Feature Extraction Benchmark

Standard Specification

Revision 1.1.1

19. April 2023

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Revision History

Revision	Date	Author(s)	Description
1.0.0	31 March 2023	Kunyi Li	Finish Intro, Datasets and Query chapters
1.1.0	14 April 2023	Kunyi Li	Add Execution Rules chapter
1.1.1	19 April 2023	Kunyi Li	Polish

Chapter 1

Introduction

1.1 Preamble

FEBench is a benchmark designed to evaluate the performance of real-time feature extraction (RTFE) systems, which are used to compute features over incoming data tuples in applications such as fraud detection and recommendation (An example of RTFE at Appendix A). Unlike traditional database benchmarks, FEBench focuses on the unique query characteristics (e.g., complex operator patterns over multiple windows) and data distributions in real-time feature extraction scenarios.

This specification describes the functionality and expected behavior of FEBench, which was developed by 4Paradigm in collaboration with industry partners. The benchmark includes selected datasets, query templates, and a testing framework for evaluating the effectiveness of feature extraction systems. The results of the benchmark have shown that tested systems, such as Flink and OpenMLDB, have their own problems in different aspects, such as overall latency, tail latency, and concurrency performance.

This specification is intended for software engineers, system administrators, and anyone interested in evaluating the performance of RTFE systems. It provides guidance on how to use FEBench, interpret the results it generates, and understand the metrics it reports.

The scope of this specification includes the following:

- An overview of FEBench and its features, including the datasets and query templates.
- The components of FEBench and guidelines for installing and using FEBench.
- Details on how FEBench measures and reports performance metrics.

This specification does not cover:

- In-depth analysis of the performance of individual RTFE systems. The team at 4Paradigm has completed a detailed study with this benchmark and report the results in this technical report[1].
- Best practices for RTFE system design or optimization For those details, readers can refer to the open-source website of FEBench, https://github.com/decis-bench/febench.

The FEBench benchmark suite is developed and maintained by a collaboration between academic researchers and industry partners. FEBench is designed to fill the gap in benchmarking tools for real-time feature extraction systems, and to enable researchers and practitioners to evaluate the performance of their implementations in a standardized and reproducible way.

It is assumed that the reader has a basic understanding of RTFE concepts and terminology.

[1] https://github.com/decis-bench/febench/blob/main/report/febench.pdf

1.2 General Implementation Guidelines

To be evaluated using FEBench, a target system must meet the following requirements:

- **Real-time feature extraction**: The system being evaluated must be capable of performing real-time feature extraction on incoming data with minimal delay. This requires the system to process incoming data quickly and efficiently.
- **SQL-like language**: The system must support a SQL-like language for expressing feature extraction procedures. This allows FEBench to define queries and query templates that can be executed by the target system in a standardized way. It also allows the target system to express complex feature extraction operations in a familiar and user-friendly style.
- **Data ingestion**: The system must be able to ingest data from a variety of sources, including files, streams, and external databases. FEBench provides a set of benchmark datasets that can be used to evaluate the performance of the target system across different data types and sizes.
- **Scalability**: The system must be scalable and able to handle large volumes of data with high concurrency. This requires the system to be able to handle increasing scales of data and workload without degrading performance or accuracy. FEBench includes a set of benchmark scenarios that test the performance of the target system under various levels of concurrency and data volume.
- **Time-based aggregation**: The system must support aggregation operations over multiple time windows, including sliding and tumbling windows. This allows the system to compute aggregate statistics over a stream of data tuples that arrive within specified time windows. FEBench includes a set of benchmark scenarios that test the performance of the target system in performing time-based aggregation operations.
- **Point in Time Joins**: Point-In-Time Joins (PIT Joins) is a critical feature that must be supported by the target system to be evaluated using FEBench. PIT Joins enable querying the feature of an entity at a specific point in time, which is essential for many real-world applications. For instance, in finance, it is often necessary to calculate the creditworthiness of a customer based on their historical credit card transactions at a specific date.

Overall, meeting these requirements allows a target system to be evaluated using FEBench to measure its performance in real-time feature extraction and time-based aggregation operations across a range of application scenarios. By using FEBench, developers and researchers can gain valuable insights into the performance and scalability of their systems and make informed decisions about optimization and improvement.

