QS_Toolbox

Table

Introduction

QS_Toolbox was developed with 4D v18 and compiled in 4D v18.2.
Because it follows the standard version branch, it can be used without any problem on the R version branch.

What is QS_Toolbox

It is a component for 4D developers to use when analyzing their code, transferring code or migrating.
QS_Toolbox allows in-depth analysis of the structure in order to help you detect possible errors and programming difficulties.
QS_Toolbox does not modify your data without your permission. Except for the method parameters and the replacement of "disapproved" commands, no changes can be made in your code.

Demonstration version vs Commercial version

QS_Toolbox is free, and the source code is available up to version 2.2 of the component.
Since version 3.0, QS_Toolbox has become a commercial component whose cost is excessively low compared to the services it is able to provide you.
The demo version is fully functional for 60 days.
Each time the component is launched, it connects to our servers to check the validity of the license. Aware that you may be on the move and without a temporary connection, the latter accepts 10 offline launches before "blocking" until a new connection is detected.

Component installation

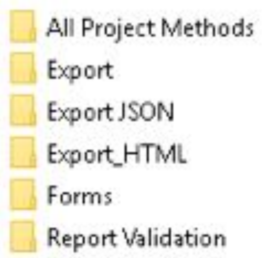
The component (or its shortcut / alias) must be placed in the 'Components' folder of your application to scan.

To start it, you can set the following code in ‘on startup database’ method:

```
ARRAY TEXT($tTxt_Components;0)
COMPONENT LIST($tTxt_Components)
If (Not(Is compiled mode))

     // QS_Toolbox
    If (Find in array($tTxt_Components;"QS_Toolbox@")>0)
    C_POINTER($ptr)
        EXECUTE METHOD("QS_Toolbox";*;$ptr)
    End if
End if
```

At the first launch, a folder is created on the local disk and located:

- PC : ‘drive’:\my documents\QS_Toolbox\<base name>
- Mac : /documents/QS_Toolbox/<base name>

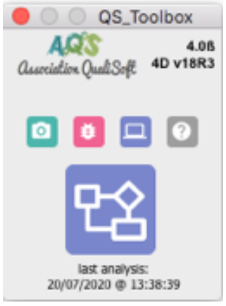


All Project Methods
Export
Export JSON
Export_HTML
Forms
Report Validation

In the folder <base name>, several sub-folders are created to organize the output information.

A data file is also created in this folder and is used to manage parameters and save methods as part of version management. This data file is called 'QST_External_DB'.

Information structure in QS_Toolbox

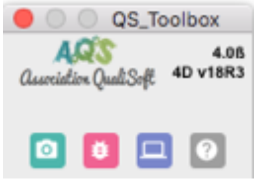


After launch, the component is presented in the form of a pallet accessible in structure mode.
The entire interface is in English.
All different options are accessible through menus. Those in blue are only accessible once the startup database analysis is completed. The duration of this analysis depends on the complexity of the structure (number of tables, forms, methods, ...).
The themes of QS_Toolbox are:

- Methods Analysis
- Analysis of Forms
- Analysis of the database structure
- Code conversion (EN <-> FR)
- 4D method version management
- Automated reporting

Note: When the component is launched, it starts the analysis of your database. This analysis can temporarily slow down your application and allow a smooth navigation between the different elements of the component.
In the event of a major change, you can restart the analysis of your database at any time. To do this, we recommend that you close all windows of the component.

General functions



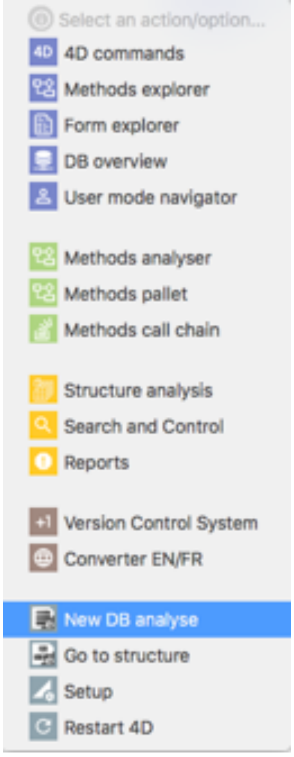
The upper part of the tool palette provides you with the following information:
- Name of the current host database (here QS_Toolbox itself)
- Version number of the component (here 4.0ß)
- current 4D version number used (here v18R3)

The available tools are, from left to right:

- Screen copy automatically saved in the Log folder of the database
- Access to the site of the "bugs list" of the major version of 4D in progress
- Storage of system information
- The 'About' of the component.
  The license number is also entered from this location

Generally speaking, a double click on the name of a method opens it in the 4D editor. In case of changes, they will only be included in the QS_Toolbox analysis after reanalysis of your database. This has been done voluntarily so as not to have to create a process that runs in the background and slows down your application.

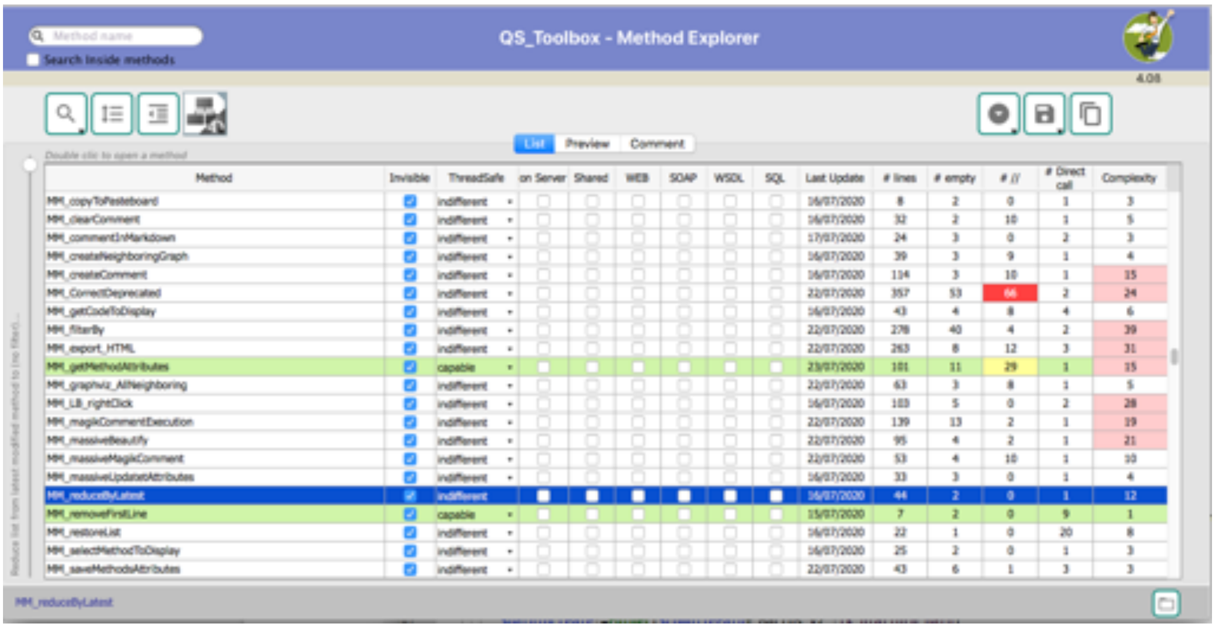
Method management



The management of methods is divided into 5 distinct parts that we will study below:

- 4D commands: lists methods from 4D commands and also provides other information
- Methods explorer: view a set of statistics on methods and modify their properties
- Methods Analyzer: in-depth analysis of your methods
- Pallet methods: quick access to all your code, including form widgets
- Methods call chain: display a graphic of callers or callees linked project methods

Method Overview


Method name
Search inside methods
QS_Toolbox - Method Explorer
4.08
List
Preview
Comment
Double clic to open a method
Reduce list from latest modified method to (no filter)...
MM_reduceByLatest

Method	Invisible	ThreadSafe	on Server	Shared	WEB	SOAP	WSDL	SQL	Last Update	# lines	# empty	# //	# Direct call	Complexity
MM_copyToPasteboard	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	8	2	0	1	3
MM_clearComment	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	32	2	10	1	5
MM_comment1nMarkdown	☑	indifferent	☐	☐	☐	☐	☐	☐	17/07/2020	24	3	0	2	3
MM_createNeighboringGraph	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	39	3	9	1	4
MM_createComment	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	114	3	10	1	15
MM_CorrectDeprecated	☑	indifferent	☐	☐	☐	☐	☐	☐	22/07/2020	357	53	66	2	24
MM_getCodeToDisplay	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	43	4	8	4	6
MM_filterBy	☑	indifferent	☐	☐	☐	☐	☐	☐	22/07/2020	278	40	4	2	39
MM_export_HTML	☑	indifferent	☐	☐	☐	☐	☐	☐	22/07/2020	263	8	12	3	31
MM_getMethodAttributes	☑	capable	☐	☐	☐	☐	☐	☐	23/07/2020	101	11	29	1	15
MM_graphviz_AllNeighboring	☑	indifferent	☐	☐	☐	☐	☐	☐	22/07/2020	63	3	8	1	5
MM_LB_rightClick	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	103	5	0	2	28
MM_magikCommentExecution	☑	indifferent	☐	☐	☐	☐	☐	☐	22/07/2020	139	13	2	1	19
MM_massiveBeautify	☑	indifferent	☐	☐	☐	☐	☐	☐	22/07/2020	95	4	2	1	21
MM_massiveMagikComment	☑	indifferent	☐	☐	☐	☐	☐	☐	22/07/2020	53	4	10	1	10
MM_massiveUpdateAttributes	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	33	3	0	1	4
MM_reduceByLatest	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	44	2	0	1	12
MM_removeFirstLine	☑	capable	☐	☐	☐	☐	☐	☐	15/07/2020	7	2	0	9	1
MM_restoreList	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	22	1	0	20	8
MM_selectMethodToDisplay	☑	indifferent	☐	☐	☐	☐	☐	☐	16/07/2020	25	2	0	1	3
MM_saveMethodsAttributes	☑	indifferent	☐	☐	☐	☐	☐	☐	22/07/2020	43	6	1	3	3

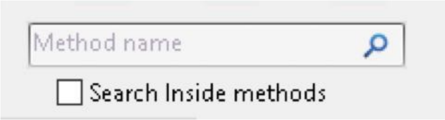
This is the basic module of the component for method management.

This module allows you to, among other things:

- View and modify the parameters of your methods
- To visualize the statistics carried out on the methods
- To visualize the method
- To edit the comments of the method in Markdown format (require 4D 18R3 or upper)
- Export the catalogue of your methods in HTML format

Buttons bar

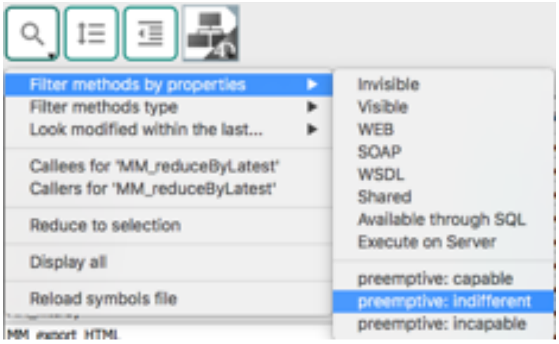
Search area



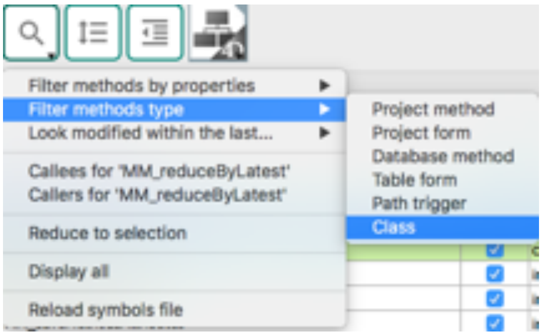
Allows you to reduce the list of displayed methods by searching on the name and content of the method, if the option is enabled.

The magnifying glass

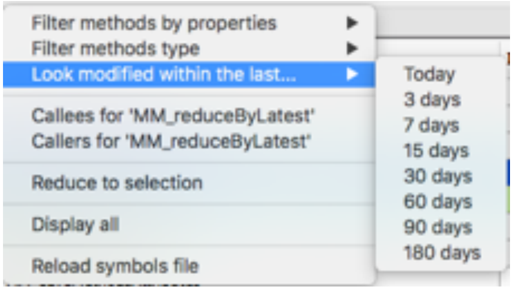
The button bar associated with this module allows you to quickly make selections:



Selection based on method properties

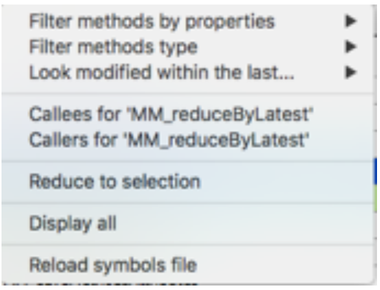


Selection based on the nature of the method (Class will be available only starting from v18R3)


Filter methods by properties
Filter methods type
Look modified within the last...
Callees for 'MM_reduceByLatest'
Callers for 'MM_reduceByLatest'
Reduce to selection
Display all
Reload symbols file
Today
3 days
7 days
15 days
30 days
60 days
90 days
180 days

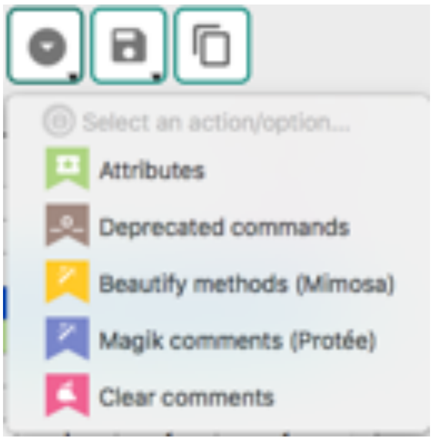
Selection based on the age of the methods

Note that if a method is selected, access to "Called methods" and "Calling methods" is possible. In this case, the content of the list is updated.


