

DIAView

Data access

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2020/04



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

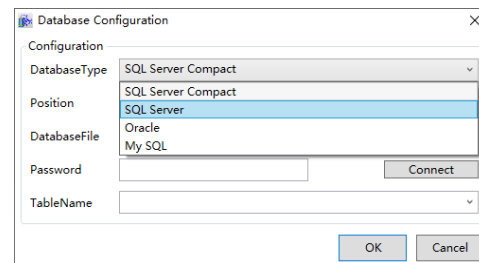
- DIAView provides methods and properties for accessing, querying, and editing data in external databases.

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**

MES

EMS

ERP

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

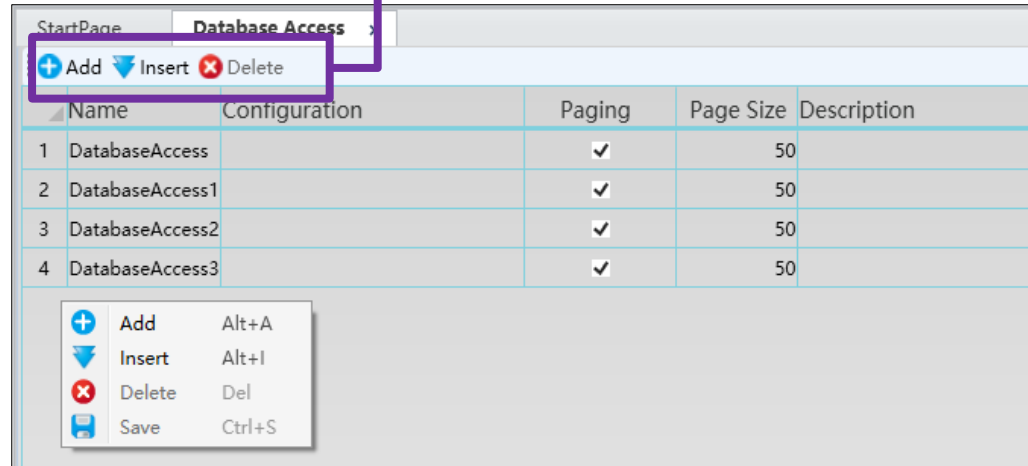
➤ Database Access configuration :

- **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;



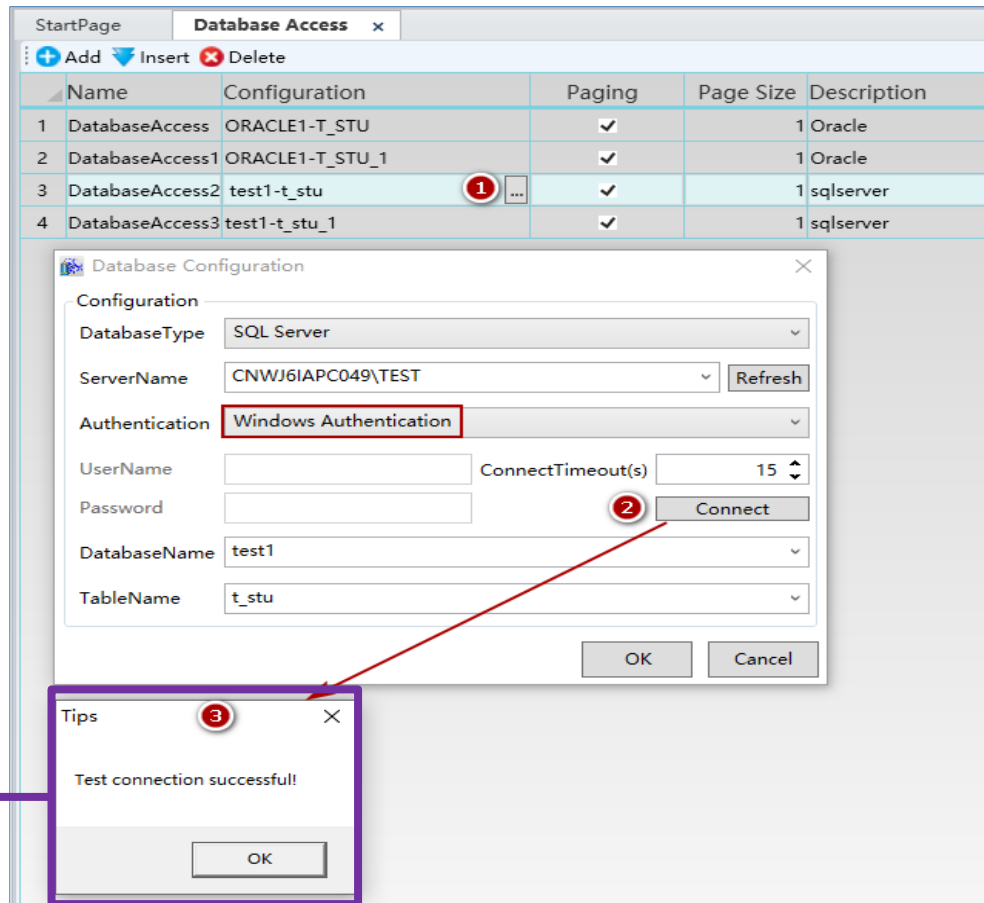
Name	Configuration	Paging	Page Size	Description
1 DatabaseAccess		<input checked="" type="checkbox"/>	50	
2 DatabaseAccess1		<input checked="" type="checkbox"/>	50	
3 DatabaseAccess2		<input checked="" type="checkbox"/>	50	
4 DatabaseAccess3		<input checked="" type="checkbox"/>	50	

Icon	Action	Shortcut
	Add	Alt+A
	Insert	Alt+I
	Delete	Del
	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



The screenshot shows the 'Database Access' window with a table of configurations. A red circle '1' highlights the 'test1-t_stu' entry. Below it, the 'Database Configuration' dialog is open, showing 'SQL Server' as the database type, 'CNWJ6IAPC049\TEST' as the server name, 'Windows Authentication' as the authentication method, and 'test1' as the database name. A red circle '2' highlights the 'Connect' button. At the bottom, a 'Tips' dialog shows the message 'Test connection successful!' with an 'OK' button. A red arrow points from the 'Connect' button to the 'Tips' dialog. A purple arrow points from the text box on the left to the 'Tips' dialog.

