Project Explanation: The College Coding Challenge Platform

Project Vision

The College Coding Challenge Platform is a web-based application designed to provide students with a focused, weekly opportunity to test and improve their practical programming skills. While architected for future expansion, its initial focus is exclusively on a structured, weekly challenge format. The platform requires a one-time account creation and a simple, per-test check-in process to gather academic data for detailed performance analysis.

The User's Journey (The Student Experience)

1. One-Time Setup: Creating an Account A student's first step is to register for a permanent account using their official college email. This account will store their overall progress and profile information. For any subsequent test, they simply need to sign in.

2. The Weekly Challenge & Pre-Test Check-in Each week, a new challenge becomes available during a fixed time window. Before a student can begin the test, they must complete a **mandatory pre-test check-in**. This involves:

- Confirming their Name (pre-filled from their profile).
- Selecting their **Year**, **Class**, **Section**, and **Mentor Name** from pre-defined dropdown lists.

This quick check-in ensures that each test attempt is associated with the correct academic group for that specific time, even if a student's class or mentor changes in the future.

3. Taking the Test: A Timed & Focused Environment Immediately after completing the check-in, the test begins, and the student enters a dedicated "test mode":

- **Personal Timer:** A personal countdown timer starts (e.g., 90 minutes).
- **Automatic Submission:** If the timer runs out, their last saved code is automatically submitted.
- **Required Language:** The student must solve the problem in the single programming language specified by the administrator for that challenge.

- **Proctoring Rules:**
    - The test runs in **full-screen mode**.
    - **Tab switching is detected**, with a limited number of warnings before the test is terminated.
    - **Copy and paste are disabled** within the code editor.

4. Submission & Feedback Whether submitted manually or automatically, the solution is instantly evaluated by the code judge, and the student receives immediate feedback (Accepted, Wrong Answer, etc.).

5. After the Test: Reflection & Results After submission, the student is prompted to write a brief reflection on their experience. They can then view their detailed performance and submission history in their profile.

6. Tracking Progress & Community Students can still track their standing on real-time leaderboards and participate in the community discussion forum.

The Administrator's Role (The Faculty Experience)

1. Challenge Management The admin's core responsibilities for creating challenges are enhanced:

- **Create & Schedule:** Admins can create and schedule weekly challenges with specific availability windows.
- **Define Problem & Rules:** They set the problem statement, time limit, and the single, required programming language for the test.
- **Configure Proctoring:** They can enable or disable the full-screen, no-tab-switching, and no-copy-paste rules for each challenge.
- **Add Test Cases:** They provide the hidden test cases for evaluation.

2. New Core Feature: Academic Data Management To support the pre-test check-in, administrators have a new set of tools. They can:

- **Manage Academic Groups:** Create, edit, and delete entries for Years (e.g., "First Year," "Second Year"), Classes (e.g., "CSE," "ECE"), and Sections (e.g., "A," "B").
- **Manage Mentors:** Maintain an up-to-date list of faculty mentors.

This ensures that the dropdown lists presented to students during check-in are accurate and centrally managed.

3. Enhanced Oversight & Reporting The admin dashboard provides powerful insights. In addition to viewing all submissions and reading student reflections, admins can now:

- **Filter & Segment Results:** This is the key benefit of the check-in system. Admins can filter test results and analyze performance based on the data collected at check-in. For example, they can answer questions like:
    - "What was the average score for Section A on this week's test?"
    - "How did the First Year students perform compared to the Second Year students?"
    - "Show me the results for all students mentored by Professor Smith."

4. User & Community Management Admins continue to manage user accounts, post announcements, and moderate the discussion forum.