Filter methods by properties
Filter methods type
Look modified within the last...
Callees for 'MM_reduceByLatest'
Callers for 'MM_reduceByLatest'
Reduce to selection
Display all
Reload symbols file

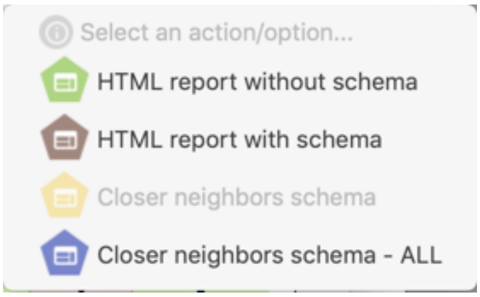
Updates available

The first button allows you to make a generalized modification of the properties of the selected methods or to act directly on the comments of the methods.



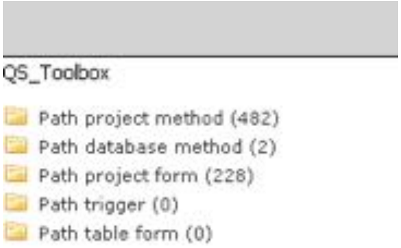
- Update Attributes
- Replacement of depreciated orders (make a backup beforehand)
- Improve code readability (Mimosa method)
- Automatic generation of comments (method based on the one edited by Proteus) in Markdown format (from v18R3 and upper). Using this option also lists the commands and methods that prevent the 'Preemptive Method' status.
- Removing comments from all methods (starting with v18R3 and later).

The save button

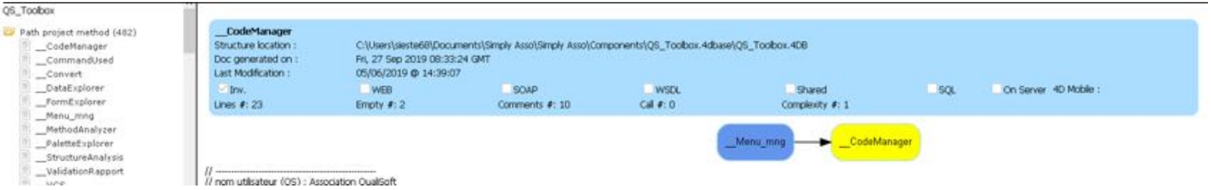

Select an action/option...
HTML report without schema
HTML report with schema
Closer neighbors schema
Closer neighbors schema - ALL

Allows the HTML export of the catalog of methods with or without schema generated using Graphviz (require an active web connexion).
At the end of the export, you will be able to navigate through the methods between them.

The export creates a menu and shows you the number of methods available depending on their location.



Clicking on the name of the method displays the information about it and the callers and called through the link inserted in the diagram.

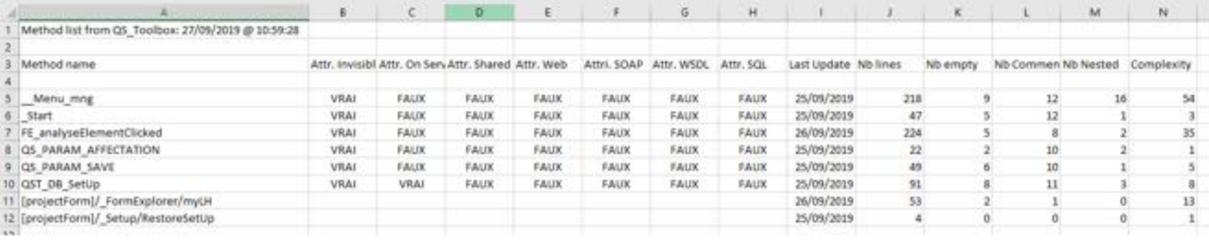


__CodeManager
Structure location : C:\Users\sieste68\Documents\Simply Asso\Simply Asso\Components\QS_Toolbox.4dbase\QS_Toolbox.4DB
Doc generated on : Fri, 27 Sep 2019 08:33:24 GMT
Last Modification : 05/06/2019 @ 14:39:07
☑ Inv. ☐ WEB ☐ SOAP ☐ WSDL ☐ Shared ☐ SQL ☐ On Server 4D Mobile :
Lines #: 23 Empty #: 2 Comments #: 10 Call #: 0 Complexity #: 1

// ---
// nom utilisateur (OS) : Association QualiSoft

The page button

Allows you to copy the list in memory in order to paste it into a spreadsheet.



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Method list from QS_Toolbox: 27/09/2019 @ 10:59:28													
2														
3	Method name	Attr. Invisibl	Attr. On Serv	Attr. Shared	Attr. Web	Attri. SOAP	Attr. WSDL	Attr. SQL	Last Update	Nb lines	Nb empty	Nb Commen	Nb Nested	Complexity
4														
5	__Menu_mng	VRAI	FAUX	FAUX	FAUX	FAUX	FAUX	FAUX	25/09/2019	218	9	12	16	54
6	_Start	VRAI	FAUX	FAUX	FAUX	FAUX	FAUX	FAUX	25/09/2019	47	5	12	1	3
7	FE_analyseElementClicked	VRAI	FAUX	FAUX	FAUX	FAUX	FAUX	FAUX	26/09/2019	224	5	8	2	35
8	QS_PARAM_AFFECTATION	VRAI	FAUX	FAUX	FAUX	FAUX	FAUX	FAUX	25/09/2019	22	2	10	2	1
9	QS_PARAM_SAVE	VRAI	FAUX	FAUX	FAUX	FAUX	FAUX	FAUX	25/09/2019	49	6	10	1	5
10	QST_DB_SetUp	VRAI	VRAI	FAUX	FAUX	FAUX	FAUX	FAUX	25/09/2019	91	8	11	3	8
11	[projectForm]/_FormExplorer/myLH								26/09/2019	53	2	1	0	13
12	[projectForm]/_Setup/RestoreSetUp								25/09/2019	4	0	0	0	1

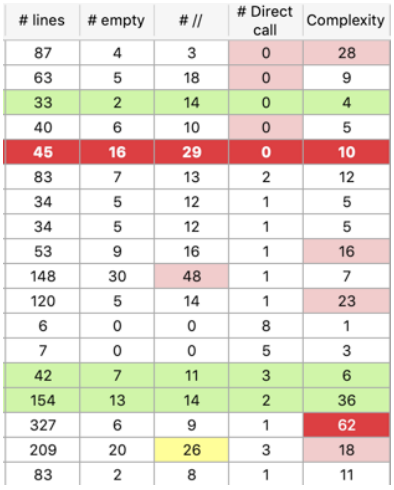
Cursor and folder

The cursor allows you to reduce the list of methods based on the date they were modified. This makes it possible to identify very quickly the last methods affected.

The folder provides quick access to the information stored on the local hard disk:
- Windows: 'drive':\my documents\QS_Toolbox\<base name>
- Mac: /documents/QS_Toolbox/<base name>

Statistics' interpretation

Color codes can be used to draw your attention to different elements:

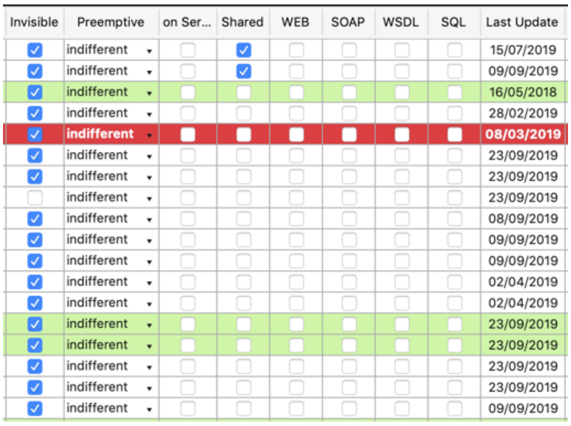


# lines	# empty	# //	# Direct call	Complexity
87	4	3	0	28
63	5	18	0	9
33	2	14	0	4
40	6	10	0	5
45	16	29	0	10
83	7	13	2	12
34	5	12	1	5
34	5	12	1	5
53	9	16	1	16
148	30	48	1	7
120	5	14	1	23
6	0	0	8	1
7	0	0	5	3
42	7	11	3	6
154	13	14	2	36
327	6	9	1	62
209	20	26	3	18
83	2	8	1	11

The statistics correspond to:

- Total number of lines per method
- Number of empty lines
- Number of comment lines
- Number of method calls
- Relative complexity of the method

A cell highlighted by a color quickly allows you to visualize if a verification action is to be considered on your method. 3 color levels have been defined: yellow, pink and red.



Invisible	Preemptive	on Ser...	Shared	WEB	SOAP	WSDL	SQL	Last Update
☑	indifferent ▾	□	☑	□	□	□	□	15/07/2019
☑	indifferent ▾	□	☑	□	□	□	□	09/09/2019
☑	indifferent ▾	□	□	□	□	□	□	16/05/2018
☑	indifferent ▾	□	□	□	□	□	□	28/02/2019
☑	indifferent ▾	□	□	□	□	□	□	08/03/2019
☑	indifferent ▾	□	□	□	□	□	□	23/09/2019
☑	indifferent ▾	□	□	□	□	□	□	23/09/2019
□	indifferent ▾	□	□	□	□	□	□	23/09/2019
☑	indifferent ▾	□	□	□	□	□	□	08/09/2019
☑	indifferent ▾	□	□	□	□	□	□	09/09/2019
☑	indifferent ▾	□	□	□	□	□	□	09/09/2019
☑	indifferent ▾	□	□	□	□	□	□	02/04/2019
☑	indifferent ▾	□	□	□	□	□	□	02/04/2019
☑	indifferent ▾	□	□	□	□	□	□	23/09/2019
☑	indifferent ▾	□	□	□	□	□	□	23/09/2019
☑	indifferent ▾	□	□	□	□	□	□	23/09/2019
☑	indifferent ▾	□	□	□	□	□	□	23/09/2019
☑	indifferent ▾	□	□	□	□	□	□	09/09/2019

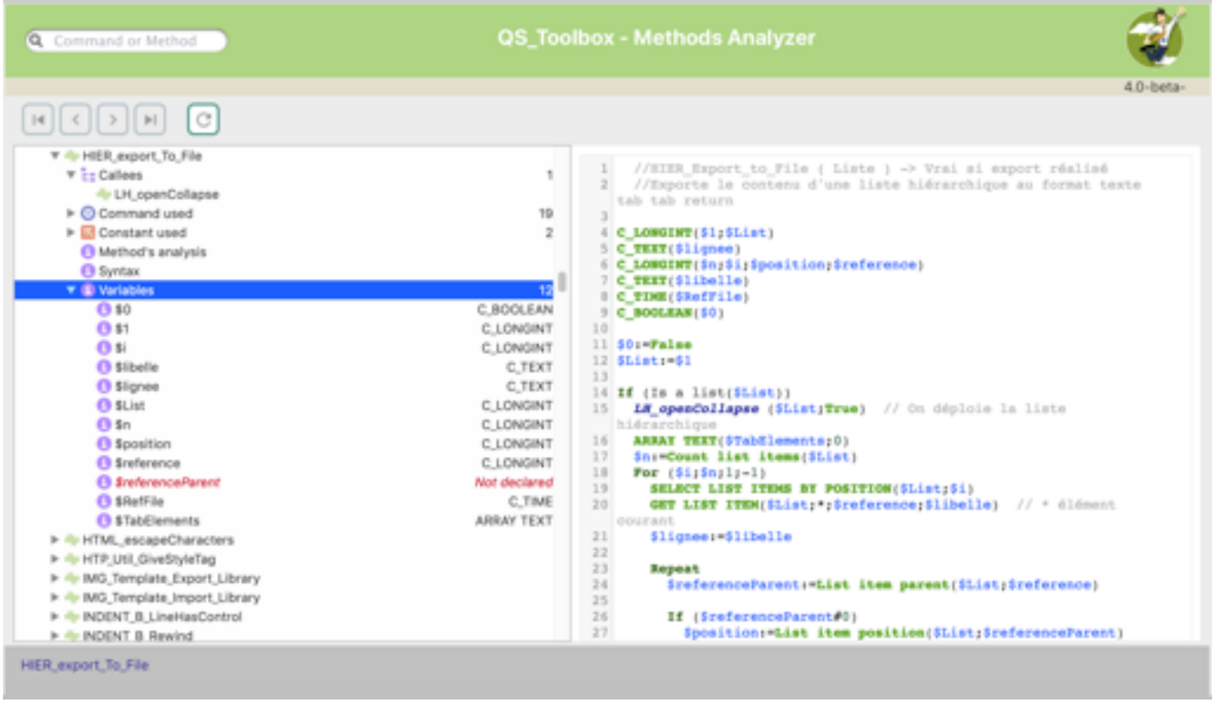
The method properties are accessible and can be modified directly from the graphical interface.
A simple click allows you to modify the desired property.

In case of modification, the icon ✓ appears in the top left corner of the module to save the modifications.

A *green line* indicates that the 'Preemptive' property of the method can be set to 'capable' (TreadSafe). This indication is only available if the typing file was generated during compilation.
Similarly, a line not highlighted in green and whose "Preemptive" property is "capable" must be changed to "indifferent" unless you correct the code and restart the compilation for verification.

A *red line* indicates that the method is "useless" because the sum of the empty and commented lines is equal to the total number of lines of code of the method.

