

# DIAView

Historical variables

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2020/02/28



# Outline

- History Overview
- Database Configuration
- Variable record Configuration
- History group record Configuration
- Script

# Purpose

After this chapter, you will learn ...

- ... Historical database configuration

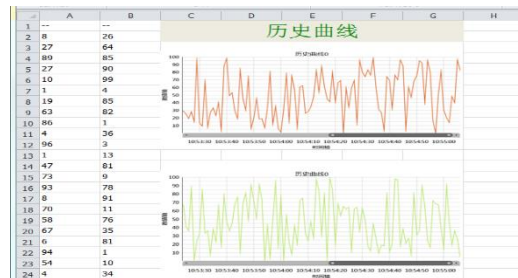
- ... Variable record configuration and script

- ... Historical group record configuration and script

- Various data will be generated when the project is running.
- These data are very valuable for users to understand the production status and historical status.

The historical record function provides the recording and query of these data.

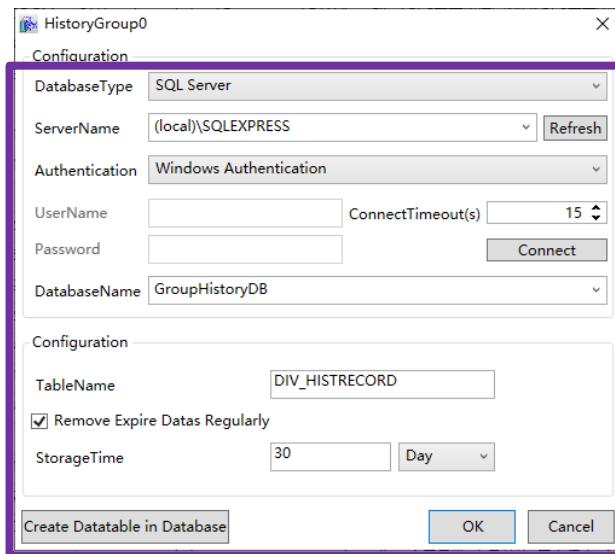
- Support variable records and historical group records;
- Various storage modes: timing record, change record, general storage, difference storage;
- Built-in timer to achieve flexible and convenient storage and query interval;
- Support My SQL, SQL Server, SQL Compact, Oracle and other different databases;
- Support the display of diverse historical records such as reports and historical curves;



# Database Configuration

- The data of the historical record is stored in the specified Database. Before the historical record starts, the variable record and the historical group record need to be configured with the Database.

- **DatabaseType:** Data source type, variable records support SQL Server, and history record group support SQL Server Compact \ SQL Server \ Oracle \ My SQL
- **ServerName:** The name or IP address of the database server to be connected, click the drop-down button will automatically search the server in the network
- **Authentication:** There are two authentication methods: Windows Authentication, SQL Authentication
- **Connect:** Connection test to test whether it can connect to the database server
- **DatabaseName:** Database name to be used
- **TableName:** Name of the data table to be used
- **Create Datable in Database:** After clicking this button, DIAView constructs a table in Database according to the configuration of Database



HistoryGroup0

Configuration

DatabaseType: SQL Server

ServerName: (local)\SQLEXPRESS Refresh

Authentication: Windows Authentication

UserName: ConnectTimeout(s): 15

Password: Connect

DatabaseName: GroupHistoryDB

Configuration

TableName: DIV\_HISTRECORD

☒ Remove Expire Datas Regularly

StorageTime: 30 Day

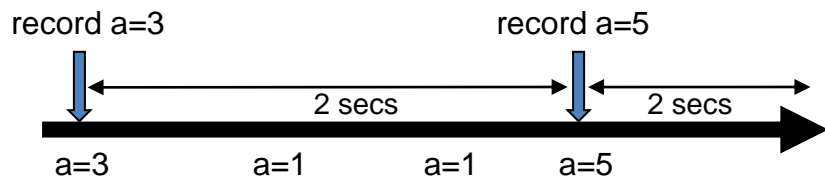
Create Datable in Database OK Cancel

# Record Variable configuration

➤ There are two modes to record variables:

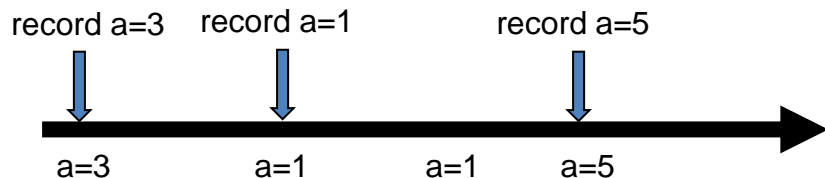
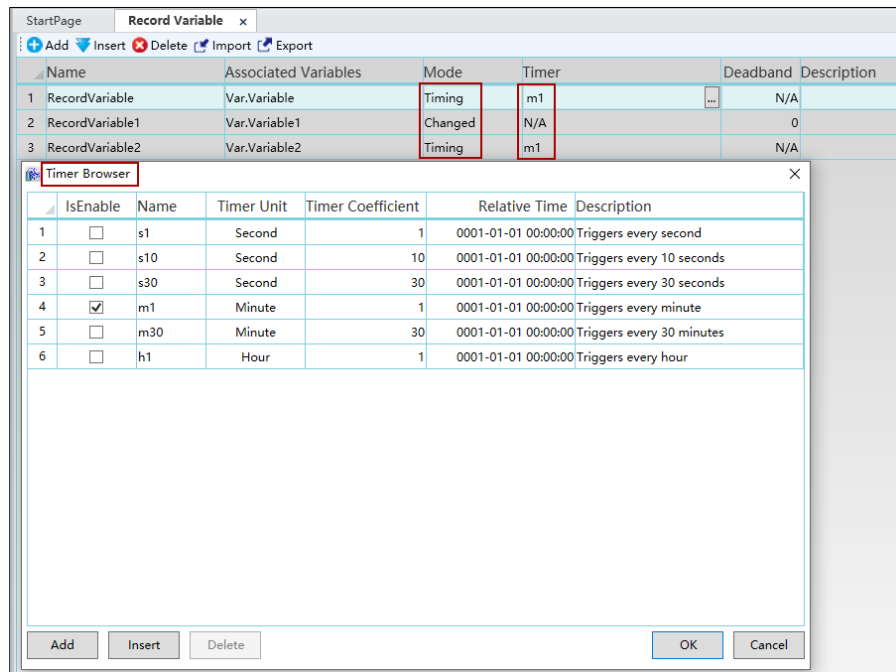
## ① Timing:

Example: Time unit is 2 sec.



## ① Changed:

Example:

The screenshot shows the 'Record Variable' configuration window. It has a 'StartPage' tab and a 'Record Variable' sub-tab. The window contains a table with columns: Name, Associated Variables, Mode, Timer, Deadband, and Description. The table has three rows:

Name	Associated Variables	Mode	Timer	Deadband	Description
1 RecordVariable	Var.Variable	Timing	m1	N/A	
2 RecordVariable1	Var.Variable1	Changed	N/A	0	
3 RecordVariable2	Var.Variable2	Timing	m1	N/A	

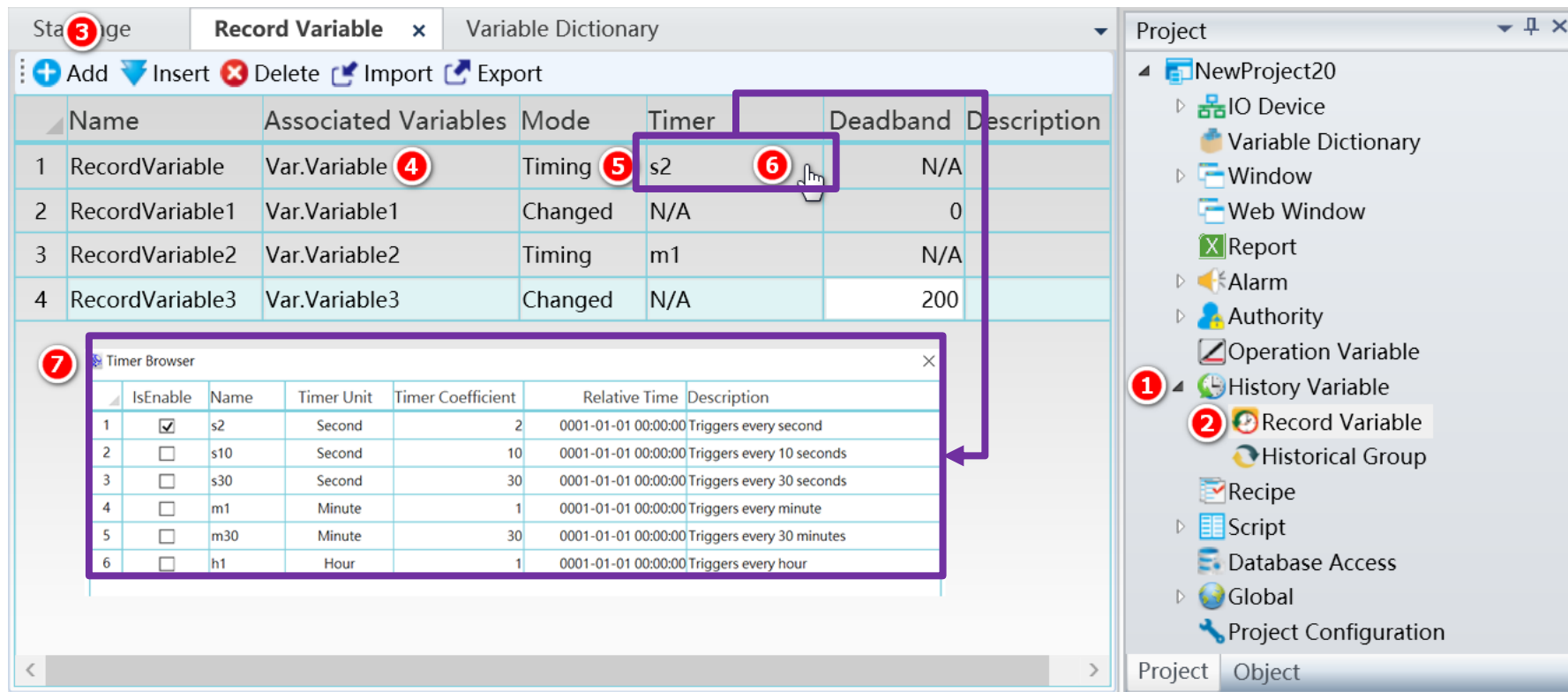
Below the table is a 'Timer Browser' window with a table of timer settings:

IsEnable	Name	Timer Unit	Timer Coefficient	Relative Time	Description
<input type="checkbox"/>	s1	Second	1	0001-01-01 00:00:00	Triggers every second
<input type="checkbox"/>	s10	Second	10	0001-01-01 00:00:00	Triggers every 10 seconds
<input type="checkbox"/>	s30	Second	30	0001-01-01 00:00:00	Triggers every 30 seconds
<input checked="" type="checkbox"/>	m1	Minute	1	0001-01-01 00:00:00	Triggers every minute
<input type="checkbox"/>	m30	Minute	30	0001-01-01 00:00:00	Triggers every 30 minutes
<input type="checkbox"/>	h1	Hour	1	0001-01-01 00:00:00	Triggers every hour

At the bottom of the window are buttons for 'Add', 'Insert', 'Delete', 'OK', and 'Cancel'.

# Record Variable configuration

① **Timing mode example:** How to set up a RecordVariable record every 2 sec.



The screenshot shows the 'Record Variable' configuration window. The main table lists variables and their configurations. A purple box highlights the 'RecordVariable' row, and a red circle 6 points to the 's2' timer value. A red circle 7 points to the 'Timer Browser' dialog, which is open and shows a list of timers. A red circle 1 points to the 'Record Variable' option in the Project tree on the right.

**Record Variable Table:**

Name	Associated Variables	Mode	Timer	Deadband	Description
RecordVariable	Var.Variable	Timing	s2	N/A	
RecordVariable1	Var.Variable1	Changed	N/A	0	
RecordVariable2	Var.Variable2	Timing	m1	N/A	
RecordVariable3	Var.Variable3	Changed	N/A	200	

**Timer Browser Table:**

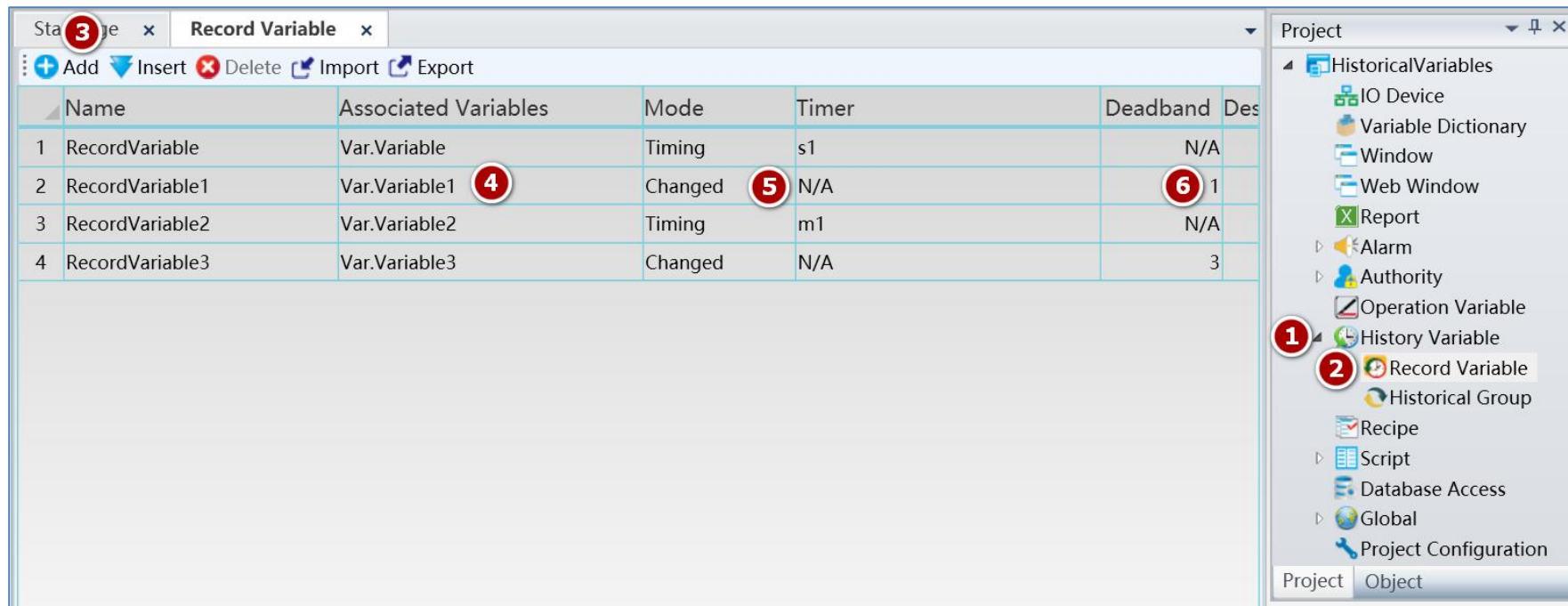
IsEnable	Name	Timer Unit	Timer Coefficient	Relative Time	Description
<input checked="" type="checkbox"/>	s2	Second	2	0001-01-01 00:00:00	Triggers every second
<input type="checkbox"/>	s10	Second	10	0001-01-01 00:00:00	Triggers every 10 seconds
<input type="checkbox"/>	s30	Second	30	0001-01-01 00:00:00	Triggers every 30 seconds
<input type="checkbox"/>	m1	Minute	1	0001-01-01 00:00:00	Triggers every minute
<input type="checkbox"/>	m30	Minute	30	0001-01-01 00:00:00	Triggers every 30 minutes
<input type="checkbox"/>	h1	Hour	1	0001-01-01 00:00:00	Triggers every hour

