Variable & Expression Management

In Qlik application development and maintenance, there is often a need for a centralized means of managing variables and expressions in Qlik. These varaibles are used for localization settings, load script and application settings (e.g., paths and colors) and for encapsulating expressions separate from the application to maximize reuse and ease maintenance. This is a common best practice. The medium often chosen is a spreadsheet file on the server. Such a file can be added/updated in source control as part of the appication release process.

ExternalVariables.xls

This is the file used to capture all the variables for all of the QVW/QVF files comprising your application solution. The sheet is broken into logical sections, each containing variable names, initial values, optional comments, and a set of flags. Each of the QVF files has a tab dedicated to loading the variables which pertain to it. It identifies those variables by examining the flag column pertaining to that QVF. If it finds an "x" there, the variable on that line will be loaded. The column "Let or Set" should contain either of these values and that method will be used for assigning the variable. In most cases, use "Let", unless the value must be loaded as a string without being evaluated during loading (in which case, use "Set".)

The image below shows a portion of an example file:

Extraction	Transformation	Schema	Presentation	Variable Name	Value	Comments	Let or Set
Expression Variables:							
			x	vAveragePaid	Sum(Aggr(Avg([Loss Total] + [Expense Total]), [Suffix Dim Id],[Supervisor Dim Id], [Adjuster Dim Id])) / Count(Distinct [Review Dim Id	Let
			x	vCPI	Sum([Scoring Value1])*300 / Sum([Scoring Weight1])		Let
			x	vExpense	Sum(Aggr(Avg([Expense Total]), [Suffix Dim Id], [Supervisor Dim Id], [Adjuster Dim Id]))		Let
			x	vExpenseLeakage	Sum({$<[Leakage Allocation Dim Id] = {"2","8"}>}[Net Indemnity Leakage])		Let
			x	YesFactPctGradient	ColorMix1($(vYesFactPct), White(), $(vColorP	Used initially on Leading Practice Frequency pivot table	Let
			x	NoFactPctGradient	ColorMix1($(vNoFactPct), White(), $(vColorG	Used initially on Leading Practice Frequency pivot table	Let
							Let
Application Control Variables:							
				HidePrefix	%	hides fields beginning with "%"	Let
				HideSuffix	_	hides fields ending with "_"	Let
Color Variables:							
			x	vColorPurple	RGB(51,34,136)		Let
			x	vColorLightBlue	RGB(136,204,238)		Let
			x	vColorGreen	RGB(17,119,51)		Let
Configuration Variables:							
x				vDbConnName	CMDB	DB Connection Name. May change between environments.	Let
				vTempMinDate	1/1/2014	Min Calendar Date. This variable will be auto-deleted because it starts with "vTemp."	Let
				vTempMaxDate	12/31/2017	Max Calendar Date. This variable will be auto-deleted because it starts with "vTemp."	Let
x	x	x	x	vFileConnection	lib://MyCo Custom		Set
x	x			vQvdPathExtract	$(vFileConnection)/qvds/extract	Location of the Extract QVDs	Let
	x	x		vQvdPathTransform	$(vFileConnection)/qvds/transform	Location of the Transformation QVDs	Let
	x	x	x	vQvdPathSchema	$(vFileConnection)/qvds/schema	Location of the Schema QVDs	Let
	x	x	x	vExternalConfigPath	$(vFileConnection)/config	Location of the folder holding external config files	Let
			x	vExternalScriptsPath	$(vFileConnection)/scripts	Location of the folder holding external script files	Let
				vExternalDataPath	$(vFileConnection)/filedata	Location of the folder holding external data files	Let
Standard Variables:							
x	x	x	x	MoneyDecimalSep	.		Let
x	x	x	x	MoneyFormat	$#,##0.00;($#,##0.00)		Let
x	x	x	x	TimeFormat	h:mm:ss TT		Let

External Variables.xls

The non-System variables uses a naming convention beginning with a "v" followed by a title-case name with no spaces or underscores.

Expression variables are special. They contain a snippet of executable code and can only be used in the application in places where expressions are permitted (where you see an "f_x" symbol.) It is recommended that complex expressions be broken into smaller, re-usable pieces which can be included into other expressions using dollar sign expansion "$()". For example:

Variable Name	Value
vSalesYTD	sum({<YTD=1>}Sales)
vSalesLYTD	sum({<LYTD=1>}Sales)
vSalesYrOverYr	$(vSalesYTD)/$(vSalesLYTD)

An expression variable referenced from another expression variable need not be defined above it, provided the calling script is executed more than once (because variables persist through reloads.) This way, a large set of expressions may be sorted alphabetically or in another order if desired.

The following example Qlik Sense script code may be used in the load script to load the "Extraction" variables (see the where clause.). I like to put this on its own tab following the Change Log tab.:

```
Set vVariablesPathFile = ExternalVariables.xls;
Set vAppType =Extraction;

// LOAD EXTERNAL EXTRACTION VARIABLES:
Variables:
LOAD
"Variable Name",
Value
FROM [$(vVariablesPathFile)]
(biff, embedded labels, table is Sheet1$)
WHERE NOT ISNULL("Variable Name")
AND NOT ISNULL("$(vAppType)")
;
Let vVarCount=RangeMax(NoOfRows('Variables'),0)-1;
For i=0 to $(vVarCount)
Let vTempName = peek('Variable Name',$(i),'Variables');
Let vTempValue = peek('Value',$(i),'Variables');
Let vLetSet = peek('Let or Set',$(i),'Variables');
$(vLetSet) $(vTempName) = vTempValue;
Next
```

It is also recommended to add a "Variables Clean Up" tab near the end of the script to remove the variables tables and any "temp" variables defined in the spreadsheet:

```
// Clean up temporary variables and Variables table:
For i=0 to $(vVarCount)
Let vTempVarName = peek('Variable Name',$(i),'Variables');
If Left(vTempVarName,5) = 'vTemp' then
Let $(vTempVarName) = Null();
Endif
Next
Let vTempName = Null();
Let vTempValue = Null();
Let vVarCount = Null();
Let vTempVarName = Null();
Let vTempVarValue = Null();
Let i = Null();
Drop table Variables;
```

Note: If multiple apps will be sharing the configuration folder where the spreadsheet it stored, choose a filename particular to the application instead of the generic “External Variables.xls”.

A Note on Config File Formats

Excel spreadsheets are a convenient mean for managing configuation data, particularly where cell formatting is desired and a single entry may contain multiple lines and embedded formatting as may be the case with externalized variables.

One drawback is Excel is rarely available on the Qlik Server to read/edit these files. To remedy, with permission, Open Office Calc can be installed on the server to support this function.

If it is, it is also required that each file be stored in the “Excel 97-2003 Workbook (*.xls)” format. Open Office cannot read the “Excel Workbook (*.xlsx)” format and the Microsoft Excel 5.0/95 Workbook (*.xls)” was found to truncate some longer expressions.