1.3 General Measurement Guidelines

FEBench provides several performance metrics, including TP-50, TP-99, and TP-999 latency, tail latency, queries per second (QPS), and the execution time breakdown metrics. These metrics are explained in detail in Section 4.3. It is crucial to note that the results of FEBench are expected to be an accurate representation of the target system's performance. Therefore, it is essential to follow general measurement guidelines when measuring the results:

- **Accepted Engineering Practice or Standard**: All measurements must follow accepted engineering practices or standards that are widely recognized within the industry.
- **Result Enhancement**: Any approach used in the measurement process must not artificially enhance the performance results.
- **Fidelity and Candor in Reporting**: Test sponsors must maintain fidelity and candor in reporting any anomalies or unexpected results in the benchmark results, even if not specifically required by the FEBench benchmark requirements.

Chapter 2

LOGICAL DATABASE DESIGN

2.1 Dataset Collection and Extraction

2.1.1 Dataset Collection

FEBench is a benchmark designed to evaluate the performance of real-time feature extraction systems in various application scenarios. These scenarios include but are not limited to:

- Applications that require real-time analysis of incoming data to detect anomalies or security threats, such as fraud detection and traffic analysis.
- Applications that require real-time analysis of user behavior data to provide personalized recommendations, such as recommendation systems.
- Applications that involve analysis of sensor data from IoT devices to detect environmental changes or other events.

To meet the four important criteria for a domain-specific benchmark proposed by Jim Gray (i.e., relevance, simplicity, portability, and scalability), FEBench collected over 100 RTFE workloads from various sources. These workloads include 45 Kaggle datasets, 11 Tianchi datasets, 8 KiltHub datasets, 28 UCI ML datasets, and 26 applications in 4Paradigm. All of these datasets meet the requirements:

- Be in tabular data format. Most online decision-making tasks store data in tabular format, where each tuple represents an instance and each column corresponds to a basic feature.
- Have at least one timestamp column. RTFE requires the updating of computed features by the most recent data. Thus, any selected dataset must contain a "timestamp" column that simulates the various incoming data distributions in real online scenarios.
- Be large enough to support minutes of tests. We need the dataset that includes at least one table with timestamps (usually the main table) and contains over 1×10^6 tuples. This allows us to simulate the real-world data incoming scenarios and test the performance for minutes. Note, similar to other benchmarks like TPC-C and Sysbench, we only insert tuples by the order of their timestamps during evaluation.

The datasets used in FEBench possess several unique characteristics. Firstly, they cover a broad range of data distributions, with the number of tables ranging from 1 to 10 and dataset sizes ranging from 1MB to 10TB. Secondly, the operator patterns in FEBench queries are closedly correlated with the data distributions, with single table datasets utilizing multi-table windows, and datasets with multiple tables using subqueries with many levels. Finally, the majority of the datasets used in FEBench are relatively small, with sizes not exceeding 50GB. This is because most FEBench queries only operate on recent data and require only data

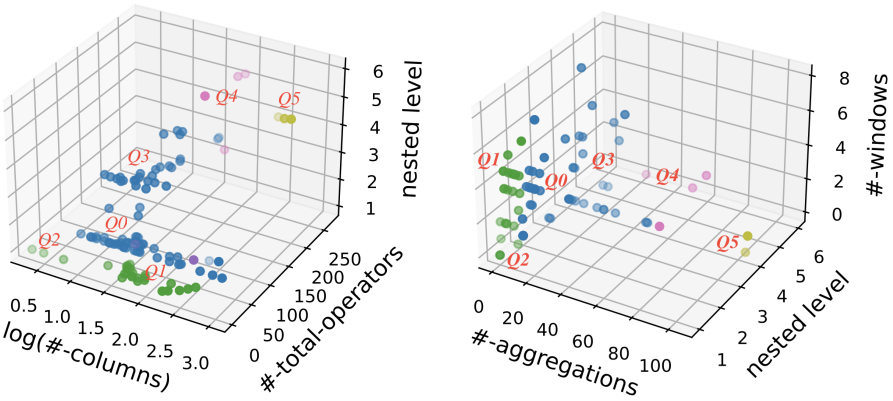
tuples within specific time windows. However, FEBench also includes larger datasets that exceed 10TB, which do not require time windows but instead join incoming tuples with full static tables.