**Project Tree:**

- NewProject20
  - IO Device
  - Variable Dictionary
  - Window
  - Web Window
  - Report
  - Alarm
  - Authority
  - Operation Variable
  - History Variable
  - Record Variable**
  - Historical Group
  - Recipe
  - Script
  - Database Access
  - Global
  - Project Configuration

# Record Variable configuration

② **Changed mode example:** How to set up a RecordedVariable record in changed mode?



The screenshot shows the 'Record Variable' configuration window. The table lists four variables, with the second row (RecordVariable1) highlighted. The project tree on the right shows the 'Record Variable' option selected under 'Historical Variables'.

	Name	Associated Variables	Mode	Timer	Deadband	Description
1	RecordVariable	Var.Variable	Timing	s1	N/A	
2	RecordVariable1	Var.Variable1	Changed	N/A	1	
3	RecordVariable2	Var.Variable2	Timing	m1	N/A	
4	RecordVariable3	Var.Variable3	Changed	N/A	3	

Project Tree:

- HistoricalVariables
  - IO Device
  - Variable Dictionary
  - Window
  - Web Window
  - Report
  - Alarm
  - Authority
  - Operation Variable
  - History Variable
  - Record Variable**
  - Historical Group
  - Recipe
  - Script
  - Database Access
  - Global
  - Project Configuration



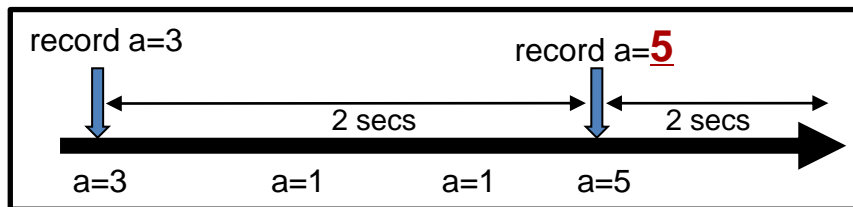
# History group configuration

- The historical group record records historical variables in groups, and each group can be associated with up to 256 variables.

- Storage method:

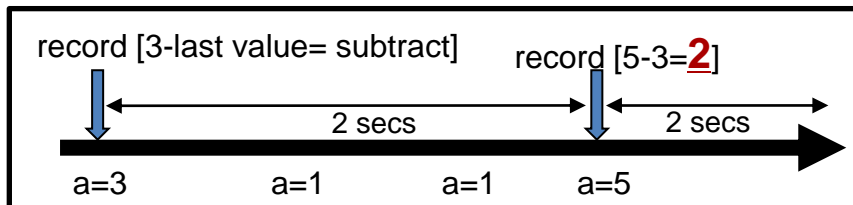
① **General storage**: record real-time data generated by variables;

- Time trigger
- Time unit = 2 sec



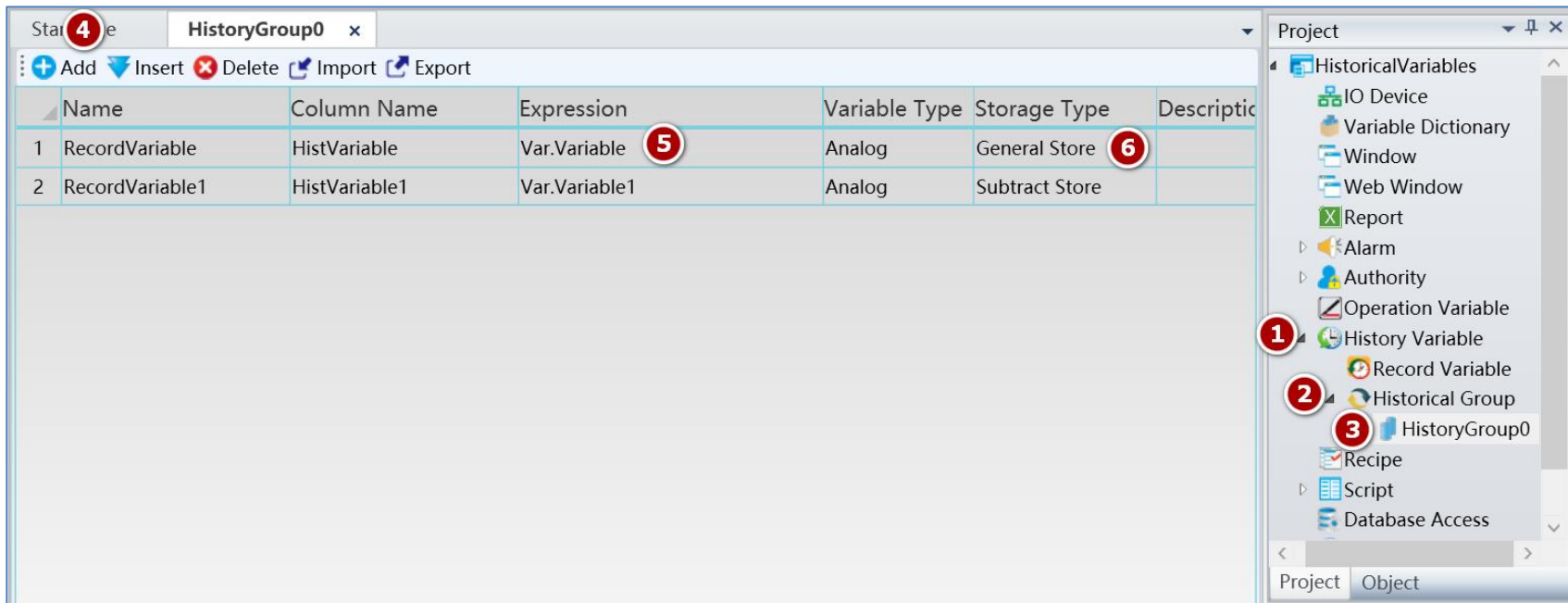
① **Subtract storage**: record the difference between the data generated by the variable and the last data

