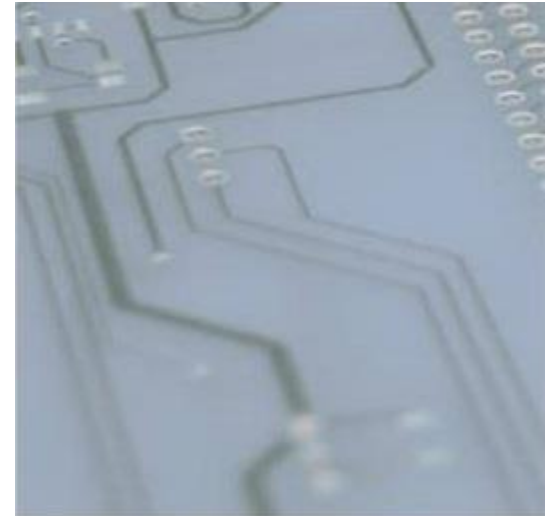
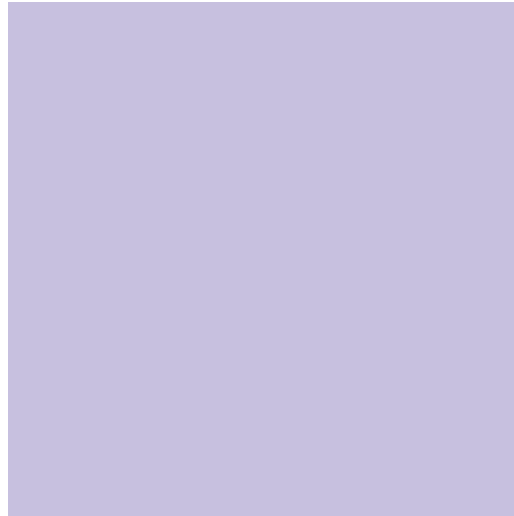


CanEasy Automation Scheduler



Moderator:
Thomas Staebe

Author:
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CanEasy provides the many ways to make your life easier,
by **automating** things:

Shortcut plugin:

- Global keyboard shortcuts, even for highly automated complex functions

Formula plugin:

- Changing signals and messages based on powerful formulas

Modulator plugin:

- Changing signal values based on ramps, sines and much more

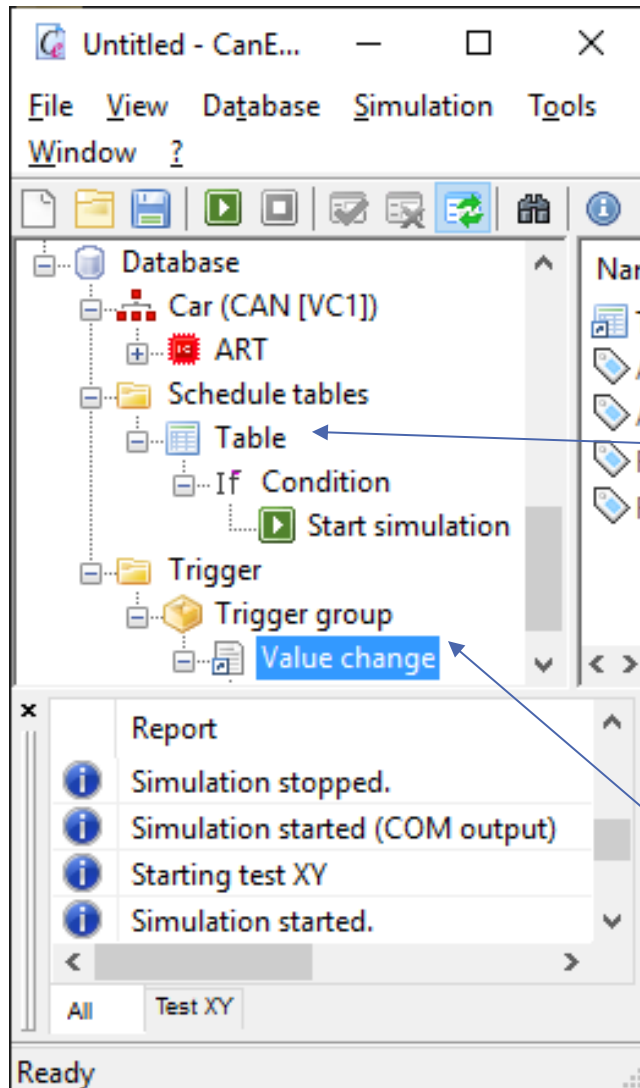
Programming:

- VBA / VSTA / MultiStudio Remote control via COM

Scheduler:

- Easy and fast definition of sequences of actions

Overview



Simulation of a flasher control unit

Sw_Blinker: Steering column switch for
turn on/off the flashlight

Lt_Blinker: Signal to the light control unit
to switch on the light

Table:

- Is a sequential executed collection of actions

Trigger:

- Used to start the execution of a Table

Tables: Definition

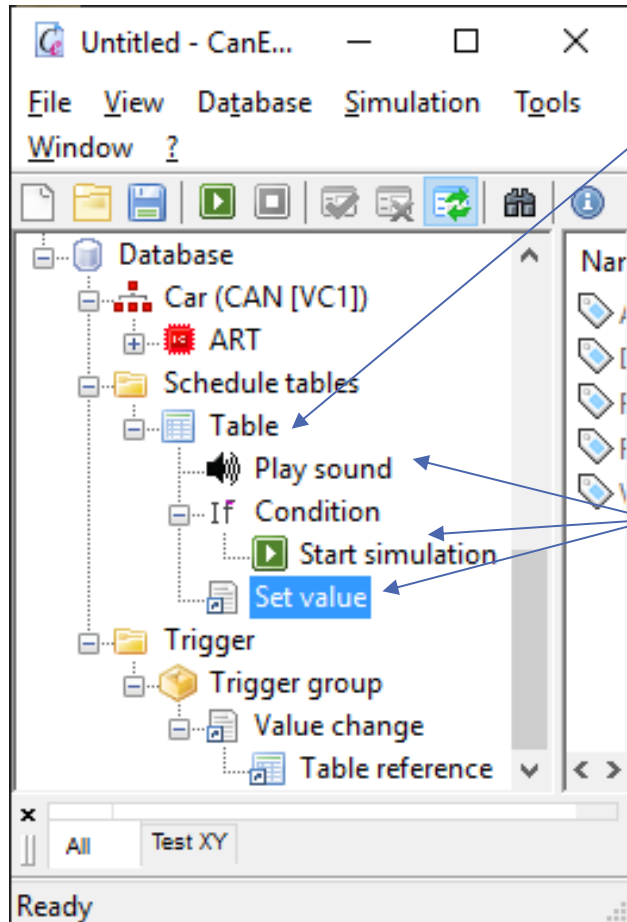


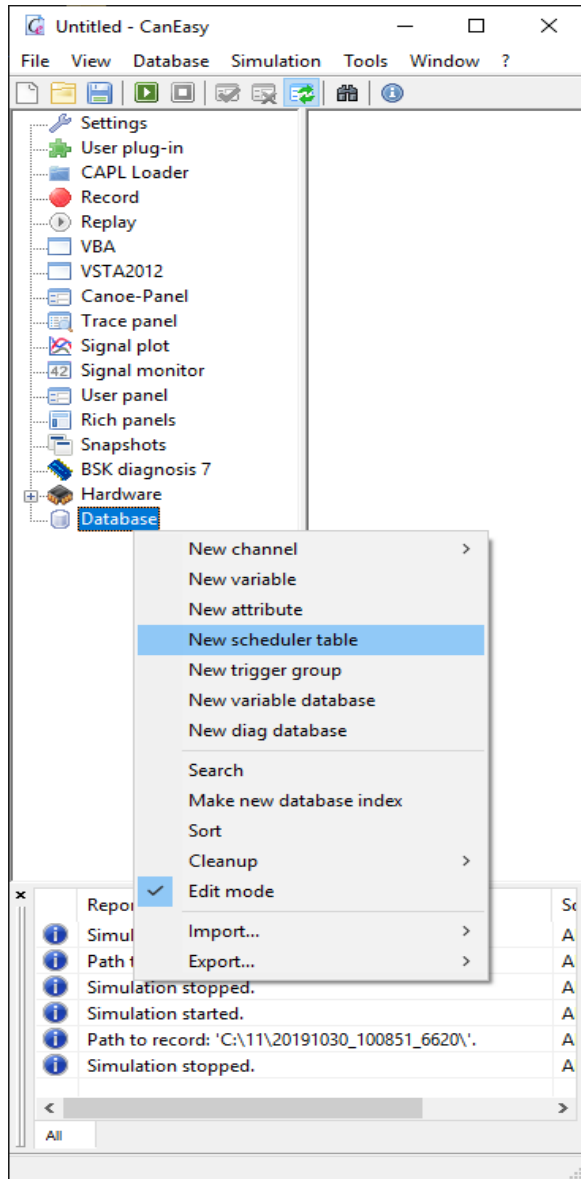
Table:

- Is a sequential executed collection of table actions

Table actions:

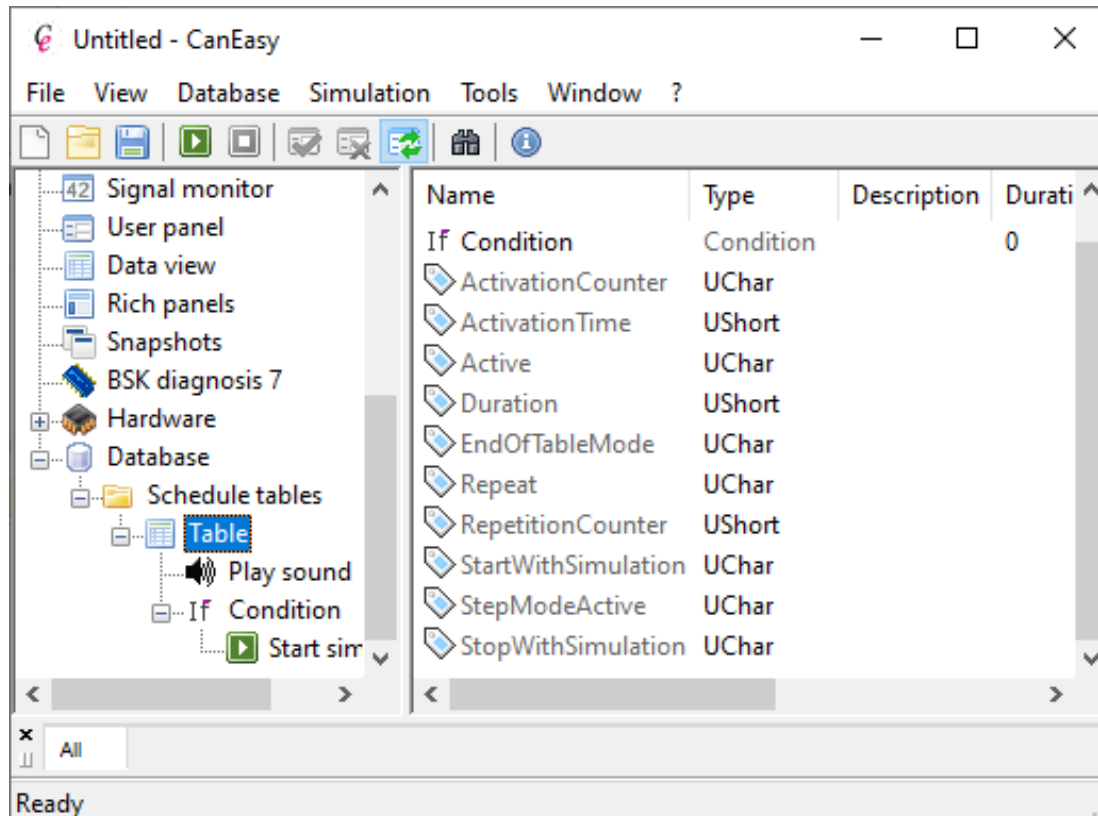
- Set signal
- Condition
- Activate table

Add new Scheduler Tables



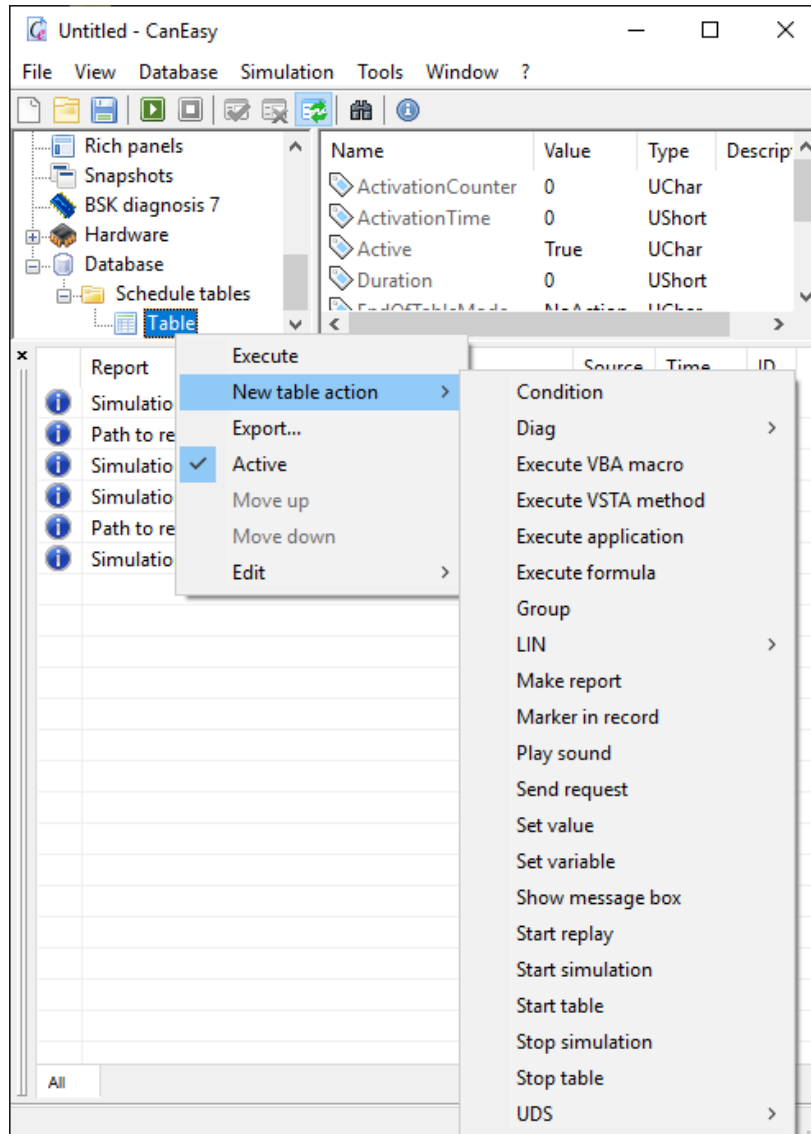
- Right click on „Database“
- Click on „New Schedule Table“
- Enter name

Setting for Scheduler Tables



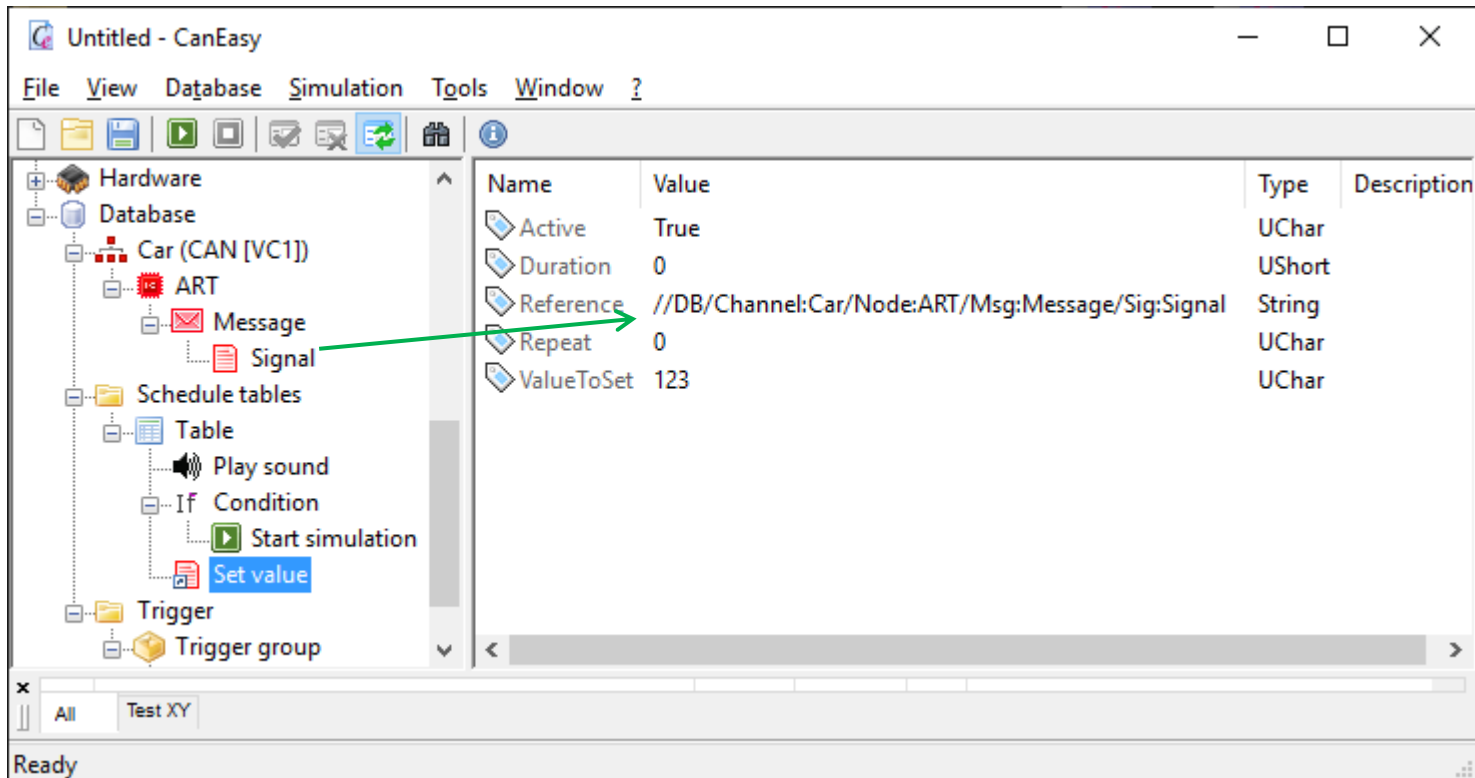
- **Start with simulation**
Table execution is started automatically when simulation is started
- **Activation Time**
Delay for starting the table after simulation start
- **Stop with simulation**
Table execution is stopped automatically when simulation is stopped
- **End of Table Action**
Repeat: the table is started again after its execution is finished
NoAction: No action

