Odysseus Cheat Sheet

Full Grammar of PQL

```
QUERY          = (STREAM | VIEW | SOURCE)+
STREAM         = STREAM "=" OPERATOR
VIEW           = VIEWNAME ":=" OPERATOR
SOURCE         = SOURCENAME "::=" OPERATOR
OPERATOR       = QUERY | [OUTPUTPORT ":"] OPERATORTYPE
                 "(" (PARAMETERLIST [ "," OPERATORLIST ]
                 | OPERATORLIST) ")"
OPERATORLIST   = [ OPERATOR ("," OPERATOR)* ]
PARAMETERLIST  = "{" PARAMETER ("," PARAMETER)* "}"
PARAMETER      = NAME "=" PARAMETERVALUE
PARAMETERVALUE = LONG | DOUBLE | STRING | PREDICATE |
                 LIST | MAP
LIST           = "[" [PARAMETERVALUE ("," 
                 PARAMETERVALUE)*] "]"
MAP            = "[" [MAPENTRY ("," MAPENTRY*] "]"
MAPENTRY       = PARAMETERVALUE "=" PARAMETERVALUE
STRING         = "'" [~']* "'"
PREDICATE      = PREDICATETYPE "(" STRING ")"
```

Advanced Operators

ASSOCIATIVESTORAGE

This operator stores streaming data in an associative storage

SIZES

INDEX

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

VALUE

DEBUG — Flag, that this operator should be debuged.

STORAGENAME

HIERARCHY

BUFFEREDFILTER

This operator can be used to reduce data rate. It buffers incoming elements on port 0 (left) for bufferTime and evaluates a predicate over the elements on port 1 (right). If the predicate for the current element e evaluates to true, all elements from port 0 that are younger than e.startTimeStamp()-bufferTime will be enriched with e and delivered for deliverTime. Each time the predicate evaluates to true, the deliverTime will be increased.

DELIVERTIME

PREDICATE

BUFFERTIME

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

COALESCE

This Operator can be used to combine sequent elements, e.g. by a set of grouping attributes or with a predicates. In the attributes case, the elements are merged with also given aggregations functions, as long as the grouping attributes (e.g. a sensorid) are the same. When a new group is opened (e.g. a measurement from a new sensor) the old aggregates values and the grouping attributes are created as a result. In the predicate case, the elements are merged as long as the predicates evaluates to false, i.e. a new tuple is created when the predicates evaluates to true.

DRAINATDONE — If set to true (default), elements are not yet written will be written at done.

FASTGROUPING — Use hash code instead of tuple compare to create group. Potentially unsafe!

OUTPUTPA

CREATEONHEARTBEAT

PREDICATE — Do not use. Use StartPredicate and EndPredicate instead.

MAXELEMENTSPERGROUP

ENDPREDICATE

DEBUG — Flag, that this operator should be debuged.

HEARTBEATRATE

STARTPREDICATE

USEROUNDROBINALLOCATION — Enables RoundRobin allocation. This is used in multithreaded execution for selecting the specific thread

ATTR

NUMBEROFTHREADS — Use multiple threads for execution (only possible if grouping attributes are set)

DUMPATVALUECOUNT

AGGREGATIONS

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DRAINATCLOSE — If set to true (default is false), elements are not yet written will be written at close.

DRAIN — If set to true (default), elements are not yet written will be written at done.

MAXBUFFERSIZE — Defines the size of the buffers used in multithreaded execution

CONVOLUTION

This operator applies a convolution filter, which is often used in electronic signal processing or in image processing to clean up wrong values like outliers. The idea behind the convultion is to correct the current value by looking at its neighbours. The number of neighbours is the size of the filter. If, for example, SIZE=3, the filter uses the three values before the current and three values after the current value to correct the current value. Therefore, the filter does not deliver any results for the first SIZE values, because it also needs additionally SIZE further values after the current one!

ATTRIBUTES

GROUP_BY

SIZE

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

OPTIONS

FUNCTION

DEBUG — Flag, that this operator should be debuged.

FASTMEDIAN

Calculate the median for one attribute in the input tuples

PERCENTILES

GROUP_BY

ATTRIBUTE

ROUNDINGFACTOR

HISTOGRAM

NUMERICAL

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

APPENDGLOBALMEDIAN — If a GROUP_BY element is given, the global median (i.e. median without respecting groups) will be annotated to each element.

GENERATOR

Generates missing values in a stream

EXPRESSIONS

GROUP_BY

FREQUENCY

PREDICATE

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

MULTI

TOPK

Calculate the top k elements of the input

FASTGROUPING	Use hash code instead of tuple compare to create group. Potentially unsafe!
GROUP_BY	
TRIGGERONLYBYPUNCTUATION	If set to true, output is only generated when punctuation arrives.
RECALCSCORE	Sometime the score for an elements depends on state information. Set recalcScore to true to update for each (!) stored element every time a new output is triggered.
K	The number of elements to sort
SCORINGFUNCTION	The scoring function for ordering
TEARDOWNFUNCTION	This function is called for every input element after calculating the score.
CLEANUPPREDICATE	This (optional) predicate is used to clean up the state after processing the input.
TRIGGERBYPUNCTUATION	If set to true, output is only generated when punctuation arrives.
DEBUG	Flag, that this operator should be debuged.
SETUPFUNCTION	This function is called for every input element before calculating the score.
TIEWITHTIMESTAMP	If two elements have the same score, this value can be used to define an order by time stamps. (Default is false)
DESCENDING	Sort descending (default is true)
PRESCOREFUNCTION	This function be will called on the input before each element is scored. Typically used in case where recalcScore is set to true.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
SUPPRESSDUPLICATES	If set to true (default), output is only generated when a new top k set is available
UNIQUEATTRIBUTES	
ADDSCORE	If set to true, the score value will be added to each output element in the top k list. Default is false.

TUPLEAGGREGATE

Select from all elements of a window on with the given method

ATTRIBUTE	Attribute on which the method is evaluated
METHOD	Method to use (MIN, MAX, LAST, FIRST)
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

UDO

Calls a user defined operator

ATTRIBUTES	
INIT	
CLASS	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

Base Operators

AGGREGATE

Aggretations on attributes e.g Min, Max, Count, Avg, Sum and grouping.

DRAINATDONE	If set to true (default), elements are not yet written will be written at done.
FASTGROUPING	Use hash code instead of tuple compare to create group. Potentially unsafe!
GROUP_BY	
OUTPUTPA	
DEBUG	Flag, that this operator should be debuged.
USEROUNDROBINALLOCATION	Enables RoundRobin allocation. This is used in multithreaded execution for selecting the specific thread
NUMBEROFTHREADS	Use multiple threads for execution (only possible if grouping attributes are set)
DUMPATVALUECOUNT	
AGGREGATIONS	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DRAINATCLOSE	If set to true (default is false), elements are not yet written will be written at close.
DRAIN	If set to true (default), elements are not yet written will be written at done.
MAXBUFFERSIZE	Defines the size of the buffers used in multithreaded execution

AGGREGATION

Aggretations on inputAttributeIndices e.g Min, Max, Count, Avg, Sum and grouping.

EVAL_BEFORE_REMOVE_OUTDATING	
GROUP_BY	
EVAL_AT_DONE	
AGGREGATIONS	
EVAL_AT_NEW_ELEMENT	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
OUTPUT_ONLY_CHANGES	
DEBUG	Flag, that this operator should be debuged.
EVAL_AT_OUTDATING	

COMMAND

This operator executes commands on other operators or services.

COMMANDEXPRESSION	Expression for the commands, e.g. an attribute or a string
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

DIFFERENCE

This operator calculates the difference between two input sets.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

DISTINCT

This operator removes duplicates.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

DUPLICATEELIMINATION

Removes duplicates (Depending on the time model!)

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

EXISTENCE

This operator tests an existence predicate and can be used with the type EXISTS (semi join) and NOT_EXISTS (anti semi join). The predicates can be evaluated against the element from the first input and the second input. Semi join: All elements in the first input for which there are elements in the second input that fulfills the predicate are sent. Semi anti

join: All elements in the first input for which there is no element in the second input that fulfills the predicate are sent.

PREDICATE	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
TYPE	

FILTER

Filters elements of the input stream. If predicate evaluates to true, element will be sent to port 0 else to port 1.

