUMBER	

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# User Contribute

The screenshot shows the Intelli Judge platform interface. On the left, there's a sidebar with a graduation cap icon and the text "Intelli Judge". Below it are several menu items: Dashboard, Coding Challenge, User Contribute (which is highlighted in blue), Coding Submission, Coding Contest, and Sliders. At the top right, there's a user profile for "Admin Maria Gibson" with a notification badge. A search bar with placeholder text "Type text..." is located at the top center. The main content area is titled "User Contribute List" and contains a table with one row. The table has columns for "SI No", "Title", "Level", "Type", and "Action". The first row shows "1", "Longest Common Prefix", "BEGINNER", "NUMBER", and a green edit icon.

SI No	Title	Level	Type	Action
1	Longest Common Prefix	BEGINNER	NUMBER	

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# Coding Submission



Intelli Judge

Dashboard

Coding Challenge

User Contribute

[Coding Submission](#)

Coding Contest

Sliders

Type text...

Admin  
Maria Gibson

### Coding Submissions List

SI No	User Name	Question	Question Type	Question Level	Date	Run Time	Status
1	Ridoy Sarker	LONGEST COMMON PREFIX	NUMBER	BEGINNER	5/15/2024, 12:45:34 AM	68 MS	Accepted !
2	Ridoy Sarker	LONGEST COMMON PREFIX	NUMBER	BEGINNER	8/15/2024, 9:45:53 PM	1120 MS	Accepted !

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# Coding Contest



Intelli Judge

Dashboard

Coding Challenge

User Contribute

Coding Submission

Coding Contest

Sliders

≡

Type text...

New Contest

Sl No	Title	Slug	Access Code	Start Time	End Time	Action
1	Noob Race	noob-race	1234	2024-08-15T16:30:00.000Z	2024-08-15T17:30:00.000Z	

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# User Profile

The screenshot shows the 'My Profile' section of the Intelli Judge website. At the top, there's a navigation bar with links for Dashboard, Solve Problem, Contribute, Coding Contest, Search, My Profile / Logout, and a magnifying glass icon. Below the navigation is a decorative banner featuring icons of a book, a ruler, and a flask.

**My Profile**

**Edit Profile**

First Name	Last Name
Ridoy	Sarker

Email: csridoy42@gmail.com

**Update Profile**

On the left, there's a placeholder profile picture and user information: Ridoy Sarker, csridoy42@gmail.com, and Remaining 3000 points.

# User Dashboard

## Dashboard



Ridoy Sarker



- Beginner
- Intermediate
- Advance

Beginner	1/808
Intermediate	0/1682
Advanced	0/714

1 Submission last 150days



# Solve Problem

The screenshot shows a web-based coding environment with a blue header and a white main content area. The header includes navigation links for Dashboard, Solve Problem, Contribute, Coding Contest, a search bar, and user profile information. The main title "Solve Problem" is centered above two problem cards. The first card, for "LONGEST COMMON PREFIX" (Beginner, Number), shows sample input "asd asd asd" and a "Solve It Now!" button. The second card, for "REVERSE STRING" (Intermediate, String), contains the problem description: "Write a function that reverses a string. The input string is given as an array of characters s." and also features a "Solve It Now!" button.

Intelli Judge

Dashboard Solve Problem Contribute Coding Contest Search My Profile / Logout

## Solve Problem

BEGINNER NUMBER

LONGEST COMMON PREFIX

asd asd asd

INTERMEDIATE STRING

REVERSE STRING

Write a function that reverses a string. The input string is given as an array of characters s.

My Submissions →

Solve It Now!

Solve It Now!

# Solve Problem

The screenshot shows a web-based coding environment. At the top, there's a navigation bar with links for 'Dashboard', 'Solve Problem', 'Contribute', 'Coding Contest', a search bar, and user account options ('My Profile / Logout'). Below the navigation, the main content area has a decorative background featuring a book, a pencil, and a flask icon.

## Longest Common Prefix

Problem Statement

You must run your code first

**NUMBER**

function to find the longest common prefix string amongst an array of strings.  
no common prefix, return an empty string "".