Add new Tables Actions



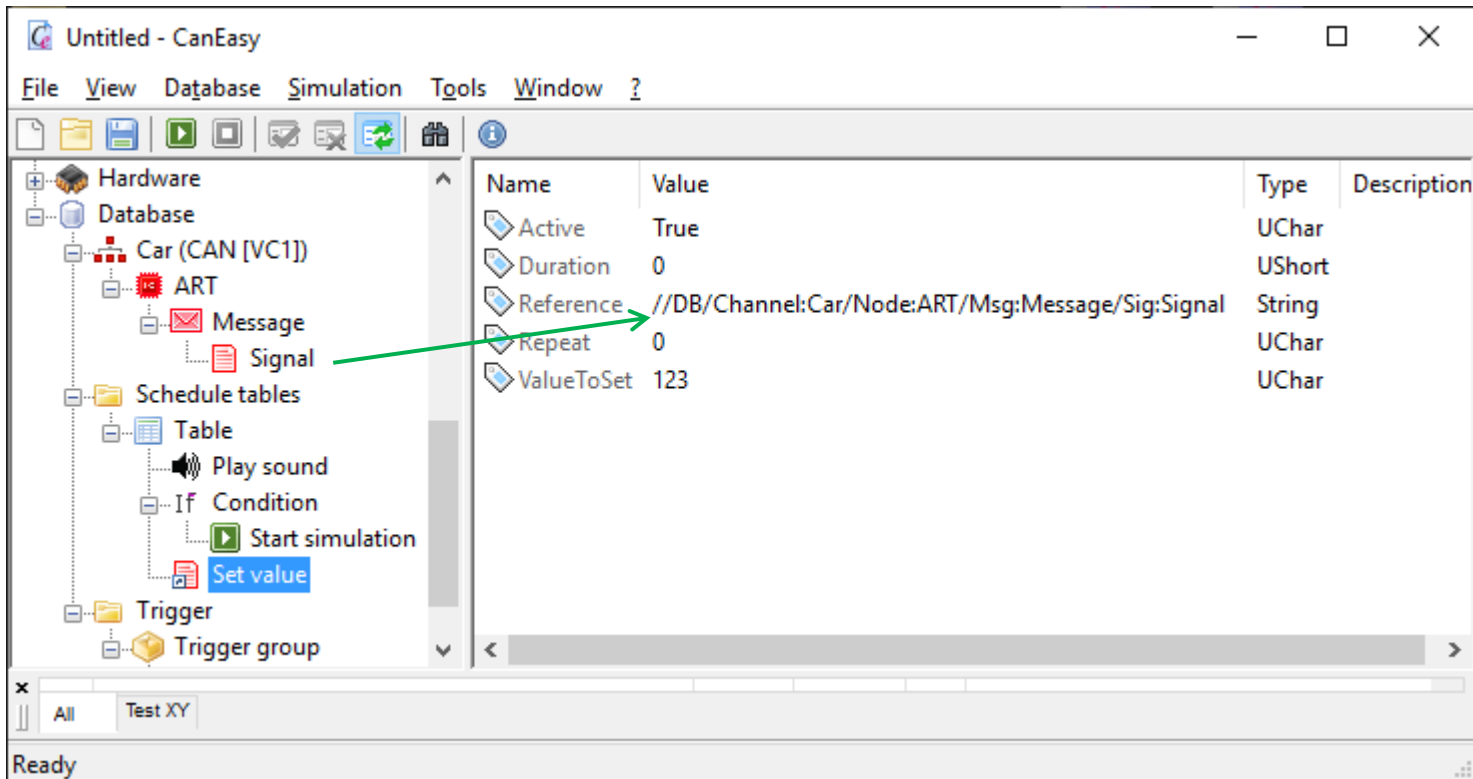
- Right click on Scheduler Table
- Click on "New Table Action"
- Choose a Table Action e.g. "Set Value"
- Enter name

Configure a Table Action "Set Value"



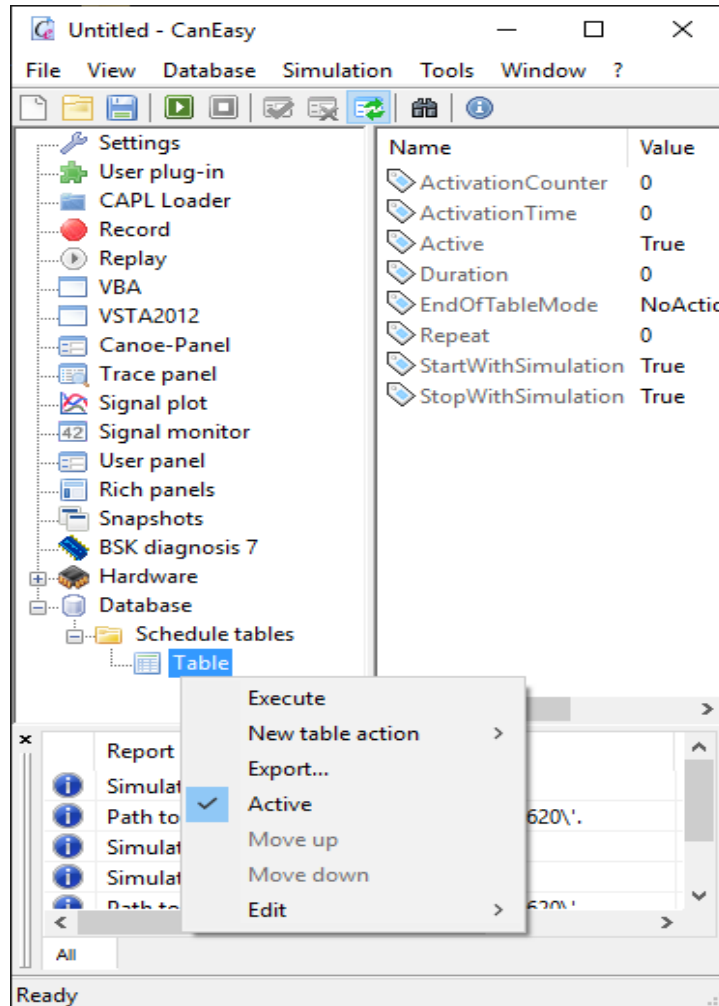
- **Reference:** Path to a "value" [Signal, Environment Variable, ...]
- **ValueToSet:** Value which is set to the reference
- **Duration:** Time to wait until the next table action is executed

Configure a Table Action "Condition"



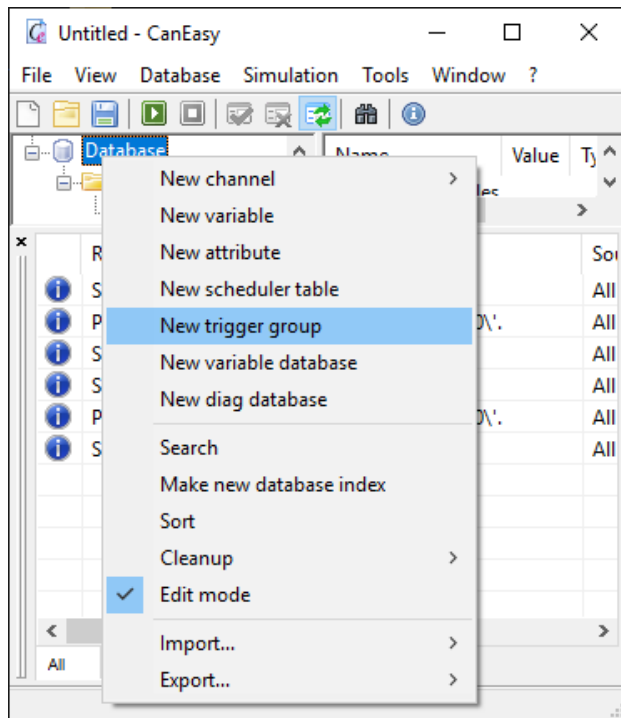
- **Reference:** Path to a "value" which should be compared
- **Value:** Value which is compared to the referenced value
- **Operator:** Comparison operator (equal, not equal, smaller, larger)

Starting a Table

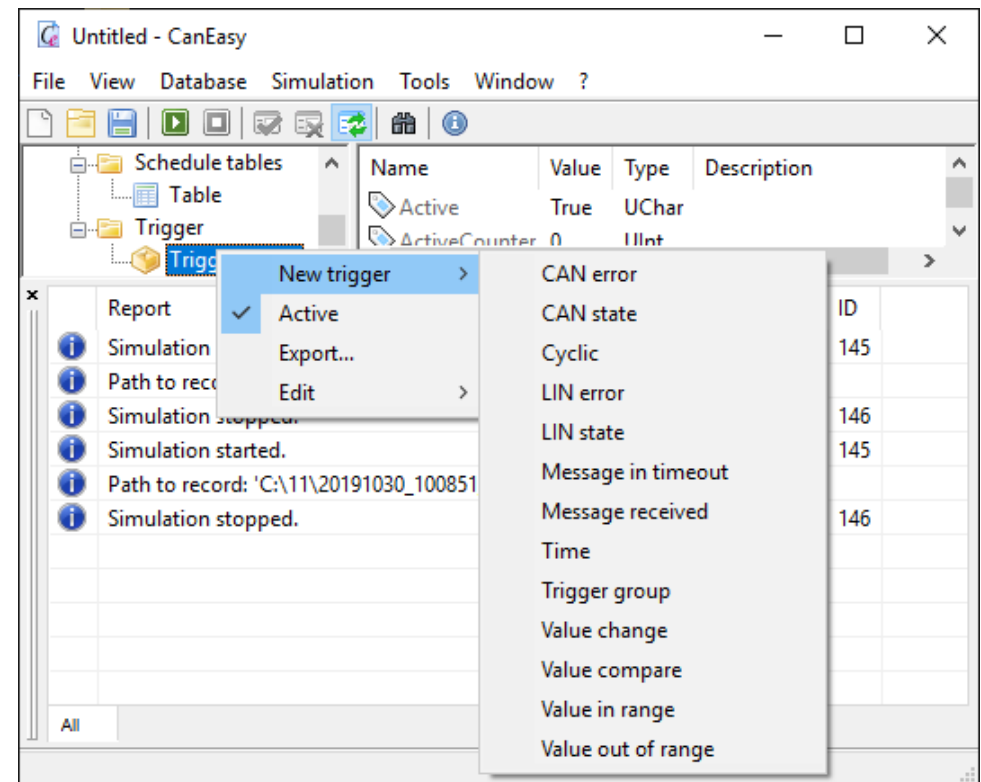


- Right Click the Table
Click on "Execute"
- Automatically when simulation is started
- By a Trigger e.g.:
 - Changing of a value
 - Value is equal or in range
 - Receiving of a message
 - Bus Error, Timeout
 - Time
 - Cyclic

