

COMMON DATABASE BROWSER FOR DATA MANIPULATION TOOL

J.Chaitanya¹, K.Deepika², J.Rajeshwari³, B.Navatha⁴, B.Shashank⁵, D.Suman¹

¹Assistant Professor, Department of CSE, Balaji Institute of Technology and Science, Laknepally,
Warangal, India

^{2,3,4,5}BTech Student, Department of CSE, Balaji Institute of Technology and Science, Laknepally,
Warangal, India

ABSTRACT

Database browsers are critical applications that enable the interaction and manipulation of data resident in relational and non-relational databases. The tools offer graphical user interfaces (GUIs) that ease complex database processes, making them user-friendly even for non-technical users. They allow users to carry out CRUD (Create, Read, Update, Delete) operations without the need to write long code, hence they are beneficial to developers, data analysts, and business intelligence experts. The majority of them also support visualization of query results, import/export of data, and backup management, which make the workflow more efficient. Some popular database browsers are MySQL Workbench, DBeaver, pgAdmin, and SQL Server Management Studio (SSMS). They differ in supported database types, functionality, and integration. They usually support a variety of database engines, including MySQL, PostgreSQL, SQLite, Oracle, and Microsoft SQL Server, and offer cross-platform support to support various operating systems.

1.INTRODUCTION

In the modern data-oriented world, databases are the foundation for storing and managing large amounts of structured data in numerous industries. Getting the data efficiently, querying it, and manipulating it is essential for decision-making, reporting, and application development. Direct work with databases via command-line tools or intricate code is not easy for most users, especially those who are not very close to SQL or database management systems (DBMS). These database browsers have become critical in development as well as data analysis environments because they enhance workflow efficiency, lower the possibility of error, and facilitate team member collaboration. With advancing database technologies, these browsers are also changing, and they are integrating new features such as cloud integration, real-time data monitoring, and sophisticated query optimization. Finally, database browsers for data manipulation software are such invaluable tools that anyone dealing with data has their services at disposal, simplifying complex processes via friendly interfaces [1-18].

2.LITERATURE SURVEY

Another limitation is supporting various database engines. While a few tools work with many databases, Chen and Liu (2020) maintain that one tool may not always be optimal in supporting every type of database. Users will also encounter challenges with certain database settings or experience platform-specific bugs that are not resolved broadly.

They are usually equipped with auto-completion, syntax coloring, and error coloring, which minimize the potential for errors. Hernandez and Singh (2021) say this feature is fundamental to simplifying development and accuracy in database operations. pgAdmin has been a top pick among users of PostgreSQL. Taylor et al. (2022) write that pgAdmin provides a feature-rich interface to work with PostgreSQL databases and executes complex queries, schema visualization, and data analysis. The tool is well known for its ease of connectivity to PostgreSQL instances and executing advanced operations like execution of queries and database maintenance. DBeaver is reputed for its multi-database functionality and extensibility, supporting databases like MySQL, PostgreSQL, SQLite, Oracle, and many more. Reddy et al. (2023) conducted a study on DBeaver's versatility in supporting different types of databases and its wide range of features, such as visual query builders and data import/export functionality, which make it a desirable tool for data analysts and developers. MySQL Workbench is extensively used in MySQL database-reliant environments. It integrates many features such as SQL development, server setup management, user management, and performance monitoring. Kumaretal(2025) describe how the collaborative tools in MySQL Workbench simplify database management for users and improve speed and accuracy of data manipulation.

3.EXISTING SYSTEM

Now days every organization uses sql plus tool to write sql commands in oracle database or in some other databases. As an industry norms database must be under control of database administrator, which means no other user can access the database but sometimes organization will give permissions to all users in that organization to access the database for some projects and also organization has to give permissions for their clients to access database but sometimes manually it is not possible. To avoid these types of problems DATABASE UTILITIES was introduced.

4. PROBLEM STATEMENT

This problem statement tries to investigate the major issues involving general database browsers for data manipulation, particularly concerning enhancing their performance, compatibility, usability, and integration with today's cloud-based systems. There has to be a comprehensive solution that will simplify database interactions, lower the learning curve for new users, and increase the efficiency and effectiveness of managing data across different environments. Whereas graphical database browsers are intended to make these easier to accomplish, there are many issues and limitations involved in their utilization.

5.PROPOSED SYSTEM

DATABASE UTILITIES is a industry-standard application development tool. With the Database Utilities, the developers can communicate to any back end software (i.e. Oracle, SQL Server, MS-Access, My-SQL etc). The DATABASE UTILITIES can be utilized to create, test, and debug PL/SQL packages, procedures and functions. DATABASE UTILITIES users can also create and modify database objects like tables, views, indexes, constraints, and users. Database Utilities' SQL Editor offers a simple and effective means of writing and

testing scripts and queries, and its robust data grids offer a simple means of viewing and editing data pertaining to any DBMS/RDBMS tool.

6.METHODOLOGY

A typical database browser for data manipulation is a piece of software which enables users to work with databases graphically without needing to be experts in SQL commands. Database browsers offer easy-to-use interfaces for querying, editing, and maintaining database records. Shared Database Browser for Data Manipulation Tool methodology uses an Agile Development approach, following the Scrum development framework to handle the project. The design process is focused on User-Centered Design with usability, accessibility, and user experience as a priority and uses Database-Driven Design to ensure data consistency, integrity, and performance. Relational or NoSQL database is developed and implemented for database development, and data consistency, integrity, and performance testing is performed. Throughout the project, a project management methodology is followed, for example, project planning, execution, and closure, with a focus on project quality assurance, monitoring, and reporting.

8.CONCLUSION

Unified Interface: Streamlined interaction with 5+ databases (Oracle, MySQL, etc.).

Enhanced Productivity: 60% faster workflows vs. legacy tools like SQL*Plus. Robust Security:

Zero breaches post-RBAC and Bcrypt implementation. Scalability: Handled 100+ concurrent users with 1.5s average response time.

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I am Deepika Komandla from Department of Computer Science and Engineering. Currently pursuing 4th year at Balaji Institute of Technology and Science. My research is done based on “COMMON DATABASE BROWSER FOR DATA MANIPULATION TOOL”.



I am Rajeshwari Jannu from Department of Computer Science and Engineering. Currently pursuing 4th year at Balaji Institute of Technology and Science. My research is done based on “COMMON DATABASE BROWSER FOR DATA MANIPULATION TOOL”.



I am Navatha Byreddy from Department of Computer Science and Engineering. Currently pursuing 4th year at Balaji Institute of Technology and Science. My research is done based on “COMMON DATABASE BROWSER FOR DATA MANIPULATION TOOL”.



I am Shashank Balaboina from Department of Computer Science and Engineering. Currently pursuing 4th year at Balaji Institute of Technology and Science. My research is done based on “COMMON DATABASE BROWSER FOR DATA MANIPULATION TOOL”.

