# Project Proposal: Audio-Only Meetings Platform

## Client Requirements:

### Platform Overview:

- Host can create meetings where students join and listen to the host's voice.  
- Students can unmute themselves and privately ask doubts to the host.  
- Student voice will only be audible to the host (private conversation).  
- Host's voice is broadcasted to all participants.  
- Private conversations between a student and the host must be recorded and saved.  
- Only recordings from the past 3 days will be saved and viewable by the student.

### Ideal Usage:

- 50 meeting participants.  
- 5-hour meeting length.  
- 25 meetings daily.  
- 25 active days per month.

### Deliverables:

- Admin Panel: Host creation and management.  
- Host Web Panel: Student creation, management, viewing all recordings (last 3 days), and meeting creation.  
- Host Android App: Meeting creation.  
- Student Android App: Join meetings, view recordings (last 3 days), and change password.

### Constraints:

- No use of paid RTC APIs (Agora, Twilio, Daily, etc.).  
- Budget: ₹20,000.  
- Deadline: January 26th, 2025.

## Technical Proposal:

### Technologies and Frameworks:

- Backend: Node.js with WebSocket for real-time communication.  
- Frontend:  
 - Admin and Host Web Panels: React.js with Material-UI.  
 - Mobile Apps: Flutter  
- Database:  
 - MongoDB for user data and meeting metadata.  
 - Amazon S3 or Google Cloud Storage for storing recorded conversations.  
- Streaming and Recording:  
 - WebRTC for real-time audio streaming.  
 - Custom recording module using MediaStream APIs.  
- Authentication:  
 - JWT (JSON Web Tokens) for secure and scalable user sessions.  
- Hosting:  
 - Backend: AWS EC2 with scalable instance configurations.  
 - Database: MongoDB Atlas or self-hosted MongoDB.  
 - Static assets: Amazon S3 or Cloudflare CDN.  
- Storage Cleanup:  
 - Cron jobs to delete recordings older than 3 days.

### System Architecture:

- Admin Panel: Accessible via web for managing hosts.  
- Host Panel: Accessible via web and mobile for managing meetings and students.  
- Student App: Mobile-only for joining meetings and viewing recordings.  
- Recording Management:  
 - Audio streams between host and students recorded in the backend.  
 - Secure storage with access control for individual recordings.

### Key Features Implementation:

- Real-Time Audio Streaming: Using WebRTC for low-latency voice communication.  
- Private Conversations: Peer-to-peer connections between host and students for private audio.  
- Recording Management:  
 - WebSocket signaling for starting/stopping recordings.  
 - Audio storage in cloud storage with metadata linking in the database.  
- Recording Cleanup: Scheduled tasks to delete older recordings.  
- Scalability: Implementing load balancing via NGINX or AWS Application Load Balancer.

## Estimated Costs:

1. Development Costs: Within budget (₹20,000).  
2. Server Infrastructure:  
 - AWS EC2: Medium to large instance (₹5,000/month).  
 - S3 Storage: Approx. 1 TB/month (₹1,000/month).  
 - MongoDB Atlas: Free tier or small paid plan (₹500/month).  
3. Operational Costs: Estimated ₹6,500/month.

## Project Timeline:

|  |  |  |
| --- | --- | --- |
| Phase | Duration | Deadline |
| Requirement Analysis | 1 day | January 19, 2025 |
| UI/UX Design | 3 days | January 22, 2025 |
| Backend Development | 5 days | January 25, 2025 |
| Frontend Development | 4 days | January 25, 2025 |
| Testing and QA | 1 day | January 26, 2025 |

## Deliverables Checklist:

1. Admin Panel (Web):  
 - Host creation and management features.  
  
2. Host Web Panel:  
 - Student management.  
 - Meeting creation.  
 - Viewing last 3 days' recordings.  
  
3. Host Android App:  
 - Meeting creation.  
  
4. Student Android App:  
 - Join meetings.  
 - View last 3 days' recordings.  
 - Change password.  
  
5. Recording Management:  
 - Secure storage and retrieval of recordings.  
 - Scheduled deletion of recordings older than 3 days.

## Next Steps:

1. Confirm the proposal and scope of work.  
2. Begin development on January 19th, 2025.  
3. Deliver the completed platform by January 26th, 2025.