2.1.2 Dataset Extraction

We extract 6 out of the total 118 datasets based on the analysis of data and query templates.

First we utilize the industry-grade automated machine learning (AutoML) technique, which can express RTFE in SQLs for ease of building AI models[1,2], to generate Feature Extraction(FE) queries. This tool has been implemented in 4Paradigm's commercial product4 and served in many real-world scenarios (such as Industrial and Commercial Bank, UnionPay). The detailed procedures can be found in Section 3.1

To select representative query templates from the collected FE queries, clustering is performed using the DBSCAN algorithm. The feature vector for each query consists of five parts, namely the number of output columns, the total number of query operators, the occurrence frequencies of complex operators, the highest level of nested subqueries, and the constraints of maximal tuples in windows. To evaluate the relation of these features with the execution time, a logistic regression model is trained with the above features as input and the execution time as output. The regression weights of each feature are then used as their clustering weights. With the weighted query features, DBSCAN is used to divide the origin queries into six clusters. Queries around the centroid of each cluster are extracted as the candidate templates.



(a) High-level features (b) Highest-weighted features

Figure 2.1: Query Clustering Analysis. The 118 origin queries are divided into 6 clusters (query templates).

From the 118 FE queries, six query templates are selected, one each for traffic, healthcare, energy, and sales, and two for financial transactions, based on their representation of different scenarios.

2.2 Database Entities and Relationships

In FEBench, it is crucial to differentiate between two types of tables: the main table and the secondary table.

The main table serves as the primary data table for feature extraction, while auxiliary information related to the main table may be stored in other tables in the database, which are referred to as secondary tables (note that there may be multiple secondary tables). By joining the main table with these secondary tables through operations, more comprehensive features can be generated. For example, to infer whether a user has

[1] I. Guyon, L. Sun-Hosoya, M. Boullé, H. J. Escalante, S. Escalera, Z. Liu, D. Jajetic, B. Ray, M. Saeed, M. Sebag, et al. Analysis of the automl challenge series. Automated Machine Learning, 177, 2019

[2] Y. Luo, M. Wang, H. Zhou, Q. Yao, W.-W. Tu, Y. Chen, W. Dai, and Q. Yang. Autocross: Automatic feature crossing for tabular data in real-world applications. In Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery Data Mining, pages 1936–1945, 2019.

been defrauded based on their consumption behavior, the user consumption record table can be used as the primary table, and the merchant transaction record table as the secondary table.

During the test process of FEBench, we load the data of the secondary tables into the SUT in advance and insert the data of the main table into the SUT using a data stream during the test.

The schema description in this section distinguishes between two types of tables: the main table and the secondary table. The main table is the one from which an arrow originates, while the secondary table is the one to which an arrow points. It's important to note that if there is only one table in the schema, it is automatically considered the main table.

Dataset	Main Table	Secondary Table
Q0	Train	\
Q1	Train	\
Q2	Train	Benchmark windforecasts_wf<1-7> Test
Q3	Flatten_request	Feedback shipping_Q3_Col3 product_Q3_Col3 order_cancel_return Order_sales Product_item
Q4	flattenRequest	bo_POS_CASH_balance bo_bureau bo_bureau_balance action bo_part bo_installment_payment bo_previous_applicatio bo_credit_card_balance
Q5	flatten_request	feedback CUST_f7 sag_efs_tbproduct_F_b debit1_f1 debit2_f2 debit3_f3 AUM_f4 LINK1_f5 LINK2_f6

Table 2.1: Main table and secondary table of each dataset

Legend:

- **One-to-one**: Each tuple in the main table is associated with only one record in the secondary table, and vice versa.
- **One-to-many**: Each tuple in the main table is associated with multiple records in the secondary table, and the data in the secondary table can be aggregated.
- **Slice**: The data in the secondary table represents the state of the entity at a specific time in the main table.

2.2.1 Ride Duration Prediction (Q0)

For the ride prediction task, we collect open NYC transportation data ranging from 2016-01-01 to 2016-06-30.