	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

Authentication: Windows Authentication

UserName:

Password:

ConnectTimeout(s): 15

DatabaseName: test1

TableName: t_stu

Connect

OK Cancel

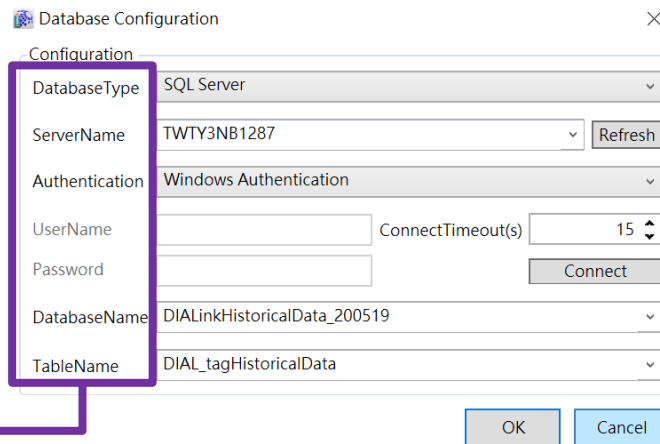
Tips

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"

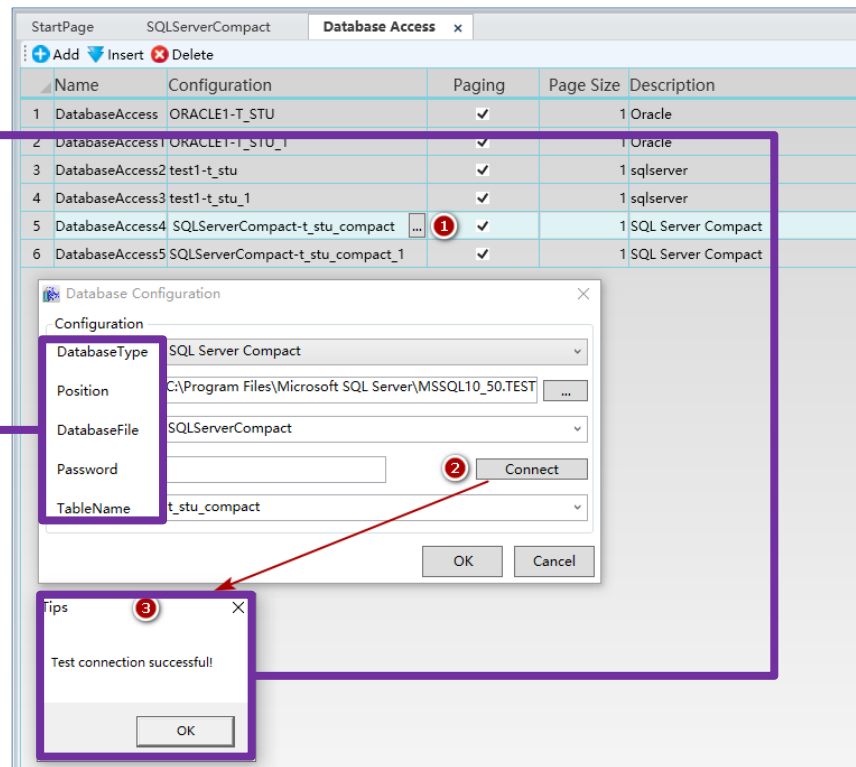
A screenshot of the 'Database Configuration' dialog box. The dialog has a title bar with a close button. It contains a 'Configuration' section with several fields: 'DatabaseType' (a dropdown menu set to 'SQL Server'), 'ServerName' (a text box containing 'TWTY3NB1287' and a 'Refresh' button), 'Authentication' (a dropdown menu set to 'Windows Authentication'), 'UserName' (a text box), 'Password' (a text box), 'ConnectTimeout(s)' (a spinner box set to '15'), 'DatabaseName' (a dropdown menu set to 'DIALinkHistoricalData_200519'), and 'TableName' (a dropdown menu set to 'DIAL_tagHistoricalData'). There is a 'Connect' button next to the password field. At the bottom right, there are 'OK' and 'Cancel' buttons. A purple arrow points from the 'Connect' button in the dialog to the 'Connect' item in the list on the left.

