Project Documentation – Quizify by Team Velocity

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1. Problem Statement

Students and learners often struggle to convert large amounts of educational content into clear and structured study material. Notes, articles, and textbooks are usually unorganized, making revision difficult. Creating quizzes manually from this content takes time and effort, and it is not easy to identify weak areas or learning gaps. Because of this, learning becomes inefficient and less engaging.

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2. Proposed Solution

Quizify is a web-based application that automatically converts educational text into structured knowledge and quizzes. Users can paste any learning material into the system, select a difficulty level, and instantly receive extracted concepts, topic hierarchies, and AI-generated quiz questions. The platform also evaluates quiz performance and highlights weak areas so learners know where to focus.

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3. System Architecture

Frontend
The frontend is built using Next.js with React. It handles user interaction, text input, visual display of concepts, quizzes, results, and review screens. Tailwind CSS is used for styling to provide a clean and user-friendly interface.

Serverless Backend
Quizify uses a serverless API route that acts as a bridge between the frontend and the AI model. This backend does not require a separate hosted server and runs only when requests are made.

AI Processing
The Groq API powered by the LLaMA 3.1 model processes the input text. It extracts key concepts, builds topic hierarchies, and generates quiz questions with difficulty levels.

Deployment
The application is deployed on Vercel, which supports serverless execution and fast global access.

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4. Autonomy and Agentic Flow

User Input
The user provides educational content and selects a quiz difficulty.

AI Analysis
The system automatically sends the content to the AI without manual intervention.

Concept Extraction
The AI identifies important concepts and assigns relevance and difficulty.

Knowledge Structuring
Concepts are organized into hierarchies and visual maps.

Quiz Generation
Questions are generated automatically based on extracted concepts and selected difficulty.

Evaluation
User answers are checked, scores are calculated, and weak concepts are identified.

Feedback Loop
The system suggests areas that need improvement and allows reattempts or review.

This entire flow happens automatically, making Quizify an autonomous learning assistant.

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5. Innovation

Quizify combines concept extraction, visualization, quiz generation, and learning gap detection in one platform. Instead of only generating questions, it connects each question to concepts and tracks mistakes to identify weak areas. The guided step-by-step learning flow makes the system feel intelligent and supportive, not just reactive.

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6. Unique Selling Points

Automatic conversion of text into structured knowledge
Visual concept maps and topic hierarchies
Learning gap detection based on quiz mistakes
Difficulty-based quiz generation
Clean and student-friendly interface

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7. Future Scope

Support for file uploads like PDF and Word documents
Personalized learning paths based on past performance
Exporting quizzes and notes for offline study
User accounts to track long-term progress
Multi-language support
Teacher dashboards for classroom use

This documentation explains how Quizify solves a real learning problem using an autonomous, AI-driven approach while remaining simple and easy to use for students.