

DIView

Data access

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Outline

- Database access overview
- Database
- Database configuration
- Database operations

Purpose

After this chapter, you will learn ...

- ... Database

- ... Database configuration

- ... Database operations

Outline

- Database access overview
- Database
- Database configuration
- Database operations

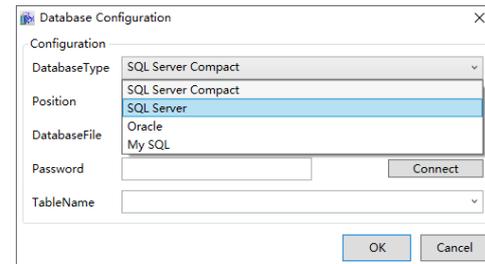
➤ DIAView provides methods and properties for accessing, querying, and editing data in external databases.

The user configures the database connection in the database access and writes the database access script to realize the operation of the data in the corresponding database at runtime. Provide basic operations on the database, including inserting, modifying, querying data, creating tables and deleting tables.

- ① Support different databases such as My SQL, SQL Server, SQL Compact, Oracle, etc.
- ② Support the intercommunication of production data through database and third-party software
- ③ Support database file, data table name drop-down convenient selection



Database
Database real-time data interaction



3rd Party Software integration



- Database access
- **Database access configuration**
- Database configuration
- Database operation

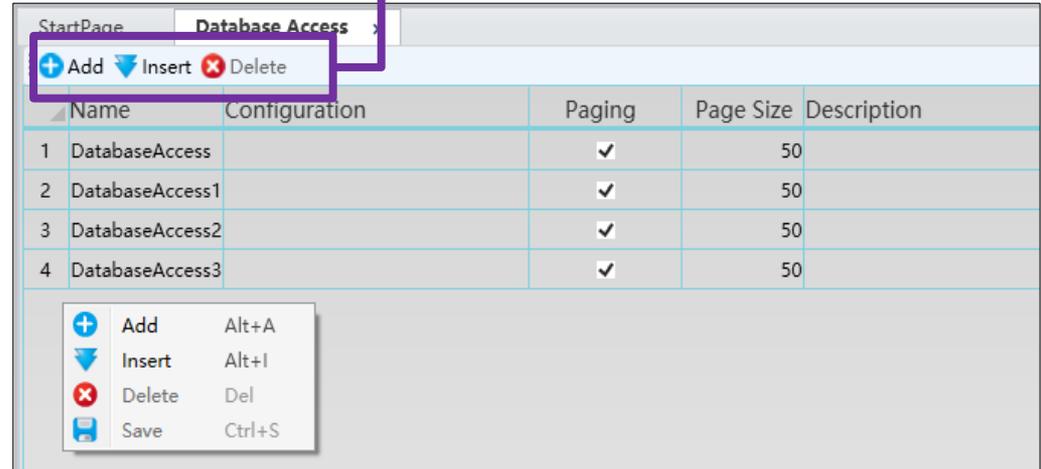
➤ Database Access configuration :

- **Name:** Database access name, the default is Database Access, DatabaseAccess1 ... can be renamed;
- **Configuration:** Configuration information of Database;
- **Paging:** Whether the table in the Database is paginated, check to indicate paging, and check by default;
- **Page Size:** page size, the default is 50 pages, which can be modified;
- **Description:** The description or description of Database access, which is empty by default;

| | Name | Configuration | Paging | Page Size | Description |
|---|-----------------|-----------------------------------|--------|-----------|-------------|
| 1 | DatabaseAccess | DIALinkHistoricalData_200519- ... | ✓ | 50 | |
| 2 | DatabaseAccess1 | | ✓ | 50 | |
| 3 | DatabaseAccess2 | | ✓ | 50 | |

➤ Toolbar buttons:

- **Add / Alt + A:** add a database access;
- **Insert / Alt + I:** Insert a Database access;
- **Delete / Del:** delete a database access;
- **Save / Ctrl + S:** save changes;



The screenshot shows the 'Database Access' configuration window. At the top, there is a toolbar with three buttons: '+ Add', '▼ Insert', and '× Delete'. Below the toolbar is a table with the following columns: Name, Configuration, Paging, Page Size, and Description. The table contains four rows of database access entries. At the bottom of the window, there is a legend for the toolbar buttons, showing the icon, the button name, and the corresponding keyboard shortcut.

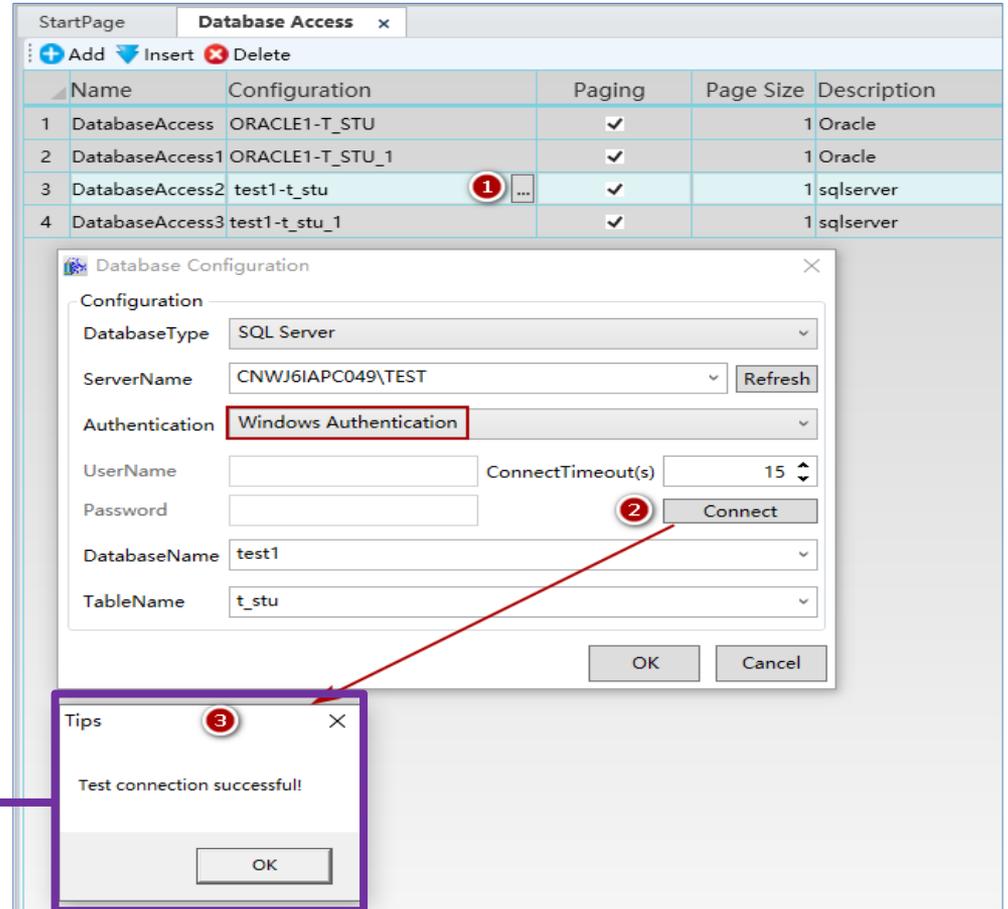
| Name | Configuration | Paging | Page Size | Description |
|-------------------|---------------|--------|-----------|-------------|
| 1 DatabaseAccess | | ✓ | 50 | |
| 2 DatabaseAccess1 | | ✓ | 50 | |
| 3 DatabaseAccess2 | | ✓ | 50 | |
| 4 DatabaseAccess3 | | ✓ | 50 | |

