

Product Requirements Document (PRD)

Product Name (Working Title): VibeCoders IDE

One-liner:

An AI-powered IDE that simulates a real-world software development process: the user acts as a project manager and the AI acts as a developer, guiding from idea to planning to fully coded, scalable full-stack applications.

1. Product Overview

1.1 Description:

VibeCoders IDE is an interactive platform that allows beginners or aspiring developers to experience real-world software engineering workflows. Before any coding begins, the user provides a project idea. The AI acts like a developer, generating detailed planning materials — HLD (High-Level Design), LLD (Low-Level Design), system architecture, data flow diagrams, tech stack recommendations, scalability, and security strategies. Once the user (playing the role of a project manager) approves the plan, the AI begins coding within an integrated IDE.

1.2 Objectives:

- Teach users the real process of full-stack development, not just coding.
- Simulate the interaction between project managers and developers.
- Generate well-structured, scalable, and secure applications.
- Provide full mentorship from idea to deployment in the simplest form.

1.3 Differentiators:

- Planning-first approach (unlike Replit or Cursor).
 - Real-life team simulation: Manager (user) ↔ Developer (AI).
 - Beginner-friendly system design breakdowns.
 - Emphasis on scalability and real-world practices.
-

2. Target Users

2.1 User Personas:

- Vibe Coders: Curious new coders who want to build real-world apps without being overwhelmed.
- Beginner Developers: Bootcamp students or college learners trying to understand system design.
- Solo Builders: Early-stage indie hackers who need planning help.

- Career Switchers: Professionals from non-tech backgrounds moving into development.

2.2 Pain Points:

- Don't know how to plan a real-world project.
 - Struggle with folder structure, scalability, DB design.
 - Want to understand developer workflows used in tech companies.
 - Need mentorship-like guidance to gain confidence.
-

3. Problem Statement

While many platforms help with code generation (e.g., Replit, GitHub Copilot), none guide users through the entire development workflow used in real-world tech companies:

- Planning → Design → Architecture → Approval → Implementation → Testing → Deployment.

Beginners skip planning and make bad architecture choices. There's no safe environment to simulate a full software development life cycle.

Outcome desired: A user can confidently take an idea, understand how to plan it like a real developer, build it with help from an AI agent, and deploy a secure, scalable full-stack app.

4. Core Features

4.1 MVP (Minimum Viable Product)

Feature Group: Project Planning Engine

- AI collects project idea from the user.
- Generates:
 - Step-by-step development roadmap.
 - HLD (High-Level Design)
 - LLD (Low-Level Design)
 - Tech stack suggestion
 - Folder structure (with detailed explanations of files and folders)
 - Data flow diagrams (Mermaid or React-Flow)
 - Scalability & security suggestions

Feature Group: Manager Approval Interface

-

User can:

- View all proposed plans visually.
- Edit tech stack or folder names.
- Ask the agent for clarification.
- Approve or reject specific parts of the plan.

Feature Group: Interactive Coding IDE

- Monaco-based IDE with real-time code generation.
- File/folder navigator.
- Syntax highlighting and code formatting.
- Preview live frontend/backend app.

Feature Group: AI Developer Agent

- Explains why certain design choices were made.
- Writes and explains each file/module.
- Takes feedback from user and regenerates code.

Feature Group: Visual Architecture Tools

- Drag-and-drop diagram builder for system design.
- Auto-generate and customize diagrams.

Feature Group: Auth & Projects

- Login/Signup using Clerk/Auth.js.
 - Save and export projects.
 - View dashboard of all created apps.
-

4.2 Future Features (Post-MVP)

- AI Code reviewer for debugging, test cases, and optimization.
 - GitHub integration + version control simulation.
 - Team simulation with multiple AI agents (frontend/backend/devops).
 - Collaboration mode (user-to-user pair programming).
 - Task board / sprint simulation.
 - Real-world project templates (eCommerce, SaaS, Netflix clone).
 - Dark/light theme toggle and custom editor settings.
-

5. User Experience & Flow

5.1 User Journey:

1.

User signs up or logs in.

2.

Onboards with tutorial: "You're the Manager, AI is your Developer."

3.

Submits a vague or clear project idea.

4.

AI asks questions and presents:

- Functional requirements
- HLD / LLD
- Diagrams + architecture
- Tech stack & rationale
- Folder structure & code outline

5.

User gives feedback or approval.

6.

AI starts coding.

7.

Code appears in Monaco IDE.

8.

User runs, edits, or exports code.

9.

Can deploy preview app in-browser.

10.

User gets guided walkthroughs on deployment.

5.2 UX Highlights:

- Step-by-step tutorial mode.
 - Interactive diagrams.
 - Typewriter animation during AI explanations.
 - Voice-enabled explanation (future).
-

6. Technical Specifications

6.1 Frontend

- Framework: Next.js
- Styling: Tailwind CSS + Shadcn/ui + Framer Motion
- Diagram Library: Mermaid.js or React-Flow
- Editor: Monaco Editor (VSCode base)

6.2 Backend

- Server: Node.js + Express
- Database: PostgreSQL or MongoDB (for user/project storage)
- Auth: Clerk or Firebase Auth
- Hosting: Vercel (frontend) + Render/Fly.io (backend)
- GPT Integration: OpenAI GPT-4o API with custom prompt builder

6.3 Dev Tools

- CI/CD: GitHub Actions
 - Deployment Pipeline: Auto-deploy preview on save
 - Project Execution: Docker container per user session (Phase 2)
-

7. Timeline & Milestones

Phase	Timeline	Features
Phase 1	Week 1	AI planning engine (HLD, LLD, diagrams, etc.)
Phase 2	Week 2	User approval flow + editable plan UI
Phase 3	Week 3	Monaco IDE integration + code generation agent
Phase 4	Week 4	Auth, saving projects, export options
Phase 5	Week 5	Basic deployment & launch MVP

8. Success Metrics

- 100+ beta users within first month.

- 50+ completed project blueprints.
 - 20+ apps built and deployed using platform.
 - Average session duration > 15 minutes.
 - Positive feedback from beginners about real-world learning.
-

9. Optional Enhancements

- Gamification: Badges for completing project stages.
 - Live Mentorship: Schedule 1:1 review calls with experts.
 - Marketplace: Upload and sell custom blueprints or templates.
 - Resume Builder: Export project as a case study to add to portfolio.
-

10. Final Summary

VibeCoders IDE is not just a coding platform. It's a full-stack development simulator that teaches how real developers think, plan, build, and ship apps. From vague idea to professional-quality deployment, users are mentored step-by-step — with AI acting as their developer and architectural guide.

It aims to turn absolute beginners into confident builders — with scalability, structure, and security as the foundation.