The schema of the corresponding table is presented below, consisting of a singular table with a total of eleven columns, comprising two timestamp columns, two string columns, and seven numeric columns.

id,string
vendor_id,int
pickup_datetime,timestamp
dropoff_datetime,timestamp
passenger_count,int
pickup_longitude,double
pickup_latitude,double
dropoff_longitude,double
dropoff_latitude,double
store_and_fwd_flag,string
trip_duration,int

Train

Figure 2.2: Schema of Q0

2.2.2 Flu Forecast (Q1)

For the flu forecast task, we have collected covid19 data ranging from 2020-01-22 to 2020-04-07.

The corresponding table schema is presented below, comprising a singular base table with a total of six columns, consisting of one timestamp column, two string columns, and three numeric columns.

Id,int
Province_State,string
Country_Region,string
Date,timestamp
ConfirmedCases,double
Fatalities,double

Train

Figure 2.3: Schema of Q1

2.2.3 Wind Energy Forecasting (Q2)

For the power forecast task, we have collected the open wind-power data ranging from 2009-07-01 to 2012-06-26.

The table schema is shown below. It consists of 10 tables containing a total of 61 columns. Among them, seven farm tables record power changes separately for each farm, while the remaining three training tables are utilized for the prediction model training process.

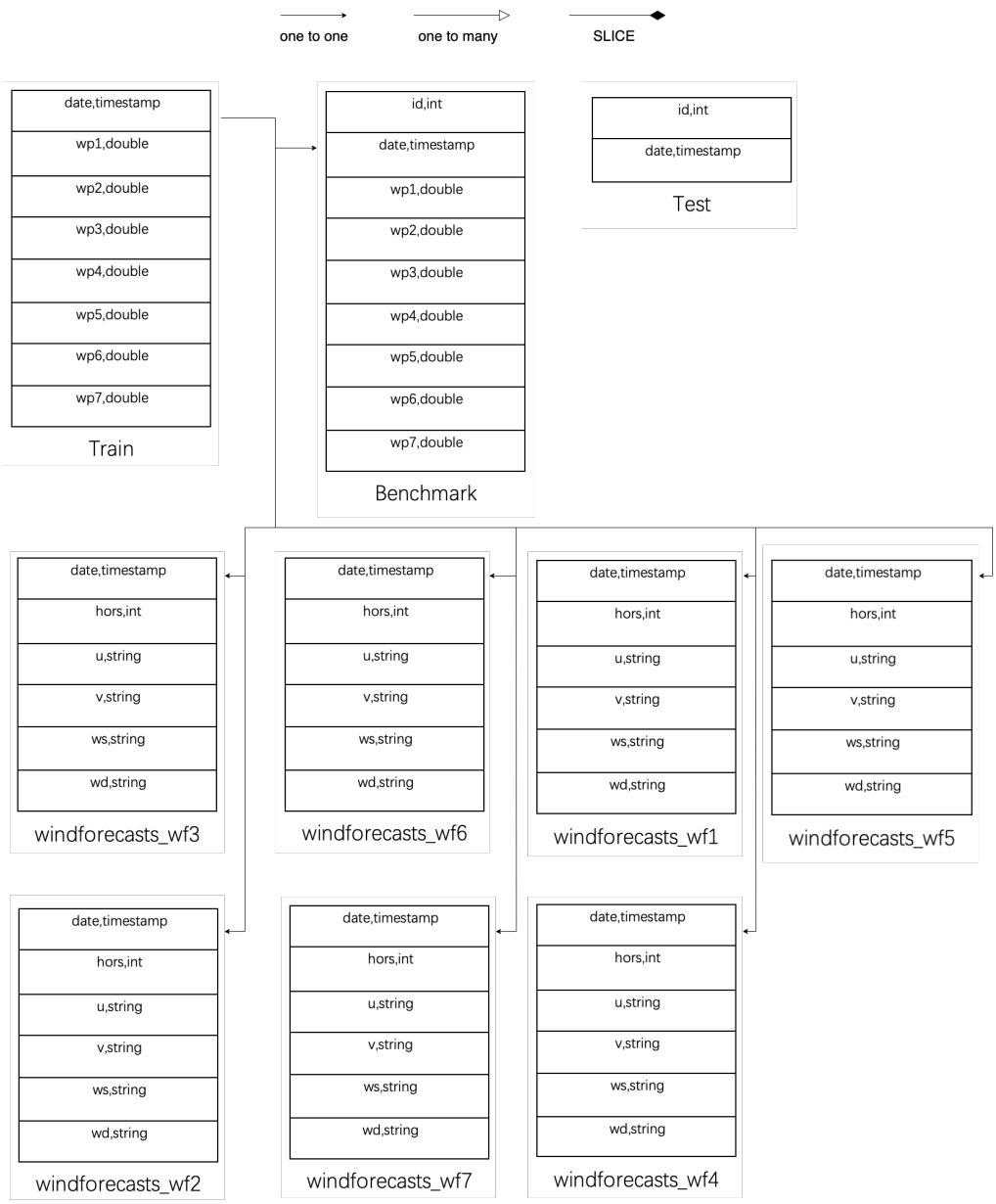


Figure 2.4: Schema of Q2

2.2.4 Sales Prediction (Q3)

For the sales-prediction task, we have collected real data in Uniqlo ranging from 2017-12-31 to 2021-05-30.

The data schema comprises a total of 7 tables with 85 columns, incorporating both steam tables, such as canceled orders storage, and attribute tables, such as product information.