- Time trigger
- Time unit = 2 sec



# Record Variable configuration

## ① General storage.



Star 4 e HistoryGroup0 x

+ Add Insert Delete Import Export

	Name	Column Name	Expression	Variable Type	Storage Type	Description
1	RecordVariable	HistVariable	Var.Variable	Analog	General Store	
2	RecordVariable1	HistVariable1	Var.Variable1	Analog	Subtract Store	

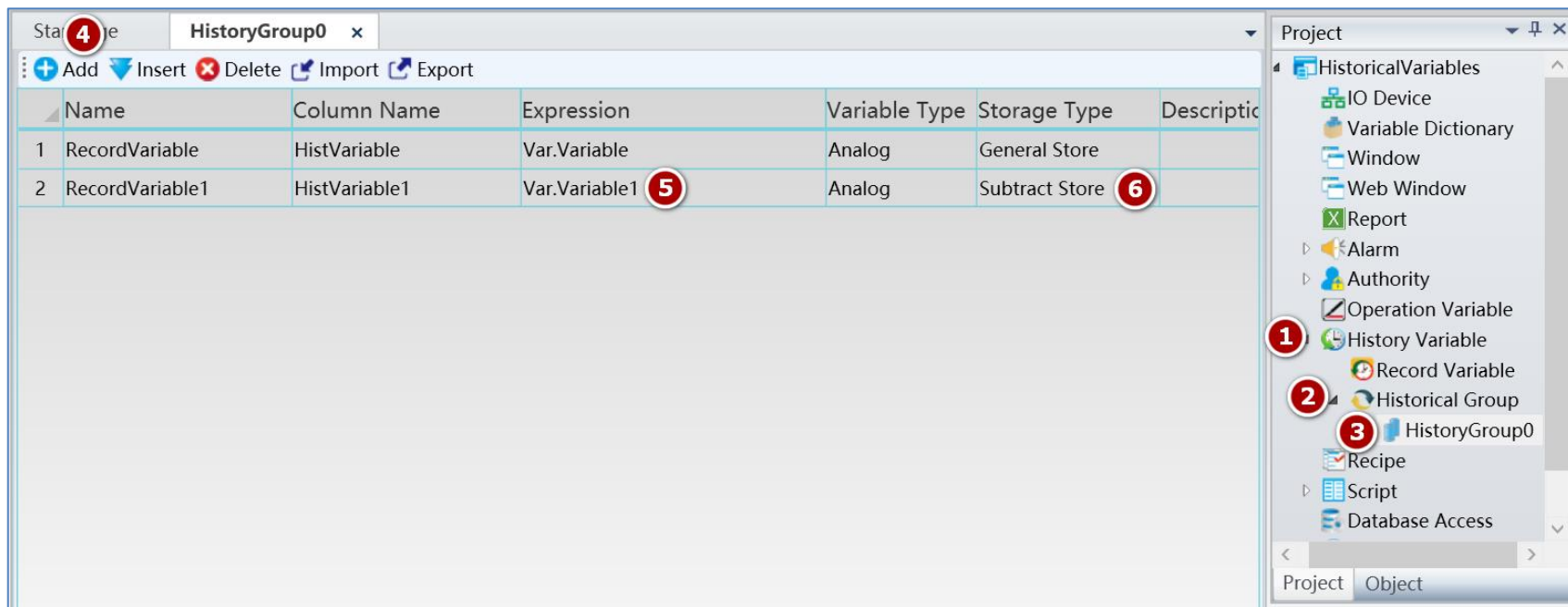
Project

- HistoricalVariables
  - IO Device
  - Variable Dictionary
  - Window
  - Web Window
  - Report
  - Alarm
  - Authority
  - Operation Variable
  - History Variable
  - Record Variable
  - Historical Group
    - HistoryGroup0
  - Recipe
  - Script
  - Database Access

