

CHATAPPLICATION PROJECT SUMMARY

OVERVIEW

- * Real-time 1-to-1 chat application with WhatsApp-like UX.
- * Supports text, media, audio calls, and video calls.
- * WebRTC for peer-to-peer calls with TURN for NAT traversal.
- * Socket.io used for real-time messaging and signaling.
- * Firebase Storage used for file uploads.
- * Deployed with frontend on Vercel and backend on Render.

CORE FEATURES

- * User authentication with Firebase.
- * One-to-one chat with typing and file attachments.
- * Image preview (modal) and document link preview.
- * Real-time unread badges and sidebar message previews.
- * Online status indicator for users (green dot).
- * Notification sound for new incoming messages.
- * Call notifications with ringtone when receiving calls.
- * Separate scrollable sidebar and chat area.
- * Responsive layout for mobile/tablet (WhatsApp-style layout).

MESSAGING FLOW

- * Messages stored in MongoDB via Mongoose.
- * Real-time delivery using Socket.io 'sendMessage' / 'receiveMessage'.
- * Message status tracking:
 - * Sent (single tick)
 - * Delivered (double gray tick)
 - * Seen (double blue tick)
- * Delivered status is emitted when receiver gets message.
- * Seen status is emitted when receiver opens the chat and the app is focused.

AUDIO & VIDEO CALLING

- * 1-to-1 WebRTC calls with audio and video.
- * TURN support (Twilio NTS) for calls across different networks.
- * ICE candidate queuing until remote description is set.
- * Stream handling via 'ontrack' and safe playback re-tries.
- * Call controls: start, accept, reject, hang up.
- * Auto-cleanup of tracks and peer connection on end.

UI / UX HIGHLIGHTS

- * WhatsApp-inspired layout and call button placement.
- * Separate scrollable chat list and message pane.
- * Link and long text wrapping in message bubbles.
- * Chat bubbles styled with sender context.
- * Last message preview under user name in sidebar.
- * "Scroll to latest" floating button when user scrolls up.

NOTIFICATIONS