| Icon | Button Name | Keyboard Shortcut |
|----------|-------------|-------------------|
| + Add | Add | Alt+A |
| ▼ Insert | Insert | Alt+I |
| × Delete | Delete | Del |
| Save | Save | Ctrl+S |

- Database access
- Database access configuration
- **Database configuration**
- Database operation

➤ SQL Server Configuration:

Before accessing the SQL Server database, please ensure that the connection between DIAView and the database is successful



| | Name | Configuration | Paging | Page Size | Description |
|---|-----------------|-----------------|--------|-----------|-------------|
| 1 | DatabaseAccess | ORACLE1-T_STU | ✓ | 1 | Oracle |
| 2 | DatabaseAccess1 | ORACLE1-T_STU_1 | ✓ | 1 | Oracle |
| 3 | DatabaseAccess2 | test1-t_stu | ✓ | 1 | sqlserver |
| 4 | DatabaseAccess3 | test1-t_stu_1 | ✓ | 1 | sqlserver |

Database Configuration

Configuration

DatabaseType: SQL Server

ServerName: CNWJ6IAPC049\TEST Refresh

Authentication: Windows Authentication

UserName: ConnectTimeout(s): 15

Password: Connect

DatabaseName: test1

TableName: t_stu

OK Cancel

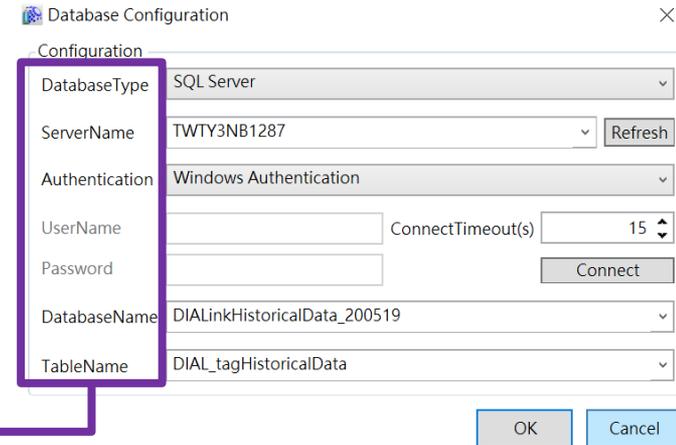
Tips

Test connection successful!

OK

➤ Database Configuration:

- **ServerName:** the name or IP address of the host where SQL Server Database is located
- **Authentication:** The authentication method supported by SQL Server:
 - ① **Windows Authentication:** No need to enter username and password
 - ② **SQL Authentication:** Enter the corresponding username and password configured in the SQL server
- **UserName:** Username corresponding to SQL Authentication
- **Password:** the password corresponding to SQL Authentication
- **ConnectTimeout:** The default is 15 seconds
- **DatabaseName:** Database name to be accessed
- **TableName:** the name of the data table to be accessed
- **Connect:** Test the database connection, and return "Test connection successful"



The screenshot shows a 'Database Configuration' dialog box with the following fields and values:

| Field | Value |
|-------------------|------------------------------|
| DatabaseType | SQL Server |
| ServerName | TWY3NB1287 |
| Authentication | Windows Authentication |
| UserName | |
| Password | |
| ConnectTimeout(s) | 15 |
| DatabaseName | DIALinkHistoricalData_200519 |
| TableName | DIAL_tagHistoricalData |

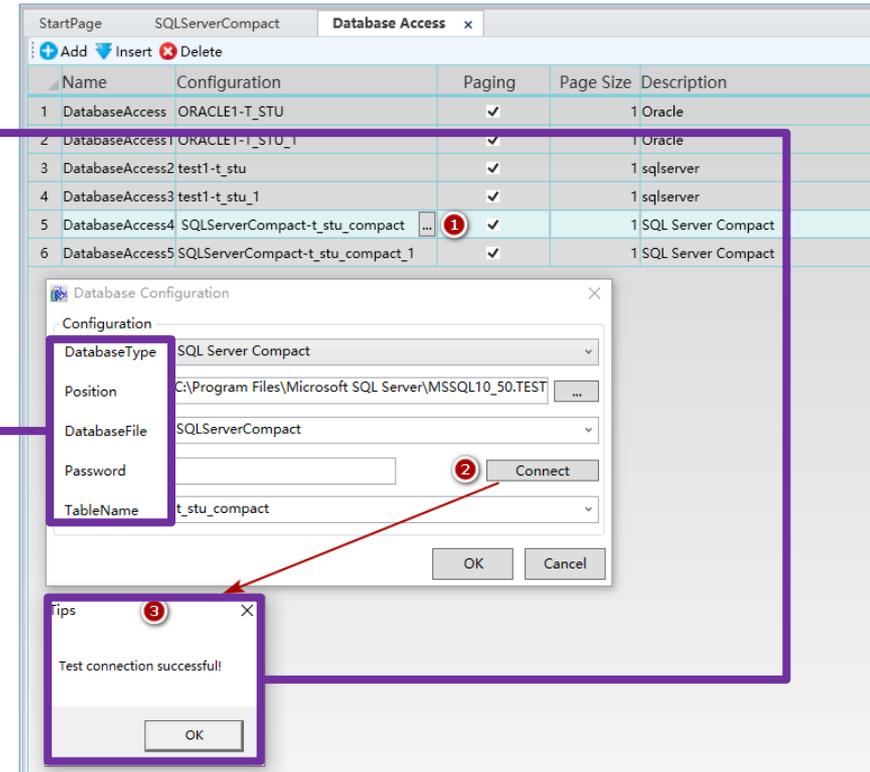
Buttons: OK, Cancel

➤ Before accessing the SQL Server Compact

Database, ensure that the connection between DIAView and Database is successful.