PREDICATE	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
HEARTBEATRATE	

INTERSECTION

This operator calculates the intersection between two input sets.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

JOIN

Operator to combine two datastreams based on the predicate

ASSUREORDER	If set to false, the operator will not garantee order in output. Default is true
PREDICATE	Predicate to filter combinations
SWEEPAREANAME	Overwrite the sweep area
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
CARD	Type of input streams. For optimization purposes: ONE_ONE, ONE_MANY, MANY_ONE, MANY_MANY

LEFTJOIN

Operator to combine two datastreams based on the predicate. All attributes from the first (left) source remain. If an element from the first source has no join partner, it will also be part of the output stream and the output schema contains null values for the missing fields.

ASSUREORDER	If set to false, the operator will not garantee order in output. Default is true
PREDICATE	Predicate to filter combinations
SWEEPAREANAME	Overwrite the sweep area
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
CARD	Type of input streams. For optimization purposes: ONE_ONE, ONE_MANY, MANY_ONE, MANY_MANY

MAP

Performs a mapping of incoming attributes to out-coming attributes using map functions. Odysseus also provides a wide range of mapping functions. Hint: Map is stateless. To used Map in a statebased fashion see: StateMap

ALLOWNULL	If set to true (default) and an error occurs in calculation a null value is added to the element. Else the element is skipped and no output is produced. Default is true.
EXPRESSIONS	A list of expressions.
REMOVEATTRIBUTES	If keepInput is set to true, you can here provides attributes that should not be part of the output.
THREADS	Number of threads used to calculate the result.
EVALUATEONPUNCTUATION	If set to true, map will also create an output (with the last read element) when it receives a punctuation.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
SUPPRESSERRORS	If set to true calculation errors will not appear in log or console. Could be helpful in scenarios where null values are allowed.
DEBUG	Flag, that this operator should be debuged.
KEEPINPUT	If set to true, all attributes of the input are also part of the output, so there is no need to repeat all attributes.

MERGE

Merge different input streams into one stream with "first comes first served" semantics.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

PROJECT

Make a projection on the input object (i.e. filter attributes)

ATTRIBUTES	A list of attributes that should be used.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

RENAME

Renames the attributes

ISNOOP	A flag to avoid removing this operator even if nothing in the schema is changed.
NOOP	A flag to avoid removing this operator even if nothing in the schema is changed.
ALIASES	The new list of attributes. Must be exactly the same length as in the input schema.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
TYPE	The new type name of the output schema.
PAIRS	If set to true, aliases will be interpreted as pairs oldAttribute, new Attribute.

SELECT

The select operator filters the incoming data stream according to the given predicate.

PREDICATE	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
HEARTBEATRATE	

SETSYSTEMTIME

The SetSystemTime operator sets the system time to the timestamp of incoming elements when the difference is too big.

THRESHOLD	Max allowed difference between system time and element time stamp before system time is set
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

SORT

Sort operator

ATTRIBUTES	A list of attributes that should be used.
ASCENDING	The sort of each attribute
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

STATEMAP

Performs a mapping of incoming attributes to out-coming attributes using map functions. Odysseus also provides a wide range of mapping functions. Hint: StateMap can use history information. To access the last n.th version of an attribute use "__last_n." Mind the two "_" at the beginning!

ALLOWNULL	If set to true (default) and an error occurs in calculation a null value is added to the element. Else the element is skipped and no output is produced. Default is true.
GROUP_BY	
THREADS	Number of threads used to calculate the result.
EVALUATEONPUNCTUATION	If set to true, map will also create an output (with the last read element) when it receives a punctuation.
SUPPRESSERRORS	If set to true calculation errors will not appear in log or console. Could be helpful in scenarios where null values are allowed.
DEBUG	Flag, that this operator should be debuged.
ALLOWNULLINOUTPUT	
EXPRESSIONS	A list of expressions.
REMOVEATTRIBUTES	If keepInput is set to true, you can here provides attributes that should not be part of the output.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
KEEPINPUT	If set to true, all attributes of the input are also part of the output, so there is no need to repeat all attributes.

SYNCHRONIZE

Synchronizes different input streams

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DRAINATCLOSE	If set to true (default is false), this buffer be emptied when calling close. Remark: Could lead to longer termination time!
DEBUG	Flag, that this operator should be debuged.

TIMESTAMP

This Operator can be used to update the timestamp information in the meta data part. Be careful because this may lead undefined semantics

DATEFORMAT	If using a string for date information, use this format to parse the date (in Java syntax).
MONTH	The name of the attribute for the month part of the start timestamp for application time
HOUR	The name of the attribute for the hour part of the start timestamp for application time
FACTOR	A multiplication factor for a single attributed timestamp to calc milliseconds (e.g. if input is seconds, use 1000 here)
DEBUG	Flag, that this operator should be debuged.
CLEAREND	If set to true, the end timestamp will be set to infinity
LOCALE	Interprete the date string with this locale
YEAR	The name of the attribute for the year part of the start timestamp for application time
SYSTEMTIME	If set to true, system time instead of application time will be used
OFFSET	An offset in milliseconds that will be added to the timestmap
START	The name of the attribute for the start timestamp for application time
END	The name of the attribute for the end timestamp for application time
MINUTE	The name of the attribute for the minute part of the start timestamp for application time
SECOND	The name of the attribute for the second part of the start timestamp for application time
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
MILLISECOND	The name of the attribute for the millisecond part of the start timestamp for application time
TIMEZONE	The timezone in Java syntax.
DAY	The name of the attribute for the day part of the start timestamp for application time

UNION

Merges different input streams. (Typically preserves input order. Depending on the processing model)

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DRAINATCLOSE	If set to true (default is false), this buffer be emptied when calling close. Remark: Could lead to longer termination time!
DEBUG	Flag, that this operator should be debuged.

Benchmark Operators

CALCLATENCY

Odysseus has some features to measure the latency of single stream elements. This latency information is modeled as an interval. An operator in Odysseus can modify the start point of this interval. This operator sets the endpoint and determines the place in the query plan, where the latency measurement finds place. There can be multiple operators in the plan, to measure latency at different places.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

CLOSESTREAM

This operator allow to stop stream processing based on a predicate.

PREDICATE	
COUNT	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

LATENCYTOPAYLOAD *(Deprecated)*

Deprecated: You Latency.start, Latency.end, Latency.latency etc. directly as attributes! Adds attributes with the current latency information (start,end,latency,max_start,max_latency) to each tuple.

SMALL	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
APPEND	

Enrich Operators

ENRICH

This operator enriches tuples with data that is cached, e.g. to enrich a stream with a list of categories. The first input stream, therefore, should be only stream limited data to avoid buffer overflows. The second input is the data stream that

should be enriched.

MINIMUMSIZE	Blocks all until there are at least minimumSize elements in the chache
PREDICATE	Predicate to filter combinations
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

Order Operators

ASSUREORDER *(Deprecated)*

Deprecatd. Use ReOrder.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

REORDER

Operator which ensures the order of tuples based on punctuations. Requires heartbeats.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

Pattern Operators

CHANGECORRELATE

Operator used in DEBS Grand Challenge 2012

RIGHTLOWPREDICATE	
LEFTLOWPREDICATE	
LEFTHIGHPREDICATE	
RIGHTHIGHPREDICATE	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

CHANGEDETECT

This operator can reduce traffic. It lets an event pass if its different than the last event, if specified, numeric values can have a tolerance band (relative or absolute defined) e.i. only if the new values lies outside this band, it is send (aka known as deadband or histerese band)

GROUP_BY	
SUPPRESSCOUNTATTRIBUTE	
USEBASEVALUE	If this is set to true, the actual value is compared to the base value instead to the last value. Default is false. Does not work with 'useWindow'.
TOLERANCE	
DEBUG	Flag, that this operator should be debuged.
SENDLASTOFSAMEOBJECTS	If set to false (default), in a group of same objects, the first is send. If set to true, the last one is send.
HEARTBEATRATE	
ATTR	
BASEVALUE	If 'useBaseValue' is true, the actual value is compared to the base value instead to the last value.
DELIVERFIRSTELEMENT	
USEWINDOW	If this is set to true, the operator compares not to the last value (or base value), but instead to the elements in the window. Therefore the difference to the minimum and maximum value to the new value is calculated. Default is false.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
RELATIVETOLERANCE	

PATTERN

This generic operator allows the definition of different kinds of pattern (e.g. all, any). For sequence based patterns see SASE operator

OUTPUTMODE	
ATTRIBUTE	
ASSERTIONS	
SIZE	
INPUTPORT	
TIME	
DEBUG	Flag, that this operator should be debuged.
RETURN	
TIMEUNIT	
COUNT	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
TYPE	
EVENTTYPES	

SASE

This operator can parse a query in SASE+ syntax.

