FlowState - Creative Intelligence OS for Musicians

Live URL: https://flowstateos.netlify.app/ **Student:** [Your Name] | **Instructor:** Dr. Lee | **Course:** NLP Spring 2026 | **Date:** February 11, 2026

1. Application Description

FlowState is a **Creative Intelligence OS** designed for musicians and producers. It helps users capture ideas (text, voice, image, video, PDF), manage music projects, track tasks, and overcome creative blocks. FlowState uses **pgvector** for semantic search and **Gemini 2.5 Flash** as its LLM to power a RAG chatbot that understands the *content* of a user's workspace. Users can converse via voice (Vapi.ai) or text to retrieve context, create items, and get AI-generated answers grounded in their own data. Uploaded files are automatically analyzed by **Gemini 2.0 Flash** multimodal AI to extract transcripts, summaries, and key concepts — making every attachment searchable knowledge.

2. Test Credentials

Role	Email	Password
Admin	`admin@test.com`	`password123`
Regular User	`member@test.com`	`password123`

3. Requirements Mapping & Testing Guide

Req	Where It Lives	How to Test
1. Auth & Roles	Supabase Auth. Routes: `/auth/sign-up`, `/auth/sign-in`. `is_admin` boolean in `profiles` table. `AuthProtectedRoute` guards `/dashboard`. `DashboardLayout` conditionally renders Admin sidebar section.	Log in as admin → see "Admin" section in sidebar with User Management page. Log in as regular user → admin section hidden. Refresh page → session persists. Log out → redirected.
2. Profile	Settings page at `/dashboard/settings`. Fields: display name, bio, avatar URL, timezone. `react-hook-form` + `zod` validation. Saved to `profiles` table.	Log in → sidebar "Settings" → edit display name, bio, avatar URL → click Save → see success toast → refresh page → verify changes persisted.
3. Database	Supabase PostgreSQL. 10 tables (see schema below). RLS enabled on all. pgvector extension active. `embeddings` table with `vector(768)` column. FK relationships throughout.	Create a project, idea, and task → data appears in dashboard. Schema diagram below shows all 10 tables + relationships.
4. UI Components	6 ReactBits components on the landing page (see list below). shadcn/ui throughout the dashboard (Dialog, Sheet, Accordion, Badge, Button, Input, Textarea).	Visit landing page (`/`) → observe animated gradient headings, blur-in hero text, spotlight hover cards, animated stat counters, glare-hover benefit cards, star-border CTA button.
5. Edge Functions	7 Supabase Edge Functions deployed (see Section 4 below). Triggered by: creating ideas/tasks (embedding), chatbot queries (ask-flowstate), voice commands (vapi-actions), file uploads (extract-idea-memory).	Open "Ask FlowState" panel → type a question → response comes from `ask-flowstate` Edge Function. Create an idea with a file upload → `extract-idea-memory` runs automatically.
6. MCP Integration	3 MCP servers used during development (see Section 6 below). Configured in `.mcp.json`.	Evidence visible in the app: Supabase MCP managed all DB migrations and Edge Function deployments. ReactBits MCP generated the animated components. 21st.dev Magic MCP generated UI component code.
7. RAG Chatbot	`AskFlowState.tsx` panel. Embedding: Gemini Embedding-001 (768d). Vector search: `search_embeddings` RPC (cosine similarity). LLM: Gemini 2.5 Flash. History: `chat_messages` table. Knowledge base: all user ideas, tasks, and projects + extracted file memory.	Open "Ask FlowState" → ask example questions below → verify answers reference your actual workspace data with citations. Ask something unrelated → AI says it has no info.

4. Supabase Edge Functions (7 Deployed)

Function	Version	What It Does	Trigger
`ask-flowstate`	v23	RAG pipeline: embeds query → pgvector search → enriches context with memory → Gemini 2.5 Flash generates answer	Chatbot text/voice query
`vapi-actions`	v9	Handles Vapi.ai voice tool calls: `create_task`, `create_idea`, `create_project`, `query_workspace`	Voice assistant commands
`extract-idea-memory`	v6	Downloads uploaded file → Gemini 2.0 Flash multimodal → extracts transcript/summary/concepts → stores as JSONB	File upload on idea
`generate-embedding`	v4	Generates 768d vector embedding via Gemini Embedding-001 for any entity	Creating/updating ideas, tasks, projects
`semantic-search`	v3	Cosine similarity search via `search_embeddings` RPC	Cmd+K search
`parse-task-nl`	v3	Parses natural language into structured task JSON (title, due date, priority)	Natural language task input

`regenerate-embeddings`	v1	Batch re-embeds all entities for a user (model migration utility)	Manual admin trigger