➤ Before accessing the SQL Server Compact

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

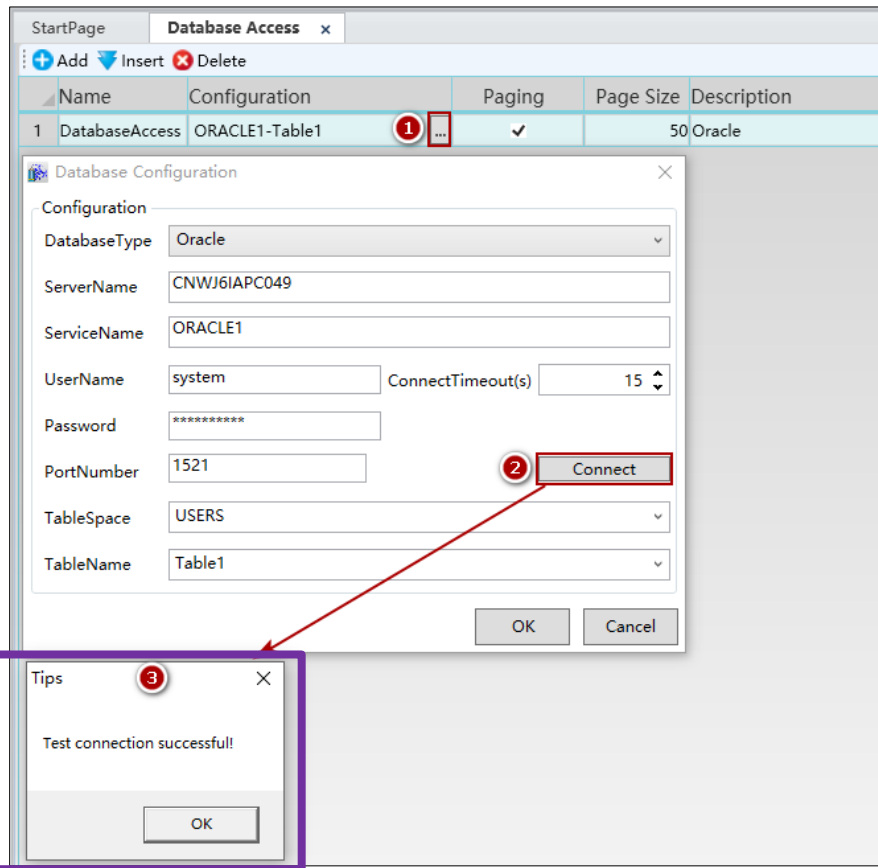
➤ Database Configuration

- 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"



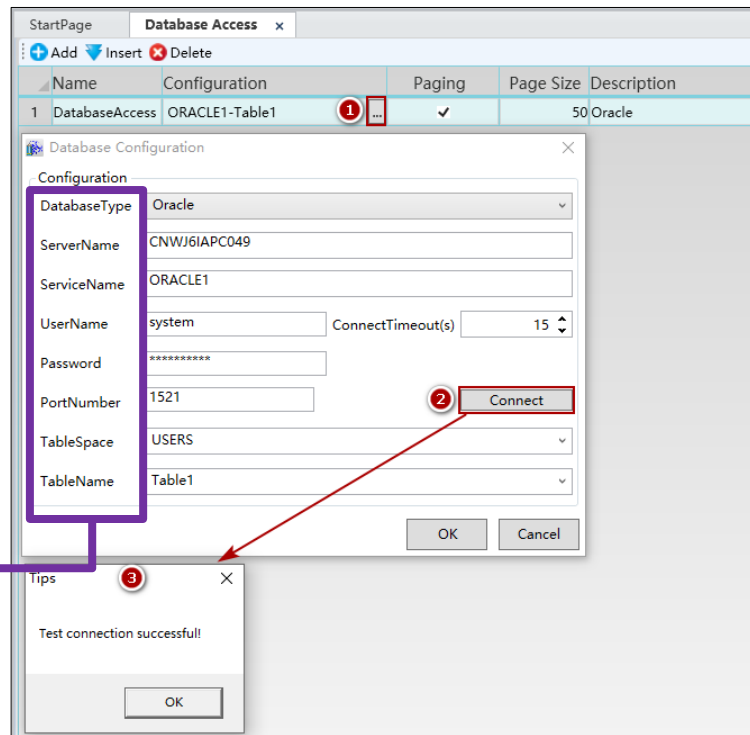
➤ Oracle Database Configuration:

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



➤ 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"



The screenshot shows the 'Database Configuration' dialog box within a 'Database Access' window. The dialog box has a 'Configuration' tab and a 'Connect' button. A red box labeled '1' highlights the 'DatabaseAccess' entry in the table below. A red box labeled '2' highlights the 'Connect' button. A red arrow points from the 'Connect' button to a 'Tips' dialog box that says 'Test connection successful!'. A purple box highlights the 'Configuration' section of the dialog box, and a purple arrow points from the 'Connect' button to the 'Tips' dialog box.

Name	Configuration	Paging	Page Size	Description
1 DatabaseAccess	ORACLE1-Table1	✓	50	Oracle

Database Configuration

Configuration

DatabaseType: Oracle

ServerName: CNWJ6IAPC049

ServiceName: ORACLE1

UserName: system ConnectTimeout(s): 15

Password: *****

PortNumber: 1521

TableSpace: USERS

TableName: Table1

Connect

OK Cancel

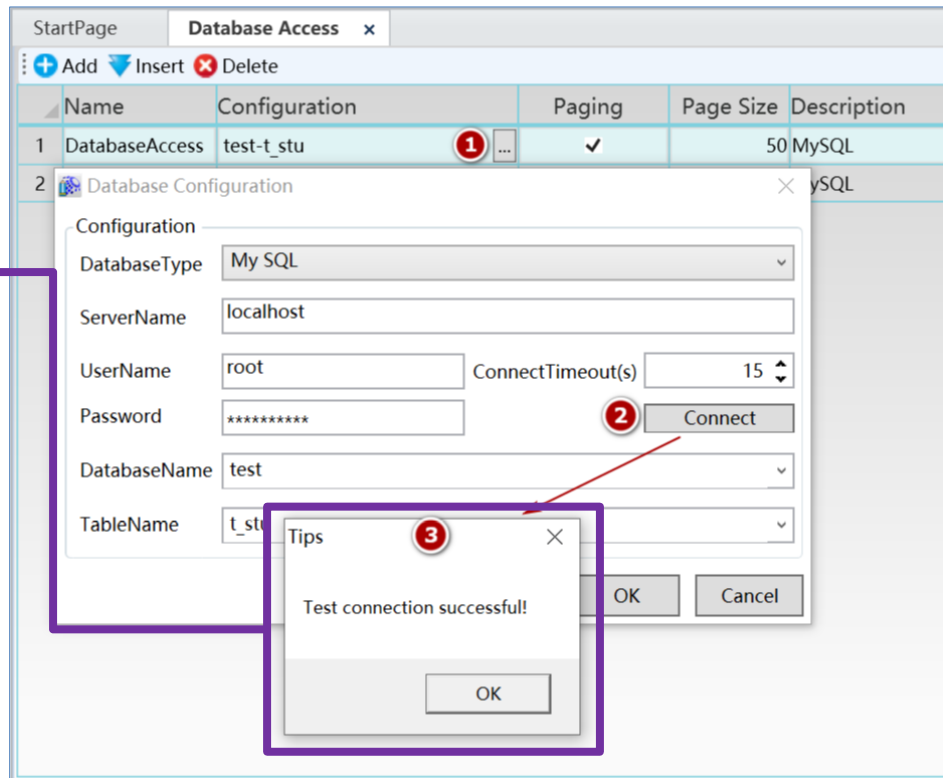
Tips

Test connection successful!