Method Analyser



HIER_export_To_File	
Callees	1
LH_openCollapse	
Command used	19
Constant used	2
Method's analysis	
Syntax	
Variables	12
$0	C_BOOLEAN
$1	C_LONGINT
$i	C_LONGINT
$libelle	C_TEXT
$lignee	C_TEXT
$List	C_LONGINT
$n	C_LONGINT
$position	C_LONGINT
$reference	C_LONGINT
$referenceParent	Not declared
$RefFile	C_TIME
$TabElements	ARRAY TEXT
HTML_escapeCharacters	
HTP_Util_GiveStyleTag	
IMG_Template_Export_Library	
IMG_Template_Import_Library	
INDENT_B_LineHasControl	
INDENT_B_Rewind	

```
  //HIER_Export_to_File ( Liste ) -> Vrai si export réalisé
  //Exporte le contenu d'une liste hiérarchique au format texte tab tab return

C_LONGINT($1;$List)
C_TEXT($lignee)
C_LONGINT($n;$i;$position;$reference)
C_TEXT($libelle)
C_TIME($RefFile)
C_BOOLEAN($0)

$0:=False
$List:=$1

If (Is a list($List))
  LH_openCollapse ($List;True)  // On déploie la liste hiérarchique
  ARRAY TEXT($TabElements;0)
  $n:=Count list items($List)
  For ($i;$n;1;-1)
    SELECT LIST ITEMS BY POSITION($List;$i)
    GET LIST ITEM($List;*;$reference;$libelle)  // * élément courant
    $lignee:=$libelle

    Repeat
      $referenceParent:=List item parent($List;$reference)

      If ($referenceParent#0)
        $position:=List item position($List;$referenceParent)
```

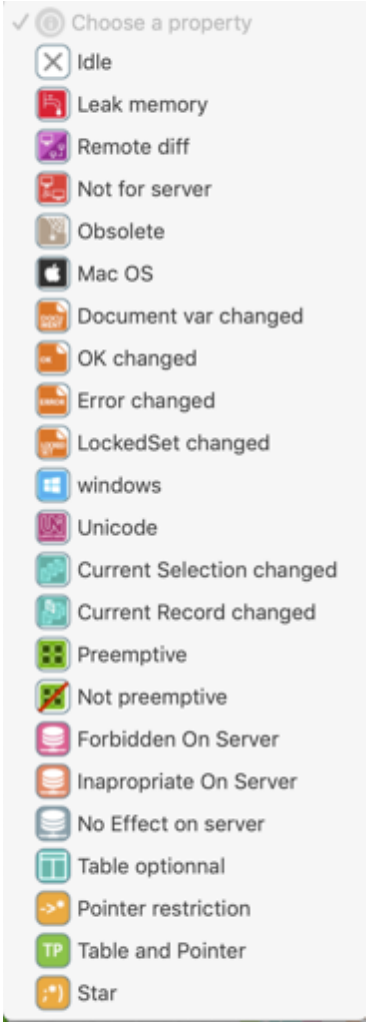
Second module on methods. The latter lists your methods using a hierarchical list, much like the method explorer, with the following differences:

- You have access to calling and called methods directly from the interface
- You have access to the list of commands used in the code
- You have access to the list of constants used in the code
- An analysis of your method is carried out in order to highlight points of attention such as the presence of dead code, the verification of the names of assemblies, the use of "end-of-life" commands...
- You have access to the syntax of your method*
- You have access to the list of variables of your method and their declaration. In case of non-reporting, QS_Toolbox offers you the type to report. *

* If the generation of the symbol file was performed during compilation, the information presented by QS_Toolbox is more relevant.

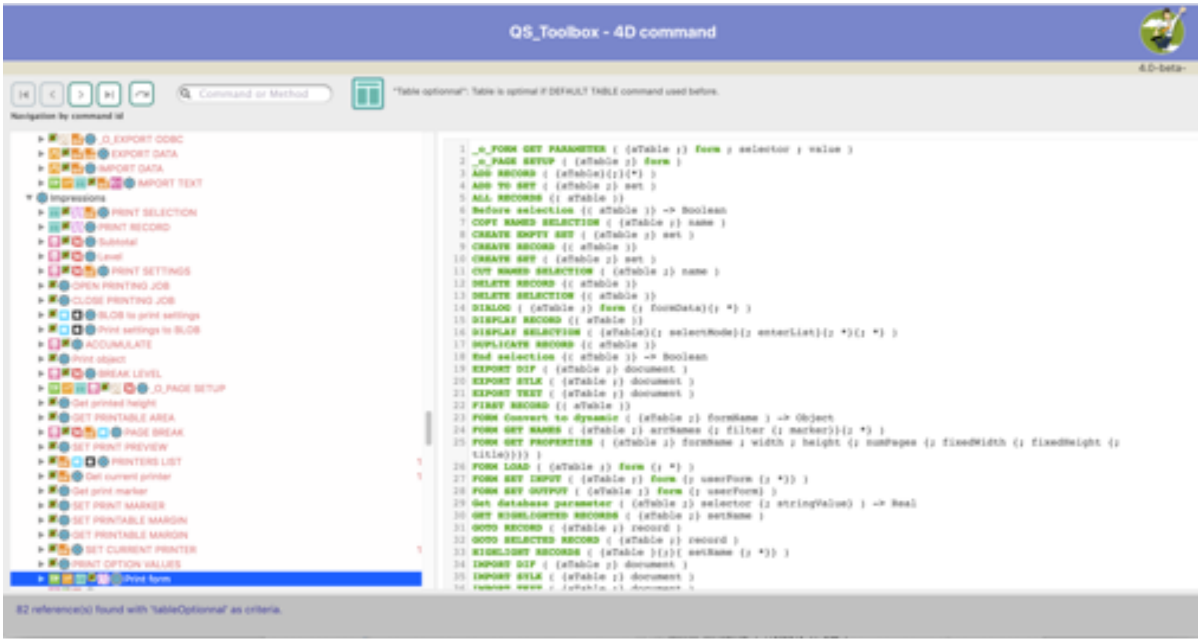
4D Command

This module allows you to list the methods used through the 4D command catalog, but also to list commands with a behavior such as a different client-server operation, those that modify the OK variable, ...



The buttons are "identical" to those found in 4D's documentation (https://doc.4d.com/ or https://livedoc.4d.com/)
Clicking on one of the buttons displays the relevant commands and selects them for quick navigation between them.

Starting from ‘Not preemptive’, buttons are not coming from the documentation and list are based on specific request observed on the 4D forum.



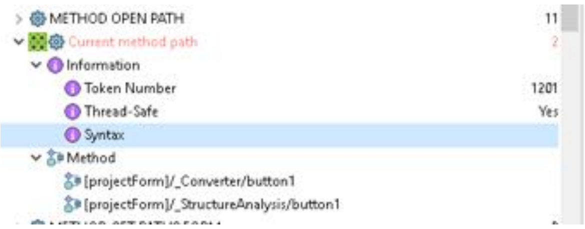
"Table optionnal": Table is optimal if DEFAULT TABLE command used before.

_O_EXPORT ODBC
EXPORT DATA
IMPORT DATA
IMPORT TEXT
Impressions
PRINT SELECTION
PRINT RECORD
Subtotal
Level
PRINT SETTINGS
OPEN PRINTING JOB
CLOSE PRINTING JOB
BLOB to print settings
Print settings to BLOB
ACCUMULATE
Print object
BREAK LEVEL
_O_PAGE SETUP
Get printed height
GET PRINTABLE AREA
PAGE BREAK
SET PRINT PREVIEW
PRINTERS LIST 1
Get current printer 1
Get print marker
SET PRINT MARKER
SET PRINTABLE MARGIN
GET PRINTABLE MARGIN
SET CURRENT PRINTER 1
PRINT OPTION VALUES
Print form

```
_o_FORM GET PARAMETER ( {aTable ;} form ; selector ; value )
_o_PAGE SETUP ( {aTable ;} form )
ADD RECORD ( {aTable}{;}{*} )
ADD TO SET ( {aTable ;} set )
ALL RECORDS {( aTable )}
Before selection {( aTable )} -> Boolean
COPY NAMED SELECTION ( {aTable ;} name )
CREATE EMPTY SET ( {aTable ;} set )
CREATE RECORD {( aTable )}
CREATE SET ( {aTable ;} set )
CUT NAMED SELECTION ( {aTable ;} name )
DELETE RECORD {( aTable )}
DELETE SELECTION {( aTable )}
DIALOG ( {aTable ;} form {; formData}{; *} )
DISPLAY RECORD {( aTable )}
DISPLAY SELECTION ( {aTable}{; selectMode}{; enterList}{; *}{; *} )
DUPLICATE RECORD {( aTable )}
End selection {( aTable )} -> Boolean
EXPORT DIF ( {aTable ;} document )
EXPORT SYLK ( {aTable ;} document )
EXPORT TEXT ( {aTable ;} document )
FIRST RECORD {( aTable )}
FORM Convert to dynamic ( {aTable ;} formName ) -> Object
FORM GET NAMES ( {aTable ;} arrNames {; filter {; marker}}{; *} )
FORM GET PROPERTIES ( {aTable ;} formName ; width ; height {; numPages {; fixedWidth {; fixedHeight {;
title}}}} )
FORM LOAD ( {aTable ;} form {; *} )
FORM SET INPUT ( {aTable ;} form {; userForm {; *}} )
FORM SET OUTPUT ( {aTable ;} form {; userForm} )
Get database parameter ( {aTable ;} selector {; stringValue} ) -> Real
GET HIGHLIGHTED RECORDS ( {aTable ;} setName )
GOTO RECORD ( {aTable ;} record )
GOTO SELECTED RECORD ( {aTable ;} record )
HIGHLIGHT RECORDS ( {aTable }{;}{ setName {; *}} )
IMPORT DIF ( {aTable ;} document )
IMPORT SYLK ( {aTable ;} document )
IMPORT TEXT ( {aTable ;} document )
```

82 reference(s) found with 'tableOptionnal' as criteria.

Example of selecting commands whose table specification is optional when using "Default table".

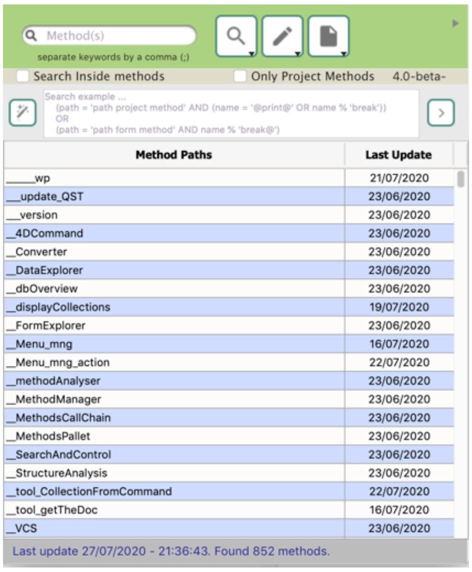


METHOD OPEN PATH	11
Current method path	2
Information	
Token Number	1201
Thread-Safe	Yes
Syntax	
Method	
[projectForm]/_Converter/button1	
[projectForm]/_StructureAnalysis/button1	

Selecting a command allows you to quickly know the number of methods using it and to extract:

- His token
- Its compatibility to be Thread-safe
- Its syntax
- The list of methods using this command, the code of which is displayed in case of selection

Methods Pallet



□ Search Inside methods □ Only Project Methods 4.0-beta-

Search example ...
(path = 'path project method' AND (name = '@print@' OR name % 'break'))
OR
(path = 'path form method' AND name % 'break@')

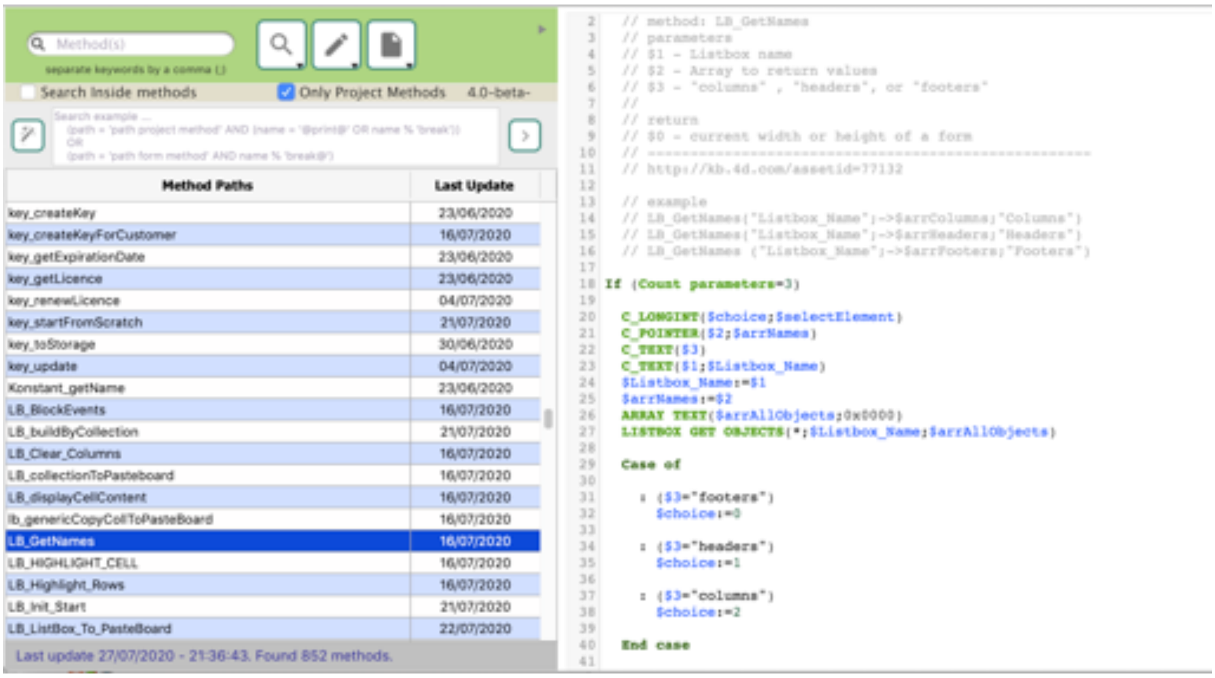
Method Paths	Last Update
_____wp	21/07/2020
__update_QST	23/06/2020
__version	23/06/2020
_4DCommand	23/06/2020
_Converter	23/06/2020
_DataExplorer	23/06/2020
_dbOverview	23/06/2020
_displayCollections	19/07/2020
_FormExplorer	23/06/2020
_Menu_mng	16/07/2020
_Menu_mng_action	22/07/2020
_methodAnalyser	23/06/2020
_MethodManager	23/06/2020
_MethodsCallChain	23/06/2020
_MethodsPallet	23/06/2020
_SearchAndControl	23/06/2020
_StructureAnalysis	23/06/2020
_tool_CollectionFromCommand	22/07/2020
_tool_getTheDoc	16/07/2020
_VCS	23/06/2020

Last update 27/07/2020 - 21:36:43. Found 852 methods.

This module allows you to have the list of methods on hand to view or copy all or part of the code.

