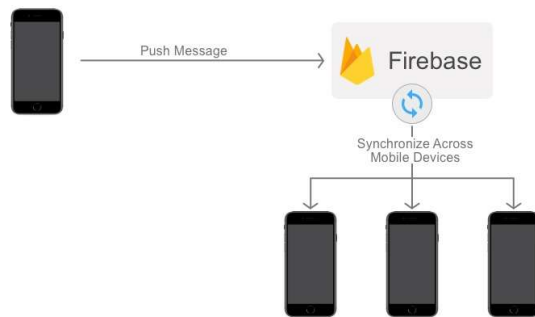


Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID591006
Project Name	Project - ChatConnect - A Real-Time Chat and Communication App
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2



Guidelines:

Include all the processes (As an application logic / Technology Block)
Provide infrastructural demarcation (Local / Cloud)
Indicate external interfaces (third party API's etc.)
Indicate Data Storage components / services
Indicate interface to machine learning models (if applicable)

Table-1 : Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	User registration, login, and identity verification	Kotlin, XML
2.	Application Logic-1	Logic for a process in the application is responsible for handling user registration and authentication processes	Kotlin, XML
3.	Application Logic-2	Logic for a process in the application is responsible for enabling users to exchange real-time messages within the application	React for frontend, Express.js for backend.
4.	Application Logic-3	Logic for a process in the application is responsible for the intricate process of transmitting messages and notifying users about new messages, ensuring a seamless and engaging communication experience.	user authentication will be handled, e.g., JWT (JSON Web Tokens), OAuth, etc
5.	Database	Storage and synchronization of chat messages in real time	Firebase Realtime Database
6.	Cloud Database	Serverless functions for server-side logic, Storage of multimedia content, e.g., images and files	Firebase Cloud Functions & Storage
7.	File Storage	Seamless File Sharing, Secure Cloud Storage, Real-Time Sync, Version Control, File Previews,	Cloud Storage Services, Content Delivery Networks (CDNs)

		Advanced Search, Custom Folders and Organization	
8.	External API-1	User Authentication, Push Notifications, Geolocation Services, Media Sharing, Language Translation, Emojis and Stickers, Third-Party Integrations	Real-Time Messaging, User Authentication and Authorization, Push Notifications, Cloud Storage, Geolocation
9.	External API-2	Payment Gateways, Analytics and User Insights, Bot Integrations, Security and Compliance, Content Moderation	Video and Voice Calling, Notifications and Alerts, Data Storage, Analytics and Monitoring, Speech-to-Text and Text-to-Speech
10.	Machine Learning Model	the app can provide personalized recommendations, automate responses, and improve message filtering, thereby making conversations more efficient, enjoyable, and secure for its users.	Natural Language Processing (NLP), Recommendation Systems, User Behavior Analysis, Language Translation, User Engagement Prediction, Personalization,. etc.
11.	Infrastructure (Server / Cloud)	Application Deployment on Local System / Cloud Local Server Configuration: install the necessary server software, such as a web server (e.g., Apache or Nginx), a database server (e.g., MySQL or PostgreSQL), and any required frameworks or libraries. Cloud Server Configuration : involve setting up and maintaining physical or virtual servers within your organization's infrastructure, making it suitable for smaller-scale applications with less need for scalability and accessibility.	Local System Deployment, Cloud Deployment .,etc

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	List the open-source frameworks used, here are some common open-source frameworks and libraries that are often used in the development of	For chat and instant messaging functions, it uses real-time communication libraries like WebSockets or MQTT. To ensure

S.No	Characteristics	Description	Technology
		such applications: Socket.io, React Native or Flutter, Node.js, Firebase, Twilio,.etc	scalability and resilience, the application may also leverage open-source server frameworks for backend development, such as Django, Ruby on Rails, or Node.js.
2.	Security Implementations	role-based access control to manage user permissions, multi-factor authentication to improve user access security, end-to-end encryption for messages to safeguard their confidentiality and penetration testing to find and fix flaws.	encryption protocols such as TLS to secure data in transit, role-based access control to manage user permissions, and strong authentication methods like multi-factor authentication.
3.	Scalable Architecture	Ensuring scalability and load balancing as user base grows	Cloud resources, load balancing, and monitoring
4.	Availability	Ensuring data privacy and GDPR compliance , Implementation of automated and user testing.	Technology used is GDPR Compliance & Automated testing (unit tests, integration tests), User testing.
5.	Performance	Management of user profiles with user information, Iterative development and improvement based on user feedback.	Technology used is Firebase Realtime Database (User Profiles) & Ongoing updates and feature enhancements.