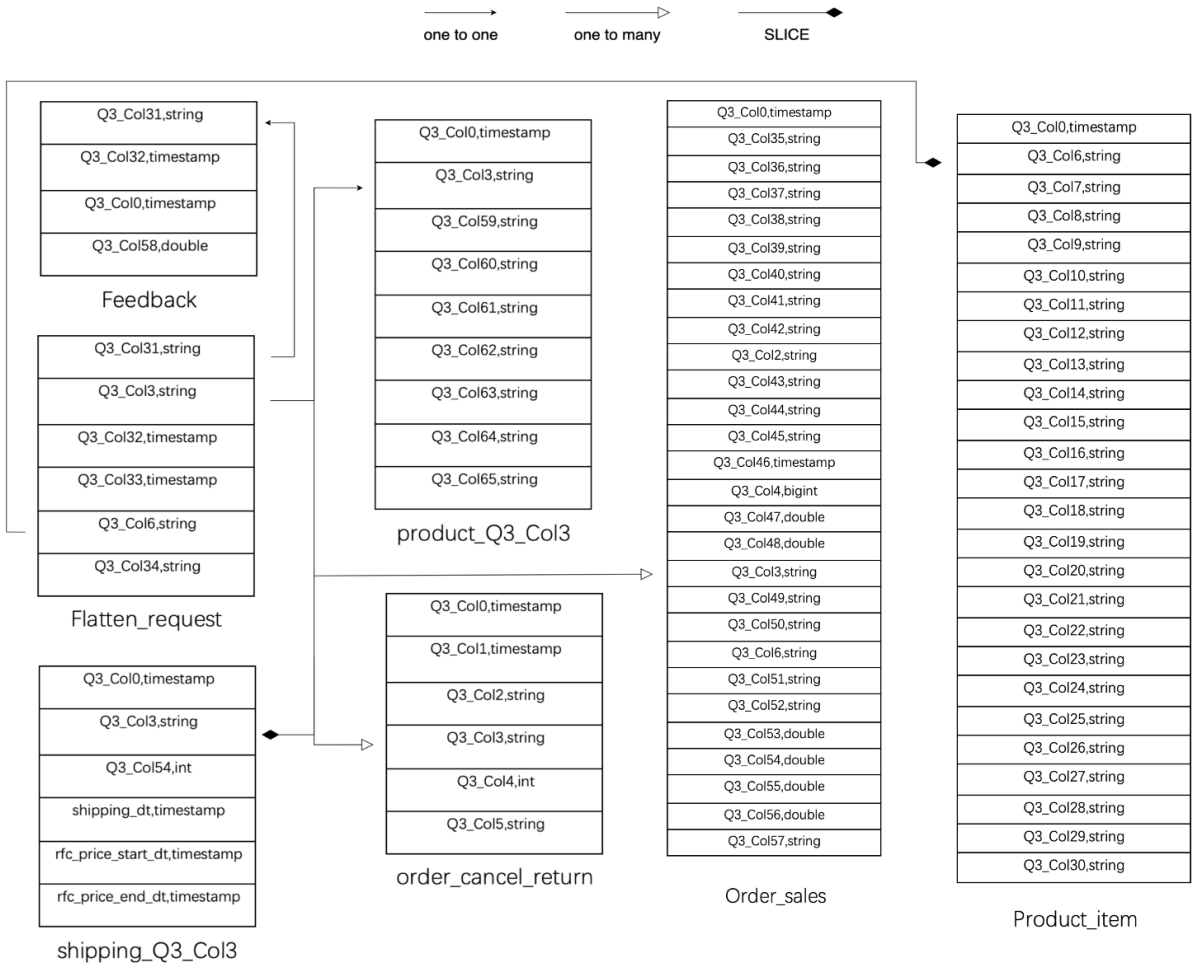


Figure 2.5: Schema of Q3

2.2.5 Loan Evaluation (Q4)

The task aims to predict whether customers will pay back their loans on time for a credit card company. Q4 owns 9 tables together with 1GB