SCHEMA	
QUERY	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
ONEMATCHPERINSTANCE	
DEBUG	Flag, that this operator should be debuged.
TYPE	
HEARTBEATRATE	

Plan Operators

PLANMODIFICATIONACTION

Executes plan modifications based on receiving tuple data

COMMANDEXPRESSION	Expression for the plan modification commands, e.g. an attribute or a string
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
QUERYIDEXPRESSION	Expression to calculate the query id to execute the commands on
DEBUG	Flag, that this operator should be debuged.

Processing Operators

ADWIN *(Deprecated)*

Change detection window operator.

ATTRIBUTE	
DELTA	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

ASSUREORDER *(Deprecated)*

Deprecatd. Use ReOrder.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

ASSUREHEARTBEAT *(Deprecated)*

Deprecated. Use Heartbeat instead!

ALLOWOUTOFORDER

APPLICATIONTIMEDELAY

SENDALWAYSHEARTBEAT

STARTATCURRENTTIME

REALTIMEDELAY

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

STARTTIMERAFTERFIRSTELEMENT

BLOOMFILTER

Filter incoming streams using a Bloom filter

ATTRIBUTES

FPP

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

INSERTIONS

BUFFER

Typically, Odysseus provides a buffer placement strategy to place buffers in the query plan. This operator allows adding buffers by hand. Buffers receives data stream elements and stores them in an internal elementbuffer. The scheduler stops the execution here for now. Later, the scheduler resumes to execution (e.g. with an another thread).

THREADED — If set to true, this buffer will not be scheduled by the scheduler, but uses an own thread. Handle with care!

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DRAINATCLOSE — If set to true (default is false), this buffer be emptied when calling close. Remark: Could lead to longer termination time!

MAXBUFFERSIZE

DEBUG — Flag, that this operator should be debuged.

TYPE

CACHE

This operator can can some stream elements. At runtime, every time a new operator is connected it will get the cached elements. This can be usefull when reading from a csv file and multiple parts of a query need this information.

MAXELEMENTS

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

COMBINE

Takes values of attributes from the input operators and combines them in one tuple

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

BUFFERNEWINPUTELEMENTS — If WaitForAllChanged is set, specifies, if new Input should be buffered or overrides older Input that hast not been transfered yet

DEBUG — Flag, that this operator should be debuged.

WAITFORALLCHANGED — If true, there is only output when there has been input on all ports

CREATENEWFILENAMEPUNCTUATION

Depending on a predicate and a name: Create NewFilenamePunctuations

PREDICATE — If expression evaluates to true, a NewFileNamePunctuation is created from the filename attribute value

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

FILENAME — The expression to create the output filename.

DEBUG — Flag, that this operator should be debuged.

HEARTBEAT

This operator assures that every n time elements there will be a heartbeat on the garantees, that no element (heartbeat or streamobject) is send, that is older than the last send hearbeat (i.e. the generated heartbeats are in order and indicate time progress). Heartbeats can be send periodically (sendAlwaysHeartbeats = true) or only if no other stream elements indicate time progess (e.g. in out of order scenarios) independent if a new element has been received or not.

ALLOWOUTOFORDER

APPLICATIONTIMEDELAY

SENDALWAYSHEARTBEAT

STARTATCURRENTTIME

REALTIMEDELAY

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

STARTTIMERAFTERFIRSTELEMENT

METADATA

Change the current meta data

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

METAATTRIBUTE — This overwrites the current set meta data. Existing values will not be overwritten.

DEBUG — Flag, that this operator should be debuged.

REORDER

Operator which ensures the order of tuples based on punctuations. Requires heartbeats.

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

REPLICATIONMERGE

Merge input from semantically equal queries.

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

ROUTE

This operator can be used to route the elements in the stream to different further processing operators, depending on the predicate.

SENDINGHEARTBEATS — If an element is routed to an output, heartbeats will be send to all other outputs

PREDICATES

OVERLAPPINGPREDICATES — Evaluate all (true) or only until first true predicate (false), i.e. deliver to all ports where predicate is true or only to first

SUPPRESSPUNCTUATIONS — If set to true, no punctuations will be delivered from this operator. Default is false

DEBUG — Flag, that this operator should be debuged.

REPLACEMENT

This operator can be used if a value is espected but was not delivered timely. Different methods to determine the missing

value are available.

INTERVAL	Size of the intervals
REPLACEMENTMETHOD	The replacement method for missing value.
VALUEATTRIBUTE	The attribute with the value attribute.
TIMESTAMPATTRIBUTE	The attribute with the timestamp attribute that should be updated.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
QUALITYATTRIBUTE	The attribute with the quality attribute that should be updated.

SAMPLE

This operator can reduce load by throwing away tuples.

SAMPLERATE	
TIMEVALUE	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

SETTIMEPROGRESSMARKER

This operator updates the time order marker flag for each tuple. It can be used to state that an input stream should not be used to determine time progess.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
VALUE	
DEBUG	Flag, that this operator should be debuged.

SYNCWITHSYSTEMTIME

This operator tries to delay elements so that they are not faster than realtime.

APPLICATIONTIMEFACTOR	Factor to calculate milliseconds from application time
APPLICATIONTIMEUNIT	Unit of application timestamps
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

TIMESHIFT

Shifts the timestamp(s) a given time

SHIFT	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

TIMESTAMPORDERVALIDATE

Assure that all elements are ordered by start timestamp and eliminate out of order elements.

DEBUGMODE	Set output mode: 0 = minimal, 1 = medium, 2 = maximum
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

WATERMARK

Sends a watermark (heartbeat) with a certain delay. The watermark then lags behind a certain timespan.

TIMESPANVALUE	How long the watermark lacks behind the data stream timestamps.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

Probabilistic Operators

DISTRIBUTION *(Deprecated)*

Assign a distribution to the given attributes

ATTRIBUTES	The attributes holding the expected value.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
VARIANCE	The attribute holding the variance of the distribution.
CONTINUOUS	The distribution is continuous or discrete.
DEBUG	Flag, that this operator should be debuged.

EM *(Deprecated)*

Estimate the distribution of the given attributes using a Gaussian mixture model

MIXTURES	The number of mixture components.
ATTRIBUTES	The attributes to fit a distribution to
THRESHOLD	The threshold for the loglikelyhood to terminate the fitting process (default: 10E-5).
ITERATIONS	The number of iterations (default: 1000).
PREDICATE	The predicate to run a new fitting process.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
INCREMENTAL	Reuse the existing model in each fitting process.

EXISTENCETOPAYLOAD *(Deprecated)*

The input object gets one new field with tuple existence.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

KALMAN *(Deprecated)*

Kalman filter operator

ATTRIBUTES	
PROCESSNOISE	
DEBUG	Flag, that this operator should be debuged.
INITIALERROR	
TRANSITION	
MEASUREMENTNOISE	
VARIABLES	
MEASUREMENT	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
INITIALSTATE	
CONTROL	

KDE *(Deprecated)*

Estimate the distribution of the given attributes using a Gaussian mixture model

ATTRIBUTES	The attributes to fit a distribution to
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

PROBABILISTIC *(Deprecated)*

This Operator can be used to update the existence uncertainty information in the meta data part.

ATTRIBUTE	The name of the attribute for the existence uncertainty.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

SAMPLEFROM *(Deprecated)*

Create samples from a given distribution

ATTRIBUTES	The distribution to sample from.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
SAMPLES	The number of samples to create.
DEBUG	Flag, that this operator should be debuged.

Set Operators

DIFFERENCE

This operator calculates the difference between two input sets.

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

EXISTENCE

This operator tests an existence predicate and can be used with the type EXISTS (semi join) and NOT_EXISTS (anti semi join). The predicates can be evaluated against the element from the first input and the second input. Semi join: All elements in the first input for which there are elements in the second input that fulfills the predicate are sent. Semi anti join: All elements in the first input for which there is no element in the second input that fulfills the predicate are sent.

PREDICATE	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
TYPE	

SYNCHRONIZE

Synchronizes different input streams

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DRAINATCLOSE	If set to true (default is false), this buffer be emptied when calling close. Remark: Could lead to longer termination time!
DEBUG	Flag, that this operator should be debuged.