Project Object

# Record Variable configuration

## ② Subtract storage :



Sta 4e HistoryGroup0 x

... Add Insert Delete Import Export

	Name	Column Name	Expression	Variable Type	Storage Type	Description
1	RecordVariable	HistVariable	Var.Variable	Analog	General Store	
2	RecordVariable1	HistVariable1	Var.Variable1	Analog	Subtract Store	

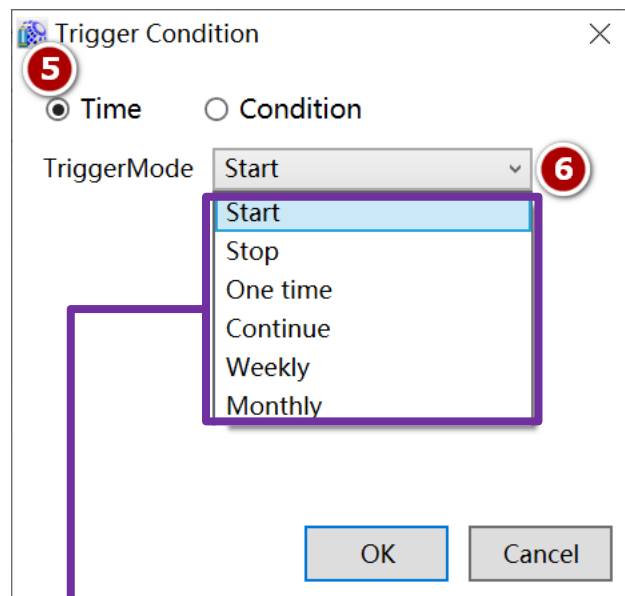
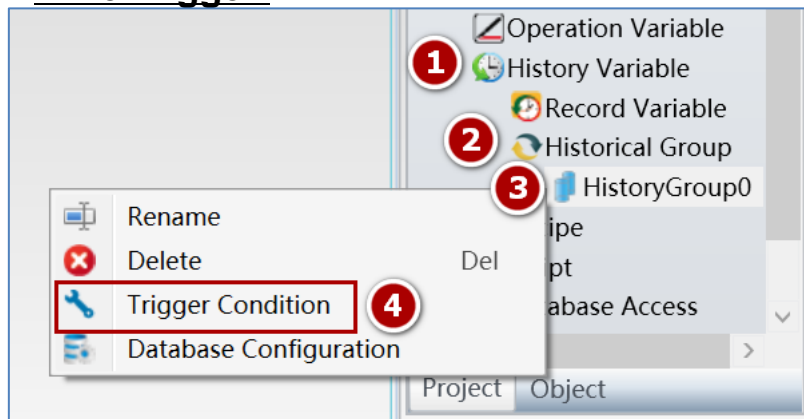
Project

- HistoricalVariables
  - IO Device
  - Variable Dictionary
  - Window
  - Web Window
  - Report
  - Alarm
  - Authority
  - Operation Variable
  - History Variable
  - Record Variable
  - Historical Group
    - HistoryGroup0
  - Recipe
  - Script
  - Database Access

Project Object

# Record Variable configuration

## ① Time Trigger:

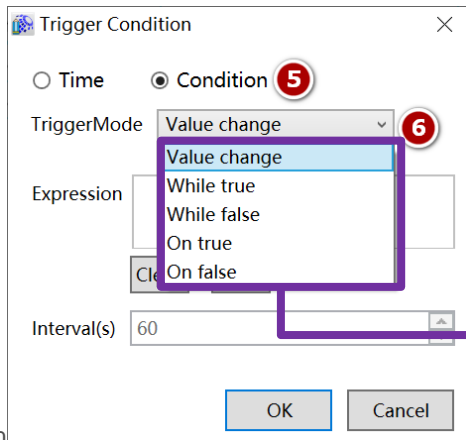
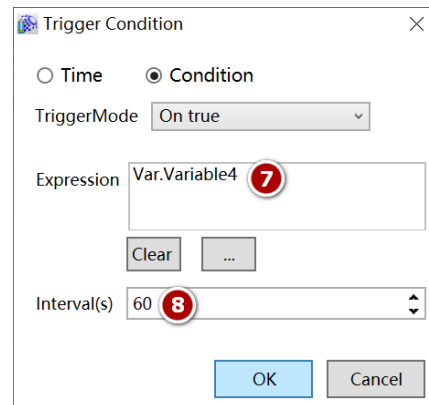
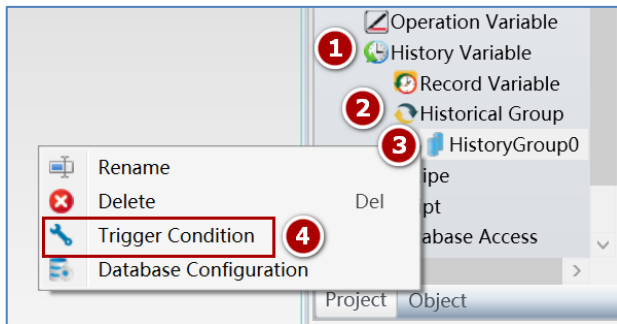


Start	Record a piece of data at startup
Stop	Record a piece of data when stopped
One time	Record a piece of data at a fixed time
Continue	Record data continuously
Weekly	Record data continuously every week
Monthly	Record data continuously every month