data and 245 columns. The schema is shown below.

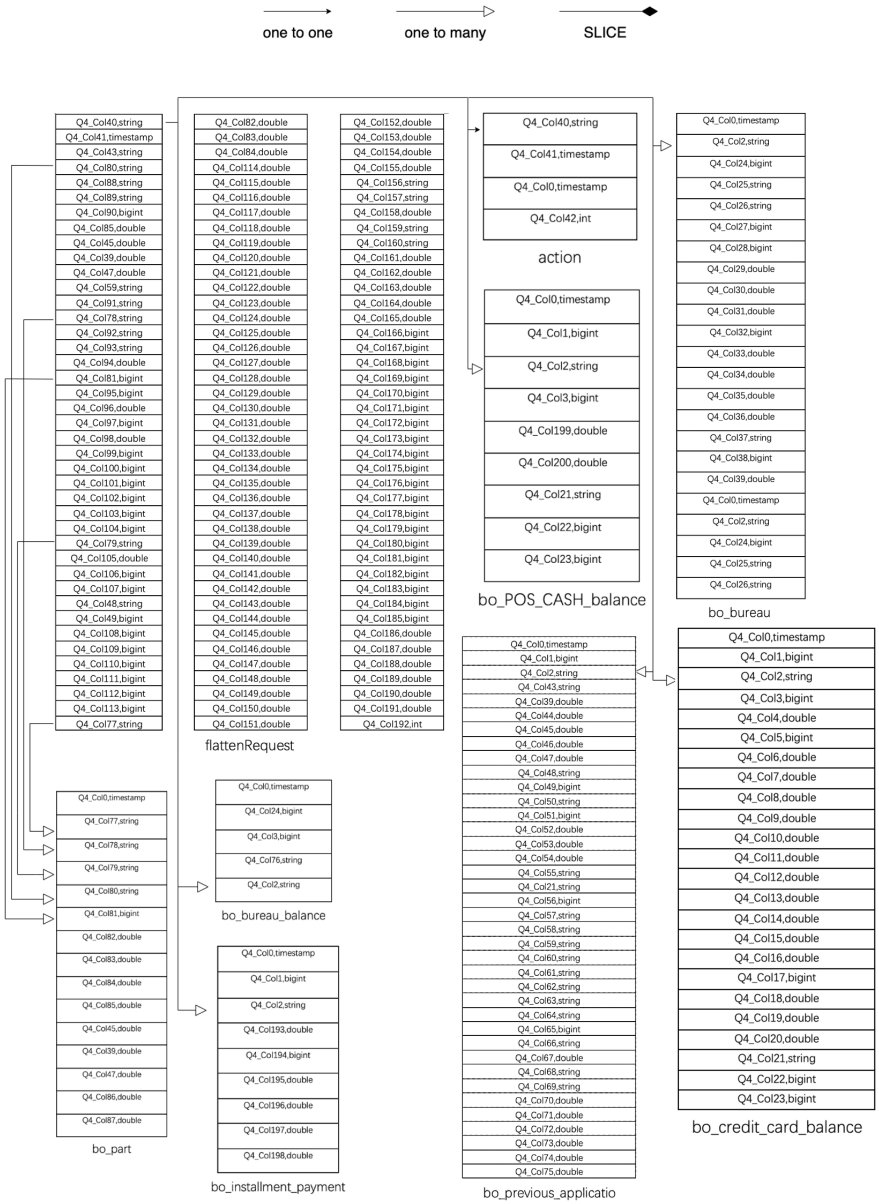


Figure 2.6: Schema of Q4

2.2.6 Fraud Detection (Q5)

Q5 owns 10 tables with over 13GB origin data and 773 columns. The schema is shown below.