UNION

Merges different input streams. (Typically preserves input order. Depending on the processing model)

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DRAINATCLOSE	If set to true (default is false), this buffer be emptied when calling close. Remark: Could lead to longer termination time!
DEBUG	Flag, that this operator should be debuged.

Sink Operators

CSVFILESINK

Allows to write tp a csv based file

CSV.NUMBERFORMATTER	Formatter for integer numbers.
TEXTDELIMITER	Delimiter for Strings. No default.
NULLVALUETEXT	Text to output for 'null'. Default is empty string.
OPTIONS	Additional options.
DEBUG	Flag, that this operator should be debuged.
WRITEMETADATA	Write metadata.
DELIMITER	Default delimiter is ','
SINK	The name of the sink.
CSV.WRITEMETADATA	Write metadata.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
CSV.FLOATINGFORMATTER	Formatter for floating numbers.
FILENAME	

CONSOLESINK

Print input to standard out.

PRINTPORT	Set to true, if input port should be printed. Default is false
DUMPPUNCTUATION	Set to true, if punctuations should be printed. Default is false
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

FILESINK *(Deprecated)*

The operator can be used to dump the results of an operator to a file.

CACHESIZE	
FLOATINGFORMATTER	
FILETYPE	
DEBUG	Flag, that this operator should be debuged.
APPEND	
DUMPMETADATA	
NUMBERFORMATTER	
LINENUMBERS	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
FILENAME	

GROUPSPLITFILEWRITER

GroupSplitFileWriter

PATH	Outputfolder
GROUPATTRIBUTES	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DATAHANDLER	The name of the datahandler to use, e.g. Tuple or Document.
DEBUG	Flag, that this operator should be debuged.

MEMSTOREWRITE

This operator writes all elements to a given store. If the store does not exists, it will be created.

CLEARSTORE	The store is cleaned every time the query is started new. If set to false, the elements will be appended without cleaning the store.
STORE	The name of the memory store to write to
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

SENDER

This operator can be used to publish processing results to multiple endpoints using different transport and application protocols.

PROTOCOL	
OPTIONS	Additional options for different handler.
DEBUG	Flag, that this operator should be debuged.
WRITEMETADATA	Write metadata.
TRANSPORT	
SINK	The name of the sink.
CSV.WRITEMETADATA	Write metadata.
WRAPPER	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DATAHANDLER	

SINK

Represents a view for s sink.

SINK	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

Source Operators

ACCESS

Generic operator to connect to an input.

DATEFORMAT	The date format used.
SCHEMA2	The output schema for port 2.
SCHEMA1	The output schema for port 1.
OVERWRITESCHEMASOURCENAME	Output schema typically contains source name in attributes. Sometime this is not wanted. Set to false to avoid overwriting.
SCHEMA3	The output schema for port 3.
PROTOCOL	The name of the protocol handler to use, e.g. Csv or SizeByteBuffer.
OPTIONS	Additional options.
METAATTRIBUTE	If set, this value overwrites the meta data created from this source.
DEBUG	Flag, that this operator should be debuged.
NAF	Enable or disable new access framework
TRANSPORT	The name of the transport handler to use, e.g. File or TcpServer.
MAXTIMETOWAITFORNEWEVENTMS	For access. Max time to wait for a new element before calling done. Typically used when the input stream has an end
READMETADATA	If the source provides meta data, use this flag to enable reading of meta data.
SCHEMA	The output schema.
WRAPPER	The name of the wrapper to use, e.g. GenericPush or GenericPull.
INPUTSCHEMA	A list of data types describing the input format. Must be compatible with output schema!
SOURCE	The name of the sourcetype to create.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DATAHANDLER	The name of the datahandler to use, e.g. Tuple or Document.

CSVFILESOURCE

Allows to read input from a csv based file

DATEFORMAT	The date format used.
SCHEMA2	The output schema for port 2.
SCHEMA1	The output schema for port 1.
OVERWRITESCHEMASOURCENAME	Output schema typically contains source name in attributes. Sometime this is not wanted. Set to false to avoid overwriting.
SCHEMA3	The output schema for port 3.
TEXTDELIMITER	Delimiter for Strings. No default.
TRIM	If set to true, for each element leading and trailing whitespaces are removed. Default false.
OPTIONS	Additional options.
METAATTRIBUTE	If set, this value overwrites the meta data created from this source.
DEBUG	Flag, that this operator should be debuged.
DELIMITER	Default delimiter is ','
NAF	Enable or disable new access framework
READFIRSTLINE	If fist line contains header information, set to false. Default true.
MAXTIMETOWAITFORNEWEVENTMS	For access. Max time to wait for a new element before calling done. Typically used when the input stream has an end
READMETADATA	If the source provides meta data, use this flag to enable reading of meta data.
SCHEMA	The output schema.
INPUTSCHEMA	A list of data types describing the input format. Must be compatible with output schema!
SOURCE	The name of the sourcetype to create.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
FILENAME	

MEMSTORESOURCE

This operator provides all elements of the given memory store as stream.

SCHEMA	The output schema.
STORE	The name of the memory store to read from.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
METAATTRIBUTE	If set, this value overwrites the meta data created from this source.

QUERYSOURCE

Attach a named query as source

OPERATOR	The name of the query that should deliver data or a tuple with queryname and operatorname
PORT	The number of the output port of the operator in the query that should be connect to.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

RECEIVE

Generic operator to connect to an input that sends data (i.e. pushed from source).

DATEFORMAT	The date format used.
SCHEMA2	The output schema for port 2.
SCHEMA1	The output schema for port 1.
OVERWRITESCHEMASOURCENAME	Output schema typically contains source name in attributes. Sometime this is not wanted. Set to false to avoid overwriting.
SCHEMA3	The output schema for port 3.
PROTOCOL	The name of the protocol handler to use, e.g. Csv or SizeByteBuffer.
OPTIONS	Additional options.
METAATTRIBUTE	If set, this value overwrites the meta data created from this source.
DEBUG	Flag, that this operator should be debuged.
TRANSPORT	The name of the transport handler to use, e.g. File or TcpServer.
NAF	Enable or disable new access framework
MAXTIMETOWAITFORNEWEVENTMS	For access. Max time to wait for a new element before calling done. Typically used when the input stream has an end
READMETADATA	If the source provides meta data, use this flag to enable reading of meta data.
SCHEMA	The output schema.
INPUTSCHEMA	A list of data types describing the input format. Must be compatible with output schema!
SOURCE	The name of the sourcetype to create.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DATAHANDLER	The name of the datahandler to use, e.g. Tuple or Document.

RETRIEVE

Generic operator to connect to an input which input must be retrieved (i.e. pulled from source).

DATEFORMAT	The date format used.
SCHEMA2	The output schema for port 2.
SCHEMA1	The output schema for port 1.
OVERWRITESCHEMASOURCENAME	Output schema typically contains source name in attributes. Sometime this is not wanted. Set to false to avoid overwriting.
SCHEMA3	The output schema for port 3.
PROTOCOL	The name of the protocol handler to use, e.g. Csv or SizeByteBuffer.
OPTIONS	Additional options.
METAATTRIBUTE	If set, this value overwrites the meta data created from this source.
DEBUG	Flag, that this operator should be debuged.
NAF	Enable or disable new access framework
TRANSPORT	The name of the transport handler to use, e.g. File or TcpServer.
MAXTIMETOWAITFORNEWEVENTMS	For access. Max time to wait for a new element before calling done. Typically used when the input stream has an end
READMETADATA	If the source provides meta data, use this flag to enable reading of meta data.
SCHEMA	The output schema.
INPUTSCHEMA	A list of data types describing the input format. Must be compatible with output schema!
SOURCE	The name of the sourcetype to create.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DATAHANDLER	The name of the datahandler to use, e.g. Tuple or Document.

STREAM

Integrate a view.

SOURCENAME	
SCHEMA	The output schema.
NODE	
SOURCE	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DATAHANDLER	The name of the datahandler to use, e.g. Tuple or Document.
DEBUG	Flag, that this operator should be debuged.

