SET ANALYSIS CHEAT SHEET

ANATOMY OF A SET EXPRESSION

Angle brackets used to enclose a **set modifier**

Set identifier

Curly brackets used to enclose the entire set expression

```
{ $
< Field1 = {NewValue1}
, Field2 = {NewValue2} >
}
```

Field name

Assignment operator

Element list (enclosed in curly brackets)
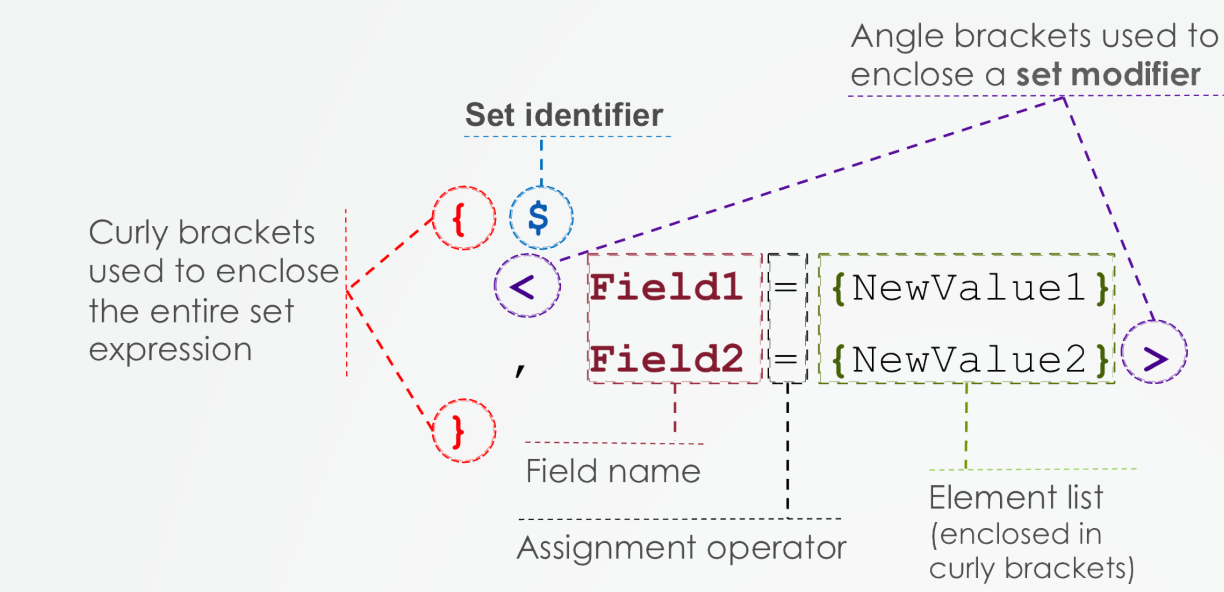
To build set expressions, we must first get the syntax right. Understand the various elements that make up a set expression and what characters are used to enclose each of them.

`{ }` - Used to enclose the entire set expression, and *also* to enclose the element list.

`$` or `1` - Common values used as the set identifier. (See below)

`< >` - Used to enclose a set modifier.

BASIC CONCEPTS

- **Set identifier**: is used to define the *starting point* in the definition of the alternative record set that will be used in the final expression.
- **Set modifier**: is the set of field-value definitions with which we *modify* the initial record set. This can also be thought of as the set of *filters* that we want to apply on the record set.
- **Element list**: is a list of values we use to filter the record set on a given field. An element list is tied to a specific field.

SET IDENTIFIERS

The following set identifiers are the most commonly used:

`$` when the alternative record set should be initially based on the **current user selections**.

`1` when the alternative record set should be initially based on the **full record set** (all the data contained in the QlikView document), ignoring all user selections.

`BM01` (the ID of a bookmark) to use the selection state stored in a bookmark as basis for the alternative record set.
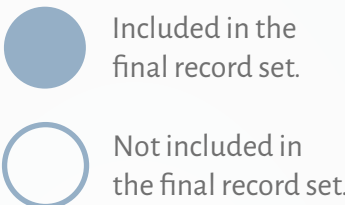
ELEMENT LISTS

- Text elements are enclosed in **straight single quotes**.
  eg:
  `<Region = {'North'}>`
- We can use search strings enclosed in **straight double quotes**.
  eg:
  `<Age = {">=18"}>`
- Numeric values in the element list **do not require quotes**.
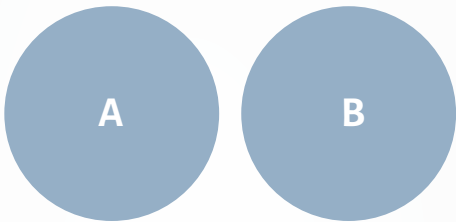 eg:
  `<Year = {2013}>`

OPERATORS

There are two types of operators:
a) **Assignment Operators**: to determine how to combine the field values with an element list.
b) **Set Operators**: to work with several element lists or several set modifiers.