OK

➤ My SQL Database Configuration:

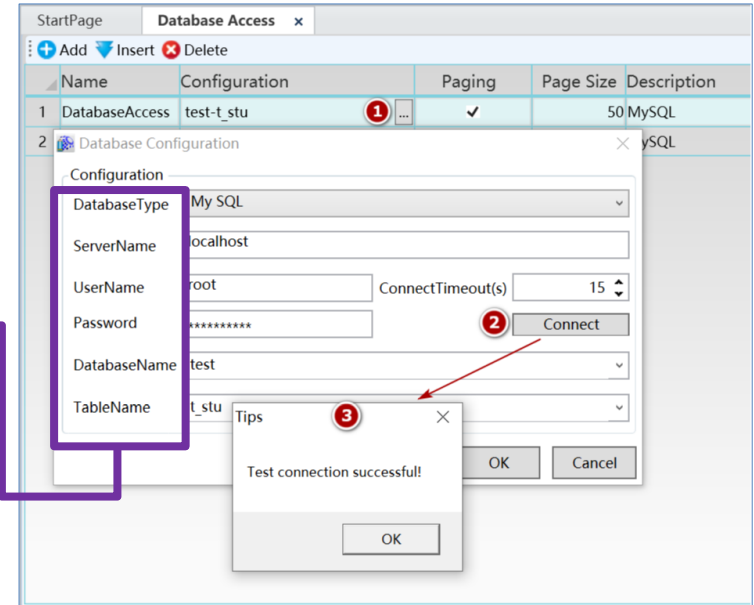
Before accessing My SQL Database, ensure that the connection between DIAView and Database is successful



My SQL Database Configuration

➤ 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
GetDataSourceRowCount	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

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



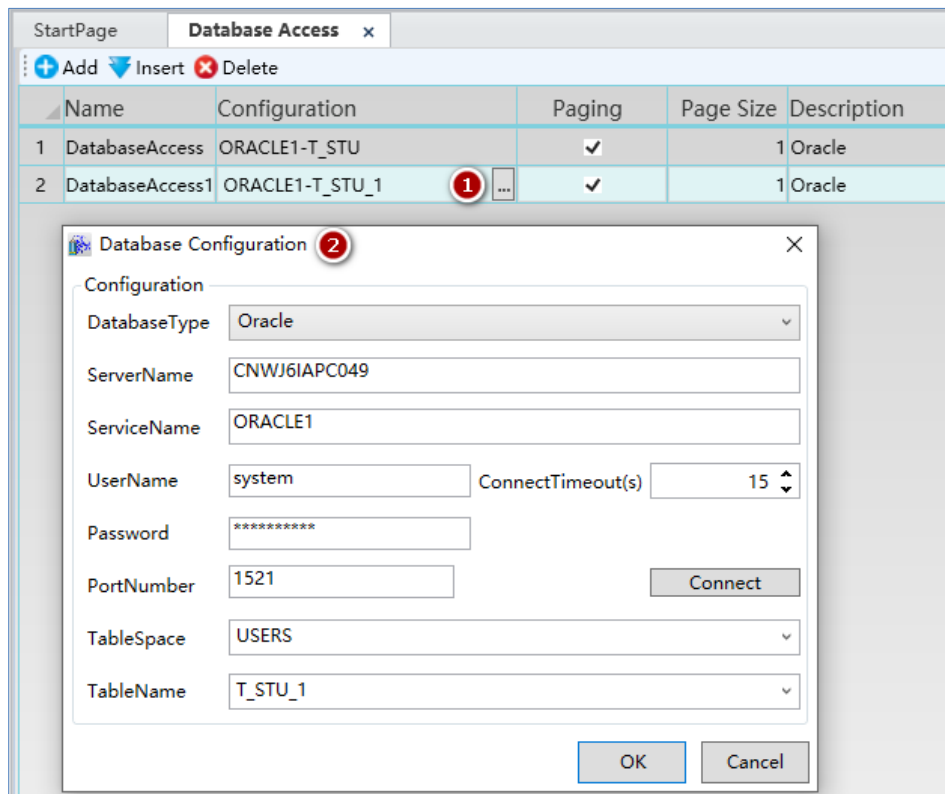
Database Access - Methods & Properties

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
UniqueIdentifier	Unique ID

Database Access - Script

➤ Example - The script calls the Database access :

- ① Configuration Database access
- ② Configuration Database connection



The screenshot displays the 'Database Access' configuration window. It features a table with columns: Name, Configuration, Paging, Page Size, and Description. Two entries are listed: 'DatabaseAccess' and 'DatabaseAccess1'. The 'DatabaseAccess1' entry is selected, and a red circle with the number '1' highlights the ellipsis button next to its configuration field. Below the table, a 'Database Configuration' dialog box is open, showing the configuration details for the selected entry. A red circle with the number '2' highlights the dialog box. The configuration fields include: DatabaseType (Oracle), ServerName (CNWJ6IAPC049), ServiceName (ORACLE1), UserName (system), Password (masked with asterisks), PortNumber (1521), TableSpace (USERS), and TableName (T_STU_1). The 'Connect' button is visible next to the PortNumber field. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