In addition to the selection tools identical to those in the 'Method overview' module, you can search in the code for project methods only, if the option is selected, or formulate a query of type ORDA. The available keywords of the Collection are available from the icon on the left. The arrow on the right allows you to launch the query.

Clicking on it ⊞ displays the right panel where you will find the code of the selected method and from which you can extract a portion of the code before copying it.



□ Search Inside methods ☑ Only Project Methods 4.0-beta-

Search example ...
(path = 'path project method' AND (name = '@print@' OR name % 'break'))
OR
(path = 'path form method' AND name % 'break@')

Method Paths	Last Update
key_createKey	23/06/2020
key_createKeyForCustomer	16/07/2020
key_getExpirationDate	23/06/2020
key_getLicence	23/06/2020
key_renewLicence	04/07/2020
key_startFromScratch	21/07/2020
key_toStorage	30/06/2020
key_update	04/07/2020
Konstant_getName	23/06/2020
LB_BlockEvents	16/07/2020
LB_buildByCollection	21/07/2020
LB_Clear_Columns	16/07/2020
LB_collectionToPasteboard	16/07/2020
LB_displayCellContent	16/07/2020
lb_genericCopyCollToPasteBoard	16/07/2020
LB_GetNames	16/07/2020
LB_HIGHLIGHT_CELL	16/07/2020
LB_Highlight_Rows	16/07/2020
LB_Init_Start	21/07/2020
LB_ListBox_To_PasteBoard	22/07/2020

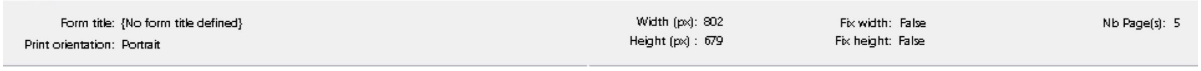
Last update 27/07/2020 - 21:36:43. Found 852 methods.

```
  // method: LB_GetNames
  // parameters
  // $1 - Listbox name
  // $2 - Array to return values
  // $3 - "columns" , "headers", or "footers"
  //
  // return
  // $0 - current width or height of a form
  // ========================================================
  // http://kb.4d.com/assetid=77132

  // example
  // LB_GetNames("Listbox_Name";->$arrColumns;"Columns")
  // LB_GetNames("Listbox_Name";->$arrHeaders;"Headers")
  // LB_GetNames ("Listbox_Name";->$arrFooters;"Footers")

If (Count parameters=3)

  C_LONGINT($choice;$selectElement)
  C_POINTER($2;$arrNames)
  C_TEXT($3)
  C_TEXT($1;$Listbox_Name)
  $Listbox_Name:=$1
  $arrNames:=$2
  ARRAY TEXT($arrAllObjects;0x0000)
  LISTBOX GET OBJECTS(*;$Listbox_Name;$arrAllObjects)

  Case of

    : ($3="footers")
      $choice:=0

    : ($3="headers")
      $choice:=1

    : ($3="columns")
      $choice:=2

  End case

```

Form Explorer

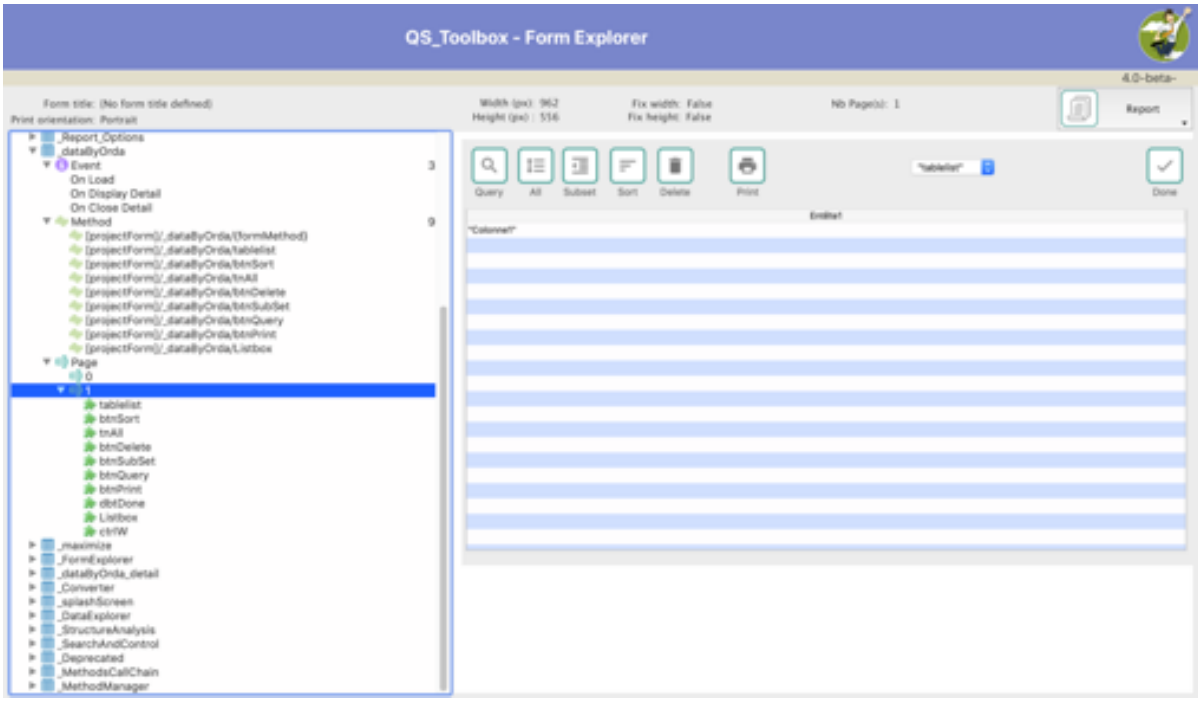
This module allows you to view a set of characteristics of your forms in a different way than 4D's Form Explorer.

The top banner displays the main attributes of the form, such as the name of the form, heights and widths, orientation and number of pages.



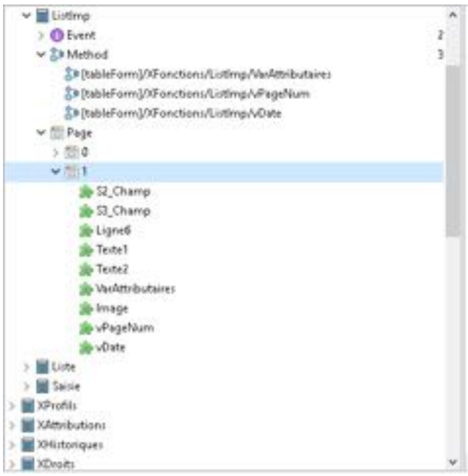
Form title: {No form title defined}
Print orientation: Portrait
Width (px): 802
Height (px) : 679
Fix width: False
Fix height: False
Nb Page(s): 5

Selecting a form from the list allows you to retrieve, in real time, the events checked for that form, the list of widgets containing a method and the number of pages used in that form.



Form title: {No form title defined}
Print orientation: Portrait
Width (px): 962
Height (px) : 516
Fix width: False
Fix height: False
Nb Page(s): 1

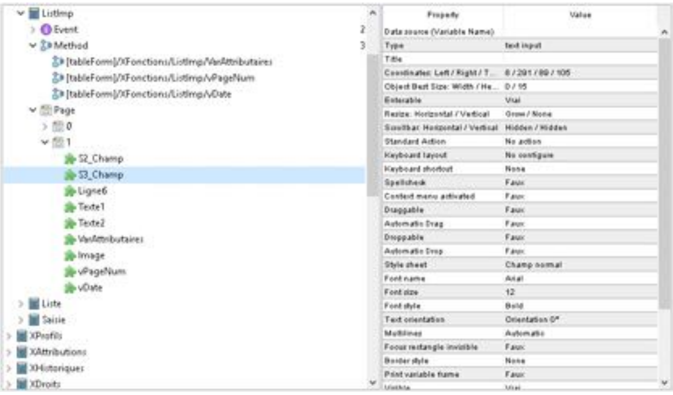
```
▸ _Report_Options
▾ _dataByOrda
  ▾ Event                                              3
      On Load
      On Display Detail
      On Close Detail
  ▾ Method                                             9
      [projectForm]/_dataByOrda/{formMethod}
      [projectForm]/_dataByOrda/tablelist
      [projectForm]/_dataByOrda/btnSort
      [projectForm]/_dataByOrda/tnAll
      [projectForm]/_dataByOrda/btnDelete
      [projectForm]/_dataByOrda/btnSubSet
      [projectForm]/_dataByOrda/btnQuery
      [projectForm]/_dataByOrda/btnPrint
      [projectForm]/_dataByOrda/Listbox
  ▾ Page
      0
    ▾ 1
        tablelist
        btnSort
        tnAll
        btnDelete
        btnSubSet
        btnQuery
        btnPrint
        dbtDone
        Listbox
        ctrlW
▸ _maximize
▸ _FormExplorer
▸ _dataByOrda_detail
▸ _Converter
▸ _splashScreen
▸ _DataExplorer
▸ _StructureAnalysis
▸ _SearchAndControl
▸ _Deprecated
▸ _MethodsCallChain
▸ _MethodManager
```



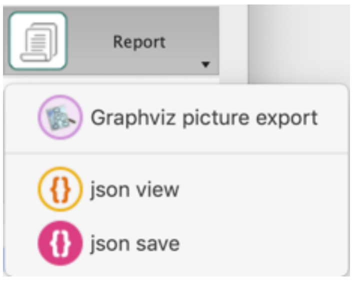
Clicking on the form name displays the screenshot of page 1 of the form.

Clicking on a page number not only displays the screen copy of the content of that page, but also lists the list of widgets that make up the page.

Selecting a widget allows you to display all the properties of the same widget.
The list consists of all the properties available using the 4D commands.

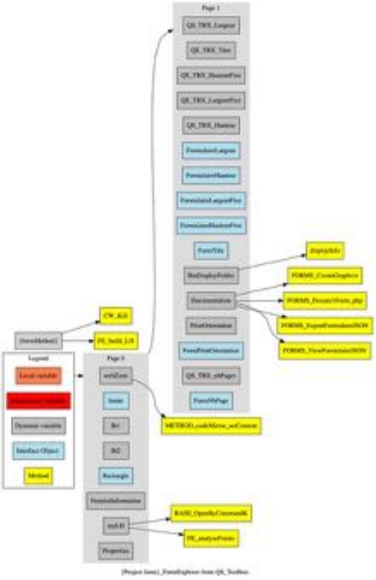


Property	Value
Data source (Variable Name)	
Type	text input
Title	
Coordinates: Left / Right / T...	8 / 291 / 89 / 105
Object Best Size: Width / He...	0 / 15
Enterable	Vrai
Resize: Horizontal / Vertical	Grow / None
Scrollbar: Horizontal / Vertical	Hidden / Hidden
Standard Action	No action
Keyboard layout	No configure
Keyboard shortcut	None
Spellcheck	Faux
Context menu activated	Faux
Draggable	Faux
Automatic Drag	Faux
Droppable	Faux
Automatic Drop	Faux
Style sheet	Champ normal
Font name	Arial
Font size	12
Font style	Bold
Text orientation	Orientation 0°
Multilines	Automatic
Focus rectangle invisible	Faux
Border style	None
Print variable frame	Faux
Visible	Vrai



The'Report' button allows you to retrieve all the information in the form in the form:

- - The link map of the form in Graphviz format
- - To visualize the definition of the form in JSON format
- - To save the training definition in JSON format

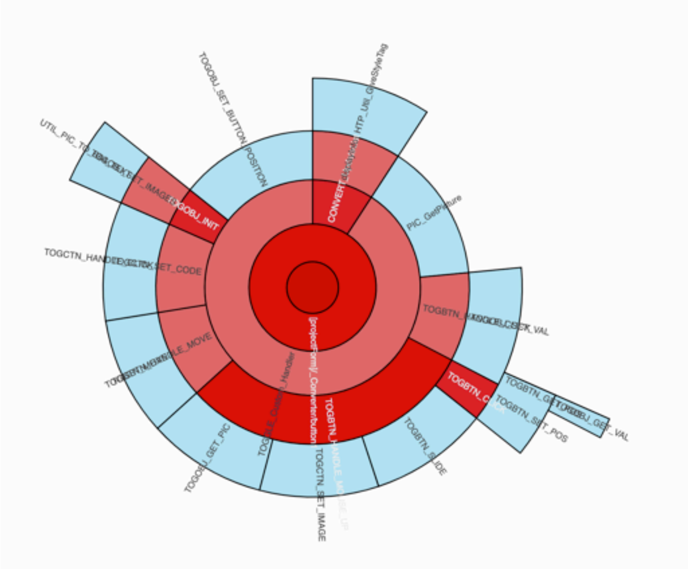


The link map is an interesting tool.
It highlights the links between the widgets on the different pages of the form as well as the links with the project methods called from the widgets in a graphical form.

