AUTOMATED GENERATION OF DATABASE SCHEMA DESCRIPTIONS BASED ON BUSINESS RULES

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Modern web applications increasingly rely on automation tools to transform business requirements into technical implementations. One of the critical tasks in software development is the design and description of a database schema. Manual translation of business rules into database structure is often time-consuming and error-prone [1]. Hence, this research aims to simplify this process by developing a software tool that automatically generates database schema definitions (DDL) based on textual business requirements.

The developed system is built using a client-server architecture. The client side is responsible for the user interface and interaction, allowing users to input textual business rules through a web interface. The server side processes the input, applies logic to interpret the data model, and generates a DDL script for the corresponding relational database.
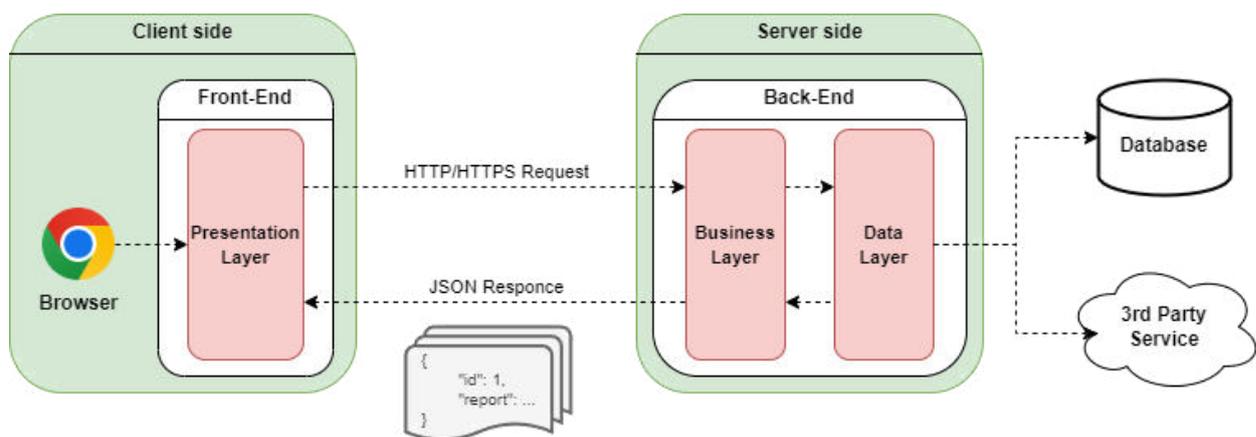

Fig. 1. – General presentation of client-server architecture

The application architecture includes three main components:

1. Client-side interface, implemented in a web browser, where users can enter and manage business rules.

2. Application server, which interprets the input, executes core logic, and communicates with the database layer.

3. Database server, which stores and manages data and provides a test environment for executing generated SQL scripts.

This approach helps reduce the complexity of the database design process and makes it more accessible for analysts and non-technical users. The system is designed to be modular and extensible, allowing integration with additional rule engines or support for different database platforms.

References:
1. Kopp A., Orlovskyi D. An Approach and a Software Tool for Automatic Source Code Generation driven by Business Rules // CEUR Workshop Proceedings. 2022. Vol. 3171. P. 239–246. URL: https://ceur-ws.org/Vol-3171/paper28.pdf