Database Toolbox 3

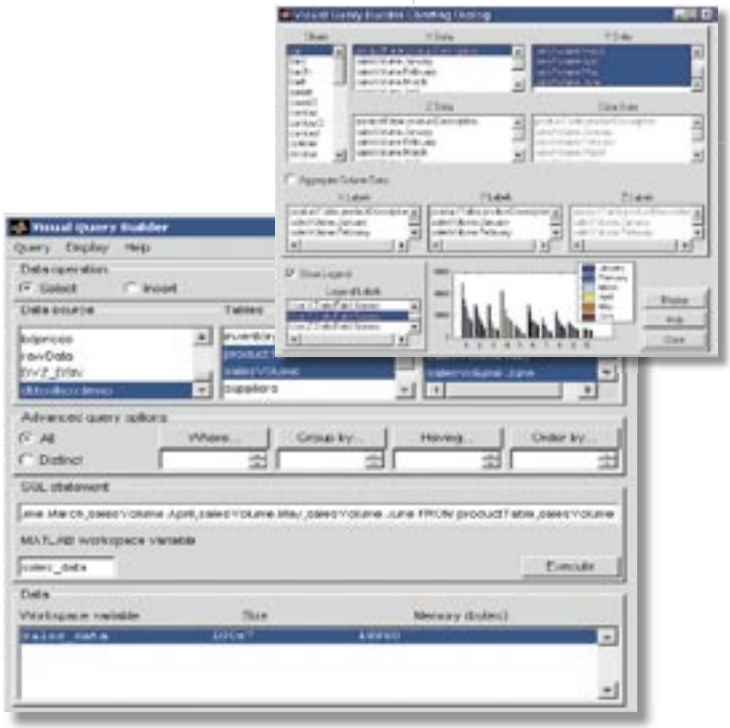
Exchange data with relational databases

The Database Toolbox enables you to use MATLAB® data analysis and visualization tools to analyze information stored in databases. Working within the MATLAB environment, you can use structured query language (SQL) commands to read and write data to and from a database and apply simple and advanced conditions to database queries.

You can interact with most popular databases from within MATLAB, including Oracle, Sybase, Microsoft SQL Server, and Informix. The toolbox also enables simultaneous access to multiple databases within a single MATLAB session and enables transactions involving large data sets. Using the Visual Query Builder, you can interact with a database without knowing SQL.

KEY FEATURES

- Connects MATLAB to ODBC/JDBC-compliant databases, including Oracle, Sybase, Microsoft SQL Server, Microsoft Access, Informix, and Ingres
- Directly executes SQL queries against a database from within MATLAB and preserves data types during all data import and export activities
- Lets you import data from one or multiple databases, perform calculations on that data, and then export the data to another database
- Retrieves large data sets in a single transaction or through multiple transactions by discretely segmenting the data
- Streamlines data import and export by keeping the database connection open during the MATLAB session
- Enables you to access and query a database without knowing SQL



The Visual Query Builder GUI (left) lets you quickly access data by automatically generating SQL statements for you. Display options let you create charts (right), graphs, and reports.

```
% connect to specified database,
specifying username and password

connectionA = database
('database', 'user', 'password')

% open cursor and issue SQL
statement to select data

cursorA = exec(connectionA,
'select X from Y')

% retrieve R rows of data
cursorA = fetch(cursorA, R)
```

A set of commands used to import a column of data, X, from table Y.

Importing Data into MATLAB

The Database Toolbox supports standard SQL commands, including `where` clauses for further defining the data to be imported. The `fetch` statement can retrieve all data at once or a subset of the selected rows. This process can be automated if you save the commands in an M-file. Once the data is in MATLAB, you can view attributes of the imported data, as well as the data itself, and use MATLAB commands to process the data.

Exporting Data to a Database

After completing calculations or data manipulation in MATLAB, you can export the results by putting the data into a matrix, cell array, or structure and defining the database column names to which you will be writing. You can add the results as new data or update the original data completely or conditionally. For added security, you can require a commit command in order to write to the database.

Sample Functions

Database Access

Connect to database

Execute SQL statement and open cursor

Get database property

Export MATLAB cell array data to database table

Replace data in database table with data from MATLAB cell array

Database Cursor Access

Get attributes of columns in fetched data set

Import data into MATLAB matrix, cell array, or structure

Database Metadata

Construct database metadata object

Get database table names

Visual Query Builder

Start visual SQL query builder

Required Products

MATLAB

Related Products

Data Acquisition Toolbox. Acquire and send out data from plug-in data acquisition boards

Datafeed Toolbox. Acquire real-time financial data from data service providers

Excel Link. Use MATLAB with Microsoft Excel

Platform and System Requirements

For platform and system requirements, visit *www.mathworks.com/products/database* ■

For demos, application examples, tutorials, user stories, and pricing:

- Visit **www.mathworks.com**
- Contact The MathWorks directly

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