5. ReactBits Components (6 Used)

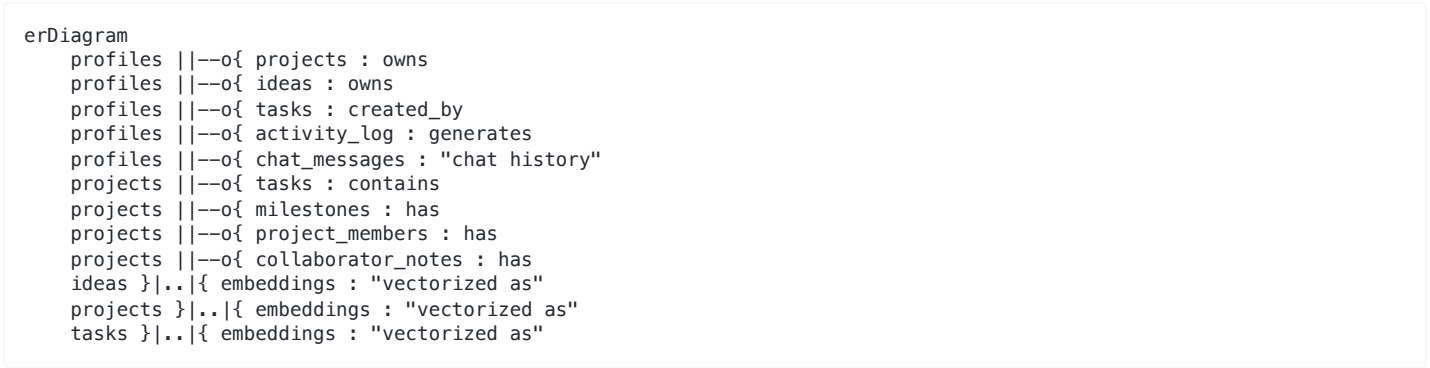
Component	Library	Where It Appears
`GradientText`	ReactBits	Landing page: section headings in Benefits, Social Proof, Pricing, How It Works
`BlurText`	ReactBits	Landing page: Hero section main headline ("Capture Ideas. Organize Feedback. Finish Tracks.")
`SpotlightCard`	ReactBits	Landing page: Social Proof section testimonial cards (spotlight hover effect)
`CountUp`	ReactBits	Landing page: Social Proof section animated statistics (2,000+ creators, 50K sessions, etc.)
`GlareHover`	ReactBits	Landing page: Benefits section cards (glare/shine effect on hover)
`StarBorder`	ReactBits	Landing page: Final CTA section "Start Free Trial" button (animated star border)

6. MCP Servers (3 Integrated)

MCP Server	Purpose	Evidence in App
Supabase MCP	Database schema management, migrations, Edge Function deployment, SQL queries	All 10 tables, RLS policies, 7 Edge Functions deployed via MCP
21st.dev Magic MCP	AI-powered UI component generation and design	Dashboard component layouts and styling
ReactBits MCP	Animated component library integration	6 ReactBits components listed above

7. Database Schema (10 Tables, RLS on All)

`profiles` · `projects` · `ideas` · `tasks` · `milestones` · `project_members` · `collaborator_notes` · `activity_log` · `embeddings` (pgvector) · `chat_messages`



```
erDiagram
    profiles ||--o{ projects : owns
    profiles ||--o{ ideas : owns
    profiles ||--o{ tasks : created_by
    profiles ||--o{ activity_log : generates
    profiles ||--o{ chat_messages : "chat history"
    projects ||--o{ tasks : contains
    projects ||--o{ milestones : has
    projects ||--o{ project_members : has
    projects ||--o{ collaborator_notes : has
    ideas }|..|{ embeddings : "vectorized as"
    projects }|..|{ embeddings : "vectorized as"
    tasks }|..|{ embeddings : "vectorized as"
```

8. RAG Chatbot — Knowledge Base & Example Questions

Knowledge base content: Every idea, task, and project the user creates is automatically embedded as a 768-dimensional vector (Gemini Embedding-001) and stored in the `embeddings` table. Uploaded files (images, voice memos, PDFs) are additionally processed by Gemini 2.0 Flash to extract transcripts and summaries, which are re-embedded for richer retrieval. The RAG pipeline searches this personalized knowledge base via cosine similarity, then sends the top results as context to Gemini 2.5 Flash.

Example questions to test:

1. *"What ideas did I have about jazz chords?"* — Tests semantic search over ideas
2. *"Create a task to finish the mixing by Friday."* — Tests voice/text tool call (creates a real task)
3. *"Add a new idea for a Lo-Fi beat with piano."* — Tests idea creation via AI assistant