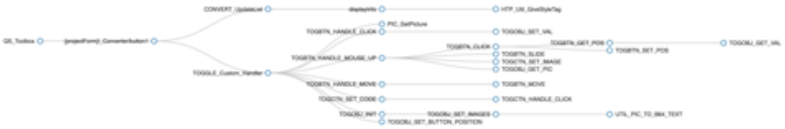
Method call chain

This module shows in different forms the links between the methods as well as the call chain. This module uses the js D3 applet and allows the representation of the following "callers" and "callees":

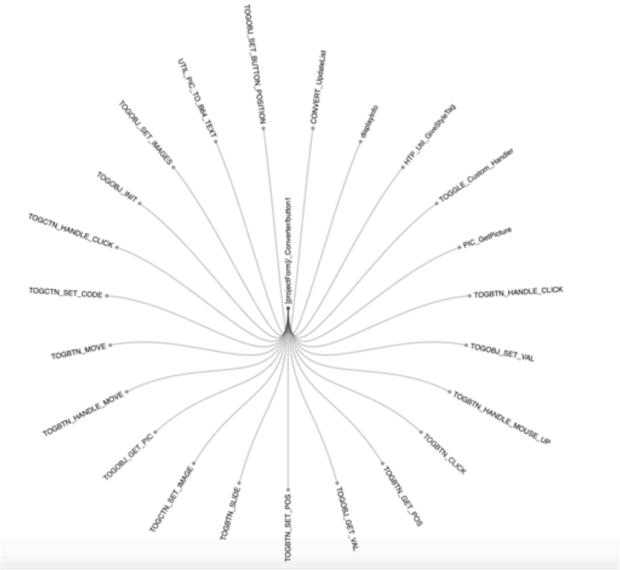
Sunburn



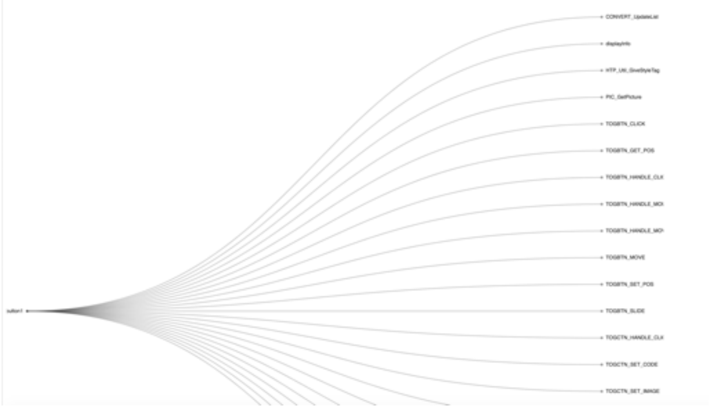
Tree collapse full



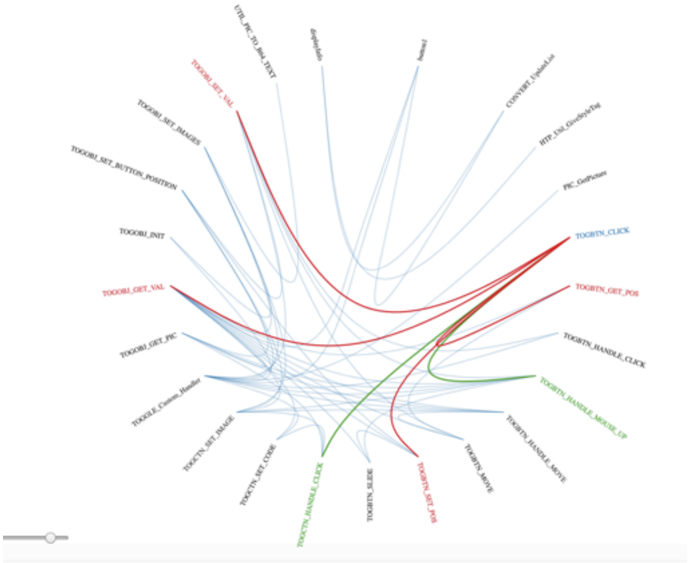
Tree radial tidy



Tree tidy



Edge Bundling

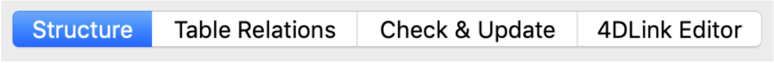


Structure Analysis

This module corresponds to the toolbox of QS_Toolbox. Indeed, it allows you to:

- View all field and table attributes
- View the definition of links
- To check, to look for what is wrong with your code.
- To execute SQL or 4D code under your sole responsibility
- Edit 4Dlink links

The transition from one functionality to another is managed by the following selection bar:



Structure

Display table & field definition data

When selecting a table, the list of fields that make it up is displayed. The background color is the one defined in the structure editor.

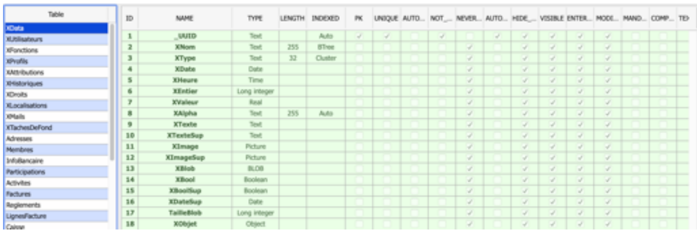
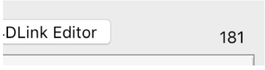


Table
XData
XUtilisateurs
XFonctions
XProfils
XAttributions
XHistoriques
XDroits
XLocalisations
XMails
XTachesDeFond
Adresses
Membres
InfoBancaire
Participations
Activites
Factures
Reglements
LignesFacture
Caisse

ID	NAME	TYPE	LENGTH	INDEXED	PK	UNIQUE	AUTO...	NOT_...	NEVER...	AUTO...	HIDE_...	VISIBLE	ENTER...	MODE...	MAND...	COMP...	TE>
1	_UUID	Text		Auto	✓	✓		✓		✓	✓	✓	✓	✓			
2	XNom	Text	255	BTree					✓		✓	✓	✓	✓			
3	XType	Text	32	Cluster					✓		✓	✓	✓	✓			
4	XDate	Date							✓		✓	✓	✓	✓			
5	XHeure	Time							✓		✓	✓	✓	✓			
6	XEntier	Long integer							✓		✓	✓	✓	✓			
7	XValeur	Real							✓		✓	✓	✓	✓			
8	XAlpha	Text	255	Auto					✓		✓	✓	✓	✓			
9	XTexte	Text							✓		✓	✓	✓	✓			
10	XTexteSup	Text							✓		✓	✓	✓	✓			
11	XImage	Picture							✓		✓	✓	✓	✓			
12	XImageSup	Picture							✓		✓	✓	✓	✓			
13	XBlob	BLOB							✓		✓	✓	✓	✓			
14	XBool	Boolean							✓		✓	✓	✓	✓			
15	XBoolSup	Boolean							✓		✓	✓	✓	✓			
16	XDateSup	Date							✓		✓	✓	✓	✓			
17	TailleBlob	Long integer							✓		✓	✓	✓	✓			
18	XObjet	Object							✓		✓	✓	✓	✓			



At the top right, QS_Toolbox indicates the number of records contained in this table.

When the selector is set to Tables, then the information about the Table is displayed.

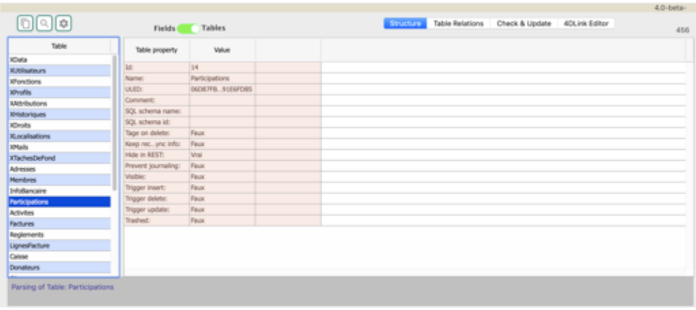


Table
XData
XUtilisateurs
XFonctions
XProfils
XAttributions
XHistoriques
XDroits
XLocalisations
XMails
XTachesDeFond
Adresses
Membres
InfoBancaire
Participations
Activites
Factures
Reglements
LignesFacture
Caisse
Donateurs

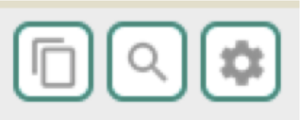
Table property	Value
Id:	14
Name:	Participations
UUID:	06D87FB...91E6FDB5
Comment:	
SQL schema name:	
SQL schema id:	
Tage on delete:	Faux
Keep rec...ync info:	Faux
Hide in REST:	Vrai
Prevent journaling:	Faux
Visible:	Faux
Trigger insert:	Faux
Trigger delete:	Faux
Trigger update:	Faux
Trashed:	Faux

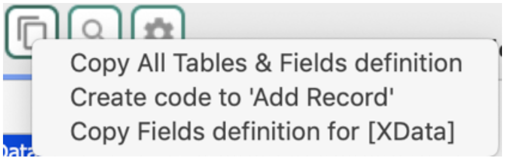
Parsing of Table: Participations

Specific options

The specific options are available through the following icons:

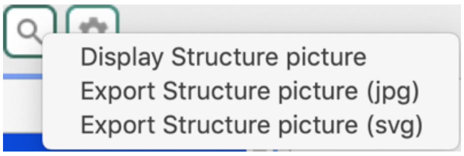
- Copying information
- Displaying or exporting the structure schema
- - Database management tools

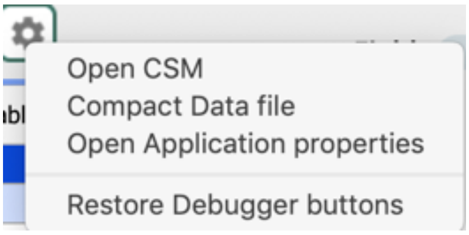



Copy All Tables & Fields definition
Create code to 'Add Record'
Copy Fields definition for [XData]

Allows you to copy the definition of the fields of the selection table, all tables and all fields as well as to store the code for adding a record using the 4D code.

Display of the database structure and export of the structure image (JPG or SVG format).

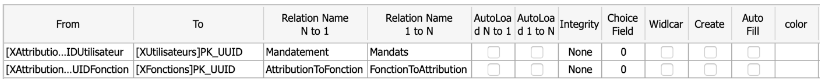

Display Structure picture
Export Structure picture (jpg)
Export Structure picture (svg)



The last icon allows you to launch the CSM dialogs, the application properties, compact the data file by command line or restore the debugger buttons when they have disappeared.

Table Relations

This feature allows you to view all the links defined in the database structure.
It is not possible to define a link from this dialog. You must open the structure editor and add / modify the link from there.

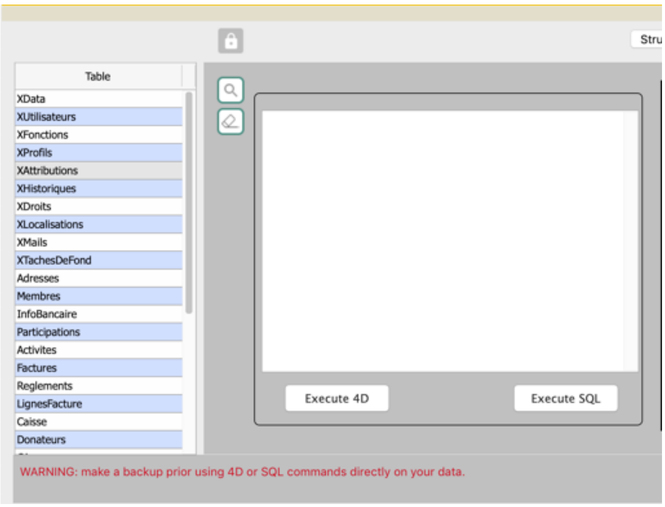


From	To	Relation Name N to 1	Relation Name 1 to N	AutoLoad N to 1	AutoLoad 1 to N	Integrity	Choice Field	Widlcar	Create	Auto Fill	color
[XAttributio...IDUtilisateur	[XUtilisateurs]PK_UUID	Mandatement	Mandats	□	□	None	0	□	□	□	
[XAttribution...UIDFonction	[XFonctions]PK_UUID	AttributionToFonction	FonctionToAttribution	□	□	None	0	□	□	□	

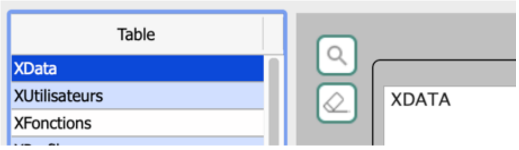
Check & Update

The features in this section may be dangerous for your data if the code executed makes a change to it.
An input field is available and allows you to execute either 4D code or SQL code directly from QS_Toolbox.

No verification of the entry is performed by the component.

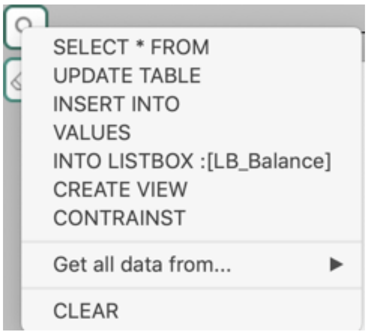


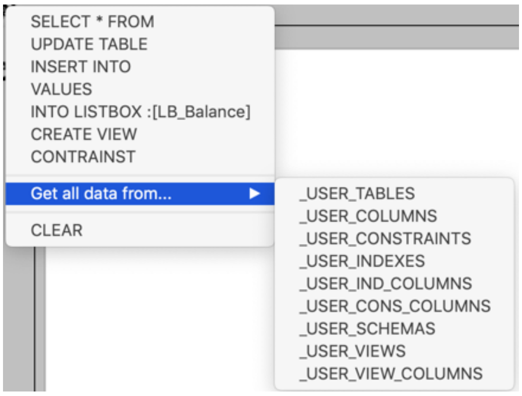
WARNING: make a backup prior using 4D or SQL commands directly on your data.



A double click on the name of a table allows you to add the name of this table in the editor

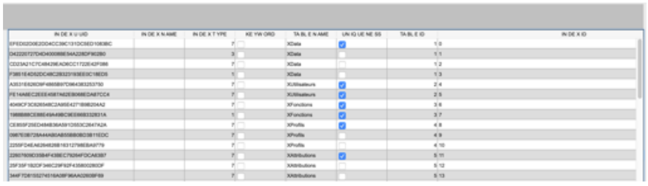
To help you build a SQL query, the main usable keywords are available from the wheel icon.
The 'CLEAR' line allows you to delete any entry from the field.





The menu "This all data from..." allows you to obtain a list of the information of the system tables that are read-only.

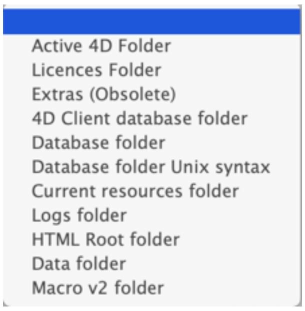
The result of a SQL query of type 'SELECT' is displayed in a listbox.