Add a Trigger

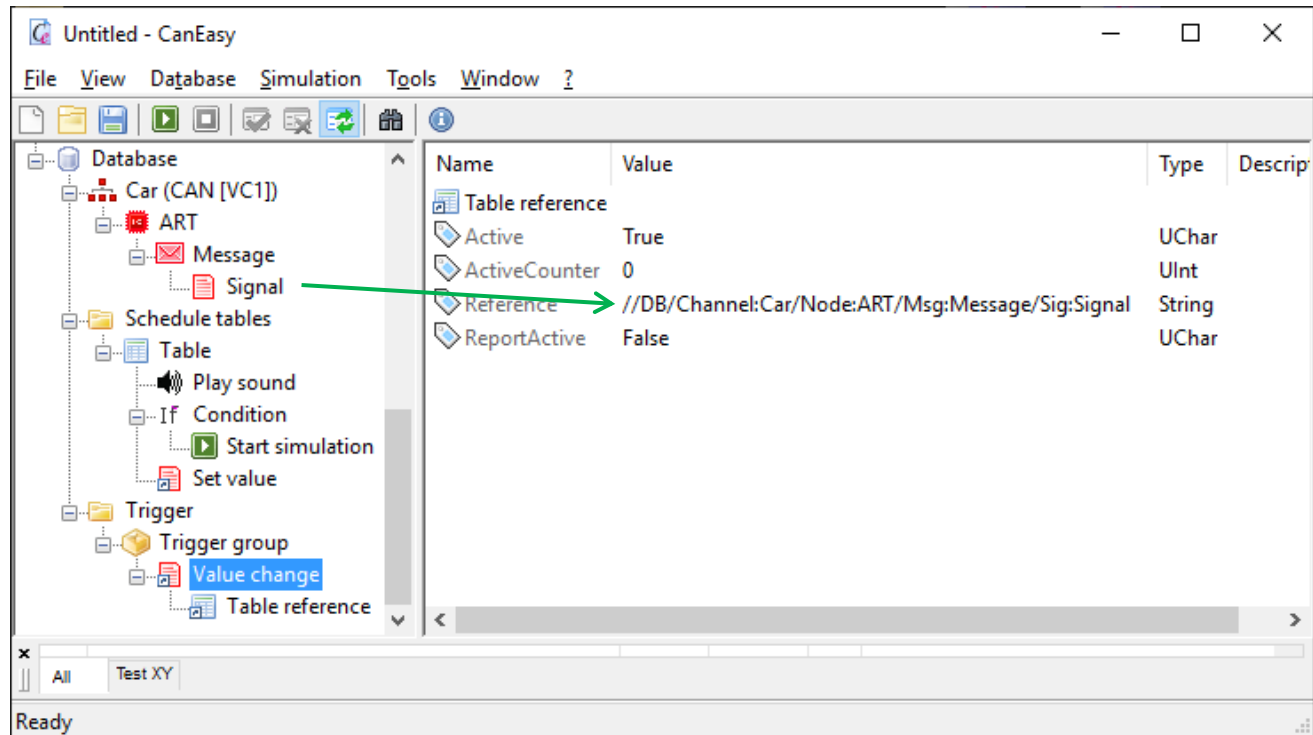


- Right click on Database
- Click on "New Trigger Group"
- Enter name



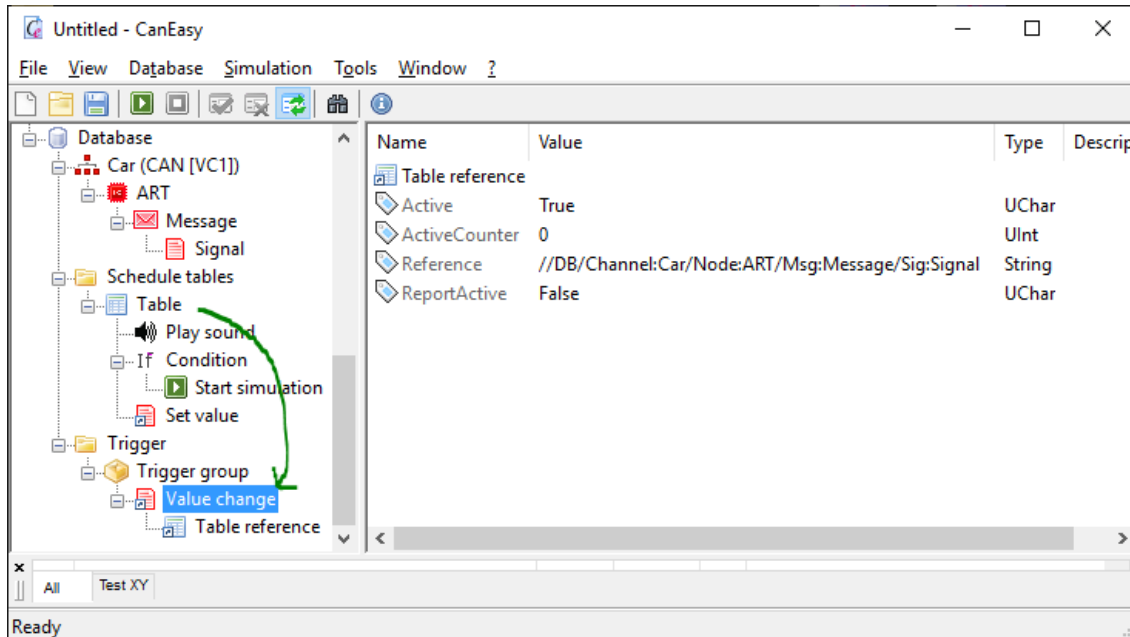
- Right click on Trigger Group"
- Click on "New Trigger"
- Choose trigger
- Enter name

Configure a Trigger



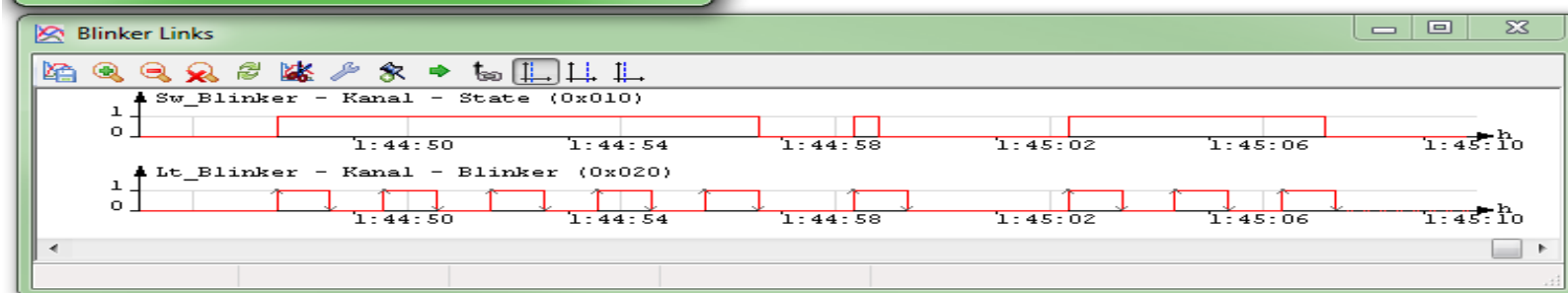
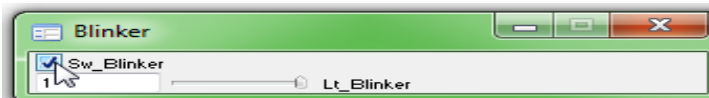
- **Reference:** Path to a “value” [Signal, Environment Variable, ...]
- **Value:** Value the reference should be compared with
- **Operation:** Comparison operator [equal, not equal, smaller, larger]

Add a Table to a Trigger



Drag n' drop the table
onto the trigger

Start the simulation and
set "Sw Blinker" to "1"



Ta

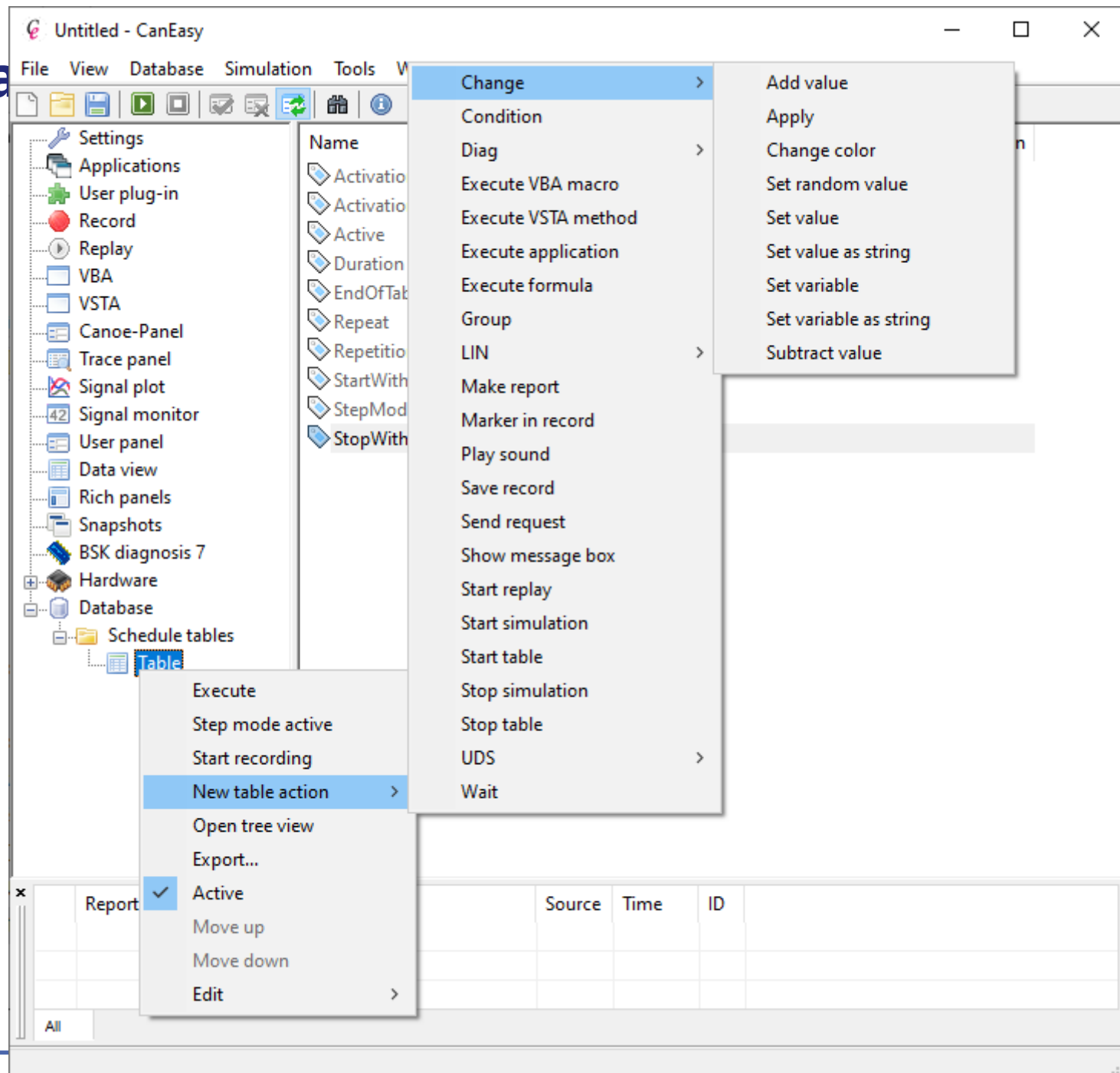


Table action: Make report

Function: Generates a report in the report window

Parameters:

Content:

Content which will be shown in the report window at the bottom of the screen.

