

Database Systems Laboratory

Course No: CSE-3110

Database Project Report



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HarmonyDB: A Music Library and Streaming Database System

Project Title

HarmonyDB: A Music Library and Streaming Database System with AI-Powered Query Support

Project Description

HarmonyDB is a full-scale **music library and streaming database system** built using **Laravel (PHP framework) and MySQL**, designed to function like a simplified version of Spotify. The system manages **users, artists, albums, songs, playlists, genres, favorites, listening history, and comments**, ensuring efficient storage, retrieval, and organization of music data.

The project demonstrates comprehensive **database system concepts** including **ER modeling, relational schema design, normalization, relational algebra, indexing, transactions, concurrency control, and database security**.

A standout feature of HarmonyDB is its **AI-powered query assistant**, where users can interact with a **Large Language Model (LLM)** via natural language prompts. The system parses LLM-generated SQL queries, executes them securely, and returns user-specific results such as personalized playlists, listening trends, or favorite artists. This highlights practical integration of **AI with databases** for intelligent information retrieval.

The backend handles **file path management for audio tracks and related media assets** while ensuring database scalability and integrity. Through this project, HarmonyDB showcases a robust, user-friendly, and academically rich database application that fulfills all aspects of a **Database Systems curriculum** while aligning with modern real-world use cases.