Notes:
In the following diagrams, A and B represent set modifiers, elements lists or the field's initial record set, depending on the context.

Included in the final record set.

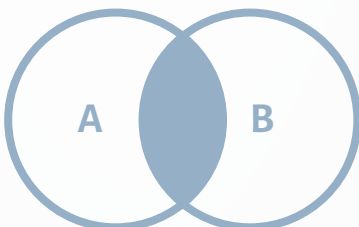Not included in the final record set.

UNION

`+` Implicitly defines a union between a field's inital record set and the element list, between two element lists or between two set modifiers.

eg: `Field += {A}`
eg: `{A} + {B}`
eg: `<A> + <B>`

INTERSECTION

`*` Used to define the alternative record set based on the **intersection** between a field's initial record set and an element list, between two element lists, or between two set modifiers.

eg: `Field *= {A}`
eg: `{A} * {B}`
eg: `<A> * <B>`

Both types of operators work similarly, and the only difference is that assignment operators carry an equal (=) sign as suffix, while their set operator counterparts do not.

Use the following diagrams to understand the result of each operator.
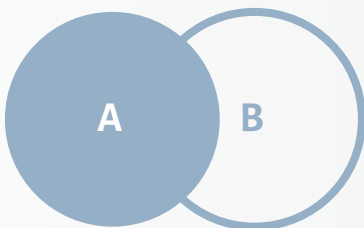
RE-ASSIGNMENT

`=` *Redefines* the selection for a certain field. This is only used as assignment operator and there is no equivalent set operator.
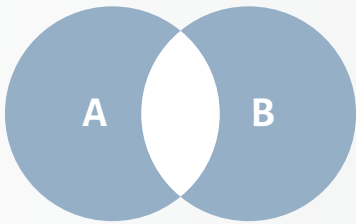
eg: `Field = {A}`

EXCLUSION

`−` Implicitly defines an **exclusion** between a field's inital record set and the element list, between two element lists or between two set modifiers.

eg: `Field -= {A}`
eg: `{A} - {B}`
eg: `<A> - <B>`

SYMMETRIC DIFFERENCE

`/` Used to define a **symmetric difference** (XOR). The modified record set will contain the values that are present in either one set, but not in both.

eg: `Field /= {A}`
eg: `{A} / {B}`
eg: `<A> / <B>`

PRO TIPS

QLIKVIEW COMPONENTS SCRIPTING LIBRARY

Using set analysis for period-over-period comparisons (*point in time reporting*) has never been easier. With the QlikView Components scripting library, you can generate **set variables** automatically and use them in your expressions right away.

One line of code to create both a master calendar table *and* the related set variables.
`CALL Qvc.CalendarFromField('OrderDate');`

Then, on the expression, you can get, for instance, the *previous year's month to date* sales with:
`Sum($(vSetPreviousYearMTD) Sales)`

Visit *www.qlikviewcomponents.org* to learn more.

ELEMENT FUNCTIONS

There are two special functions that can be used in set expressions to implicitly specify an element list. The functions are:

- `P()` - to use all **possible** values in a field (as dictated by the current selection state) as the element list.
- `E()` - to use all **excluded** values in a field (as dictated by the current selection state) as the element list.

A quick example:
`Sum({1<Year = p(Year)>} Sales)`

This expression will use the full set of data disregarding all user selections (using `1` as the set identifier), but take into account those records corresponding to the years that the user has selected. In other words, only selections made on the `Year` field are considered.

RESOURCES

To learn more about the power of Set Analysis:
- Memorize this Cheat Sheet!
- Visit the series of blog posts titled "*The Magic of Set Analysis*" at the *AfterSync* blog (`http://blog.aftersync.com`).
- Get your hands on the *QlikView 11 for Developers* book, authored by Miguel Ángel García and Barry Harmsen.
- Get your hands dirty and start experimenting!

ABOUT

This material was created by Miguel Ángel García, co-author of the book *QlikView 11 for Developers*.

Checkout more resources like this at
`https://aftersync.com/blog`

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