# Record Variable configuration

➤ There are two method to trigger:

## ② Condition Trigger:

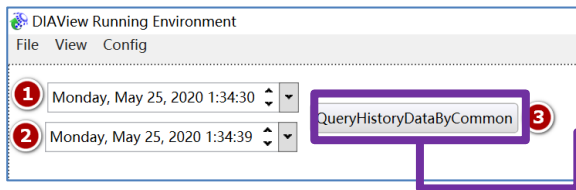


Value change	Triggered when the expression value changes
While true	Triggered when the expression value changes to true
While false	Triggered when the expression value changes to false
On true	Triggered when the expression value remains true
On false	Triggered when the expression value remains false
Value change	Triggered when the expression value changes

## Example1:

The variable record is read through the script and displayed in the report.

- QueryHistoryDataByCommon(sheetIndex, conditions, types):  
variable record query
  - sheetIndex: worksheet index
  - conditions: Variable record collection, separated by commas
  - types: TriggeringTime, Value, can also be replaced with 0 and 1 respectively



```
DateTimePicker0.Value = Sys.StartTime
DateTimePicker1.Value = Sys.Now
Call Report0.SetWorkSheetStartTime(0,DateTime
Picker0.ValueTime)
Call Report0.SetWorkSheetEndTime(0,DateTime
Picker1.ValueTime)
Call Report0.SetVarRecordRuleName(0,"m1")
Call Report0.QueryHistoryDataByCommon(0,"Var
Record.RecordVariable,VarRecord.RecordVariabl
e,VarRecord.RecordVariable2","0,1,1")
```

DIAView Running Environment

File View Config

Monday, May 25, 2020 3:21:21

Monday, May 25, 2020 3:31:58

QueryHistoryDataByCommon 4

5	A	B	C
1	TriggerTime	VarRecord.RecordVariable	VarRecord.RecordVariable2
2	2020/05/25 15:22:00	38	38
3	2020/05/25 15:23:00	97	97
4	2020/05/25 15:24:00	55	55
5	2020/05/25 15:25:00	12	12
6	2020/05/25 15:26:00	71	71
7	2020/05/25 15:27:00	29	29
8	2020/05/25 15:28:00	88	88
9	2020/05/25 15:29:00	46	46
10	2020/05/25 15:30:00	4	4
11	2020/05/25 15:31:00	62	62
12			
13			
14			
15			
16			
17			
18			
19			

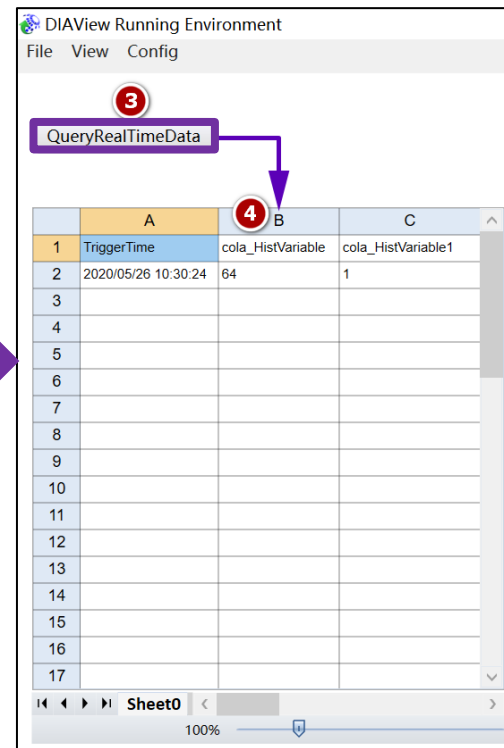
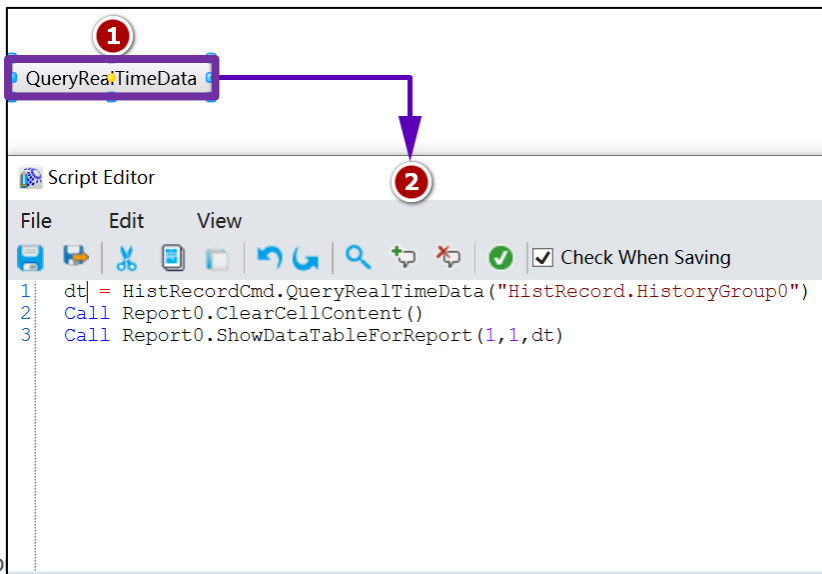
Sheet0 100%

# Query history group record script

## ➤ Example 2:

Read the real-time data of the historical record group through the script and display it with the report.