TIMER

A trigger with time events

DATEFORMAT	The date format used.
SCHEMA2	The output schema for port 2.
SCHEMA1	The output schema for port 1.
OVERWRITESCHEMASOURCENAME	Output schema typically contains source name in attributes. Sometime this is not wanted. Set to false to avoid overwriting.
SCHEMA3	The output schema for port 3.
OPTIONS	Additional options.
METAATTRIBUTE	If set, this value overwrites the meta data created from this source.
DEBUG	Flag, that this operator should be debuged.
NAF	Enable or disable new access framework
MAXTIMETOWAITFORNEWEVENTMS	For access. Max time to wait for a new element before calling done. Typically used when the input stream has an end
READMETADATA	If the source provides meta data, use this flag to enable reading of meta data.
SCHEMA	The output schema.
INPUTSCHEMA	A list of data types describing the input format. Must be compatible with output schema!
PERIOD	The timer period in ms
TIMEFROMSTART	Start from 0. If set to false, start from Jan 1th 1970.
SOURCE	The name of the sourcetype to create.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false

Test Operators

COMPARE

Compares to input streams

SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

Transform Operators

CONVERTER

This operator can be used to transform element with other protocol handler, e.g. read a complete document from a server

and then parse this document with csv or xml

DATEFORMAT	Format used if schema contains (Start|End)TimestampString
PROTOCOL	Protocol handler to use.
OPTIONS	Additional options. See help doc for further information
DEBUG	Flag, that this operator should be debuged.
OUTPUTDATAHANDLER	Datahandler to use for creation of elements.
SCHEMA	The output schema of this operator
SOURCE	Overwrite source name
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
INPUTDATAHANDLER	Datahandler to use as input (e.g. format deliefered from preceeding operator)
UPDATEMETA	If set to false, existing meta data will not be touched.

KVUNNEST

Creates from one key value object a set of key value objects

ATTRIBUTE	The input attribute that should be unnested. Must be a multi value attribute!
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

TIMESTAMPTOPAYLOAD *(Deprecated)*

Depracated: Use Map and TimeInterval.Start and TimeInterval.End directly. This operator is needed before data is send to another system (e.g. via a socket sink) to keep the time meta information (i.e. start and end time stamp). The input object gets two new fields with start and end timestamp. If this output is read again by (another) Odysseus instance, the following needs to be attached to the schema: ['start', 'StartTimestamp'], ['end', 'EndTimestamp']

ATTRIBUTES	Names of the attributes for the start and endtimestamp (default meta_valid_start and meta_valid_end.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

TOKEYVALUE

Converts an input object a key-value/JSON object

TEMPLATE	Template for the JSON object. Variables have to be in <brackets> and their names have to match the tuples attribute names.
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

TOTUPLE

Translates objects to a tuple

DATEFORMAT	If using a string for date information, use this format to parse the date (in Java syntax).
SCHEMA	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.
TYPE	

UNNEST

The UnNest operator unpacks incoming tuple with a multi value attribute to create multiple tuples

RECALCULATE	
ATTRIBUTE	
SUPPRESSPUNCTUATIONS	If set to true, no punctuations will be delivered from this operator. Default is false
DEBUG	Flag, that this operator should be debuged.

Aggregates

AMEDIAN	MAX
AMEDIAN2	MEDIAN
AVG	MIN
COMPLETENESS	NEST
CORR	NTH
COUNT	RATE
COV	STDDEV
DISTINCTNEST	SUM
FIRST	VAR
LAST	

Functions

Array

elementAt(*List, Number*) → Object
elementAt(*List, Number*) → Object

Bit

adler(*BitVector*) → BitVector
crc(*BitVector*) → BitVector
subset(*BitVector, Integer, Integer*) → BitVector
toBinary(*Floating Number*) → BitVector
toBinary(*Byte*) → BitVector
toBinary(*String*) → BitVector
toBinary(*UnsignedInt16*) → BitVector
toLong(*BitVector*) → Long

Bool

xor(*Boolean, Boolean*) → Boolean

Command

addQuery(*String, String*) → Command
fullQuery(*Object*) → Command
partialQuery(*Object*) → Command
removeQuery(*Object*) → Command
resumeQuery(*Object*) → Command
setPeriod(*Object, Number*) → Command
startQuery(*Object*) → Command
stopQuery(*Object*) → Command
suspendQuery(*Object*) → Command
updateProtocolOption(*Object, String, String*) → Command
updateTimeWindow(*Object, Discrete Number, Discrete Number*) → Command
updateTransportOption(*Object, String, String*) → Command

Compare

strlike(*String, String*) → Boolean

Crypt

DSA(*Number*) → List_String
EC(*Number*) → List_String
MD2withRSASign(*Simple Type, String*) → String
MD2withRSAVerify(*Simple Type, String, String*) → Boolean
MD5(*String*) → String
MD5withRSASign(*Simple Type, String*) → String
MD5withRSAVerify(*Simple Type, String, String*) → Boolean
NONEwithDSASign(*Simple Type, String*) → String
NONEwithDSAVerify(*Simple Type, String, String*) → Boolean
NONEwithECDSASign(*Simple Type, String*) → String
NONEwithECDSAVerify(*Simple Type, String, String*) → Boolean
NONEwithRSASign(*Simple Type, String*) → String
NONEwithRSAVerify(*Simple Type, String, String*) → Boolean
RSA(*Number*) → List_String
SHA1(*String*) → String
SHA1withDSASign(*Simple Type, String*) → String
SHA1withDSAVerify(*Simple Type, String, String*) → Boolean
SHA1withECDSASign(*Simple Type, String*) → String
SHA1withECDSAVerify(*Simple Type, String, String*) → Boolean
SHA1withRSASign(*Simple Type, String*) → String

SHA1withRSAVerify(*Simple Type, String, String*) → Boolean
SHA244(*String*) → String
SHA256(*String*) → String
SHA256withECDSASign(*Simple Type, String*) → String
SHA256withECDSAVerify(*Simple Type, String, String*) → Boolean
SHA256withRSASign(*Simple Type, String*) → String
SHA256withRSAVerify(*Simple Type, String, String*) → Boolean
SHA384(*String*) → String
SHA384withECDSASign(*Simple Type, String*) → String
SHA384withECDSAVerify(*Simple Type, String, String*) → Boolean
SHA384withRSASign(*Simple Type, String*) → String
SHA384withRSAVerify(*Simple Type, String, String*) → Boolean
SHA512(*String*) → String
SHA512withECDSASign(*Simple Type, String*) → String
SHA512withECDSAVerify(*Simple Type, String, String*) → Boolean
SHA512withRSASign(*Simple Type, String*) → String
SHA512withRSAVerify(*Simple Type, String, String*) → Boolean

Dstring

strcontains(*DString, String*) → Boolean
indexof(*DString, String*) → Integer
length(*DString*) → Integer
lower(*DString*) → String
regex(*DString, String*) → Boolean
startsWith(*DString, String*) → Boolean
strcontains(*DString, String*) → Boolean
substring(*DString, Number*) → String
substring(*DString, Number, Number*) → String
upper(*DString*) → String

Function

difference(*IntervalByte, IntervalByte*) → IntervalDouble
DolToEur(*Number*) → Double
filterQueryIDs(*List, String*) → List
getSharedOpsCount(*Integer*) → Integer
getSourceCount(*Integer*) → Integer
intersection(*IntervalByte, IntervalByte*) → IntervalDouble
IsACQuery(*Integer*) → Boolean
kvread(*String, String*) → Object
kvremove(*String, String*) → Object
kvwrite(*String, String, Simple Type*) → Object
MaxSheddingFactor(*Integer*) → Integer
QueryBasePriority(*Integer*) → Long
QueryLastStateChangeTS(*Integer*) → Long
QueryName(*Integer*) → String
QueryPriority(*Integer*) → Long
QuerySheddingFactor(*Integer*) → Integer
QueryStartTS(*Integer*) → Long
QueryState(*Integer*) → String
retrieveQueryIDs(*String*) → List
toInterval(*Number, Number*) → IntervalDouble
union(*IntervalByte, IntervalByte*) → IntervalDouble