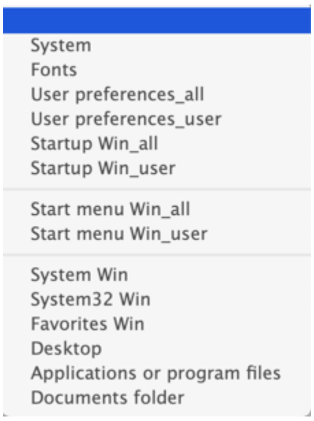


INDEX UUID	INDEX NAME	INDEX TYPE	KEYWORD	TABLE NAME	UNIQUENESS	TABLE ID	INDEX ID
EFED02D0E2DD4CC39C131DC5ED1083BC		7	□	XData	☑	1	0
D42220727D4D4000888E54A228DF902B0		3	□	XData	□	1	1
CD23A21C7C48429EAD6CC1722E42F086		7	□	XData	□	1	2
F3851E4D52DC48C2B323193EE0C18ED5		1	□	XData	□	1	3
A3531E626D9F4865B97D8643B3253750		7	□	XUtilisateurs	☑	2	4
FE14A8EC2EEE4587A62EB068EDA87DC4		7	□	XUtilisateurs	☑	2	5
4049CF3C826548C2A95E4271B9B204A2		7	□	XFonctions	☑	3	6
1988B88CE88E49A49BC9E8868332831A		1	□	XFonctions	☑	3	7
CE855F25ED484B36A591C553C2647A2A		7	□	XProfils	☑	4	8
0987E0B728A44A80AB55BB0BD3B11EDC		7	□	XProfils	□	4	9
2255FD4EA6264826B1631279BEBA9779		7	□	XProfils	□	4	10
22807609D35B4F438EC79264FDCA83B7		7	□	XAttributions	☑	5	11
25F35F1B2DF346C29F92F435800280DF		7	□	XAttributions	□	5	12
344F7D81552745168A08F96AA0280BF69		7	□	XAttributions	□	5	13

The right part of the Check & Update feature allows you to access the different folders of the system:

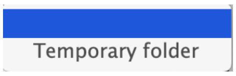
Access to all available folders thanks to the "4D Folder" command

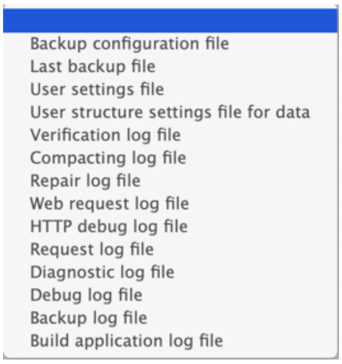




Access to all available folders through the 'System folder' command

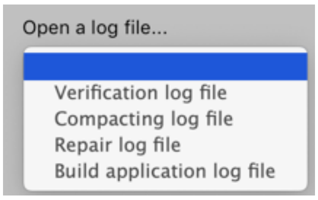
Access to the temporary folder thanks to the command "Temporary folder".



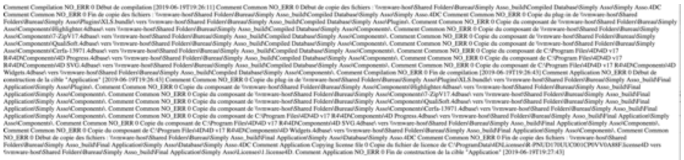


Access to all available folders thanks to the "4D File" command

The "Open a log file" part allows you to open a LOG file that can be used by the correct application of "LogStyleSheet.xsl".

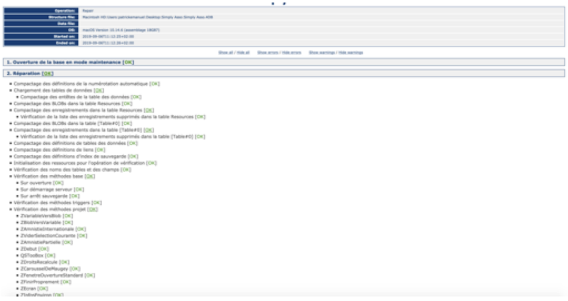


Log opened by double click without the application of "LogStyleSheet.xsl".



```
Comment Compilation NO_ERR 0 Début de compilation [2019-06-19T19:26:11] Comment Common NO_ERR 0 Début de copie des fichiers : \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Simply Asso.4DC
Comment Common NO_ERR 0 Fin de copie des fichiers : \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Simply Asso.4DC Comment Common NO_ERR 0 Copie du plug-in de \\vmware-host\Shared
Folders\Bureau\Simply Asso\Plugins\XLS.bundle\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Plugins\. Comment Common NO_ERR 0 Copie du composant de \\vmware-host\Shared Folders\Bureau\Simply
Asso\Components\Highlighter.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de \\vmware-host\Shared Folders\Bureau\Simply
Asso\Components\7-ZipV17.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de \\vmware-host\Shared Folders\Bureau\Simply
Asso\Components\QualiSoft.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de \\vmware-host\Shared Folders\Bureau\Simply
Asso\Components\Cerfa-13971.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de C:\Program Files\4D\4D v17
R4\4D\Components\4D Progress.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de C:\Program Files\4D\4D v17
R4\4D\Components\4D SVG.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de C:\Program Files\4D\4D v17 R4\4D\Components\4D
Widgets.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Compiled Database\Simply Asso\Components\. Comment Compilation NO_ERR 0 Fin de compilation [2019-06-19T19:26:43] Comment Application NO_ERR 0 Début de
construction de la cible "Application" [2019-06-19T19:26:43] Comment Common NO_ERR 0 Copie du plug-in de \\vmware-host\Shared Folders\Bureau\Simply Asso\Plugins\XLS.bundle\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final
Application\Simply Asso\Plugins\. Comment Common NO_ERR 0 Copie du composant de \\vmware-host\Shared Folders\Bureau\Simply Asso\Components\Highlighter.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final
Application\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de \\vmware-host\Shared Folders\Bureau\Simply Asso\Components\7-ZipV17.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final
Application\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de \\vmware-host\Shared Folders\Bureau\Simply Asso\Components\QualiSoft.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final
Application\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de \\vmware-host\Shared Folders\Bureau\Simply Asso\Components\Cerfa-13971.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final
Application\Simply Asso\Components\. Comment Common NO_ERR 0 Copie du composant de C:\Program Files\4D\4D v17 R4\4D\Components\4D Progress.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final Application\Simply
Asso\Components\. Comment Common NO_ERR 0 Copie du composant de C:\Program Files\4D\4D v17 R4\4D\Components\4D SVG.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final Application\Simply Asso\Components\.
Comment Common NO_ERR 0 Copie du composant de C:\Program Files\4D\4D v17 R4\4D\Components\4D Widgets.4dbase\ vers \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final Application\Simply Asso\Components\. Comment Common
NO_ERR 0 Début de copie des fichiers : \\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final Application\Simply Asso\Database\Simply Asso.4DC Comment Common NO_ERR 0 Fin de copie des fichiers : \\vmware-host\Shared
Folders\Bureau\Simply Asso_build\Final Application\Simply Asso\Database\Simply Asso.4DC Comment Application Copying license file 0 Copie du fichier de licence de C:\ProgramData\4D\Licenses\R-PNUD170UUC001CP0VV0A8F.license4D vers
\\vmware-host\Shared Folders\Bureau\Simply Asso_build\Final Application\Simply Asso\Licenses\1.license4D. Comment Application NO_ERR 0 Fin de construction de la cible "Application" [2019-06-19T19:27:43]
```

Open log with consideration of "LogStyleSheet.xsl"'.



Operation:	Repair
Structure file:	Macintosh HD:Users:patrickemanuel:Desktop:Simply Asso:Simply Asso.4DB
Data file:	
OS:	macOS Version 10.14.6 (assemblage 18G87)
Started on:	2019-09-06T11:12:25+02:00
Ended on:	2019-09-06T11:12:26+02:00

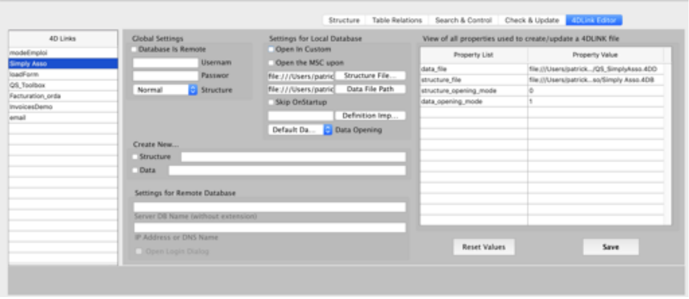
1. Ouverture de la base en mode maintenance [OK]

2. Réparation [OK]

- Compactage des définitions de la numérotation automatique [OK]
- Chargement des tables de données [OK]
  - Compactage des entités de la table des données [OK]
- Compactage des BLOBs dans la table Resources [OK]
- Compactage des enregistrements dans la table Resources [OK]
  - Vérification de la liste des enregistrements supprimés dans la table Resources [OK]
- Compactage des BLOBs dans la table [Table#0] [OK]
- Compactage des enregistrements dans la table [Table#0] [OK]
  - Vérification de la liste des enregistrements supprimés dans la table [Table#0] [OK]
- Compactage des définitions de tables des données [OK]
- Compactage des définitions de liens [OK]
- Compactage des définitions d'index de sauvegarde [OK]
- Initialisation des ressources pour l'opération de vérification [OK]
- Vérification des noms des tables et des champs [OK]
- Vérification des méthodes base [OK]
  - Sur ouverture [OK]
  - Sur démarrage serveur [OK]
  - Sur arrêt sauvegarde [OK]
- Vérification des méthodes triggers [OK]
- Vérification des méthodes projet [OK]
  - ZVariableVersBlob [OK]
  - ZBlobVersVariable [OK]
  - ZAmnistieInternationale [OK]
  - ZViderSelectionCourante [OK]
  - ZAmnistiePartielle [OK]
  - ZDebut [OK]
  - QSToolBox [OK]
  - ZDroitsRecalcule [OK]
  - ZCarrouselDeMaugey [OK]
  - ZFenetreOuvertureStandard [OK]
  - ZFinirProprement [OK]
  - ZEcran [OK]
  - ZInfosEnviron [OK]

4D Link Editor

The 4DLink File Editor is a powerful tool because it allows you to create a new 4DLink file manually or modify an existing one.
All 4Dlink configuration options are available with a single click.



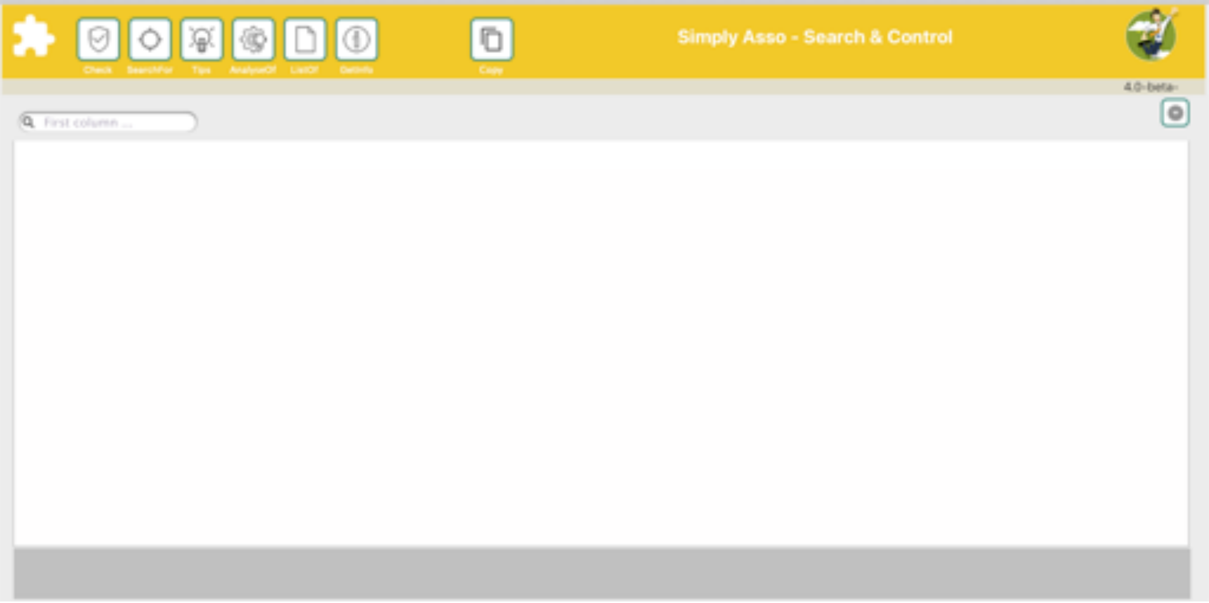
Normal
file:///Users/patric
file:///Users/patric
Default Da...

Property List	Property Value
data_file	file:///Users/patrick.../QS_SimplyAsso.4DD
structure_file	file:///Users/patrick...so/Simply Asso.4DB
structure_opening_mode	0
data_opening_mode	1

This allows you, for example, to regain control over the start of an application by asking that the next time you open it, the "On Base Opening" method should not be executed.

Search & Control

This is the toolbox of QS_Toolbox that allow you to perform various and varied searches on your methods.



The available menus are:

Check
- Check names of tables, fields and methods
- Command requiring to be "closed" after a call
- Declaration of the names of the assemblies

Search For
- Impaired orders
- Images referenced in the library
- Big tables
- A specific event
- A specific widget
- Improvements for use with 4D Server
- The use of data formatting
- the presence of dead code such as'if (1=2)' ;'if (false)'...

TIPS
- View all tips and tricks
- Show tips after analyzing project methods

Analyse
- Comparison of variable declarations

List
- Lists all objects in the database
- database parameters (SET DATABASE PARAMETER)
- lists the information of the WEB server

- lists the WEB server options

Get

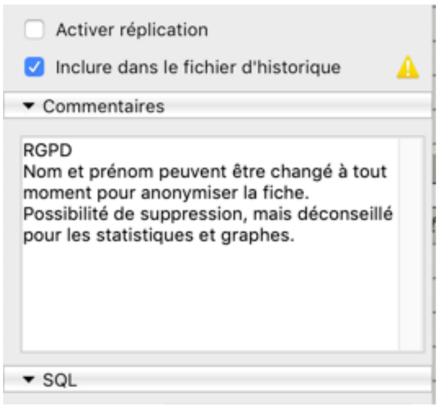
- lists the indexes
- lists the primary keys
- lists the style sheets
- lists plug-ins
- lists the components
- copies the path of the application to memory
- copies the path of the data file to memory
- retrieves the external IP
- lists license information

Copy system configuration

Copies all system information to memory:
- system configuration
- volume information
- network information
- printer list
- CODECS list
- component list
- plug-in list
- table fragmentation
- cache information
- ...