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: *****

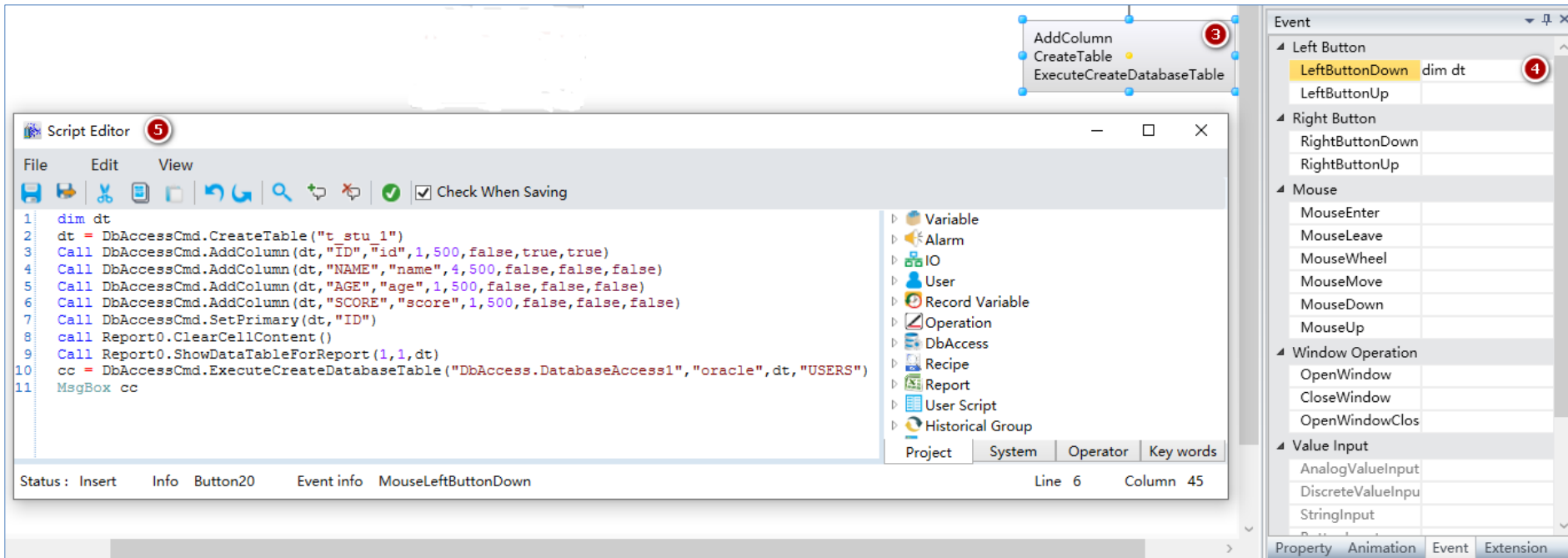
PortNumber: 1521 Connect

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 the Delta Studio IDE interface. The main window is the 'Script Editor' (labeled 5), which contains a script for creating a database table and displaying its contents. The script is as follows:

```

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
  
```

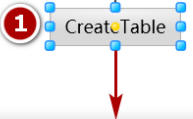
On the right side, the 'Event' table (labeled 4) is visible, showing the configuration for the 'Left Button' event. The 'LeftButtonDown' event is selected, and the 'dim dt' variable is assigned to it. The 'Event' table also lists other events like 'Right Button', 'Mouse', 'Window Operation', and 'Value Input'.

At the bottom of the script editor, the status bar shows 'Status: Insert', 'Info', 'Button20', 'Event info', 'MouseLeftButtonDown', 'Line 6', and 'Column 45'.

Database Access – Common examples

➤ Common Example :









- ① Programming button event script, create table **stu_table**
- ② Execute the button event script, return True to create the table **stu_table** successfully, and display the table **stu_table** in the running window;



Create table stu_table

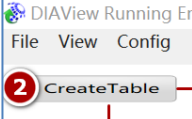
Script Editor

File Edit View









☒ Check When Saving

```

1 dim dt
2 dt = DbAccessCmd.CreateTable("stu_table")
3 Call DbAccessCmd.AddColumn(dt,"ID","stu_id",1,500,true,true)
4 Call DbAccessCmd.AddColumn(dt,"NAME","stu_name",4,500,true,false,false)
5 Call DbAccessCmd.AddColumn(dt,"AGE","stu_age",4,500,true,false,false)
6 Call DbAccessCmd.AddColumn(dt,"CHINESE","chinese",4,500,true,false,false)
7 Call DbAccessCmd.AddColumn(dt,"MATH","math",4,500,true,false,false)
8 Call DbAccessCmd.AddColumn(dt,"ENGLISH","english",4,500,true,false,false)
9 Call DbAccessCmd.SetPrimary(dt,"ID")
10 call Report0.ClearCellContent()
11 Call Report0.ShowDataTableForReport(1,1,dt)
12 cc = DbAccessCmd.ExecuteCreateDatabaseTable("DbAccess.DatabaseAccess","mysql",dt)
13 MsgBox cc
    
```



