

Db2 SQL Script

```
CREATE OR REPLACE PROCEDURE hllagg_initialize(OUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate!initialize';
```

```
CREATE OR REPLACE PROCEDURE hllagg_accumulate_int(IN value INTEGER, INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate!accumulate_int';
```

```
CREATE OR REPLACE PROCEDURE hllagg_accumulate_dbl(IN value DOUBLE, INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate!accumulate_dbl';
```

```
CREATE OR REPLACE PROCEDURE hllagg_accumulate_ft(IN value REAL, INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate!accumulate_ft';
```

```
CREATE OR REPLACE PROCEDURE hllagg_accumulate_lng(IN value BIGINT, INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate!accumulate_lng';
```

```
CREATE OR REPLACE PROCEDURE hllagg_accumulate_str(IN value VARCHAR(4000), INOUT buffer VARCHAR(22000) FOR
BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate!accumulate_str';
```

```
CREATE OR REPLACE PROCEDURE hllagg_merge(IN obuffer VARCHAR(22000) FOR BIT DATA, INOUT buffer
VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate!merge';
```

```
CREATE OR REPLACE FUNCTION hllagg_finalize(buffer VARCHAR(22000) FOR BIT DATA)
RETURNS VARCHAR(32670)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
NO SCRATCHPAD
CALLED ON NULL INPUT
```

```

EXTERNAL NAME 'hll_aggregate!finalize';

CREATE OR REPLACE FUNCTION hll_aggregate(INTEGER)
  RETURNS VARCHAR(32670)
  SPECIFIC hllagg_int
  AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
  USING
  INITIALIZE PROCEDURE hllagg_initialize
  ACCUMULATE PROCEDURE hllagg_accumulate_int
  MERGE PROCEDURE hllagg_merge
  FINALIZE FUNCTION hllagg_finalize;

CREATE OR REPLACE FUNCTION hll_aggregate(BIGINT)
  RETURNS VARCHAR(32670)
  SPECIFIC hllagg_lng
  AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
  USING
  INITIALIZE PROCEDURE hllagg_initialize
  ACCUMULATE PROCEDURE hllagg_accumulate_lng
  MERGE PROCEDURE hllagg_merge
  FINALIZE FUNCTION hllagg_finalize;

CREATE OR REPLACE FUNCTION hll_aggregate(DOUBLE)
  RETURNS VARCHAR(32670)
  SPECIFIC hllagg_dbl
  AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
  USING
  INITIALIZE PROCEDURE hllagg_initialize
  ACCUMULATE PROCEDURE hllagg_accumulate_dbl
  MERGE PROCEDURE hllagg_merge
  FINALIZE FUNCTION hllagg_finalize;

CREATE OR REPLACE FUNCTION hll_aggregate(REAL)
  RETURNS VARCHAR(32670)
  SPECIFIC hllagg_ft
  AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
  USING
  INITIALIZE PROCEDURE hllagg_initialize
  ACCUMULATE PROCEDURE hllagg_accumulate_ft
  MERGE PROCEDURE hllagg_merge
  FINALIZE FUNCTION hllagg_finalize;

CREATE OR REPLACE FUNCTION hll_aggregate(VARCHAR(4000))
  RETURNS VARCHAR(32670)
  SPECIFIC hllagg_str
  AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
  USING
  INITIALIZE PROCEDURE hllagg_initialize
  ACCUMULATE PROCEDURE hllagg_accumulate_str
  MERGE PROCEDURE hllagg_merge
  FINALIZE FUNCTION hllagg_finalize;

-- estimate

CREATE OR REPLACE PROCEDURE hll_est_initialize(OUT buffer VARCHAR(22000) FOR BIT DATA)
  LANGUAGE C
  PARAMETER STYLE SQL
  NOT FENCED THREADSAFE
  NO SQL
  EXTERNAL NAME 'hll_estimate!initialize';

CREATE OR REPLACE PROCEDURE hll_est_accumulate_int(IN value INTEGER, INOUT buffer VARCHAR(22000) FOR BIT DATA)
  LANGUAGE C