Get GRPD information

Retrieves information placed in the'Comments' area and identified by GPDR



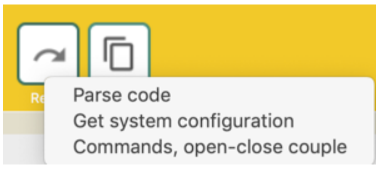
☐ Activer réplication
☑ Inclure dans le fichier d'historique ⚠
▾ Commentaires

RGPD
Nom et prénom peuvent être changé à tout moment pour anonymiser la fiche.
Possibilité de suppression, mais déconseillé pour les statistiques et graphes.

▾ SQL

Redo button

Allow you to repeat one of the 10 latest request.



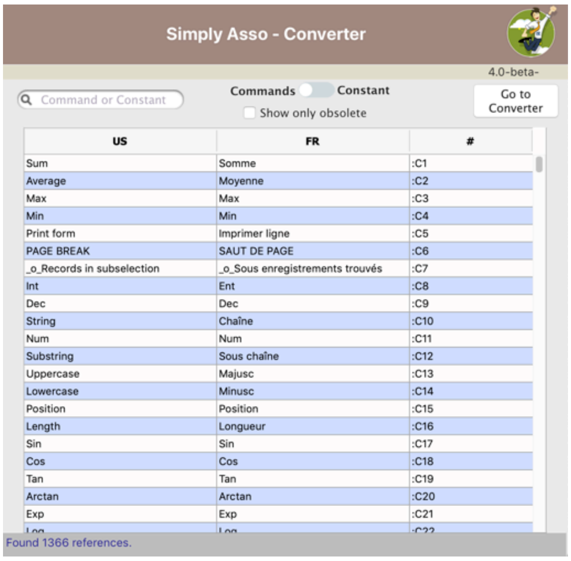
Parse code
Get system configuration
Commands, open-close couple

Copy button

Copy the listbox content in memory and ready to be paste in a sheet.

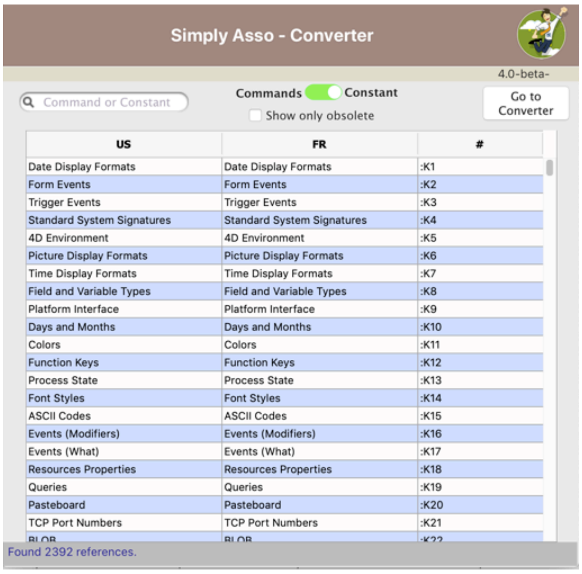
Converter EN / FR

This module allows you to have a list of the commands and constants of the current version of 4D.
You can search by part of the name of an order or display only 'obsolete' orders with a single click.



US	FR	#
Sum	Somme	:C1
Average	Moyenne	:C2
Max	Max	:C3
Min	Min	:C4
Print form	Imprimer ligne	:C5
PAGE BREAK	SAUT DE PAGE	:C6
_o_Records in subselection	_o_Sous enregistrements trouvés	:C7
Int	Ent	:C8
Dec	Dec	:C9
String	Chaîne	:C10
Num	Num	:C11
Substring	Sous chaîne	:C12
Uppercase	Majusc	:C13
Lowercase	Minusc	:C14
Position	Position	:C15
Length	Longueur	:C16
Sin	Sin	:C17
Cos	Cos	:C18
Tan	Tan	:C19
Arctan	Arctan	:C20
Exp	Exp	:C21
Log	Log	:C22

Found 1366 references.

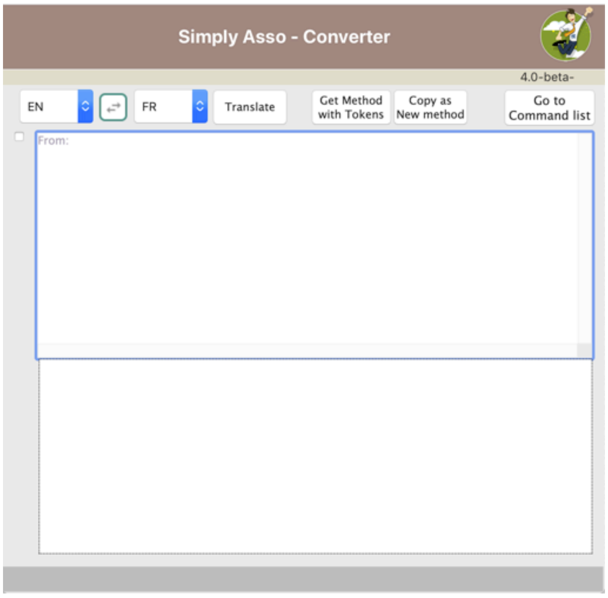


US	FR	#
Date Display Formats	Date Display Formats	:K1
Form Events	Form Events	:K2
Trigger Events	Trigger Events	:K3
Standard System Signatures	Standard System Signatures	:K4
4D Environment	4D Environment	:K5
Picture Display Formats	Picture Display Formats	:K6
Time Display Formats	Time Display Formats	:K7
Field and Variable Types	Field and Variable Types	:K8
Platform Interface	Platform Interface	:K9
Days and Months	Days and Months	:K10
Colors	Colors	:K11
Function Keys	Function Keys	:K12
Process State	Process State	:K13
Font Styles	Font Styles	:K14
ASCII Codes	ASCII Codes	:K15
Events (Modifiers)	Events (Modifiers)	:K16
Events (What)	Events (What)	:K17
Resources Properties	Resources Properties	:K18
Queries	Queries	:K19
Pasteboard	Pasteboard	:K20
TCP Port Numbers	TCP Port Numbers	:K21
BLOB	BLOB	:K22

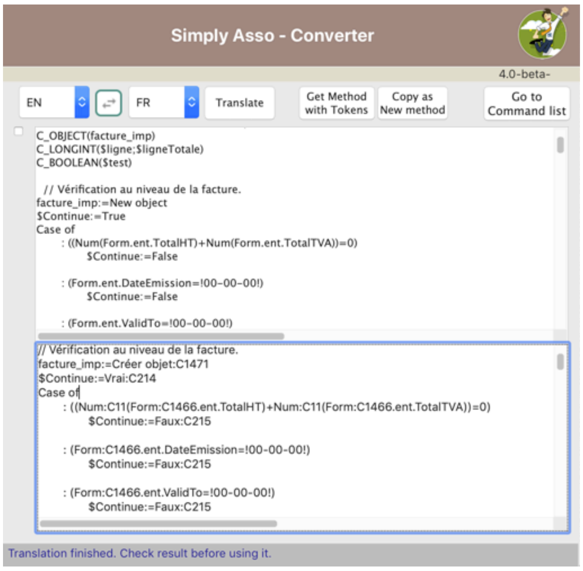
Found 2392 references.

To work with constants, simply switch the selector to the right side.
The searches are carried out in the same way as for orders.

To switch to the code translator, simply click on the'Go to converter' button.
The screen that appears will allow you to enter your code (or paste it) in the From section.
By default, the translation is: EN -> FR.
If you want to do FR -> EN, just click on the icon ⇄.



Once the code to be translated is present in the upper part, simply click on the "Translate" button to obtain the translated code.
Tokens are present in the translated code.



```
C_OBJECT(facture_imp)
C_LONGINT($ligne;$ligneTotale)
C_BOOLEAN($test)

  // Vérification au niveau de la facture.
facture_imp:=New object
$Continue:=True
Case of
	: ((Num(Form.ent.TotalHT)+Num(Form.ent.TotalTVA))=0)
		$Continue:=False

	: (Form.ent.DateEmission=!00-00-00!)
		$Continue:=False

	: (Form.ent.ValidTo=!00-00-00!)
```

```
// Vérification au niveau de la facture.
facture_imp:=Créer objet:C1471
$Continue:=Vrai:C214
Case of
	: ((Num:C11(Form:C1466.ent.TotalHT)+Num:C11(Form:C1466.ent.TotalTVA))=0)
		$Continue:=Faux:C215

	: (Form:C1466.ent.DateEmission=!00-00-00!)
		$Continue:=Faux:C215

	: (Form:C1466.ent.ValidTo=!00-00-00!)
		$Continue:=Faux:C215
```

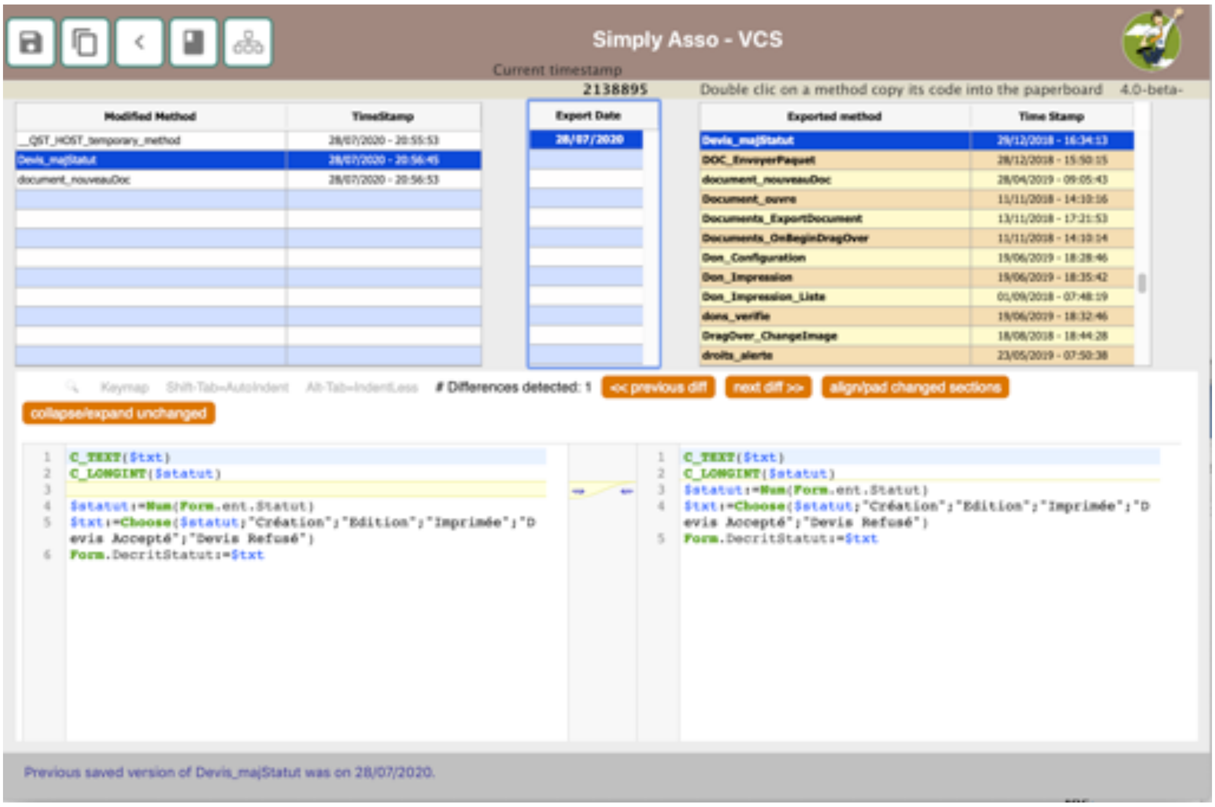
Translation finished. Check result before using it.

The button Copy as New method allows you to save the translated code in a new project method. Despite all the controls performed for the translation, it is necessary that you proofread the code to ensure that it does not contain any errors related to the translation.

The button Get Method with Tokens allows you to read the code of a project method and to display the tokens associated with each command / constant.

Version Control System

This feature allows you to save and compare different versions of your methods, all types combined.
All methods are saved in the external database data file 'QST_External_DB'.



Simply Asso - VCS

Current timestamp
2138895

Double clic on a method copy its code into the paperboard 4.0-beta-

Modified Method	TimeStamp
__QST_HOST_temporary_method	28/07/2020 - 20:55:53
Devis_majStatut	28/07/2020 - 20:56:45
document_nouveauDoc	28/07/2020 - 20:56:53

Export Date
28/07/2020

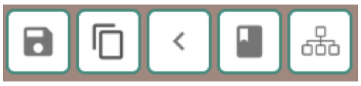
Exported method	Time Stamp
Devis_majStatut	29/12/2018 - 16:34:13
DOC_EnvoyerPaquet	28/12/2018 - 15:50:15
document_nouveauDoc	28/04/2019 - 09:05:43
Document_ouvre	11/11/2018 - 14:10:16
Documents_ExportDocument	13/11/2018 - 17:21:53
Documents_OnBeginDragOver	11/11/2018 - 14:10:14
Don_Configuration	19/06/2019 - 18:28:46
Don_Impression	19/06/2019 - 18:35:42
Don_Impression_Liste	01/09/2018 - 07:48:19
dons_verifie	19/06/2019 - 18:32:46
DragOver_ChangeImage	18/08/2018 - 18:44:28
droits_alerte	23/05/2019 - 07:50:38

Differences detected: 1

```
C_TEXT($txt)
C_LONGINT($statut)

$statut:=Num(Form.ent.Statut)
$txt:=Choose($statut;"Création";"Edition";"Imprimée";"Devis Accepté";"Devis Refusé")
Form.DecritStatut:=$txt
```

```
C_TEXT($txt)
C_LONGINT($statut)
$statut:=Num(Form.ent.Statut)
$txt:=Choose($statut;"Création";"Edition";"Imprimée";"Devis Accepté";"Devis Refusé")
Form.DecritStatut:=$txt
```

Previous saved version of Devis_majStatut was on 28/07/2020.