➤ Database Configuration

- Position: Path where SQL Server Compact Database is located
- Database File: SQL Server Compact Database name
- Password: Password corresponding to Database
- Table Name: the name of the data table to be accessed
- Connect: Test the database connection, and return "Test connection successful"



The screenshot shows the 'Database Access' window in SQL Server Compact. It contains a table with the following data:

| Name | Configuration | Paging | Page Size | Description |
|-------------------|----------------------------------|--------|-----------|----------------------|
| 1 DatabaseAccess1 | ORACLE1-T_STU | ✓ | | 1 Oracle |
| 2 DatabaseAccess2 | ORACLE1-T_STU_1 | ✓ | | 1 Oracle |
| 3 DatabaseAccess2 | test1-t_stu | ✓ | | 1 sqlserver |
| 4 DatabaseAccess3 | test1-t_stu_1 | ✓ | | 1 sqlserver |
| 5 DatabaseAccess4 | SQLServerCompact-t_stu_compact | ✓ | | 1 SQL Server Compact |
| 6 DatabaseAccess5 | SQLServerCompact-t_stu_compact_1 | ✓ | | 1 SQL Server Compact |

Below the table is the 'Database Configuration' dialog box. It has the following fields and values:

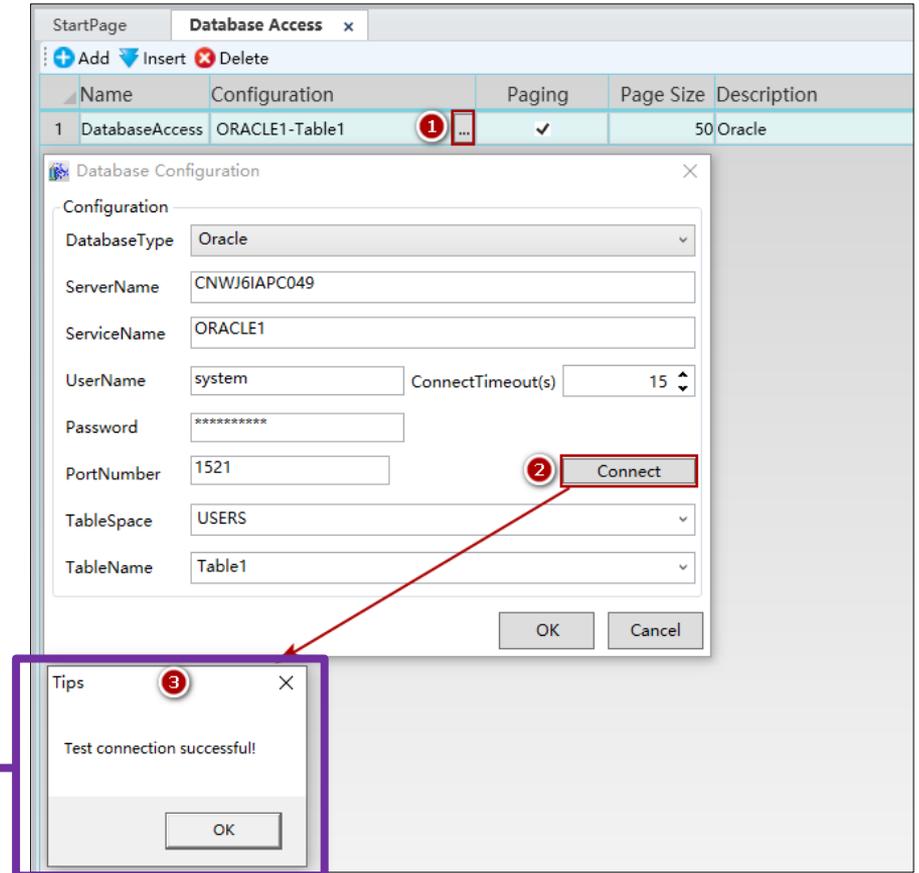
- Configuration: (dropdown)
- DatabaseType: SQL Server Compact
- Position: C:\Program Files\Microsoft SQL Server\MSSQL10_50.TEST
- DatabaseFile: SQLServerCompact
- Password: (empty)
- Connect: (button)
- TableName: t_stu_compact

Annotations in the image include:

- A purple box around the table header and first row.
- A purple box around the 'Database Configuration' dialog box.
- A red circle with the number '1' next to the 'DatabaseAccess4' row in the table.
- A red circle with the number '2' next to the 'Connect' button in the dialog box.
- A red circle with the number '3' next to the 'Test connection successful!' message in a small 'Tips' dialog box.

➤ Oracle Database Configuration:

Before accessing Oracle Database,
ensure that the connection between
DIAView and Database is successful



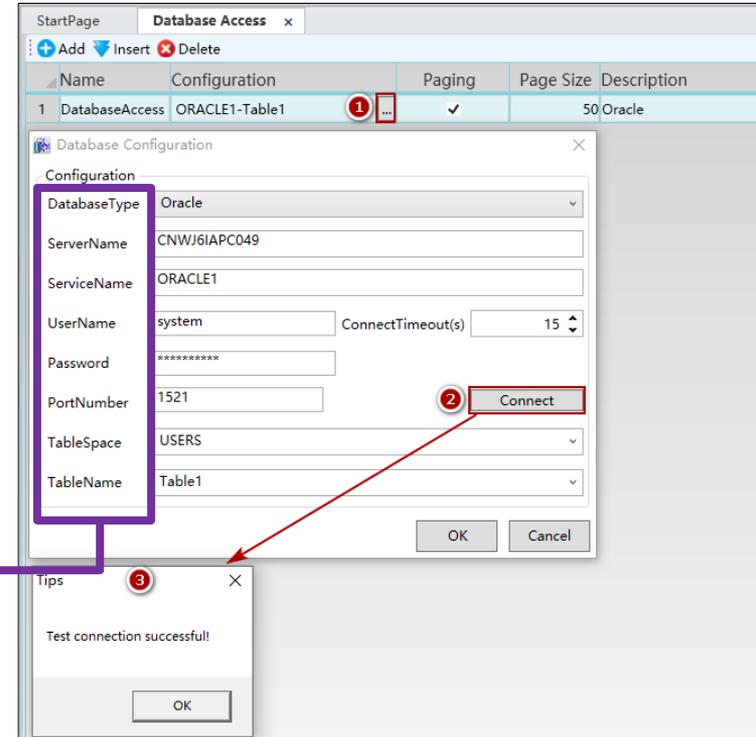
The screenshot shows the 'Database Access' window with a table listing configurations. The first row is selected, and a 'Database Configuration' dialog box is open. The dialog box contains the following fields:

- DatabaseType: Oracle
- ServerName: CNWJ6IAPC049
- ServiceName: ORACLE1
- UserName: system
- ConnectTimeout(s): 15
- Password: *****
- PortNumber: 1521
- TableSpace: USERS
- TableName: Table1

A red box highlights the 'Connect' button, and a red arrow points from it to a 'Tips' dialog box that displays the message 'Test connection successful!' and an 'OK' button.