```

```
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_estimate!accumulate_int';
```

```
CREATE OR REPLACE PROCEDURE hll_est_accumulate_dbl(IN value DOUBLE, INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_estimate!accumulate_dbl';
```

```
CREATE OR REPLACE PROCEDURE hll_est_accumulateflt(IN value REAL, INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_estimate!accumulateflt';
```

```
CREATE OR REPLACE PROCEDURE hll_est_accumulate_lng(IN value BIGINT, INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_estimate!accumulate_lng';
```

```
CREATE OR REPLACE PROCEDURE hll_est_accumulate_str(IN value VARCHAR(4000), INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_estimate!accumulate_str';
```

```
CREATE OR REPLACE PROCEDURE hll_est_merge(IN obuffer VARCHAR(22000) FOR BIT DATA, INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_estimate!merge';
```

```
CREATE OR REPLACE FUNCTION hll_est_finalize(buffer VARCHAR(22000) FOR BIT DATA)
RETURNS BIGINT
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
NO SCRATCHPAD
CALLED ON NULL INPUT
EXTERNAL NAME 'hll_estimate!finalize';
```

```
CREATE OR REPLACE FUNCTION hll_estimate(INTEGER)
RETURNS BIGINT
SPECIFIC hll_est_int
AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
USING
INITIALIZE PROCEDURE hll_est_initialize
ACCUMULATE PROCEDURE hll_est_accumulate_int
MERGE PROCEDURE hll_est_merge
FINALIZE FUNCTION hll_est_finalize;
```

```
CREATE OR REPLACE FUNCTION hll_estimate(BIGINT)
RETURNS BIGINT
```

```
SPECIFIC hlest_ing
AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
USING
INITIALIZE PROCEDURE hlest_initialize
ACCUMULATE PROCEDURE hlest_accumulate_ing
MERGE PROCEDURE hlest_merge
FINALIZE FUNCTION hlest_finalize;
```

```
CREATE OR REPLACE FUNCTION hll_estimate(DOUBLE)
RETURNS BIGINT
SPECIFIC hlest_dbl
AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
USING
INITIALIZE PROCEDURE hlest_initialize
ACCUMULATE PROCEDURE hlest_accumulate_dbl
MERGE PROCEDURE hlest_merge
FINALIZE FUNCTION hlest_finalize;
```

```
CREATE OR REPLACE FUNCTION hll_estimate(REAL)
RETURNS BIGINT
SPECIFIC hlest_ft
AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
USING
INITIALIZE PROCEDURE hlest_initialize
ACCUMULATE PROCEDURE hlest_accumulate_ft
MERGE PROCEDURE hlest_merge
FINALIZE FUNCTION hlest_finalize;
```

```
CREATE OR REPLACE FUNCTION hll_estimate(VARCHAR(4000))
RETURNS BIGINT
SPECIFIC hlest_str
AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
USING
INITIALIZE PROCEDURE hlest_initialize
ACCUMULATE PROCEDURE hlest_accumulate_str
MERGE PROCEDURE hlest_merge
FINALIZE FUNCTION hlest_finalize;
```

-- agg estimate

```
CREATE OR REPLACE PROCEDURE hllaggst_initialize(OUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate_estimate!initialize';
```

```
CREATE OR REPLACE PROCEDURE hllaggst_accumulate(IN value VARCHAR(32670), INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate_estimate!accumulate';
```

```
CREATE OR REPLACE PROCEDURE hllaggst_merge(IN obuffer VARCHAR(22000) FOR BIT DATA, INOUT buffer VARCHAR(22000) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE SQL
NOT FENCED THREADSAFE
NO SQL
EXTERNAL NAME 'hll_aggregate_estimate!merge';
```

```

CREATE OR REPLACE FUNCTION hllaggst_finalize(buffer VARCHAR(22000) FOR BIT DATA)
  RETURNS BIGINT
  LANGUAGE C
  PARAMETER STYLE SQL
  NOT FENCED THREADSAFE
  NO SQL
  NO SCRATCHPAD
  CALLED ON NULL INPUT
  EXTERNAL NAME 'hll_aggregate_estimate!finalize';

CREATE OR REPLACE FUNCTION hll_aggregate_estimate(IN value VARCHAR(32670))
  RETURNS BIGINT
  AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
  USING
  INITIALIZE PROCEDURE hllaggst_initialize
  ACCUMULATE PROCEDURE hllaggst_accumulate
  MERGE PROCEDURE hllaggst_merge
  FINALIZE FUNCTION hllaggst_finalize;

-- agg merge

CREATE OR REPLACE PROCEDURE hllaggmerge_initialize(OUT buffer VARCHAR(22000) FOR BIT DATA)
  LANGUAGE C
  PARAMETER STYLE SQL
  NOT FENCED THREADSAFE
  NO SQL
  EXTERNAL NAME 'hll_aggregate_merge!initialize';

CREATE OR REPLACE PROCEDURE hllaggmerge_accumulate(IN value VARCHAR(32670), INOUT buffer VARCHAR(22000)
  FOR BIT DATA)
  LANGUAGE C
  PARAMETER STYLE SQL
  NOT FENCED THREADSAFE
  NO SQL
  EXTERNAL NAME 'hll_aggregate_merge!accumulate';

CREATE OR REPLACE PROCEDURE hllaggmerge_merge(IN obuffer VARCHAR(22000) FOR BIT DATA, INOUT buffer
  VARCHAR(22000) FOR BIT DATA)
  LANGUAGE C
  PARAMETER STYLE SQL
  NOT FENCED THREADSAFE
  NO SQL
  EXTERNAL NAME 'hll_aggregate_merge!merge';

CREATE OR REPLACE FUNCTION hllaggmerge_finalize(buffer VARCHAR(22000) FOR BIT DATA)
  RETURNS VARCHAR(32670)
  LANGUAGE C
  PARAMETER STYLE SQL
  NOT FENCED THREADSAFE
  NO SQL
  NO SCRATCHPAD
  CALLED ON NULL INPUT
  EXTERNAL NAME 'hll_aggregate_merge!finalize';

CREATE OR REPLACE FUNCTION hll_aggregate_merge(IN value VARCHAR(32670))
  RETURNS VARCHAR(32670)
  AGGREGATE WITH (buffer VARCHAR(22000) FOR BIT DATA)
  USING
  INITIALIZE PROCEDURE hllaggmerge_initialize
  ACCUMULATE PROCEDURE hllaggmerge_accumulate
  MERGE PROCEDURE hllaggmerge_merge
  FINALIZE FUNCTION hllaggmerge_finalize;

```

```
-- version check
```

```
CREATE OR REPLACE FUNCTION atscale_honeybee_version()  
  RETURNS VARCHAR(1000)  
  LANGUAGE C  
  PARAMETER STYLE SQL  
  FENCED THREADSAFE  
  NO SQL  
  NO EXTERNAL ACTION  
  EXTERNAL NAME 'honeybee_version!version';
```