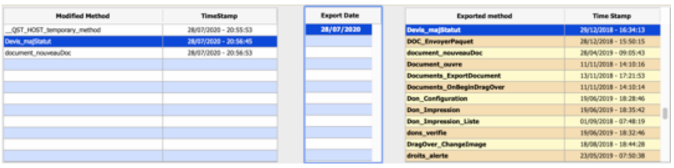


The System Control Version menu allows you to:

- To start the backup of the methods modified since the last backup
- To compare 2 versions of the same method
- Work on all backups of the current database (project)
- - To work on all backups of all databases (projects) that use the VCS of QS_Toolbox

The main screen of the VCS consists of 3 distinct areas:

- List of methods to be saved
- List of exports already made



Modified Method	TimeStamp
__QST_HOST_temporary_method	28/07/2020 - 20:55:53
Devis_majStatut	28/07/2020 - 20:56:45
document_nouveauDoc	28/07/2020 - 20:56:53

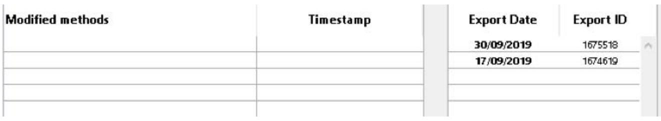
Export Date
28/07/2020

Exported method	Time Stamp
Devis_majStatut	29/12/2018 - 16:34:13
DOC_EnvoyerPaquet	28/12/2018 - 15:50:15
document_nouveauDoc	28/04/2019 - 09:05:43
Document_ouvre	11/11/2018 - 14:10:16
Documents_ExportDocument	13/11/2018 - 17:21:53
Documents_OnBeginDragOver	11/11/2018 - 14:10:14
Don_Configuration	19/06/2019 - 18:28:46
Don_Impression	19/06/2019 - 18:35:42
Don_Impression_Liste	01/09/2018 - 07:48:19
dons_verifie	19/06/2019 - 18:32:46
DragOver_ChangeImage	18/08/2018 - 18:44:28
droits_alerte	23/05/2019 - 07:50:38

- - List of methods exported when an export has been selected

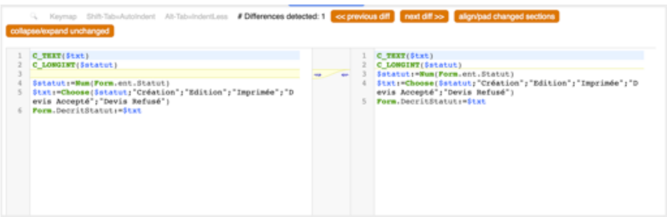
When a click is made on a method that needs to be saved, QS_Toolbox searches all backups for the previous version of the same method and automatically selects it when it is found.

A new method backup will clear the first list and add a new line to the second.



Modified methods	Timestamp	Export Date	Export ID
		30/09/2019	1675518
		17/09/2019	1674619

The comparison between the 2 methods uses a CodeMirror applet that displays differences between the 2 versions compared



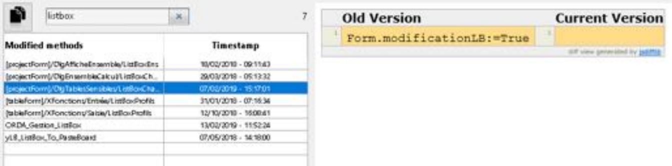
Keymap
Shift-Tab=AutoIndent
Alt-Tab=IndentLess
# Differences detected: 1
<< previous diff
next diff >>
align/pad changed sections
collapse/expand unchanged

```
C_TEXT($txt)
C_LONGINT($statut)

$statut:=Num(Form.ent.Statut)
$txt:=Choose($statut;"Création";"Edition";"Imprimée";"Devis Accepté";"Devis Refusé")
Form.DecritStatut:=$txt
```

```
C_TEXT($txt)
C_LONGINT($statut)
$statut:=Num(Form.ent.Statut)
$txt:=Choose($statut;"Création";"Edition";"Imprimée";"Devis Accepté";"Devis Refusé")
Form.DecritStatut:=$txt
```

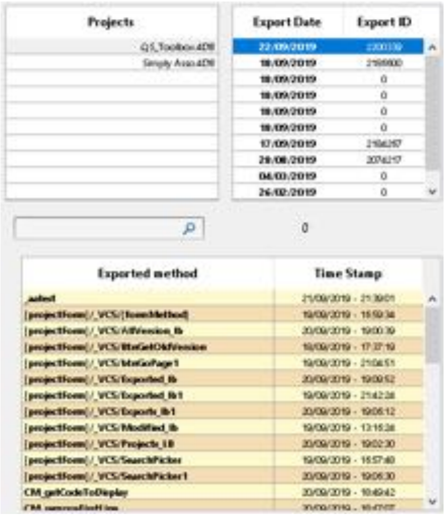
The icon ⧉ allows you to copy the content of OldVersion into memory in order to retrieve it in a text editor or to copy directly into the method editor.

Access to all backups displays all saved methods.
A search box allows you to narrow down the list in order to compare the code of the selected method with that of the current version. The number at the search level corresponds to the number of methods listed.
Selecting a method automatically starts the comparison.
In the following example, the code has simply been deleted.



Modified methods	Timestamp
[projectForm]/DlgAfficheEnsemble/ListBoxEns	18/02/2018 - 09:11:43
[projectForm]/DlgEnsembleCalcul/ListBoxCh...	29/03/2018 - 05:13:32
[projectForm]/DlgTablesSensibles/ListBoxCha...	07/02/2019 - 15:17:01
[tableForm]/XFonctions/Entrée/ListBoxProfils	31/01/2018 - 07:16:34
[tableForm]/XFonctions/Saisie/ListBoxProfils	12/10/2018 - 16:00:41
ORDA_Gestion_ListBox	13/02/2019 - 11:52:24
yL8_ListBox_To_PasteBoard	07/05/2018 - 14:18:00

Old Version	Current Version
Form.modificationLB:=True	



Projects
QS_Toolbox.4DB
Simply Asso.4DB

Export Date	Export ID
22/09/2019	2200339
18/09/2019	2199900
18/09/2019	0
18/09/2019	0
18/09/2019	0
18/09/2019	0
17/09/2019	2196267
29/08/2019	2076217
04/03/2019	0
26/02/2019	0

0

Exported method	Time Stamp
_autest	21/09/2019 - 21:39:01
[projectForm]/_VCS/[formMethod]	19/09/2019 - 15:59:34
[projectForm]/_VCS/AllVersion_lb	20/09/2019 - 19:00:39
[projectForm]/_VCS/BtnGetOldVersion	19/09/2019 - 17:37:19
[projectForm]/_VCS/btnGoPage1	19/09/2019 - 21:04:51
[projectForm]/_VCS/Exported_lb	20/09/2019 - 19:09:52
[projectForm]/_VCS/Exported_lb1	19/09/2019 - 21:42:28
[projectForm]/_VCS/Exports_lb1	20/09/2019 - 19:06:12
[projectForm]/_VCS/Modified_lb	19/09/2019 - 13:15:28
[projectForm]/_VCS/Projects_LB	20/09/2019 - 19:02:30
[projectForm]/_VCS/SearchPicker	19/09/2019 - 15:57:40
[projectForm]/_VCS/SearchPicker1	20/09/2019 - 19:06:30
CM_getCodeToDisplay	20/09/2019 - 10:49:42
CM_removeFirstLine	20/09/2019 - 10:47:07

Access to all projects displays the list of projects saved in the QS_Toolbox VCS and allows you to navigate through all the backups performed.
This has a twofold benefit:

- Check that the code is the same on projects using "identical" methods
- Copy code from another project without having to open it

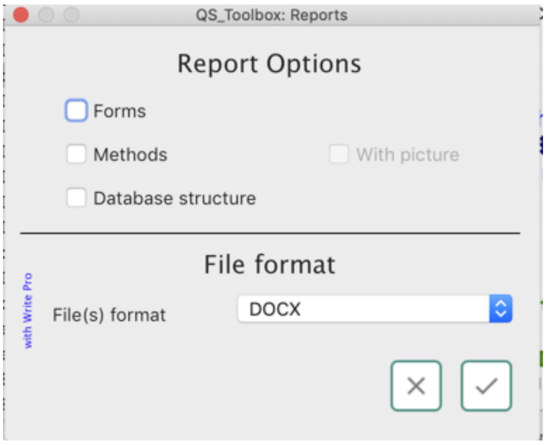
Reports

The reports created allow the export to text format of all the information concerning:

- The forms
- The methods
- The structure of the database

The export formats are:

- DOCX
- PDF
- WP format



Report Options

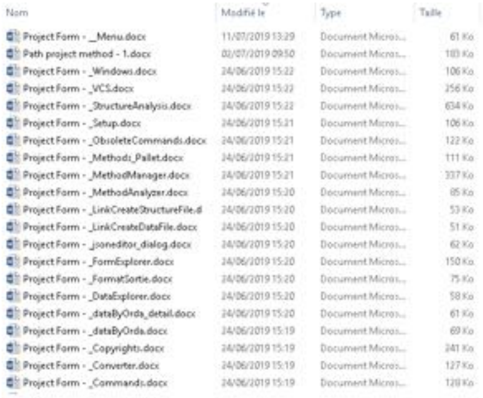
□ Forms

□ Methods □ With picture

□ Database structure

File format

File(s) format: DOCX



Nom	Modifié le	Type	Taille
Project Form - _Menu.docx	11/07/2019 13:29	Document Micros...	61 Ko
Path project method - 1.docx	02/07/2019 09:50	Document Micros...	103 Ko
Project Form - _Windows.docx	24/06/2019 15:22	Document Micros...	106 Ko
Project Form - _VCS.docx	24/06/2019 15:22	Document Micros...	256 Ko
Project Form - _StructureAnalysis.docx	24/06/2019 15:22	Document Micros...	634 Ko
Project Form - _Setup.docx	24/06/2019 15:21	Document Micros...	106 Ko
Project Form - _ObsoleteCommands.docx	24/06/2019 15:21	Document Micros...	122 Ko
Project Form - _Methods_Pallet.docx	24/06/2019 15:21	Document Micros...	111 Ko
Project Form - _MethodManager.docx	24/06/2019 15:21	Document Micros...	337 Ko
Project Form - _MethodAnalyzer.docx	24/06/2019 15:20	Document Micros...	85 Ko
Project Form - _LinkCreateStructureFile.d	24/06/2019 15:20	Document Micros...	53 Ko
Project Form - _LinkCreateDataFile.docx	24/06/2019 15:20	Document Micros...	51 Ko
Project Form - _jsoneditor_dialog.docx	24/06/2019 15:20	Document Micros...	62 Ko
Project Form - _FormExplorer.docx	24/06/2019 15:20	Document Micros...	150 Ko
Project Form - _FormatSortie.docx	24/06/2019 15:20	Document Micros...	75 Ko
Project Form - _DataExplorer.docx	24/06/2019 15:20	Document Micros...	58 Ko
Project Form - _dataByOrda_detail.docx	24/06/2019 15:20	Document Micros...	61 Ko
Project Form - _dataByOrda.docx	24/06/2019 15:19	Document Micros...	69 Ko
Project Form - _Copyrights.docx	24/06/2019 15:19	Document Micros...	241 Ko
Project Form - _Converter.docx	24/06/2019 15:19	Document Micros...	127 Ko
Project Form - _Commands.docx	24/06/2019 15:19	Document Micros...	128 Ko

The generated exports can provide a basis for documenting your application's sources. The content includes all the available information on each of the exported elements.

The export of forms systematically includes:

- A screen copy of each page of the form
- A table defining the properties for each of the widgets used

The method export includes the methods of all objects in the database.

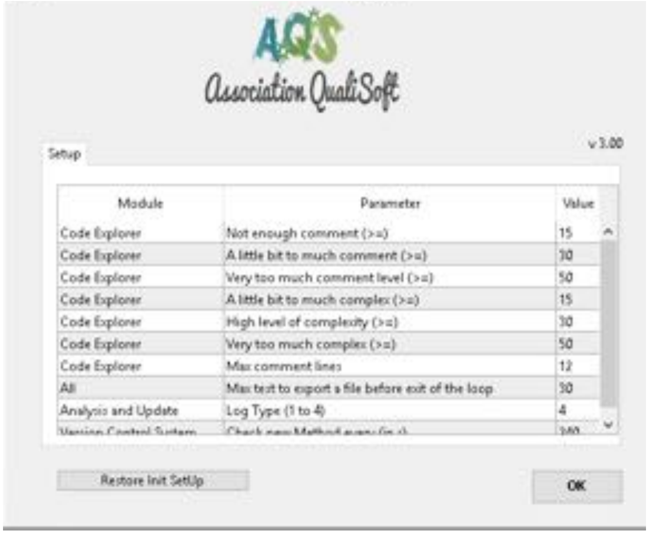
The export of the structure includes:

- The image of the database structure.
- The definition of each of the tables
- The definition of each of the fields

Setup

The different options of the application allow:

- To set the limits used for the definition of the colours used in the Method Overview section
- Set the number of times a file must be tested when it is written to disk. On VERY fast systems, this number must be increased
- To define (in second) the time between 2 modified method checks (only for the VCS).



Module	Parameter	Value
Code Explorer	Not enough comment (>=)	15
Code Explorer	A little bit to much comment (>=)	30
Code Explorer	Very too much comment level (>=)	50
Code Explorer	A little bit to much complex (>=)	15
Code Explorer	High level of complexity (>=)	30
Code Explorer	Very too much complex (>=)	50
Code Explorer	Max comment lines	12
All	Max test to export a file before exit of the loop	30
Analysis and Update	Log Type (1 to 4)	4
Version Control System	Check new Method every (in s)	360

New DB Analysis

Restarts an analysis of the database.
During the analysis, the application may be slightly slowed down. This is related to the use of resources.

Restart 4D

Restarts the application to consider the latest changes applied to the structure such as defining links for use by ORDA.