Description of physical algorithms

May 21, 2014

1 Filter

Example:
$Filter(double, double, int) -> (double, double, int)$
$f(condition = "OP\_LOWER(OP\_double\_CONSTANT("4.8"), 1)");$
Input and output columns are the same and they are numbered from 0.
Output contains only rows statisfying given condition.
Output doens't have to be sorted same way as input.

2 Filter keeping order

Example:
$FilterKeepingOrder(double, double, int) -> (double, double, int)$
$f(condition = "OP\_LOWER(OP\_double\_CONSTANT("4.8"), 1)");$
Input and output columns are the same and they are numbered from 0.
They are numbered from 0.
Output contains only rows statisfying condition.
Output has to be sorted same way as input.

3 Hash group

Example:
$HashGroup(string, string, int) -> (string, int, int)$
$g(groupBy = "1", functions = "count(), max(2)");$
Input columns are numbered from 0.

4 Sorted group

Example:
$SortedGroup(string, string, int) -> (string, int, int)$
$g(groupBy = "1", functions = "count(), max(2)");$

5 Column operationas

Example:
$ColumnsOperations(int, int, int, int, int) -> (int, int, int, double)$
$c(out = "0, 3, 4, OP\_TIMES(1, OP\_MINUS(OP\_double\_CONSTANT(1), 2))");$

6 Cross join

Example:
$CrossJoin(string, int)(int, string) -> (string, string)$
$c(left = "0, 1", right = "2, 3", out = "0, 3");$

7 Hash join

Example:
$HashJoin(int, int)(int, int, int, int) -> (int, int, int, int, int, int)$
$h(left = "0, 1", right = "2, 3, 4, 5", out = "0, 1, 2, 3, 4, 5", leftPartOfCondition =$
$"0", rightPartOfCondition = "5");$

8 Merge equijoin

Example:
$MergeEquiJoin(int)(int) -> (int, int))$
$m(left = "0", right = "1", out = "0, 1", leftPartOfCondition = "0 : D", rightPartOfCondition =$
$"1 : D");$

9 Merge nonequiJoin

10 Hash antijoin

Example:
$HashAntiJoin(int)(int) -> (int)$

$h(left = "0", right = "1", out = "0", leftPartOfCondition = "0", rightPartOfCondition = "1");$

11 Merge antijoin

Example:
$MergeAntiJoin(int)(int) -> (int)$
$m(left = "0", right = "1", out = "0", leftPartOfCondition = "0 : D", rightPartOfCondition = "1 : D");$

12 Table scan

Example:
$TableScan() -> (int, int, int, int)$
$t(name = "lineitem", columns = "l\_orderkey, l\_shipdate, l\_extendedprice, l\_discount");$

13 ScanAndSortByIndex

Example:
$ScanAndSortByIndexScan() -> (string, string, int)$
$s(name = "people", index = "index", columns = "user\_name, country, parameter");$

14 IndexScan

Example:
$IndexScan() -> (int, int)$
$i(name = "customer", index = "index2", columns = "c\_custkey, c\_mktsegment", condition = "OP\_EQUALS(1, OP\_string\_CONSTANT(SEGMENT))");$

15 Sort

Example:
$SortOperator(int, int) -> (int, int)$
$s(sortedBy = "0", sortBy = "1 : D");$

16 Union

Example:
$Union(int, string)(string, int) -> (int, string)$
$u(left = "0, 1", right = "1, 0", out = "0, 1");$