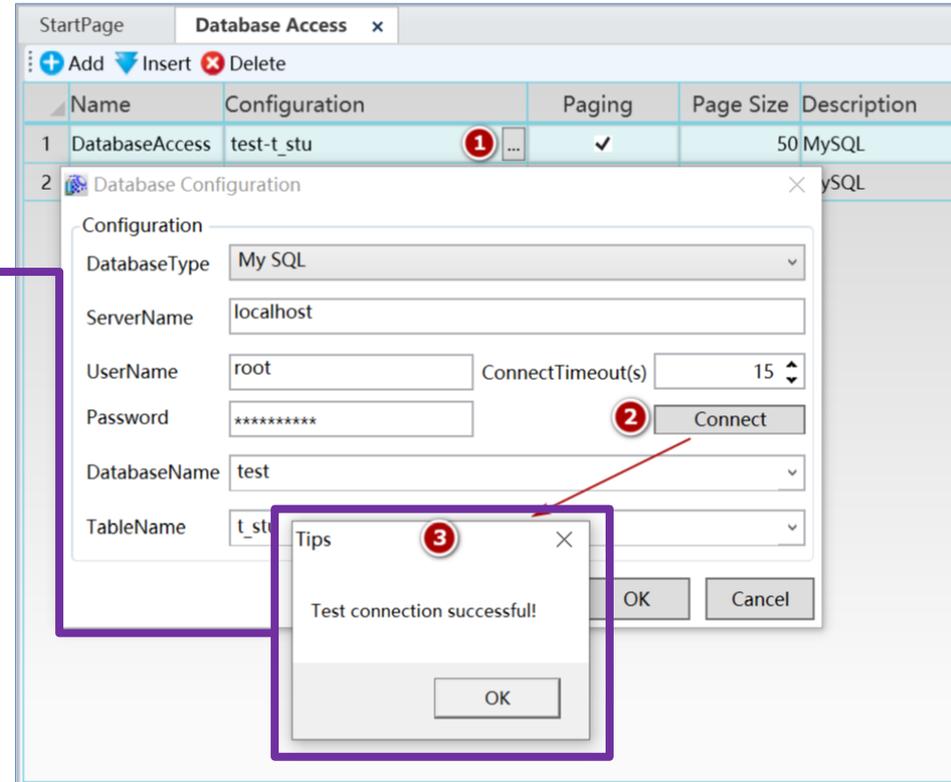
➤ Database Configuration

- **ServerName:** the name or IP address of the host where OracleDatabase is located
- **ServiceName:** Oracle Database service name
- **UserName:** the user name of the user account in OracleDatabase
- **Password:** the password of the user account in OracleDatabase
- **ConnectTimeout:** The default is 15 seconds
- **PortNumber:** Port number used by Oracle Database, the default is 1521
- **TableSpace:** the tablespace to be accessed, if it is empty, select the default tablespace
- **TableName:** the name of the data table to be accessed
- **Connect:** Test the database connection, and return "Test connection successful"



➤ My SQL Database Configuration:

Before accessing My SQL Database, ensure that the connection between DIAView and Database is successful



The screenshot shows the 'Database Access' configuration window in DIAView. The window contains a table with the following data:

| Name | Configuration | Paging | Page Size | Description |
|--------------------------|---------------|--------|-----------|-------------|
| 1 DatabaseAccess | test-t_stu | ✓ | 50 | MySQL |
| 2 Database Configuration | | | | MySQL |

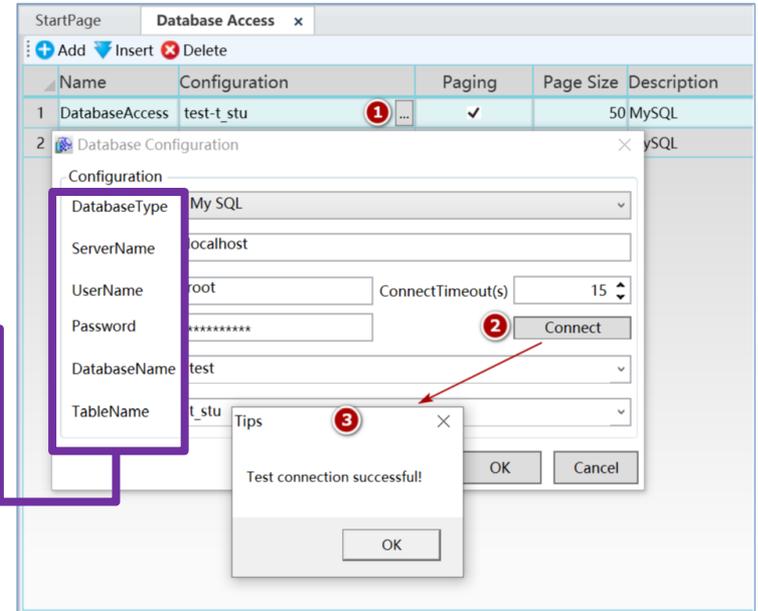
Below the table is a 'Configuration' dialog box with the following fields:

- DatabaseType: My SQL
- ServerName: localhost
- UserName: root
- Password: *****
- DatabaseName: test
- TableName: t_stu
- ConnectTimeout(s): 15
- Connect button (highlighted with a red circle 2)

A 'Tips' dialog box (highlighted with a red circle 3) is displayed in the foreground, containing the message: 'Test connection successful!' and an 'OK' button.

➤ Database Configuration

- **ServerName:** the name or IP address of the host where My SQL Database is located
- **UserName:** the user name of the user account in My SQL Database
- **Password:** the password of the user account in My SQL Database
- **ConnectTimeout:** The default is 15 seconds
- **DatabaseName:** Database name to be accessed
- **TableName:** the name of the data table to be accessed
- **Connect:** Test the database connection, and return "Test connection successful"



- Database access
- Database access configuration
- Database configuration
- **Database operation**



Database Access - Methods & Properties

➤ Database access provides methods and attributes for accessing, querying, and editing data in an external database. Users call the database access method in a script program to implement data in operation Database at runtime.