Created successfully

DIView Running Environment

File View Config

True

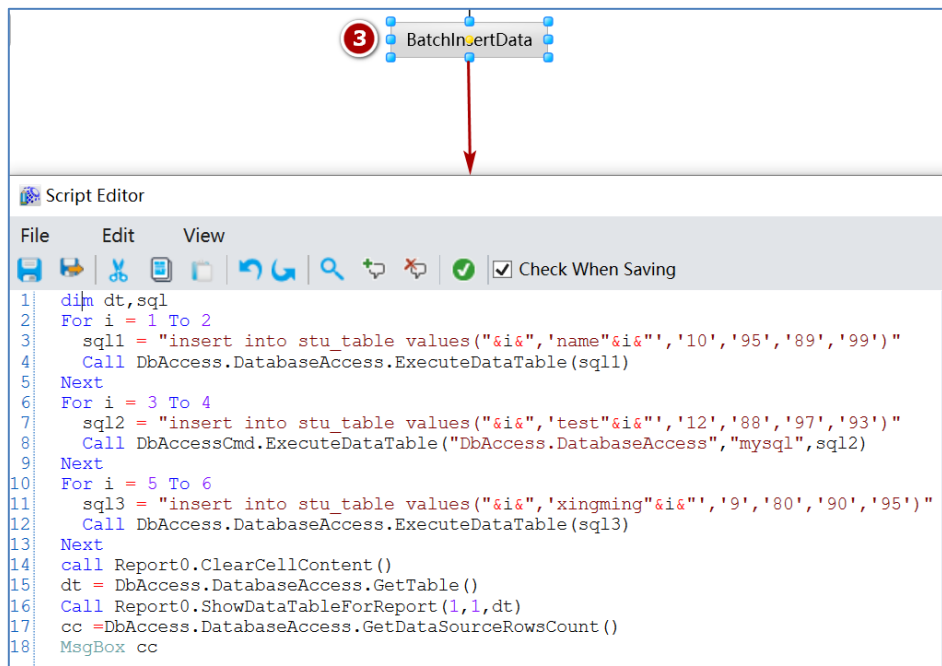
OK

	A	B	C	D	E	F
1	ID	NAME	AGE	CHINESE	MATH	ENGLISH
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						

Sheet0 100%

Database Access – Common examples

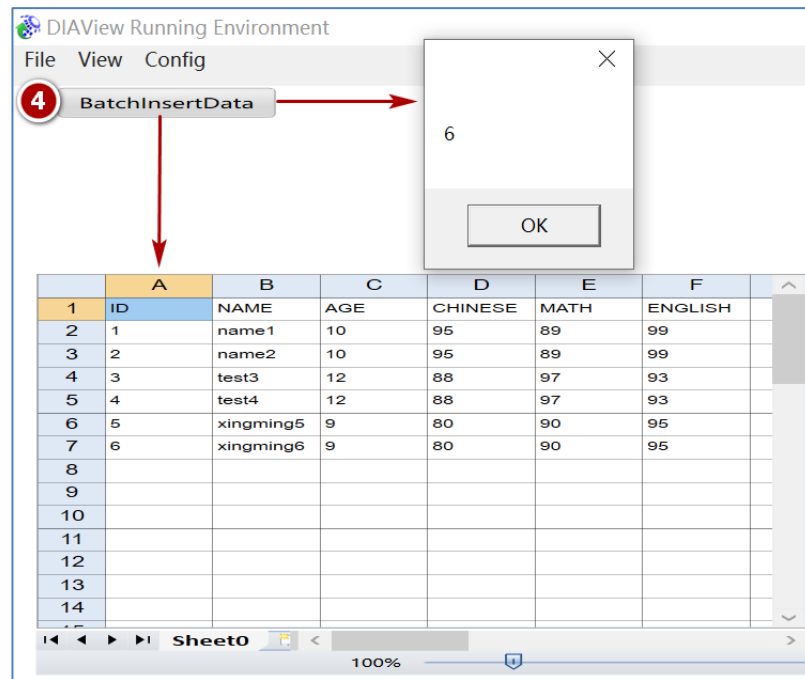
- ③ Programming button event script to add multiple data to the table **stu_table**;
- ④ Execute the button event script, return the number of added data 6 and display the table **stu_table** in the running window;



Script Editor

```

1 dim dt,sql
2 For i = 1 To 2
3     sql1 = "insert into stu_table values('&i&','name"&i&"','10','95','89','99')"
4     Call DbAccess.DatabaseAccess.ExecuteDataTable(sql1)
5 Next
6 For i = 3 To 4
7     sql2 = "insert into stu_table values('&i&','test"&i&"','12','88','97','93')"
8     Call DbAccessCmd.ExecuteDataTable("DbAccess.DatabaseAccess","mysql",sql2)
9 Next
10 For i = 5 To 6
11     sql3 = "insert into stu_table values('&i&','xingming"&i&"','9','80','90','95')"
12     Call DbAccess.DatabaseAccess.ExecuteDataTable(sql3)
13 Next
14 call Report0.ClearCellContent()
15 dt = DbAccess.DatabaseAccess.GetTable()
16 Call Report0.ShowDataTableForReport(1,1,dt)
17 cc =DbAccess.DatabaseAccess.GetDataSourceRowsCount()
18 MsgBox cc
    
```