Style:

Changes the icon:

Notification, Warning, Error

Window:

Describes the tab in the CanEasy report window. „All“ is the standard tab if an empty string is inserted.

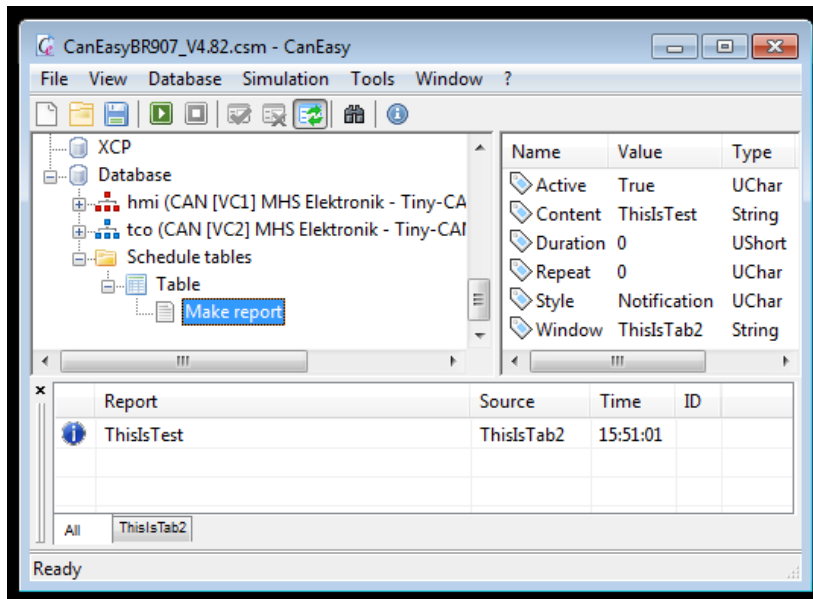


Table action: Marker in record

Function: Inserts a marker into the recording.
(Will be visible in Trace and Polt)

The screenshot displays the CanEasy software interface. On the left, the 'Untitled - CanEasy' window shows the 'Table' configuration. The 'Marker in record' action is selected in the 'Schedule tables' list. The configuration table shows the following details:

Name	Value	Type
Active	True	UChar
Duration	0	UShort
Repeat	0	UChar

Below the configuration, a 'Report' table shows simulation events:

Report	Source	Time	ID
Simulation started.	All	15:25:59	145
Simulation stopped.	All	15:29:34	146
Simulation started.	All	15:29:40	145

On the right, the 'New trace 1' window displays a list of recorded messages. A marker is visible at timestamp 00846.5960:

Timestamp	C	MsgID	Name	Rx	D
00846.1000	1	0x000	Message	Tx	8
00846.2000	1	0x000	Message	Tx	8
00846.3000	1	0x000	Message	Tx	8
00846.4000	1	0x000	Message	Tx	8
00846.5000	1	0x000	Message	Tx	8
00846.5960			*** Marker 1 ***		
00846.6000	1	0x000	Message	Tx	8
00846.7000	1	0x000	Message	Tx	8
00846.8000	1	0x000	Message	Tx	8
00846.9000	1	0x000	Message	Tx	8
00847.0000	1	0x000	Message	Tx	8
00847.1000	1	0x000	Message	Tx	8
00847.2000	1	0x000	Message	Tx	8
00847.3000	1	0x000	Message	Tx	8
00847.4000	1	0x000	Message	Tx	8
00847.5000	1	0x000	Message	Tx	8
00847.6000	1	0x000	Message	Tx	8
00847.7000	1	0x000	Message	Tx	8
00847.8000	1	0x000	Message	Tx	8
00847.9000	1	0x000	Message	Tx	8
00848.0000	1	0x000	Message	Tx	8

Table action: Play sound

Function: Plays a sound (via a Sound Card)

Parameters:

Frequency:

Frequency in Hz

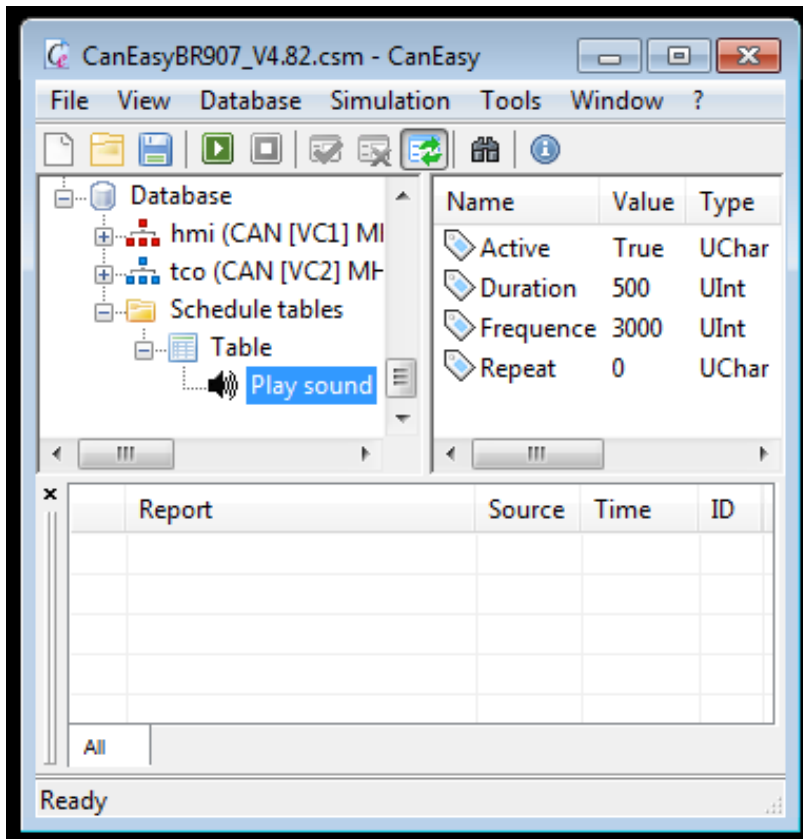
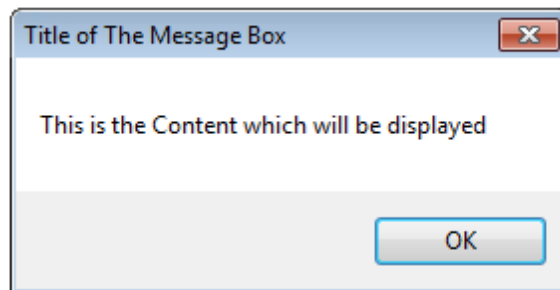


Table action: Show message box

Function: Shows a message box and waits until it is closed by the user

Name	Value	Type
Active	True	UChar
Content	This is the Content which will be ...	String
Duration	0	UShort
Highlight	20	UChar
Reference		String
Repeat	0	UChar
Style	0	Int
Title	Title of The Message Box	String



Parameters:

Title:

Title of the message box

Content:

Content of the message Box

Style:

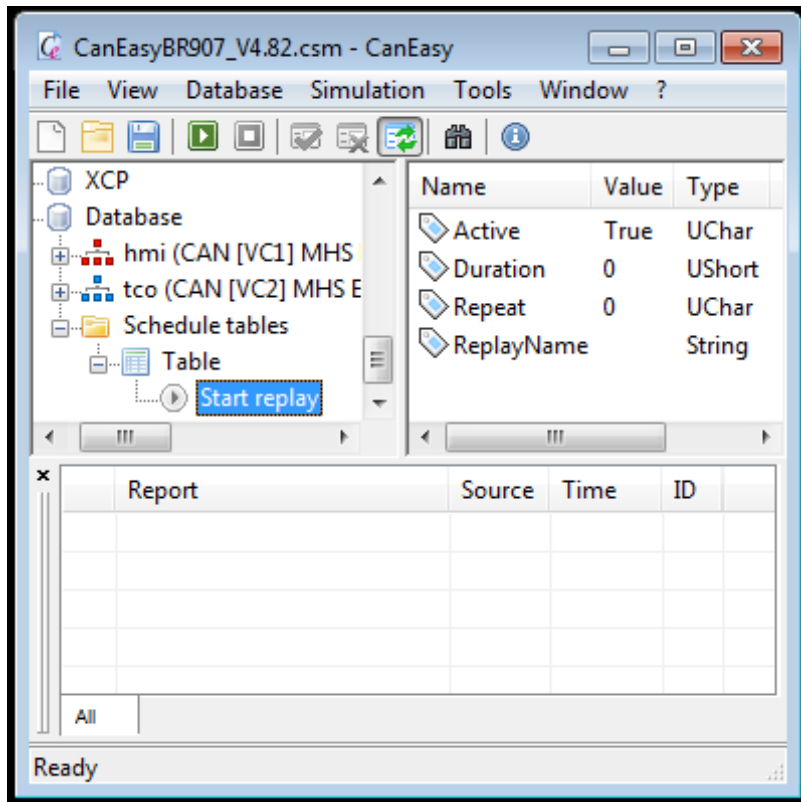
Buttonstyle as integer

Reference:

String reference for the return value from the button[s]



Function: Starts the replay of a record



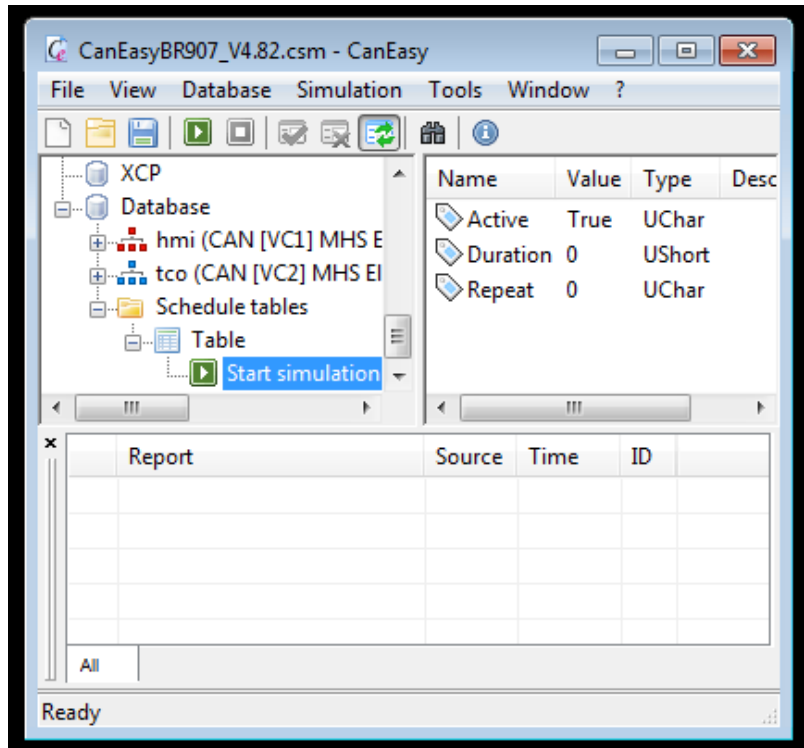
Parameters:

ReplayName:

Name of the replay which
has to be started

Table action: Start simulation

Function: Starts the simulation



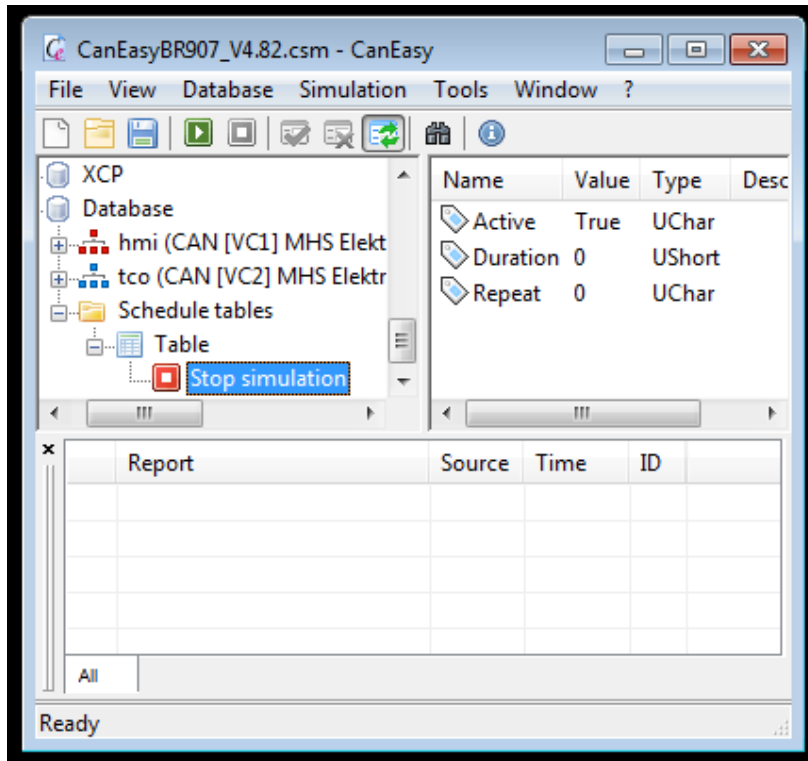
Has the same function as
the green button

■ Before: ■ After:



Table action: Stop simulation

Function: Stops the simulation



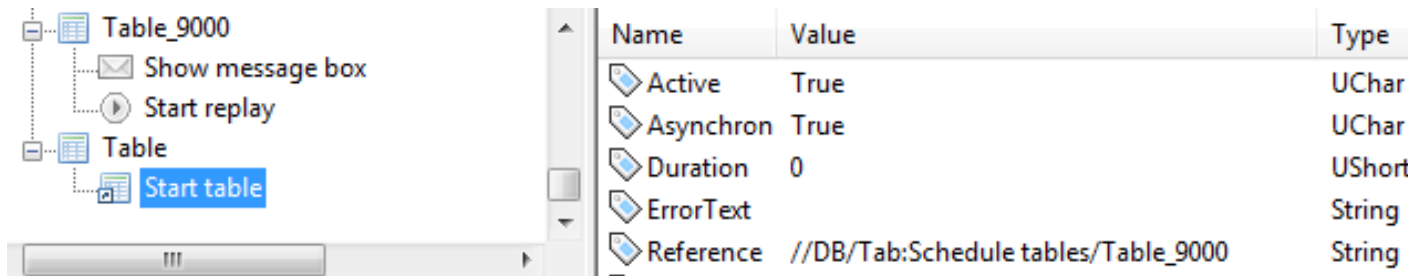
Has the same function as the red button

- Before:
- After:



Table action: Start table

Function: Starts the execution a table



Name	Value	Type
Active	True	UChar
Asynchron	True	UChar
Duration	0	UShort
ErrorText		String
Reference	//DB/Tab:Schedule tables/Table_9000	String

Parameters:

Reference:

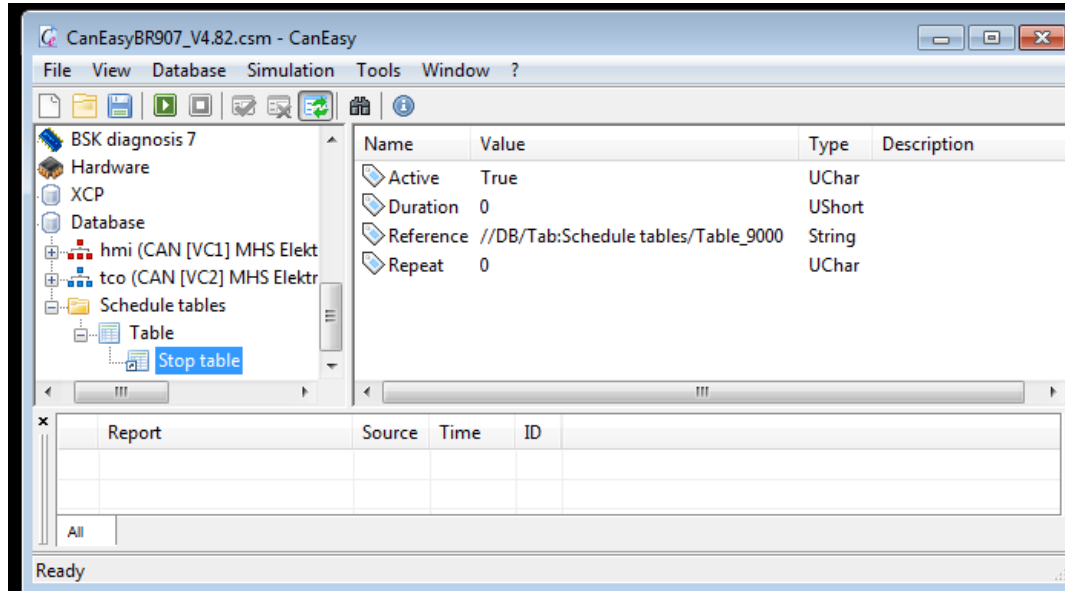
Path of the table which has to be executed

Asynchron:

- TRUE: Starts the table in it's own thread.
It will run in paralell to the first one
- FALSE: Waits with the execution of the current table until
the referenced table is finished

Table action: Stop table

Function: Stops the execution of a table



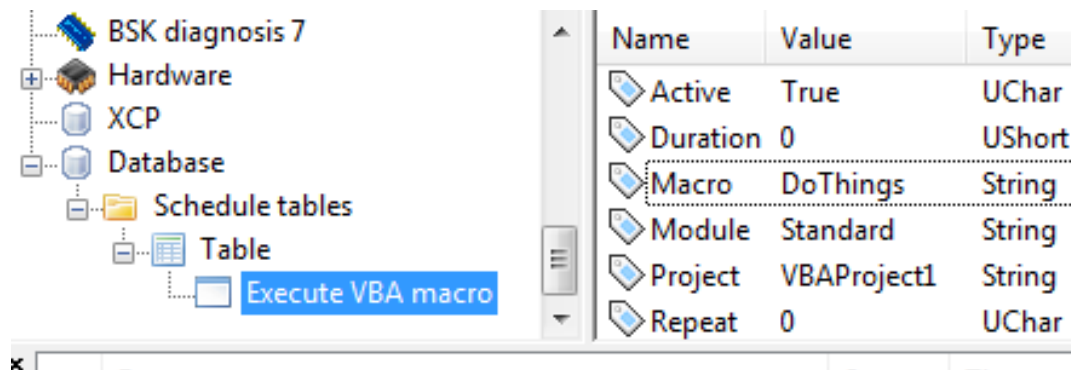
Parameters:

Reference:

Path of the table which has to be stopped

Table action: Execute VBA macro

Function: Executes a VBA macro



- Parameters:

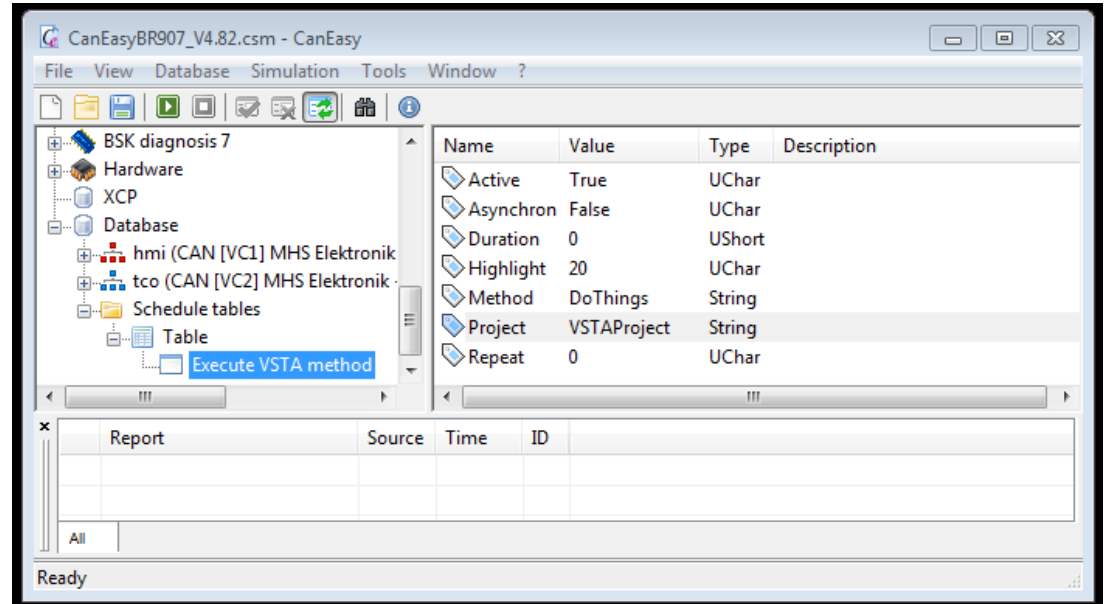
Macro: VBA macro (VBA Sub)

Module: VBA module of VBA macro

Project: Project of VBA module

Table action: Execute VSTA method

Function: Executes a VSTA method



■ Parameters:

Method: VSTA Method

Project: Project of VSTA Method

Asynchron: -TRUE: Starts macro in it's own thread

-FALSE: Waits with the execution of the current table until the macro is finished

Table action: Execute application

Function: Executes a application via the command line

Active	True	UChar
Directory	C:\	String
Duration	0	UShort
File	test.bat	String
Parameter	argument1,argument2	String
Repeat	0	UChar

Parameters:

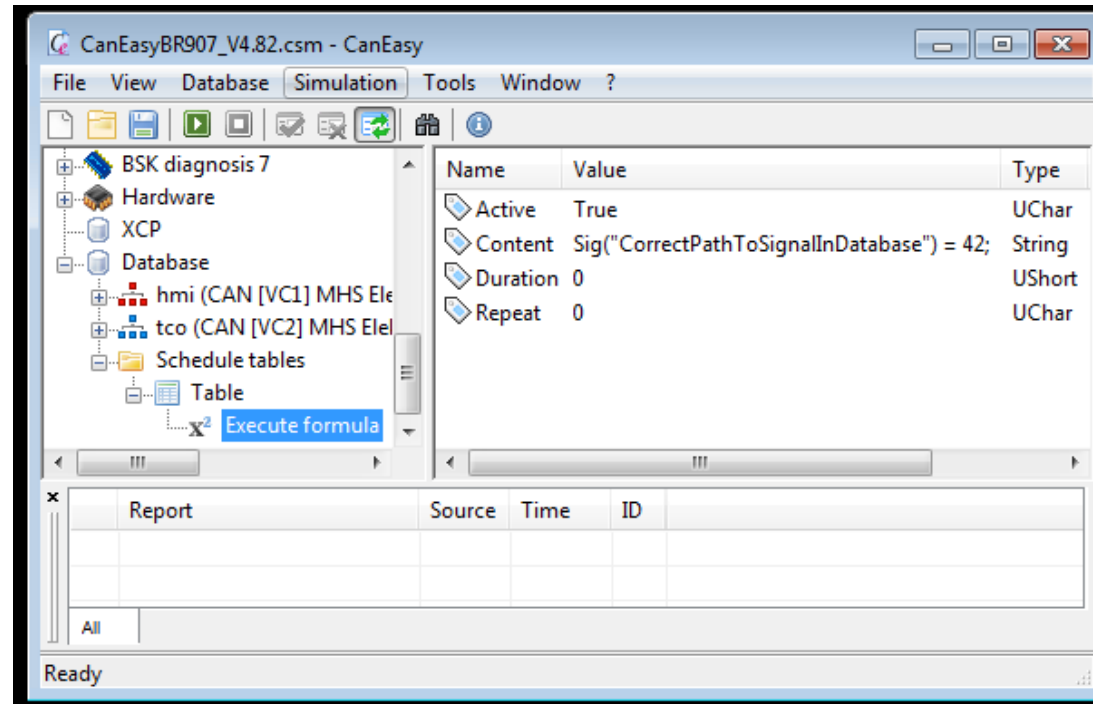
File: Filename

Directory: Directory of File

Parameter: Command-line arguments, comma separated

Table action: Execute formula

Function: Executes a formula to do some calculations



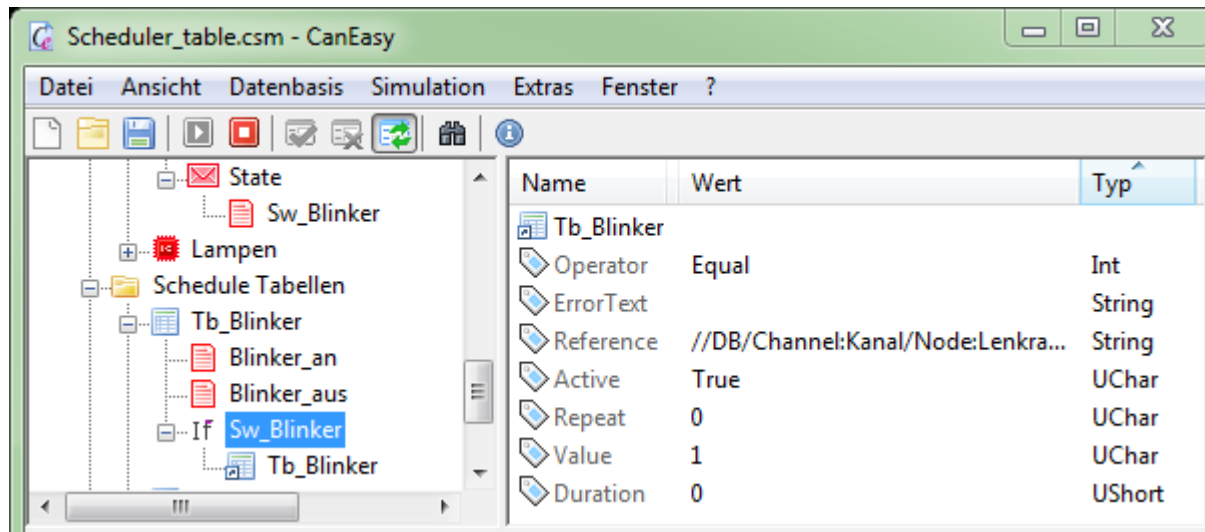
Parameters:

Content:

String which contains the formula. The syntax is the same as for the Formula plugin. So the formula can be edited and tested in the Formula plugin and then copied into the table action.

Table action: (If) Condition

Function: If the condition is true, the actions underneath the "If" action are executed



Parameters:

Reference: Path to a "value" which should be compared

Value: Value which is compared to the referenced value

Operator: Comparison operator (equal, not equal, smaller, larger)

Table action: Set value

Function: Sets the data of a referenced object to a value

Active	True	UChar
Duration	0	UShort
Reference	//DB/Channel:hmi/Node:TGW/Msg:TrafficInfo_AR/Sig:TrafficInfo_Stat5	String
Repeat	0	UChar
ValueToSet	NO_TRAFFIC_FLOW	UChar

Parameters:

Reference:

Path to signal, attribute, variable, ...

ValueToSet:

Values which is set to the reference object.

If the reference is invalid „ValueToSet“ will be invisible!

If a Value Table is assigned to the referenced object the synonyms are visible in the edit box.

Table action: Send request

Name	Value	Type
Active	True	UChar
Duration	0	UShort
ExecuterMode	ReplaceExecuterIfActive	UChar
Reference	//DB/Channel:hmi/Node:TGW/Msg:TrafficInfo_AR/Sig:TrafficInfo_Stat4	String
Repeat	0	UChar

- Parameters:

Reference:

-String reference of signal values, attributes or variables

ExecuterMode:

-An executer is the executer of the reference [which can be e.g. the **transmission control**]

-Option [ReplaceExecuterIfActive]

-> The new executer will be temporary the table [until the table has been executed]

-> When the table has been executed, then the old executer will become the executer of the reference again

-Option [ReplaceExecuter]

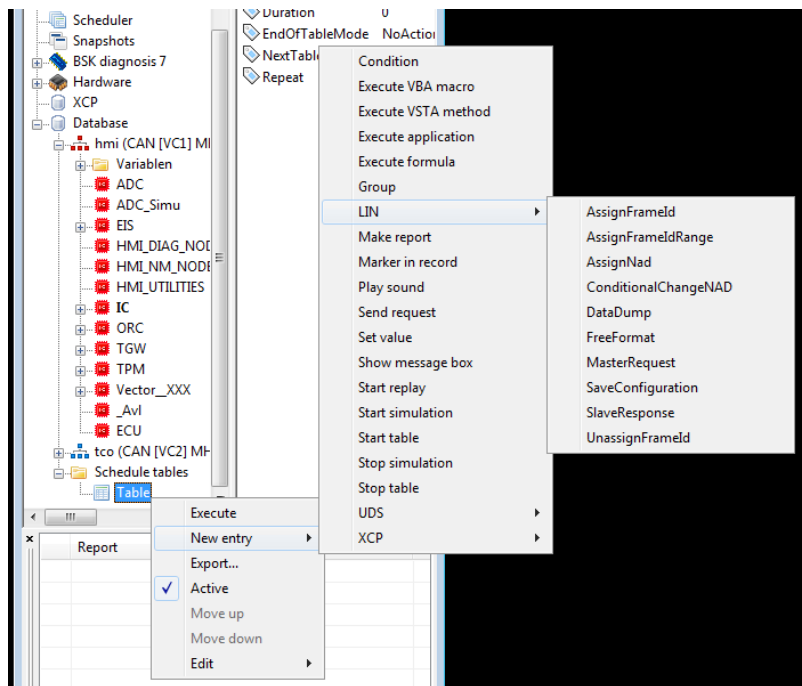
-> The new executer is the table

-> The old executer will be forgotten forever [It can not send anymore]

-Option [KeepExecuter]

-> The old executer will be kept, but may impact the process

Table action: LIN ->...