Functions

burn(*Double*) → Double
busyWait(*Double*) → Double
counter(*Byte, Byte*) → Long
counter() → Long
counter(*Boolean*) → Long
eif(*Boolean, Object, Object*) → Object
eval(*String*) → Object
hash(*Simple Type*) → Integer
isNull(*Object*) → Boolean
isNaN(*Number*) → Boolean
isNull(*Object*) → Boolean
load() → Double
MDAAddDim(*String, Integer, List_Double*) → Object
MDAAddDim(*String, List_Double*) → Object
MDADim(*Double, Double, Integer*) → List_Double
MDADrop(*String*) → Object
MDAExchangeDim(*String, Integer, List_Double*) → Object
MDAIndex(*String, Double*) → Integer
MDAIndices(*String, List_Double*) → List_Integer
MDAInit(*String, List*) → Object
MDARemoveDim(*String, Integer*) → Object
mem() → Long
random(*Byte, Integer*) → Integer
read(*String*) → String
rnd() → Double
sleep(*Double*) → Double
SMAX(*Object, Double*) → Double *(Deprecated)*
SMIN(*Object, Double*) → Double *(Deprecated)*
Split(*String, String, Long*) → List_String *(Deprecated)*
Split(*String, String*) → List_String
storedLine(*String, Matrix, Matrix*) → Matrix
storedValue(*String, Matrix, Matrix*) → Double
uptime() → Long
uuid() → String

Hex

toHex(*Discrete Number*) → HexString
toHex(*Double*) → HexString
toHex(*String*) → HexString

Kvstore

kvread(*String*) → Object
kvremove(*String*) → Object
kvwrite(*String, Simple Type*) → Boolean

List

All(*List, String*) → List
Any(*List, String*) → List
asList(*Object*) → List
avg(*List*) → Double
contains(*String, List*) → Boolean
contains(*Number, List*) → Boolean
fill(*List, Discrete Number, Object*) → List
filter(*List, String*) → List
first(*List*) → Object
foreach(*List, String*) → List
foreachpair(*List, String*) → List
IndexOf(*List, Simple Type*) → Integer
IsEmpty(*List*) → Boolean
last(*List*) → Object
ListProject(*List, String*) → List
ListTupleProject(*List, String*) → List
max(*List_Tuple, Discrete Number*) → Tuple
max_(*List*) → Object
min(*List_Tuple, Discrete Number*) → Tuple
min_(*List*) → Object
removeDuplicates(*List*) → List
rest(*List*) → List
rnd(*List*) → Object
search(*List, Simple Type, Boolean*) → Object
size(*List*) → Integer
split(*String, String*) → List
split(*String, String, String*) → List
sublist(*List, Discrete Number*) → List
sublist(*List, Discrete Number, Discrete Number*) → List
sum(*List*) → Double
toList(*Object, Object, Object, Object, Object, Object, Object*) → List
toList(*Object, Object, Object, Object*) → List
toList(*Object*) → List
toList(*Object, Object*) → List
toList(*Object, Object, Object, Object, Object, Object, Object, Object, Object*) → List
toList(*Object, Object, Object, Object, Object, Object*) → List
toList(*Object, Object, Object, Object, Object*) → List
toList(*Object, Object, Object, Object, Object, Object, Object, Object, Object, Object*) → List
toList(*Object, Object, Object*) → List
toList(*Object, Object, Object, Object, Object, Object, Object, Object*) → List

Math

abs(*Number*) → Double
acos(*Number*) → Double
as2DVector(*ProbabilisticDouble, ProbabilisticDouble*) → VectorProbabilisticDouble
as3DVector(*ProbabilisticDouble, ProbabilisticDouble, ProbabilisticDouble*) → VectorProbabilisticDouble
asin(*Number*) → Double
atan(*Number*) → Double
atan2(*Number* | *Object, Number* | *Object*) → Double
binomialTest(*Integer, Integer, Double, String, Double*) → Timestamp
ceil(*Number*) → Double
cos(*Number*) → Double
cosh(*Number*) → Double
distance(*VectorProbabilisticDouble, MatrixBoolean*) → Double

distance(*ProbabilisticDouble, Number*) → Double
distance(*Number, Number*) → Double
distance(*Matrix, Matrix*) → Double
e() → Double
exp(*Number*) → Double
floor(*Number*) → Double
inf() → Double
int(*ProbabilisticDouble, Number, Number*) → Double
kl(*ProbabilisticDouble, ProbabilisticDouble*) → Double
kl(*VectorProbabilisticDouble, VectorProbabilisticDouble*) → Double
log(*Number*) → Double
log10(*Number*) → Double
loglikelihood(*Vector, ProbabilisticDouble*) → Double
max(*Number* | *Object, Number* | *Object*) → Double
MAX(*Number* | *Object, Number* | *Object*) → Double
min(*Number* | *Object, Number* | *Object*) → Double
nan() → Double
pi() → Double
round(*Number, Integer*) → Double
sign(*Number*) → Double
similarity(*ProbabilisticDouble, ProbabilisticDouble*) → Double
similarity(*VectorProbabilisticDouble, MatrixBoolean*) → Double
sin(*Number*) → Double
sinh(*Number*) → Double
sqrt(*Number*) → Double
tan(*Number*) → Double
tanh(*Number*) → Double
ToDegrees(*Number*) → Double
ToRadians(*Number*) → Double
UnaryMinus(*Discrete Number*) → Long
UnaryMinus(*Floating Number*) → Double

Matrix

AVG(*Matrix*) → Double
AVG(*Vector*) → Double
Count(*Matrix*) → Integer
Count(*Vector*) → Integer
det(*Matrix*) → Double
dotProduct(*Matrix, Matrix*) → Double
dotProduct(*Vector, Vector*) → Double
eig(*Matrix*) → Vector
get(*Matrix, Number, Number*) → Double
get(*Vector, Number*) → Double
identity(*Number*) → Matrix
ieig(*Matrix*) → Vector
inv(*Matrix*) → Matrix
Max(*Vector*) → Double
Max(*Matrix*) → Double
Median(*Vector*) → Double
Median(*Matrix*) → Double
Min(*Matrix*) → Double
Min(*Vector*) → Double
ones(*Number, Number*) → Matrix
perm(*Matrix*) → Double
perms(*Vector*) → Matrix
readMatrix(*String*) → Matrix
readVector(*String*) → Vector
readVector(*String, Number*) → Vector
StdDev(*Vector*) → Double
StdDev(*Matrix*) → Double
sub(*Matrix, Number, Number, Number, Number*) → Matrix
sub(*Vector, Number, Number*) → Vector
Sum(*Matrix*) → Double
Sum(*Vector*) → Double
svd(*Matrix*) → Vector
toMatrix(*Vector*) → Matrix
toString(*Matrix*) → String
toString(*Vector*) → String
toVector(*Matrix*) → Vector
tr(*Matrix*) → Double
trans(*Matrix*) → Matrix
Var(*Vector*) → Double
Var(*Matrix*) → Double
vectorFromString(*String, String, Discrete Number, Discrete Number*) → Vector
vectorFromString(*String, String*) → Vector
zeros(*Number, Number*) → Matrix

Mep

assureNumber(*Number*) → Double
get(*KeyValueObject, String*) → Object
getElement(*KeyValueObject, String*) → Object
getElements(*KeyValueObject, String*) → Object
path(*KeyValueObject, String*) → List_KeyValueObject
toKeyValue(*String*) → KeyValueObject

String

concat(*Object, Object*) → String
strcontains(*String, String*) → Boolean
indexof(*String, String*) → Integer
length(*String*) → Integer
lower(*String*) → String
regex(*String, String*) → Boolean
replace(*String, String, String*) → String
replaceAll(*String, String, String*) → String
replaceAll(*String, List_String, List_String*) → String
replaceFirst(*String, String, String*) → String
startsWith(*String, String*) → Boolean
strcontains(*String, String*) → Boolean
substring(*String, Number, Number*) → String
substring(*String, Number*) → String
upper(*String*) → String

Time

businessDays(*Date, Date*) → Integer
curdate() → Date
dateInMillis(*Date*) → Long
day(*Date*) → Integer
day(*String, String*) → Integer
dayofmonth(*String, String*) → Integer
dayofmonth(*Date*) → Integer
days(*Date, Date*) → Integer
format(*Date, String*) → String
hour(*String, String*) → Integer
hour(*Date*) → Integer
hours(*Date, Date*) → Integer
millisecond(*String, String*) → Long
millisecond(*Date*) → Long
milliseconds(*Date, Date*) → Long
milliTime() → Long
minute(*String, String*) → Integer
minute(*Date*) → Integer
minuteOfDay(*Date*) → Integer
minutes(*Date, Date*) → Integer
month(*String, String*) → Integer
month(*Date*) → Integer
months(*Date, Date*) → Integer
nanoTime() → Long
second(*String, String*) → Integer
second(*Date*) → Integer
seconds(*Date, Date*) → Integer
sysdate() → Date *(Deprecated)*
toDate(*Number*) → Date
toDate(*String, String*) → Date
toLong(*Date*) → Long
toString(*Date, String, String*) → String
toString(*Date, String*) → String
toTimestamp(*Discrete Number*) → Timestamp
week(*String, String*) → Integer
week(*Date*) → Integer
weekday(*String, String*) → Integer
weekday(*Date*) → Integer
year(*Date*) → Integer
year(*String, String*) → Integer
years(*Date, Date*) → Integer