- QueryRealTimeData: query real-time data of historical record group;



The screenshot shows the DIAView Running Environment. A red circle with the number 3 is placed over the 'QueryRealTimeData' property in the Properties window. A red circle with the number 4 is placed over the 'B' column header in the report table. A purple arrow points from the 'QueryRealTimeData' property to the 'B' column header. The report table is displayed with the following data:

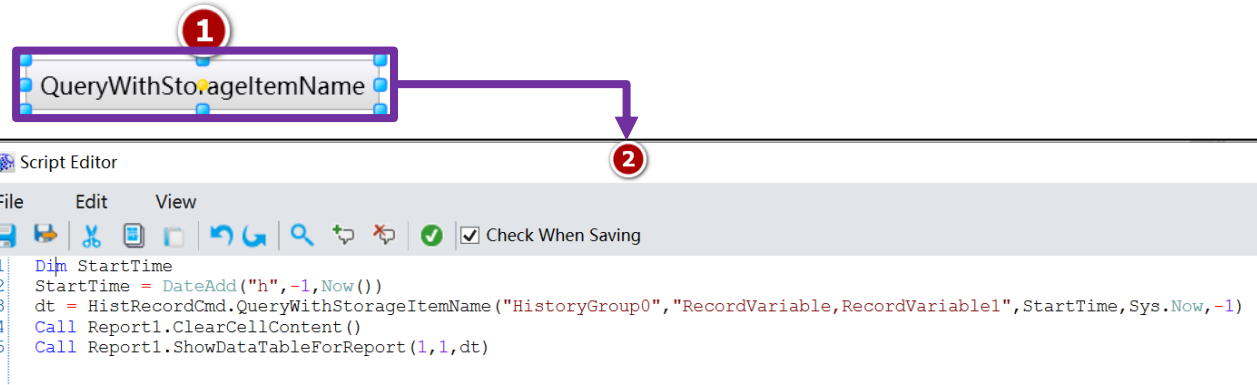
	A	B	C
1	TriggerTime	cola_HistVariable	cola_HistVariable1
2	2020/05/26 10:30:24	64	1
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

# Query history group record script

## ➤ Example 3:

Read the historical record group data through the script and display it with the report.

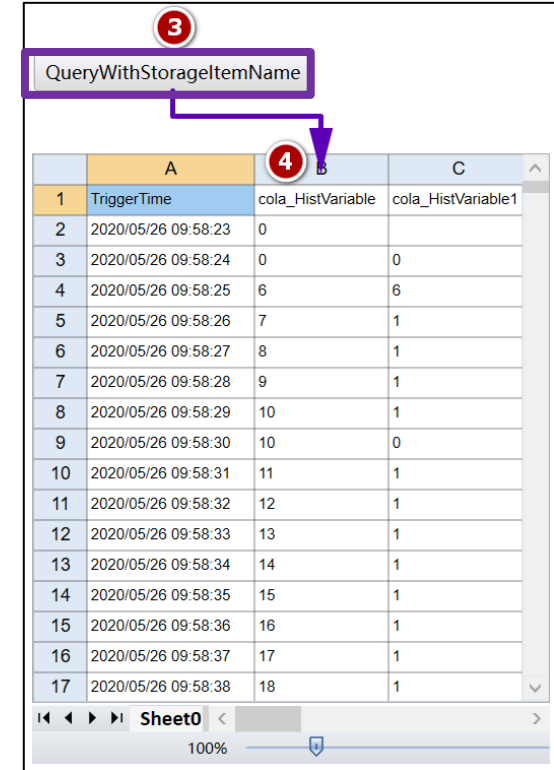
- QueryWithStorageItemName: Query historical record group data, the example is to query the data of the last hour;
- Use the DateAdd function to set the query time range to the past hour;



Script Editor

```

1 Dim StartTime
2 StartTime = DateAdd("h",-1,Now())
3 dt = HistRecordCmd.QueryWithStorageItemName("HistoryGroup0", "RecordVariable",RecordVariable1",StartTime, Sys.Now,-1)
4 Call Report1.ClearCellContent()
5 Call Report1.ShowDataTableForReport(1,1,dt)
  
```



	A	B	C
1	TriggerTime	cola_HistVariable	cola_HistVariable1
2	2020/05/26 09:58:23	0	
3	2020/05/26 09:58:24	0	0
4	2020/05/26 09:58:25	6	6
5	2020/05/26 09:58:26	7	1
6	2020/05/26 09:58:27	8	1
7	2020/05/26 09:58:28	9	1
8	2020/05/26 09:58:29	10	1
9	2020/05/26 09:58:30	10	0
10	2020/05/26 09:58:31	11	1
11	2020/05/26 09:58:32	12	1
12	2020/05/26 09:58:33	13	1
13	2020/05/26 09:58:34	14	1
14	2020/05/26 09:58:35	15	1
15	2020/05/26 09:58:36	16	1
16	2020/05/26 09:58:37	17	1
17	2020/05/26 09:58:38	18	1

Sheet0 100%



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