Please refer to the user manual "20.3 Script Syntax and Functions".

| Methods | |
|------------------------|--------------------------------------------------------------------|
| CheckTableIsExisted | Check if there is a data table with the specified name in Database |
| ExecuteDataTable | Execute SQL statement, return the query table |
| ExecuteNonQuery | Execute SQL statement and return the number of affected rows |
| ExecuteScalar | Execute SQL statement, return the first row and first column |
| GetDataSourceRowsCount | Get the number of rows in the data source table |
| GetEmptyTable | Get an empty data table |
| GetPageNum | Get the number of pages |
| GetTable | Get the last page of the table |
| GetTable | Read table based on number of pages |
| SaveTable | Save table |
| SaveTable | Save table (save specified column) |
| TestConnection | Database connection Test |



Database Access - Methods & Properties

Methods

| Methods | |
|-----------------------------------|-----------------------------------------------------------------------------------------------------|
| AddColumn | Add column |
| CreateTable | Create Table |
| ExecuteBatchInsertData | Insert data table |
| ExecuteCheckTableIsExisted | Check if there is a database table with the specified name in Database |
| ExecuteCreateDatabaseTable | Create a table with the same structure in Database according to the provided data table |
| ExecuteCreateSave | Save and return the number of affected rows |
| ExecuteDataTable | Execute the command and return the queried data table |
| ExecuteDropDatabaseTable | Delete the specified data in Database |
| ExecuteGetTable | Read the data of the first count rows |
| ExecuteNonQuery | Execute the command to return the number of affected rows |
| ExecuteNonQueryDT | According to the parameters (marked with @) to extract data from the DataTable to perform operation |
| ExecuteSave | Select the column to save and return the number of affected rows |
| ExecuteScalar | Execute the command to return the number of affected rows |
| SelectDT | Filter by the specified sort order |
| SetPrimary | Set primary key |

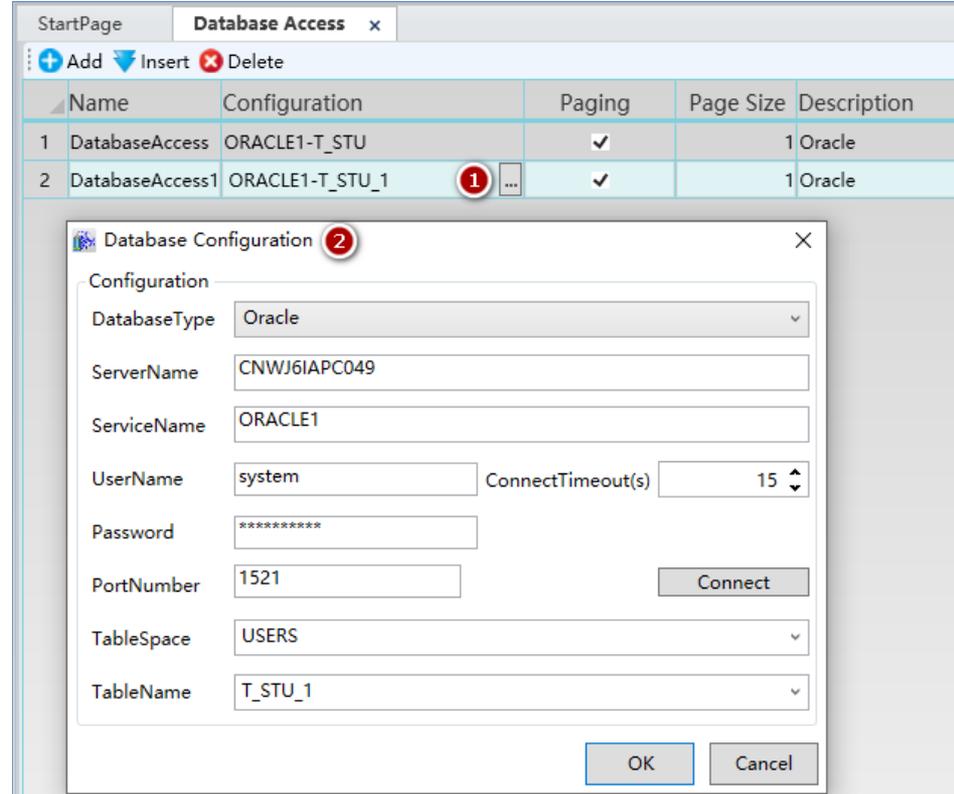


Database Access - Methods & Properties

| Properties | |
|--------------------------|------------------------------------------------------------|
| ConnectionString | Database connection string |
| Description | description |
| IsPaging | Whether to paginate |
| MaxPagingCount | Maximum number of rows in the display table |
| Name | Database access name |
| Provider | Display Database connection Provider, namely Database type |
| TableName | Data table name |
| UniquelIdentifier | Unique ID |

➤ Example - The script calls the Database access :

- ① Configuration Database access
- ② Configuration Database connection



The screenshot displays a software interface with a table of database access configurations and a 'Database Configuration' dialog box. The table has columns for Name, Configuration, Paging, Page Size, and Description. The 'Database Configuration' dialog box is open, showing fields for DatabaseType, ServerName, ServiceName, UserName, Password, PortNumber, TableSpace, and TableName, along with a Connect button.

| Name | Configuration | Paging | Page Size | Description |
|-------------------|-----------------|--------|-----------|-------------|
| 1 DatabaseAccess | ORACLE1-T_STU | ✓ | 1 | Oracle |
| 2 DatabaseAccess1 | ORACLE1-T_STU_1 | ✓ | 1 | Oracle |

