

A background image of a roller coaster with blue and red tracks, looping and twisting. The coaster is set against a backdrop of green trees and a clear sky. The tracks are supported by a complex network of blue and white metal beams. A small white building with a yellow star on top is visible in the lower right corner.

Looping Abreast

Erland Sommarskog
SQL Server MVP
esquel@sommarskog.se

DataMinutes June 11th, 2021

Set-based and Loops

- Common SQL wisdom: Set-based is good and loops are evil.
- Some problems are difficult or impossible to solve with only set-based code.
- Or set-based solutions exist, but are inefficient.
- They can often be solved with a single pass over the data.
- To compute the result for one customer (or one product or whatever), a loop over its data is needed.
- But no need to loop over the customers – handle them abreast!

The Christmas-Presents Problem

- Every time a customer has bought for a total of one million, they are entitled to a Christmas present.
- When they have passed the limit, they restart on zero, no matter the excess amount of the last order.
- A customer cannot earn more than 10 Christmas presents.
- Simple-minded loop solution, one customer at a time:

[01-simpleloop.sql](#)

Looping Abreast

The general technique:

- Compute a batch number for the transactions with `row_number`.
 - The customer's first transaction will be in the first batch, the second in batch = 2 etc.
 - If a customer has ten transactions, the customer is not in batch 11 and on.
- Materialise the numbering in a temp table with BatchNo as the leading key.
- Loop over the batch numbers and perform the computation one transaction at time for all customers abreast.

[02-general-abreast.sql](#)

Built-in Loop Columns

- Using a #batches table is the general technique you always can employ.
- Sometimes the problem offers a built-in iteration column, for instance a date.
- A twist: after earning a present, need to wait ten days before start earning a new one.
- Now we only have to consider the standing at the end of the day – no need to number the transactions.

[03-date-iteration.sql](#)

End of the Loop

Erland Sommarskog

esquel@sommarskog.se

Slides and scripts on <http://www.sommarskog.se/present>.

Demo database:

<http://www.sommarskog.se/present/LoopingAbreast.bak>.

(Backup size = 80 MB, DB size = 1 GB. Requires SQL 2016.)