DIAView Running Environment

File View Config

BatchInsertData

6

OK

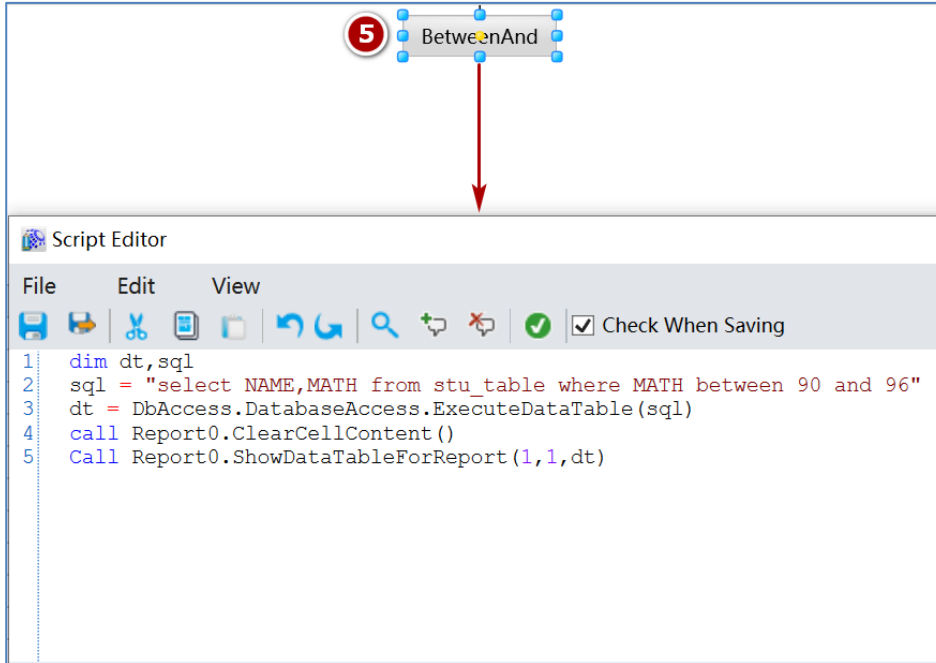
	A	B	C	D	E	F
1	ID	NAME	AGE	CHINESE	MATH	ENGLISH
2	1	name1	10	95	89	99
3	2	name2	10	95	89	99
4	3	test3	12	88	97	93
5	4	test4	12	88	97	93
6	5	xingming5	9	80	90	95
7	6	xingming6	9	80	90	95
8						
9						
10						
11						
12						
13						
14						

Sheet0

100%

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;



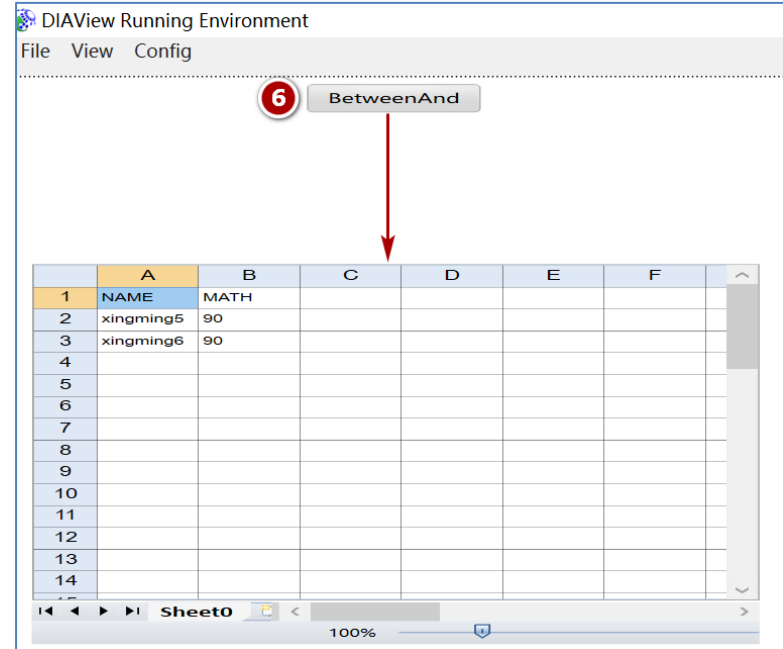
5 BetweenAnd

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)
```



DIAView Running Environment

File View Config

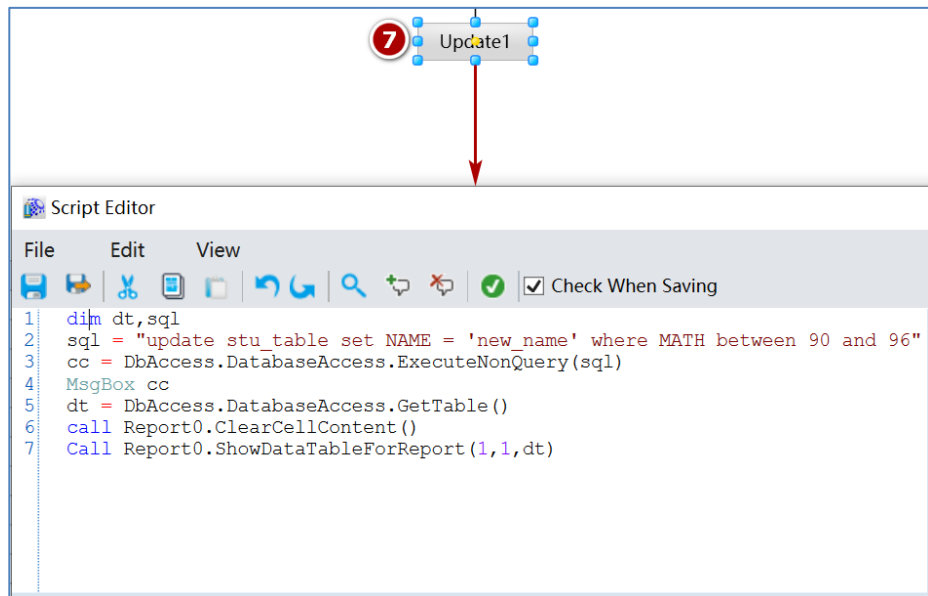
6 BetweenAnd

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

Sheet0 100%

Database Access – Common examples

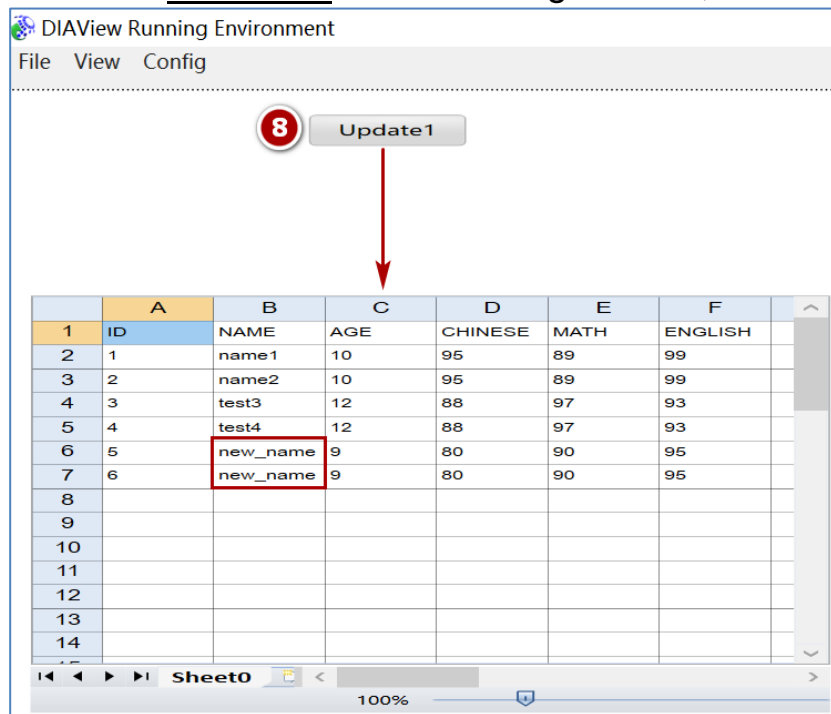
- ⑦ Programming a button event script to update the qualified data in the table **stu_table**;
- ⑧ Execute the button event script and display the executed table **stu_table** in the running window;



The screenshot shows a button labeled 'Update1' with a red circle containing the number 7. Below the button is a script editor window with the following code:

```

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)
  
```



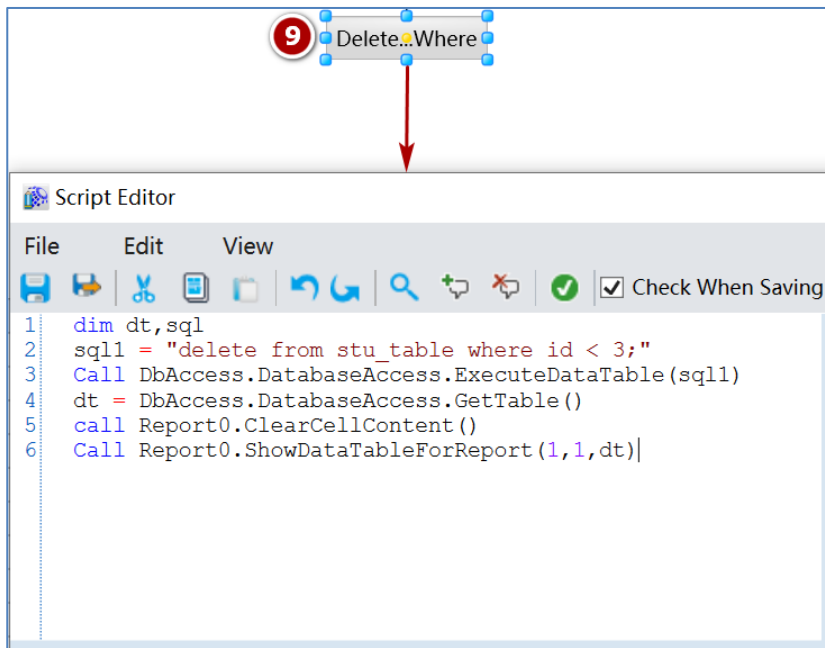
The screenshot shows the DIAView Running Environment window. At the top, there is a menu bar with 'File', 'View', and 'Config'. Below the menu bar is a button labeled 'Update1' with a red circle containing the number 8. Below the button is a data table with the following columns: A, B, C, D, E, F. The table contains data for rows 1 through 14. The data in row 7 is highlighted with a red box.

	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 status bar at the bottom shows 'Sheet0' and '100%' zoom.

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;



9 Delete...Where

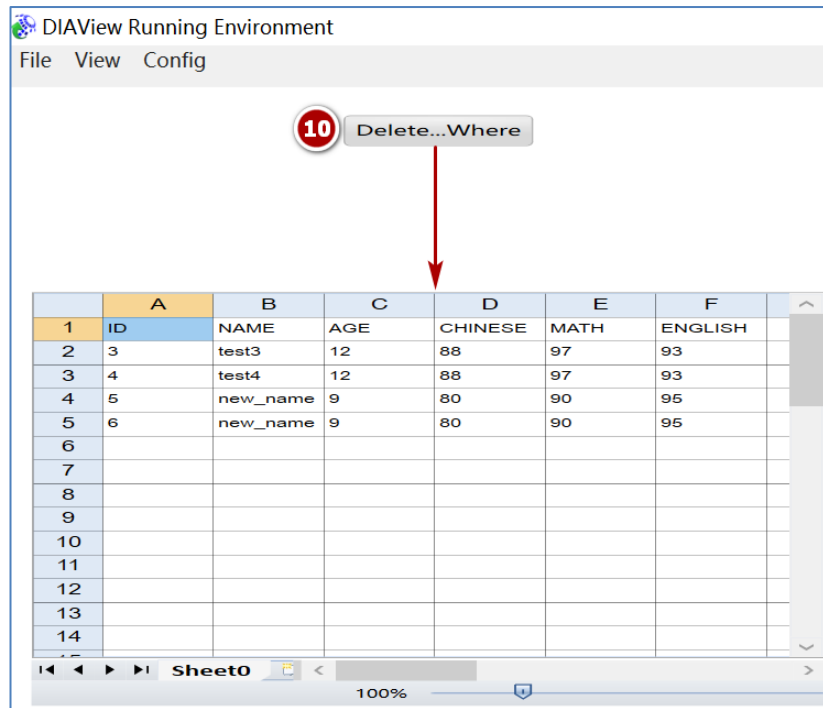
Script Editor

File Edit View

Check When Saving

```

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)|
  
```



10 Delete...Where

	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
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13						
14						

Sheet0 100%

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