Database Configuration

Configuration

DatabaseType: Oracle

ServerName: CNWJ6IAPC049

ServiceName: ORACLE1

UserName: system ConnectTimeout(s): 15

Password: *****

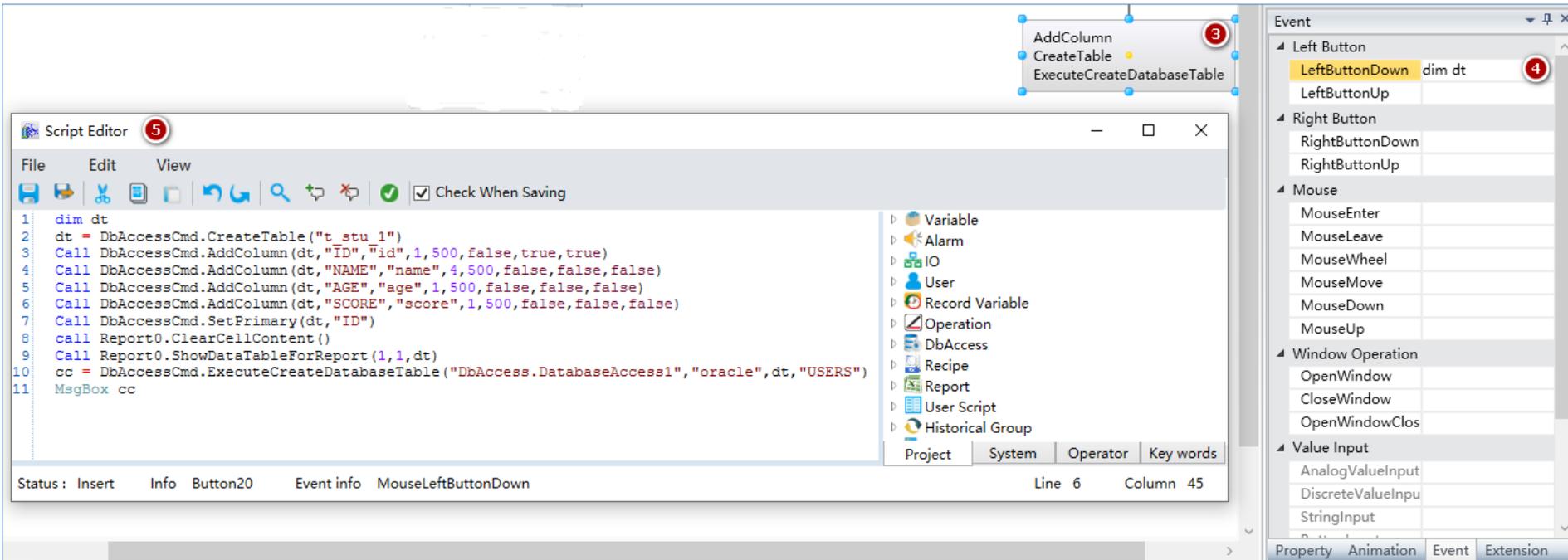
PortNumber: 1521 **Connect**

TableSpace: USERS

TableName: T_STU_1

OK **Cancel**

- ③ Create a button controls.
- ④ Trigger the script program by pressing the left button of the button control.
- ⑤ Write a script program and call the DBAccess method to realize the data in operation Database at runtime.



The screenshot displays a software development environment with a script editor and an event table. The script editor window, titled "Script Editor", contains the following code:

```
1 dim dt
2 dt = DbAccessCmd.CreateTable("t_stu 1")
3 Call DbAccessCmd.AddColumn(dt,"ID","id",1,500,false,true,true)
4 Call DbAccessCmd.AddColumn(dt,"NAME","name",4,500,false,false,false)
5 Call DbAccessCmd.AddColumn(dt,"AGE","age",1,500,false,false,false)
6 Call DbAccessCmd.AddColumn(dt,"SCORE","score",1,500,false,false,false)
7 Call DbAccessCmd.SetPrimary(dt,"ID")
8 call Report0.ClearCellContent()
9 Call Report0.ShowDataTableForReport(1,1,dt)
10 cc = DbAccessCmd.ExecuteCreateDatabaseTable("DbAccess.DatabaseAccess1","oracle",dt,"USERS")
11 MsgBox cc
```

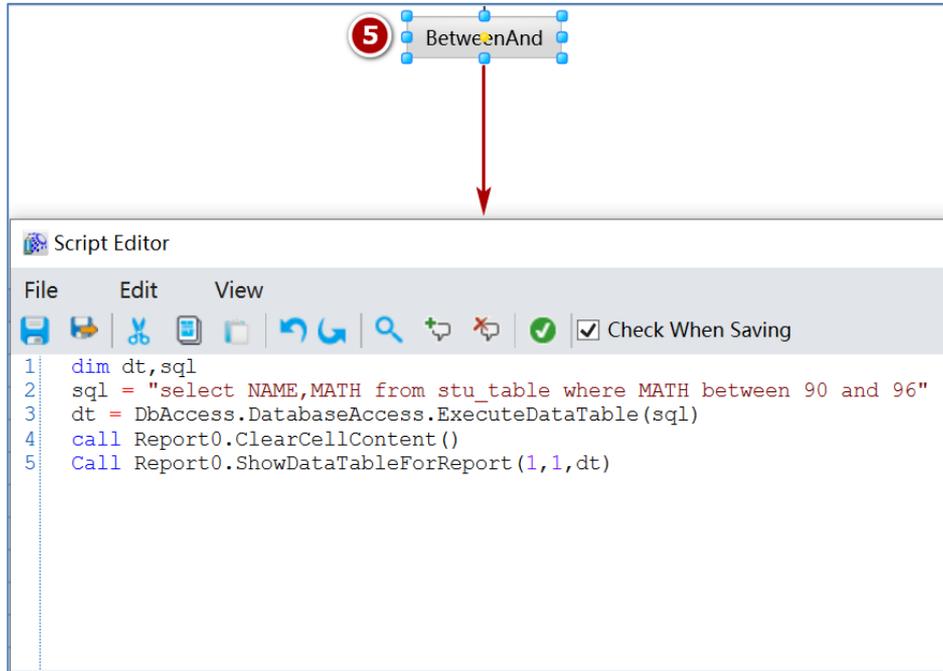
The event table on the right side of the interface shows the following configuration:

| Event | Property |
|--------------------|----------|
| Left Button | |
| LeftButtonDown | dim dt |
| LeftButtonUp | |
| Right Button | |
| RightButtonDown | |
| RightButtonUp | |
| Mouse | |
| MouseEnter | |
| MouseLeave | |
| MouseWheel | |
| MouseMove | |
| MouseDown | |
| MouseUp | |
| Window Operation | |
| OpenWindow | |
| CloseWindow | |
| OpenWindowClos | |
| Value Input | |
| AnalogValueInput | |
| DiscreteValueInput | |
| StringInput | |

The status bar at the bottom of the script editor indicates: Status: Insert Info Button20 Event info MouseLeftButtonDown Line 6 Column 45.

Database Access – Common examples

- ⑤ Programming button event script, query table **stu table** qualified data;
- ⑥ Execute the button event script to display the queried data in the running window;



