

User Handbook for OurDB Database System

Introduction

OurDB is a versatile and user-friendly database management system designed to handle various data operations. This handbook serves as a guide to effectively utilize the features of OurDB.

Getting Started

- Start the system by running the main script. `python3 ourdb.py`
- Type your commands at the `OurDB >` prompt.
- To exit the system, type `EXIT` or `E`.

Commands

General Commands

- **Help:** Type `HELP` to display help text with command references.
- **Exit:** Type `EXIT` or `E` to exit the database system.
- **Clear Database:** Type `CLEAR DATABASE` to delete all data and reset the system. Requires confirmation.
- **Show Tables:** Type `SHOW TABLES` to view all tables and their metadata.
- **Show Table Names:** Type `SHOW TABLES NAME` to list the names of all available tables in the database.

Table Management

- **Create Table:** To create a new table, use `CREATE TABLE <table_name> [<column1>, <column2>, ...] WITH VALUES [<value1>, <value2>, ...]`.

Example: `CREATE TABLE my_table [name, revenue, employee] WITH VALUES [CompanyA, 1000000, 50]` .

- **Import Table from File:** Use `IMPORT FROM <filename.csv> AS <table_name>` to create a new table from a CSV file.
- **Delete Table:** To delete a specific table, use `DELETE TABLE <table_name>` .

Example: `DELETE TABLE car` .

Data Manipulation

- **Insert Data:** To add data to a table, use `ADD TO TABLE <table_name> WITH VALUES [<value1>, <value2>, ...]` .
- **Delete Data:** To remove data from a table based on a condition, use `REMOVE FROM TABLE <table_name> THAT <column> <operator> <value>` .
- **Update Data:** To update data in a table, use `UPDATE TO TABLE <table_name> LET <column> = <new_value> [WHERE <condition>]` .
- **Find Data:** Use `FIND` commands to query data. Examples include `FIND ALL FROM <table_name> WHERE <condition>` , `FIND <aggregation>(<column>) FROM <table_name> FOR EACH <group_column> WITH ORDER ASC/DESC`

Example:

```
FIND ALL FROM <table_name> (optional WHERE)
```

```
FIND SUM(column_name) FROM <table_name> FOR EACH <group_column_name> (optional WITH ORDER ASC)
```

- **Aggregation function:** support `SUM, MIN, MAX, COUNT(#)`
- **Sorting method:** support ascending and descending, use `WITH ORDER ASC/DESC`

Join Operation

- **Join Tables:** To join two tables, use `JOIN <table1> WITH <table2> AS <new_table_name> ON THAT <table1.column1> = <table2.column2>` . The result is saved as a new table.

Advanced Features

- **Show Specific Rows:** To display a specific number of rows from a table, use `SHOW <table_name> LIMIT <number>` .

- **Integrity Check:** Automatically checks the integrity of tables against their metadata and offers options to handle inconsistencies.