



BASIC DETAILS OF THE TEAM AND PROBLEM STATEMENT

PS Code: PS01(7)

Problem Statement Title: Create and implement a customized online meeting platform for AICTE

Team Name: DEV NEXUS

Team Leader Name: AMITAVA DATTA

Institute Code (AISHE): 130

Institute Name: TECHNO MAIN SALT LAKE

Theme Name: Cyber Security

CUSTOMIZED ONLINE MEETING PLATFORM BY DEV NEXUS

❑ Core Functionalities

➤ User Management:

- User registration, authentication (OAuth, JWT , Firebase), and authorization.
- Role-based access control.
- Profile management (name, email, institution, roll no).

➤ Meeting Management:

- Meeting scheduling, invitations, and reminders.
- Meeting joining and leaving.
- Meeting recording and storage.
- Meeting analytics (auto attendance, engagement, etc.).

➤ Real-time Communication:

- Text chat, group chat, private messaging.
- Whiteboarding and collaboration tools like polling system
- Screen sharing and remote control.
- Breakout rooms.

➤ File Sharing:

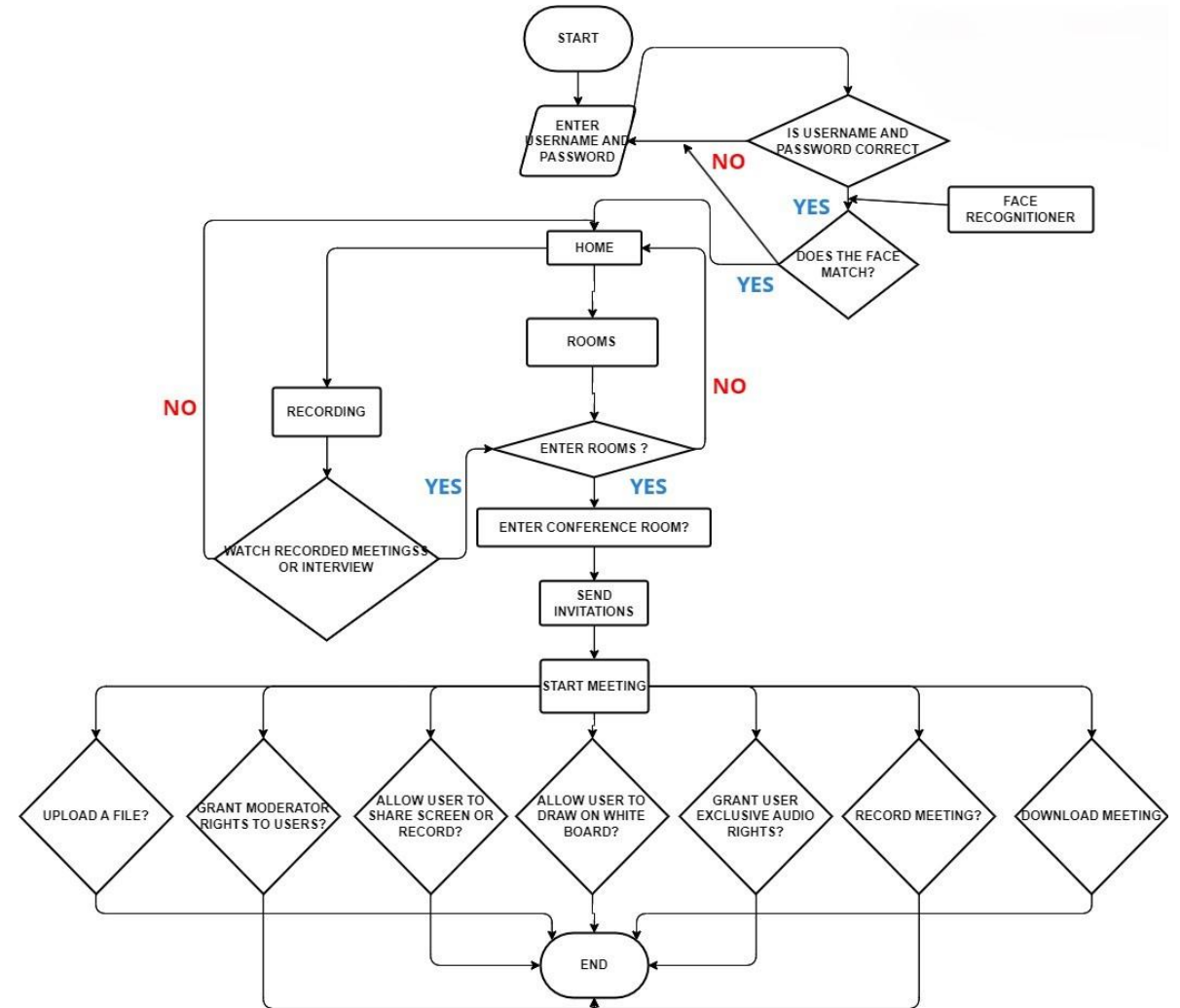
- Secure file upload, download, and sharing.
- File version control.

➤ Integration:

- APIs for integration with existing systems.

➤ Security:

- Data encryption (at rest and in transit).
- Strong authentication and authorization.
- Access controls.
- Regular security audits and vulnerability assessments.



❑ UNIQUE FEATURES--

- Face Recognition:** Check user's authenticity by scanning face of the user.
- AI Chat Bot:** Implementation of an AI chat bot which will be beneficiary for education.

IDEA/APPROACH DETAILS

❑ Use Case of our prototype

- ❖ During a lecture, educators can use virtual whiteboards to illustrate concepts and solve problems in real-time. Live quizzes can be used to assess student understanding immediately. Polls can gather quick feedback on lecture content.
- ❖ For group projects or workshops, students can be divided into smaller breakout rooms for focused discussions. Educators can move between rooms to provide guidance and support.
- ❖ A recorded lecture can be made available to students who missed the class or need to review the material. This feature supports asynchronous learning and revision.
- ❖ Meetings can be scheduled and automatically synced with participants' calendars, avoiding scheduling conflicts and ensuring everyone is informed of upcoming sessions. Popup notifications will be sent before the start of meeting.

❑ Shortcomings of our prototype

- ❖ WebRTC used in our prototype, relies **on browser support**, which can be a limitation. Not all browsers may support WebRTC, and even those that do may have varying levels of implementation.
- ❖ Since WebRTC is used our prototype will rely on a **stable network connection**. Poor network conditions can lead to packet loss, latency, and jitter, resulting in a suboptimal user experience.
- ❖ Server crashing will occur during over-accessing of the website by users at once.

❑ Software Dependencies

➤ Backend:

- Node.js for server-side logic , Cloudflare
- Database (MongoDB/Firebase) for storing user data, meeting information, and metadata.
- WebSocket or Socket.IO for real-time communication.
- WebRTC or SFU library for peer-to-peer video and audio.
- Additional libraries for authentication, authorization, security, and file handling.

➤ Frontend:

- JavaScript framework (React.js) or typescript for building the user interface
- Tailwind CSS
- UI/UX design tools (Figma, Chakra UI)
- Docker, Kubernetes

❑ Hardware Dependencies

- **Servers:** Application, web, database, media, and storage servers.
- **Network infrastructure:** Reliable network connectivity for real-time communication.
- **Storage:** Sufficient storage for user data, meeting recordings, and other files.

❑ Development Dependencies

- **Version control:** Git for managing code changes.
- **Development environment:** IDE or code editor for developers.
- **Testing frameworks:** Unit, integration, and end-to-end testing tools.
- **Deployment tools:** Tools for deploying the application to the cloud platform.

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