5

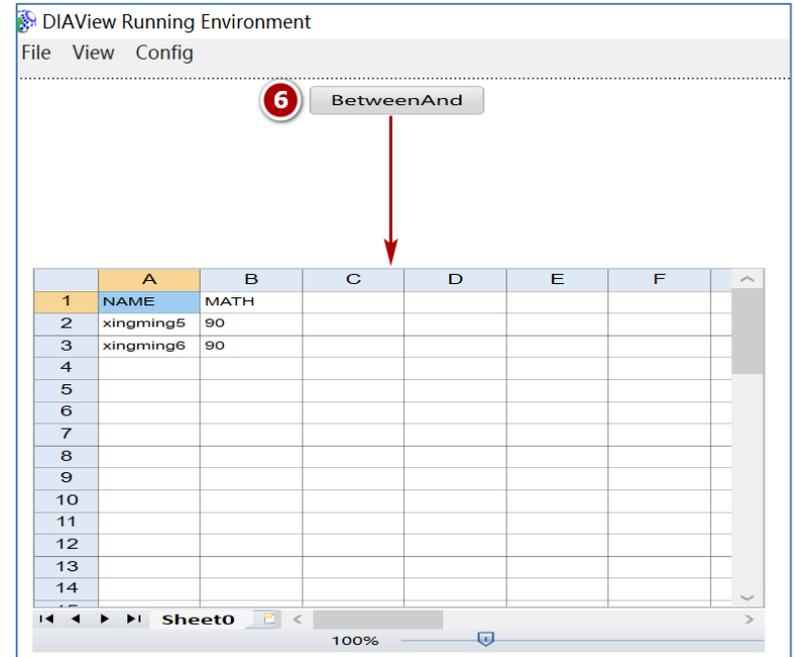
BetweenAnd

Script Editor

File Edit View

Check When Saving

```
1 dim dt,sql
2 sql = "select NAME,MATH from stu_table where MATH between 90 and 96"
3 dt = DbAccess.DatabaseAccess.ExecuteDataTable (sql)
4 call Report0.ClearCellContent ()
5 Call Report0.ShowDataTableForReport (1,1,dt)
```



6

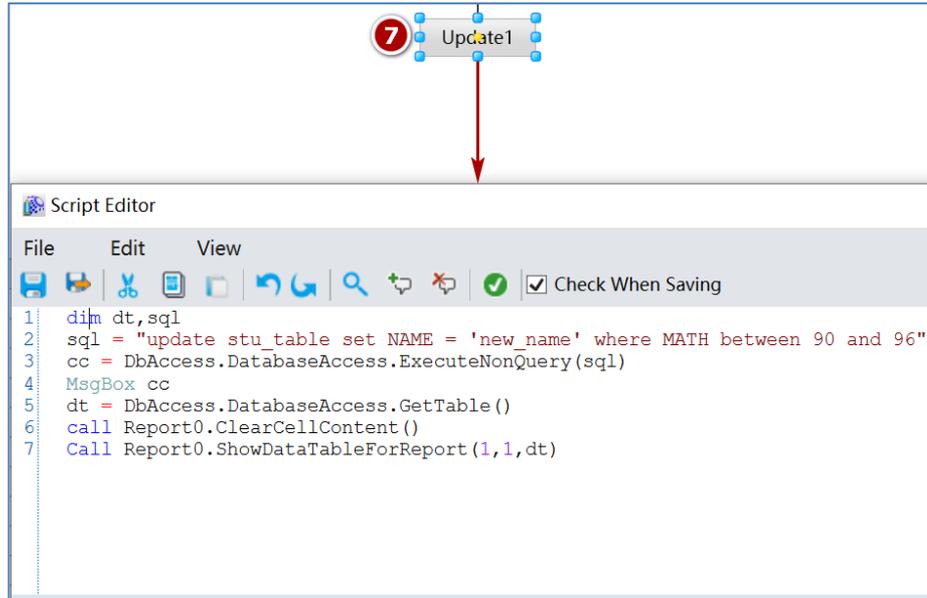
BetweenAnd

| | A | B | C | D | E | F |
|----|-----------|------|---|---|---|---|
| 1 | NAME | MATH | | | | |
| 2 | xingming5 | 90 | | | | |
| 3 | xingming6 | 90 | | | | |
| 4 | | | | | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |

Sheet0 100%

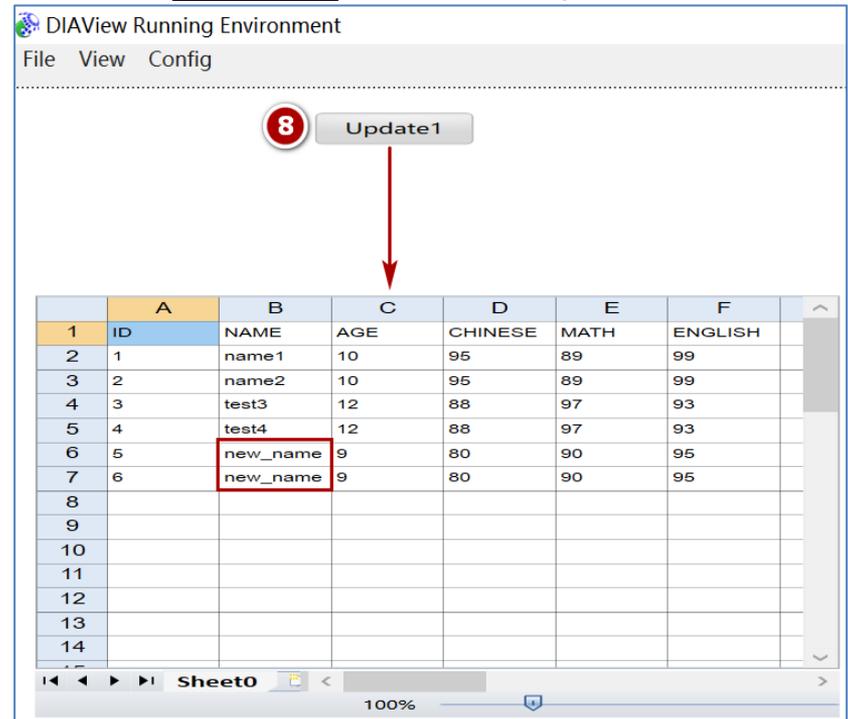
Database Access – Common examples

- ⑦ Programming a button event script to update the qualified data in the table **stu_table**;
- ⑧ Execute the button event script and display the executed table **stu_table** in the running window;



The screenshot shows a button labeled 'Update1' with a red circle containing the number 7 next to it. A red arrow points from the button to a script editor window. The script editor has a menu bar with 'File', 'Edit', and 'View', and a toolbar with various icons. The script content is as follows:

```
1 dim dt,sql
2 sql = "update stu_table set NAME = 'new_name' where MATH between 90 and 96"
3 cc = DbAccess.DatabaseAccess.ExecuteNonQuery(sql)
4 MsgBox cc
5 dt = DbAccess.DatabaseAccess.GetTable()
6 call Report0.ClearCellContent()
7 Call Report0.ShowDataTableForReport(1,1,dt)
```



The screenshot shows the DIAView Running Environment window with a menu bar containing 'File', 'View', and 'Config'. A button labeled 'Update1' with a red circle containing the number 8 next to it is shown. A red arrow points from the button to a data table. The table has columns A through F and rows 1 through 14. The data is as follows:

| | A | B | C | D | E | F |
|----|----|----------|-----|---------|------|---------|
| 1 | ID | NAME | AGE | CHINESE | MATH | ENGLISH |
| 2 | 1 | name1 | 10 | 95 | 89 | 99 |
| 3 | 2 | name2 | 10 | 95 | 89 | 99 |
| 4 | 3 | test3 | 12 | 88 | 97 | 93 |
| 5 | 4 | test4 | 12 | 88 | 97 | 93 |
| 6 | 5 | new_name | 9 | 80 | 90 | 95 |
| 7 | 6 | new_name | 9 | 80 | 90 | 95 |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |

