Key Features for Real-Time Quiz & Hackathon Platform:

1. User Authentication & Role Management:

- Secure login/signup for users.
- Role-based access for Admins (Quiz/Hackathon organizers), Moderators, and Participants.

2. Real-Time MCQ Test:

- Time-limited quizzes with real-time tracking of progress.
- Live leaderboard showing participant rankings and scores.
- Randomized questions pulled from a database to avoid repetition.

3. Real-Time Hackathon Management:

- **Problem Statement Repository**: Organizers can create and release problem statements at specific times.
- **Submission Portal**: Real-time submission of code files, project links, or documents.
- **Live Evaluation**: Judges can review and score submissions in real-time.
- **Team Collaboration**: In-app team communication channels (chat or discussion boards).

4. Quiz Features:

- Multi-format question support: MCQs, True/False, Fill-in-the-blanks.
- Question difficulty levels: Easy, Medium, Hard.
- Instant feedback for completed questions.
- Scheduled quizzes with email/SMS reminders.

5. Hackathon-Specific Features:

- **Project Builder Dashboard**: Integrated project submission tracking, with sections for code repository links, documents, and presentations.
- **Countdown Timer**: Real-time event countdown for each challenge or submission.
- **Public Voting**: Allow audience voting on projects after judge evaluation.

6. Reward System:

- Virtual badges for top performers in quizzes or hackathons.
- Monetary rewards or sponsor gifts for winners (optional integration with payment systems).
- Certification generation for participants and winners.

7. Performance Analytics:

- Detailed reports for quiz takers, including accuracy, time spent, and strengths/weaknesses.
- Hackathon evaluation analytics for teams, including scores and feedback.

8. Customizable Themes:

- Allow users or organizers to apply branded themes for hackathons or quizzes.

9. Real-Time Notifications:

- Alerts for quiz start times, hackathon updates, and leaderboard changes.
- Event reminders via email, push notifications, or SMS.

10. Gamification:

- Weekly or monthly challenges to keep users engaged.
- Leaderboards to track consistent performers across quizzes and hackathons.

Innovative Suggestions:

1. **AI-Powered Question Generation**:
   o Use AI to automatically generate quiz questions based on difficulty levels or specific topics.
2. **Code Editor for Hackathons**:
   o Embed an online code editor for participants to solve coding challenges directly on the platform.
3. **Interactive Live Quizzes**:
   o Add support for multimedia-based questions (e.g., audio, video, or image-based questions).
   o Allow hosts to conduct live quizzes via video calls integrated into the platform.
4. **Community Engagement**:
   o Build forums or discussion boards for participants to collaborate, share tips, and discuss events.
   o Create a mentorship feature where experienced developers can guide participants during hackathons.
5. **Sponsor Integration**:
   o Provide space for sponsors to display advertisements or host sponsored challenges.
   o Sponsor-specific rewards for winners of specific challenges.
6. **Global Competitions**:
   o Organize international hackathons or quizzes with participants from different countries.
   o Support for multiple languages to increase accessibility.
7. **Cheating Prevention**:
   o AI-based proctoring for quizzes and hackathons to detect suspicious behavior.
   o Randomized question orders and IP-based access restrictions.
8. **Progressive Rewards System**:
   o Introduce a tiered reward system, where consistent performance in quizzes or hackathons unlocks bigger rewards.
9. **Integration with Learning Platforms**:
   o Link hackathons or quizzes with learning platforms to allow users to learn topics before competing.
10. **AR/VR Challenges**:
   o Create immersive challenges, like solving real-world problems using AR or VR simulations.