Transform

doubleToBoolean(*Double*) → Boolean *(Deprecated)*
doubleToByte(*Double*) → Byte *(Deprecated)*
doubleToChar(*Double*) → Char *(Deprecated)*
doubleToFloat(*Double*) → Float *(Deprecated)*
doubleToInteger(*Double*) → Integer *(Deprecated)*
doubleToLong(*Double*) → Long *(Deprecated)*
doubleToShort(*Double*) → Short *(Deprecated)*
toString(*Object*) → String
toBoolean(*String*) → Boolean
toBoolean(*Number*) → Boolean
toByte(*Number*) → Byte
toByte(*Boolean*) → Byte
toByte(*BitVector*) → Byte
toByte(*String*) → Byte
toChar(*Number*) → Char
toChar(*Boolean*) → Char
toChar(*String*) → Char
toDouble(*String*) → Double
toDouble(*Boolean*) → Double
toDouble(*Number*) → Double
toFloat(*Boolean*) → Float

toFloat(*UnsignedInt16, UnsignedInt16*) → Float
toFloat(*String*) → Float
toFloat(*UnsignedInt16, UnsignedInt16, Boolean*) → Float
toFloat(*Number*) → Float
toInteger(*Number*) → Integer
toInteger(*BitVector*) → Integer
toInteger(*String*) → Integer
toInteger(*Boolean*) → Integer
toLong(*String*) → Long
toLong(*Boolean*) → Long
toLong(*Number*) → Long
toNumber(*Object*) → Double
toProbabilisticContinuousDouble(*MatrixBoolean, MatrixBoolean*) → ProbabilisticDouble
toProbabilisticDiscreteDouble(*MatrixBoolean, MatrixBoolean*) → ProbabilisticDouble
toShort(*String*) → Short
toShort(*Boolean*) → Short
toShort(*Number*) → Short
toString(*Object*) → String
toUnsignedInt16(*String*) → UnsignedInt16
toUnsignedInt16(*Number*) → UnsignedInt16
toUnsignedInt16(*Boolean*) → UnsignedInt16

Tuple

asTuple(*Object*) → Tuple
elementAt(*Tuple, Number*) → Object
toTuple(*Object, Object, Object, Object, Object, Object, Object, Object, Object, Object*) → Tuple
toTuple(*Object*) → Tuple
toTuple(*Object, Object, Object, Object, Object, Object, Object*) → Tuple
toTuple(*Object, Object, Object*) → Tuple
toTuple(*Object, Object*) → Tuple
toTuple(*Object, Object, Object, Object, Object, Object, Object, Object, Object*) → Tuple
toTuple(*Object, Object, Object, Object, Object, Object*) → Tuple
toTuple(*Object, Object, Object, Object*) → Tuple
toTuple(*Object, Object, Object, Object, Object, Object, Object, Object*) → Tuple
toTuple(*Object, Object, Object, Object, Object*) → Tuple
elementAt(*Tuple, Number*) → Object

Symbols

!(*Boolean*) → Boolean
!(*ProbabilisticResult*) → ProbabilisticResult
!=(*DString, DString*) → Boolean
!=(*Number* | *Object, Number* | *Object*) → Boolean
!=(*String, String*) → Boolean
%(*Number* | *Object, Number* | *Object*) → Double
&(*Number* | *Object, Number* | *Object*) → Long
&(*BitVector, BitVector*) → BitVector
&&(*Boolean, Boolean*) → Boolean
&&(*ProbabilisticResult, ProbabilisticResult*) → ProbabilisticResult
*(*ProbabilisticDouble, Number*) → ProbabilisticDouble
*(*Number, Vector*) → Vector
*(*Matrix, Number*) → Matrix
*(*Matrix, Matrix*) → Matrix
*(*Vector, Number*) → Vector
*(*Number, Matrix*) → Matrix
*(*Number, ProbabilisticDouble*) → ProbabilisticDouble
*(*ProbabilisticDouble, ProbabilisticDouble*) → ProbabilisticDouble
*(*Number* | *Object, Number* | *Object*) → Double
*(*IntervalByte, IntervalByte*) → IntervalDouble
*(*Vector, Vector*) → Matrix
*(*String, String*) → String
+(*ProbabilisticDouble, ProbabilisticDouble*) → ProbabilisticDouble
+(*String, String*) → String
+(*Number, ProbabilisticDouble*) → ProbabilisticDouble
+(*ProbabilisticDouble, Number*) → ProbabilisticDouble
+(*Matrix, Matrix*) → Matrix
+(*Vector, Vector*) → Vector
+(*IntervalByte, IntervalByte*) → IntervalDouble
+(*Vector, Number*) → Vector
+(*List, List*) → List
+(*Matrix, Number*) → Matrix
+(*Number, Vector*) → Vector
+(*Number* | *Object, Number* | *Object*) → Double
+(*DString, String*) → DString
+(*Date, Number*) → Date
+(*Number, Matrix*) → Matrix
+(*Date, Date*) → Date
-(*Date, Date*) → Date
-(*IntervalByte, IntervalByte*) → IntervalDouble
-(*Number* | *Object, Number* | *Object*) → Double
-(*Vector, Number*) → Vector
-(*ProbabilisticDouble, ProbabilisticDouble*) → ProbabilisticDouble
-(*Matrix, Matrix*) → Matrix
-(*ProbabilisticDouble, Number*) → ProbabilisticDouble
-(*Number, ProbabilisticDouble*) → ProbabilisticDouble
-(*Date, Number*) → Date
-(*DString, String*) → String
-(*Matrix, Number*) → Matrix
-(*List, List*) → List
-(*List, Simple Type*) → List
-(*Vector, Vector*) → Vector
-(*String, String*) → String
/(*Matrix, Number*) → Matrix
/(*String, String*) → Integer
/(*ProbabilisticDouble, Number*) → ProbabilisticDouble
/(*ProbabilisticDouble, ProbabilisticDouble*) → ProbabilisticDouble
/(*Number* | *Object, Number* | *Object*) → Double
/(*Vector, Number*) → Vector
/(*IntervalByte, IntervalByte*) → IntervalDouble
/(*Number, ProbabilisticDouble*) → ProbabilisticDouble
<(*VectorProbabilisticDouble, MatrixBoolean*) → ProbabilisticResult
<(*Number* | *Object, Number* | *Object*) → Boolean
<(*ProbabilisticDouble, Number*) → ProbabilisticResult
<<(*Number* | *Object, Number* | *Object*) → Long
<=(*VectorProbabilisticDouble, MatrixBoolean*) → ProbabilisticResult
<=(*Number* | *Object, Number* | *Object*) → Boolean
<=(*ProbabilisticDouble, Number*) → ProbabilisticResult
!=(*Number* | *Object, Number* | *Object*) → Boolean
!=(*String, String*) → Boolean
!=(*DString, DString*) → Boolean
=(*Boolean, Boolean*) → Boolean
=(*Number* | *Object, Number* | *Object*) → Boolean
=(*String, String*) → Boolean
=(*DString, DString*) → Boolean
=(*Number* | *Object, Number* | *Object*) → Boolean
=(*String, String*) → Boolean
==(*Matrix, Matrix*) → Boolean
==(*ProbabilisticDouble, Number*) → ProbabilisticResult
=(*DString, DString*) → Boolean
==(*VectorProbabilisticDouble, MatrixBoolean*) → ProbabilisticResult
==(*Vector, Vector*) → Boolean
=(*Boolean, Boolean*) → Boolean
>(*VectorProbabilisticDouble, MatrixBoolean*) → ProbabilisticResult
>(*ProbabilisticDouble, Number*) → ProbabilisticResult
>(*Number* | *Object, Number* | *Object*) → Boolean
>=(*Number* | *Object, Number* | *Object*) → Boolean
>=(*VectorProbabilisticDouble, MatrixBoolean*) → ProbabilisticResult
>=(*ProbabilisticDouble, Number*) → ProbabilisticResult
>>(*Number* | *Object, Number* | *Object*) → Long
[](*Matrix, Vector*) → Double
[](*BitVector, Integer*) → Boolean
[](*Matrix, Number*) → Vector
[](*Vector, Number*) → Double
^(*Matrix, Number*) → Matrix
^(*IntervalByte, Byte*) → IntervalDouble
^(*Number* | *Object, Number* | *Object*) → Double
|(*BitVector, BitVector*) → BitVector
|(*Number* | *Object, Number* | *Object*) → Long
||(*ProbabilisticResult, ProbabilisticResult*) → ProbabilisticResult
||(*Boolean, Boolean*) → Boolean
~(*Number*) → Long
~(*BitVector*) → BitVector