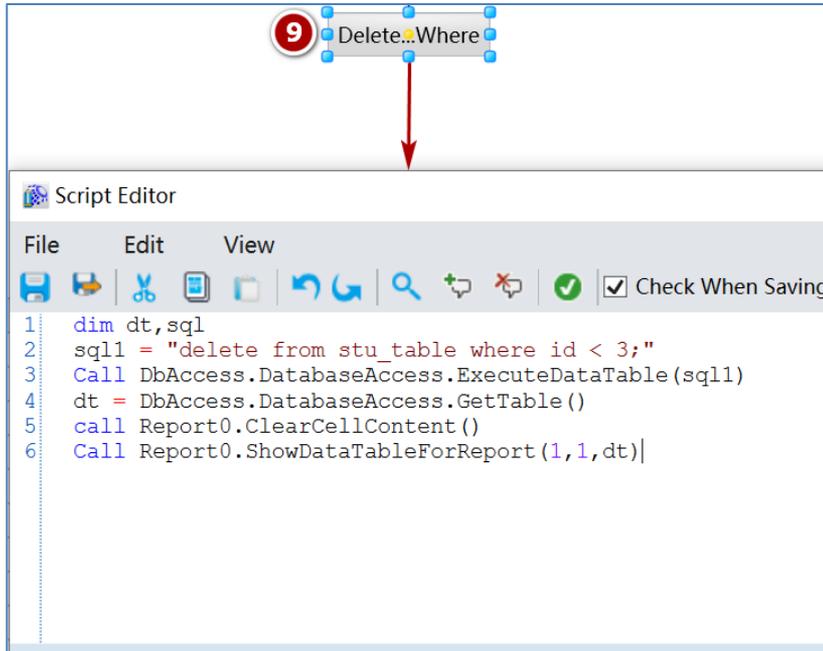
The table is displayed in a grid with columns A through F and rows 1 through 14. The data is as follows:

| | A | B | C | D | E | F |
|----|----|----------|-----|---------|------|---------|
| 1 | ID | NAME | AGE | CHINESE | MATH | ENGLISH |
| 2 | 1 | name1 | 10 | 95 | 89 | 99 |
| 3 | 2 | name2 | 10 | 95 | 89 | 99 |
| 4 | 3 | test3 | 12 | 88 | 97 | 93 |
| 5 | 4 | test4 | 12 | 88 | 97 | 93 |
| 6 | 5 | new_name | 9 | 80 | 90 | 95 |
| 7 | 6 | new_name | 9 | 80 | 90 | 95 |
| 8 | | | | | | |
| 9 | | | | | | |
| 10 | | | | | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |

The table is displayed in a grid with columns A through F and rows 1 through 14. The data is as follows:

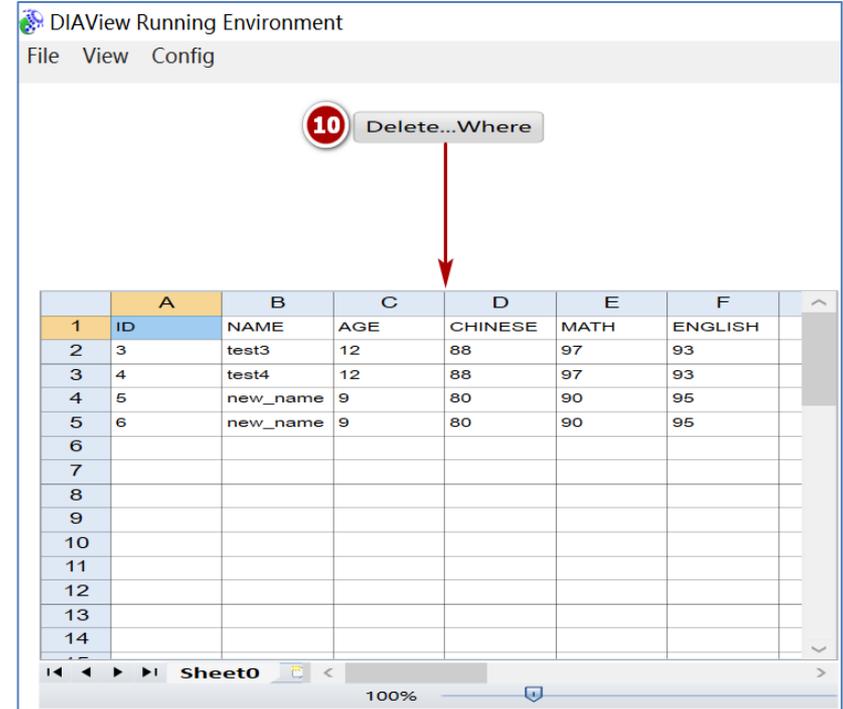
Database Access – Common examples

- ⑨ Write a button event script to delete the qualified data in the table **stu table**;
- ⑩ Execute the button event script and display the executed table **stu table** in the running window;



The screenshot shows a 'Delete...Where' button with a red circle containing the number 9. A red arrow points from the button to a 'Script Editor' window. The script editor contains the following code:

```
1 dim dt,sql
2 sql1 = "delete from stu_table where id < 3;"
3 Call DbAccess.DatabaseAccess.ExecuteDataTable(sql1)
4 dt = DbAccess.DatabaseAccess.GetTable()
5 call Report0.ClearCellContent()
6 Call Report0.ShowDataTableForReport(1,1,dt)
```



The screenshot shows the 'DIAView Running Environment' window with a 'Delete...Where' button and a red circle containing the number 10. A red arrow points from the button to a data table. The table has the following structure:

| | A | B | C | D | E | F | |
|----|----|----------|-----|---------|------|---------|--|
| 1 | ID | NAME | AGE | CHINESE | MATH | ENGLISH | |
| 2 | 3 | test3 | 12 | 88 | 97 | 93 | |
| 3 | 4 | test4 | 12 | 88 | 97 | 93 | |
| 4 | 5 | new_name | 9 | 80 | 90 | 95 | |
| 5 | 6 | new_name | 9 | 80 | 90 | 95 | |
| 6 | | | | | | | |
| 7 | | | | | | | |
| 8 | | | | | | | |
| 9 | | | | | | | |
| 10 | | | | | | | |
| 11 | | | | | | | |
| 12 | | | | | | | |
| 13 | | | | | | | |
| 14 | | | | | | | |

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