- AssignFrameId
- AssignFrameIdRange
- AssignNad
- ConditionalChangeNAD
- DataDump
- FreeFormat
- MasterRequest
- SlaveConfiguration
- SlaveResponse
- UnassignFrameId

Table action: UDS ->...

Possible table entries:

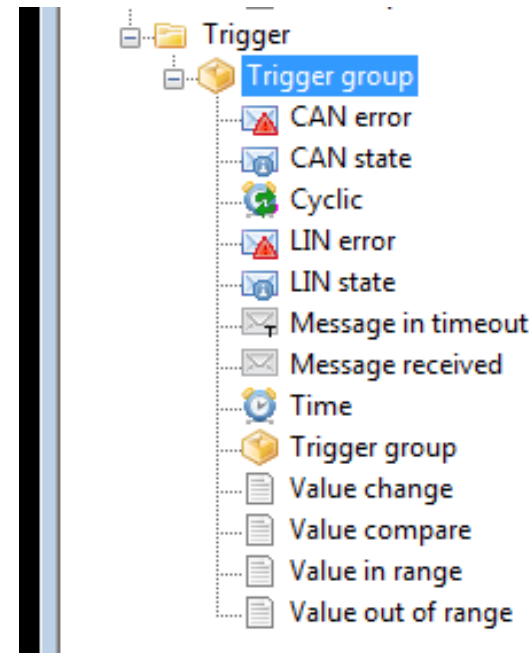
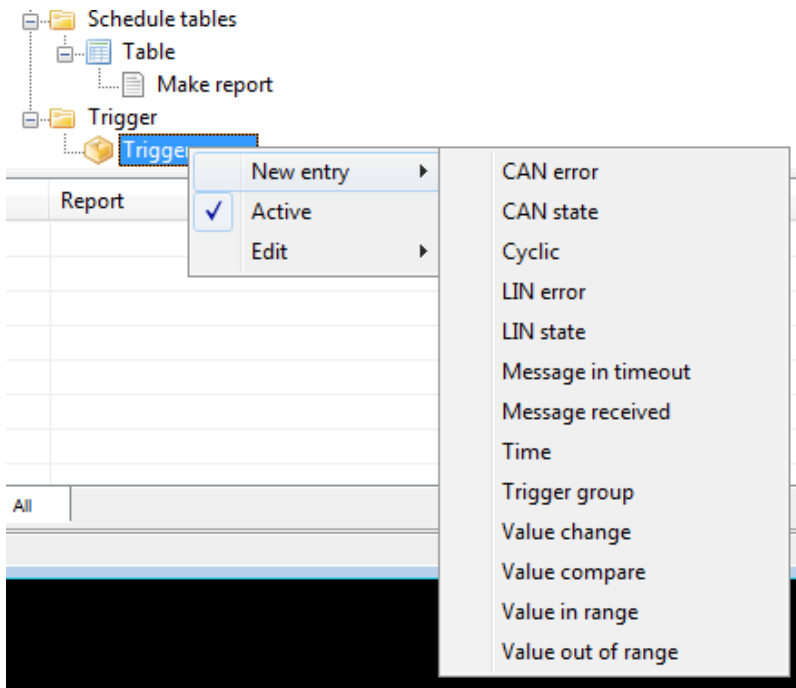
- Diagnosis request
 - Read DTC
 - ReadByAdress
 - ReadByIdentifier
 - Reset
 - SecurityAccess
 - TesterPresent
 - WriteByAdress
 - WriteByIdentifier
-

Table action: XCP ->...

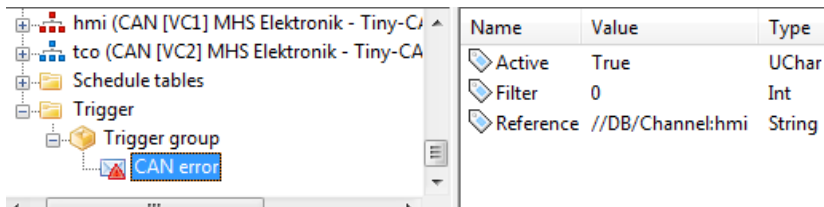
- Possible table entries:
 - Data read
 - Data write

Trigger: Overview

■ List of trigger:



Trigger: Common parameter

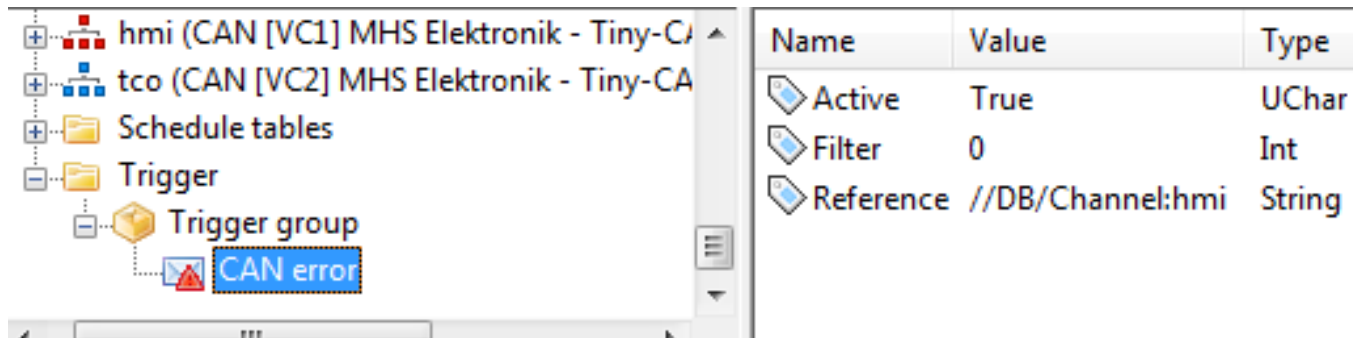


- Each **trigger** has at least the following parameter:

Active:

Can be used to
activate/deactivate **trigger**

Trigger: CAN error



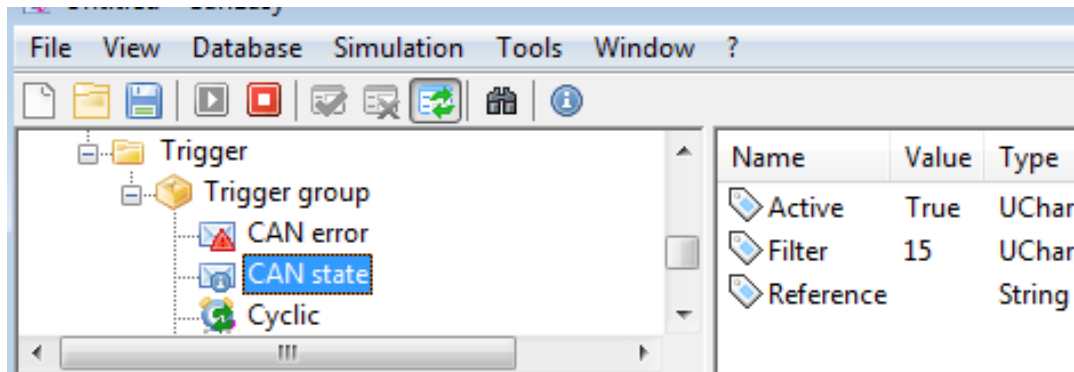
Name	Value	Type
Active	True	UChar
Filter	0	Int
Reference	//DB/Channel:hmi	String

- Parameters:

Reference:

Path of a CAN channel

Trigger: CAN state



- Parameters:

Reference:

String reference of a CAN channel

Filter:

-Defines a bitmask for chipstate/CAN state

-Possible Values:

- [1] -> Bus off
- [2] -> Passive
- [4] -> Warning
- [8] -> Active

Trigger: Cyclic



- Functions:
 - Trigger executes cyclic repetitions
 - First execution after time elapsed

- Parameters:

Time:

Time in ms

Trigger: LIN error

- Parameters:

Reference:

Path of a LIN channel

Filter:

-Defines a bitmask for LIN state

-Possible Values:

[1] -> No Answer

[2] -> Sync Error

[4] -> Error msg

[8] -> CRC error

Trigger: LIN state

- Parameters:

Reference:

Path of a LIN channel

Filter:

–Defines a bitmask for LIN error

–Possible Values:

[0] -> Unknown

[1] -> Wakeup

[2] -> Sleep

Trigger: Message in Timeout

- Parameters:

Reference:

Path of a message

Timeout:

Timeout in ms

Trigger: Time

- Parameters:

Time:

Time in ms since the simulation has been started

Trigger: Value change

- Parameters:

Reference:

Path of an object with values

Trigger: Value in range

- Parameters:

Reference:

Path of an object with values

LowerBound:

Bound where the trigger will execute an action

UpperBound:

Bound where the trigger will execute an action

Trigger: Value out of range

- Parameters:

Reference:

Path of an object with values

LowerBound:

Bound where the trigger will execute an action

UpperBound:

Bound where the trigger will execute an action

Trigger: Value compare

- Parameters:

Reference:

- Is the first operand
- Path, e.g. Message: TrafficInfo

Operator:

- Connects „Reference“ with „Value“
- Possible values: Equal, Not equal, Smaller, Larger

Value:

- Is the second operand
 - Has to be a valid value of „Reference“, e.g. HEAVY_TRAFFIC
 - Valid values will be automatically displayed in a dropdown menu if „Reference“ was valid
-

Thank you for your attention!