Handlers

Data Handlers

AVGSUMPARTIALAGGREGATE
BITVECTOR
BOOLEAN
BYTE
BYTEBUFFER
COUNTPARTIALAGGREGATE
DATE
DOCUMENT
DOUBLE
DSTRING
ENDTIMESTAMP
FLOAT
INTEGER
INTERVALDOUBLE
KEYVALUEOBJECT
LIST
LIST_BOOLEAN
LIST_BYTE
LIST_CHAR
LIST_DATE
LIST_DOUBLE
LIST_FLOAT
LIST_INTEGER
LIST_LIST
LIST_LONG
LIST_SHORT
LIST_STRING
LIST_TUPLE
LONG
MATRIX
MULTI_VALUE
MV
NTUPLE
OBJECT
PROBABILISTICDOUBLE
PROBABILISTICTUPLE
RELATIONALELEMENTPARTIALAGGREGATE
SHORT
STARTTIMESTAMP
STARTTIMESTAMPSTRING
STRING
TIMESTAMP
TUPLE
UNSIGNEDINT16
VECTOR

Protocol Handlers

BSON
CSV
DOCUMENT
JSON
LINE
MARKERBYTEBUFFER
NONE
ODYSSEUS
ODYSSEUSMARKER
SIMPLEBYTEBUFFER
SIMPLECSV
SIZEBYTEBUFFER
SVM
TEXT

Transport Handlers

DIRECTORY
FILE
NONBLOCKINGTCP
PLANMODIFICATIONWATCHER
SIMPLEUDPRECEIVE
TCP
TCPCLIENT
TCPCLIENT1
TCPSERVER
TCPSERVER1
TCPSERVER2
TIMER
UDPCLIENT
UDPSERVER

Odysseus Script

Commands

#INCLUDE
#INPUT
ACQUERY
ACTIVATEREWRITERULE
ADDQUERY
BEGIN
BUFFERPLACEMENT
CONFIG
CREATE_KV_STORE
DEACTIVATEREWRITERULE
DEFINE
DOADAPT
DODISTRIBUTE
DOQUERYSHARING
DOREWRITE
DROPALLQUERIES
DROPALLSINKS
DROPALLSOURCES
DROPPROCEDURE
DROP_KV_STORE
ELSE
END
ENDIF
ENDLOOP
EVAL
EXECUTE
IF
IFDEF
IFNDEF
IFSRCDEF
IFSRCNDEF
LOGIN
LOGOUT
LOOP
MAXSHEDDINGFACTOR
MDASTORE_DROP
MDASTORE_INIT
METADATA
NO_METADATA
ODYSSEUS_PARAM
OPTIMIZE_PREDICATES
PARSER
PARTIALQUERY
PLANGENERATIONMETHOD
PRETRANSFORM
PRINT
PROCEDURE
QNAME
QPARAM
QPRIORITY
QUERY
RECOVERYCONFIGURATION
RELOADFROMLOG
REMOVEQUERY
REQUIRED
RESETUPDATESITE
RESUMEONERROR
RESUMEQUERY
RUNCOMMAND
RUNQUERY
SCHEDULER
SLEEP
STARTQUERIES
STARTQUERY
STARTSCHEDULER
STOPQUERIES
STOPQUERY
STOPSCHEDULER
SUSPENDQUERY
TRAFOOPTION
TRANSCFG
UNDEF
UPDATE
UPDATESITE
UPTO
WAITFORQUERY

Constants

AWT.TOOLKIT
CHEATSHEET
ECLIPSE.APPLICATION
ECLIPSE.COMMANDS
ECLIPSE.HOME.LOCATION
ECLIPSE.P2.DATA.AREA
ECLIPSE.P2.PROFILE
ECLIPSE.PRODUCT
ECLIPSE.STARTTIME
ECLIPSE.STATESAVEDELAYINTERVAL
EQUINOX.USE.DS
FILE.ENCODING
FILE.ENCODING.PKG
FILE.SEPARATOR
GOSH.ARGS
JAVA.AWT.GRAPHICSENV
JAVA.AWT.PRINTERJOB
JAVA.CLASS.PATH
JAVA.CLASS.VERSION
JAVA.ENDORSED.DIRS
JAVA.EXT.DIRS
JAVA.HOME
JAVA.IO.TMPDIR
JAVA.LIBRARY.PATH
JAVA.RUNTIME.NAME
JAVA.RUNTIME.VERSION
JAVA.SPECIFICATION.NAME
JAVA.SPECIFICATION.VENDOR
JAVA.SPECIFICATION.VERSION
JAVA.VENDOR
JAVA.VENDOR.URL
JAVA.VENDOR.URL.BUG
JAVA.VERSION
JAVA.VM.INFO
JAVA.VM.NAME
JAVA.VM.SPECIFICATION.NAME
JAVA.VM.SPECIFICATION.VENDOR
JAVA.VM.SPECIFICATION.VERSION
JAVA.VM.VENDOR
JAVA.VM.VERSION
LINE.SEPARATOR
LOG4J.CONFIGURATION
ORG.ECLIPSE.UPDATE.RECONCILE
ORG.OSGI.FRAMEWORK.EXECUTIONENVIRONMENT
ORG.OSGI.FRAMEWORK.LANGUAGE
ORG.OSGI.FRAMEWORK.OS.NAME
ORG.OSGI.FRAMEWORK.OS.VERSION
ORG.OSGI.FRAMEWORK.PROCESSOR
ORG.OSGI.FRAMEWORK.SYSTEM.CAPABILITIES
ORG.OSGI.FRAMEWORK.SYSTEM.PACKAGES
ORG.OSGI.FRAMEWORK.UUID
ORG.OSGI.FRAMEWORK.VENDOR
ORG.OSGI.FRAMEWORK.VERSION
ORG.OSGI.SUPPORTS.FRAMEWORK.EXTENSION
ORG.OSGI.SUPPORTS.FRAMEWORK.FRAGMENT
ORG.OSGI.SUPPORTS.FRAMEWORK.REQUIREBUNDLE
OS.ARCH
OS.NAME
OS.VERSION
OSGI.ARCH
OSGI.BUNDLES
OSGI.BUNDLES.DEFAULTSTARTLEVEL
OSGI.COMPATIBILITY.BOOTDELEGATION
OSGI.CONFIGURATION.AREA
OSGI.FRAMEWORK
OSGI.FRAMEWORK.EXTENSIONS
OSGI.FRAMEWORK.SHAPE
OSGI.FRAMEWORK.USESYSTEMPROPERTIES
OSGI.FRAMEWORKCLASSPATH
OSGI.INSTALL.AREA
OSGI.LOGFILE

```
OSGI.NL
OSGI.OS
OSGI.REQUIREDJAVAVERSION
OSGI.SYSPATH
OSGI.WS
PATH.SEPARATOR
SUN.ARCH.DATA.MODEL
SUN.BOOT.CLASS.PATH
SUN.BOOT.LIBRARY.PATH
SUN.CPU.ENDIAN
SUN.CPU.ISALIST
SUN.IO.UNICODE.ENCODING
SUN.JAVA.COMMAND
SUN.JAVA.LAUNCHER
SUN.JNU.ENCODING
SUN.MANAGEMENT.COMPILER
SUN.OS.PATCH.LEVEL
USER.COUNTRY
USER.DIR
USER.HOME
USER.LANGUAGE
USER.NAME
USER.TIMEZONE
```

Sample Odysseus query

```
#PARSER PQL
#ADDQUERY

input = ACCESS({source='source',
        wrapper='GenericPull',
        transport='File',
        protocol='CSV',
        dataHandler='Tuple',
        metaattribute=['TimeInterval'],
        options=[['filename','example.csv']],
        schema=[['value','Double']]
})
output = MAP({expressions = ['value + 3']}, input)
```