1:  
s = ["flower", "flow", "flight"] **Output:** "fl"  
2:  
s = ["dog", "racecar", "car"] **Output:** "" **Explanation:** There is no common prefix among the input strings.

Constraints:  
length <= 200  
[i].length <= 200  
consists of only lowercase English letters.

```
1 class Solution:
2     def longestCommonPrefix(self, strs: List[str]) -> str:
3         pass
```

# Solve Problem

Dashboard Solve Problem Contribute Coding Contest Search My Profile / Logout

## Longest Common Prefix

Problem Statement

Wrong Answer

INPUTS  
null

OUTPUT  
1

EXPECTED  
[""]

```
1 class Solution(object):
2     def longestCommonPrefix(self, strs):
3         if strs is None :
4             return ""
5         if not strs:
```

NUMBER

unction to find the longest common prefix string amongst an array of strings.  
s no common prefix, return an empty string "".

# Solve Problem

Intelli Judge

Dashboard Solve Problem Contribute Coding Contest Search My Profile / Logout

## Longest Common Prefix

Problem Statement

Accepted

Your solution passed all 5.333333333333333 test cases!

**NUMBER**

function to find the longest common prefix string amongst an array of strings.  
if no common prefix, return an empty string "".

1:  
strs = ["flower", "flow", "flight"] **Output:** "fl"  
2:  
strs = ["dog", "racecar", "car"] **Output:** "" **Explanation:** There is no common prefix among the input strings.

```
1 class Solution(object):
2     def longestCommonPrefix(self, strs):
3         if strs is None :
4             return ""
5         if not strs:
6             return ""
7         shortest = min(strs,key=len)
8         for i, ch in enumerate(shortest):
9             for other in strs:
10                 if other[i] != ch:
11                     return shortest[:i]
```

# Contribute Problem

The screenshot shows the 'Contribute Problem' section of the IntelliJudge platform. At the top, there is a navigation bar with links for Dashboard, Solve Problem, Contribute, Coding Contest, a search bar, and user profile/logout options. Below the navigation, the main title 'Contribute Problem' is displayed with a pencil icon. To the right of the title is a yellow 'Upload' button with an arrow. On the left, there are two small icons: a book and a flask. A large central area contains a problem card for 'LONGEST COMMON PREFIX'. The card includes the difficulty level 'BEGINNER', the category 'NUMBER', and a brief description: 'asd asd asd'. There is also a small '...' link at the bottom of the card.

IntelliJudge

Dashboard Solve Problem Contribute Coding Contest Search My Profile / Logout

Contribute Problem

Upload →

BEGINNER NUMBER

LONGEST COMMON PREFIX

asd asd asd

...

# Coding Contests

The screenshot shows a web application for coding contests. At the top, there is a navigation bar with links for "Dashboard", "Solve Problem", "Contribute", "Coding Contest", "Search", "My Profile / Logout", and a search icon. Below the navigation bar, the main title "Coding Contests" is displayed in a large, bold, dark blue font. To the left of the title, there is a yellow book icon, and to the right, there is a yellow trophy icon. A yellow ribbon banner with the text "Coding Contests" is positioned above a white rectangular box. Inside this box, there is a green button labeled "NOOB RACE" and a green-bordered button labeled "Join It Now!". The background of the page features a light gray gradient with faint, curved white lines.

# Comparison of Features in Various Systems

Paper No.	Code Contribution	Contest	User Tracking Dashboard
[3]	No	No	No
[5]	No	No	No
[7]	No	No	No
<b>Proposed Method</b>	Yes	Yes	Yes

# Conclusion

The proposed platform is for encouraging problem solvers.

Making learning and knowledge sharing more easy and interesting for programmers. Making flexible the way of growing and contributing in community.

# Future work

- Open-Source Compiler: Allow anyone to contribute to the compiler engine.
- AI Roadmap Suggestions: Use machine learning to provide beginner-friendly roadmap recommendations.





Thank  
you!