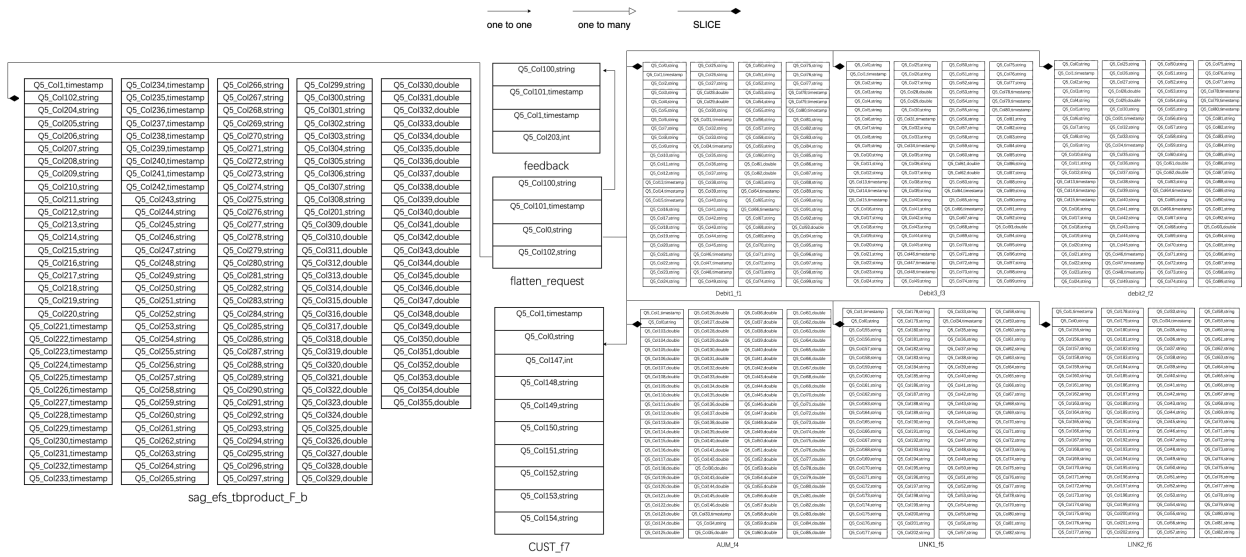


Figure 2.7: Schema of Q5

Chapter 3

RTFE QUERIES

3.1 Query Generation

In practice, it is laborious and time-consuming for data scientists to sample and try out different feature combinations. To simplify the process, we utilize the industry-grade automated machine learning (AutoML) technique as mentioned in Section 2.1.2. Given an AI task and source data, the selection of features and generation of queries involve four steps (Figure 3.1):

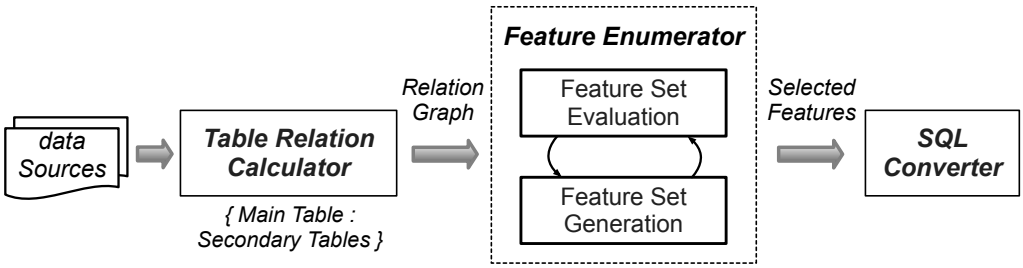


Figure 3.1: The workflow of FE query generation

Step 1 (initialization): We first identify the main table (storing the stream data) and secondary tables (e.g., static/appendable/snapshot tables) in the dataset. Next, we enumerate the one-to-one/one-to-many relations (corresponding to different operators) of columns within the main table and secondary tables, like columns with similar names or key relations.

Step 2 (table relation calculator): Next we map the column relations to FE operators. As shown in Table 3.1, for a secondary table, if it has the one-to-one relationship with the main table (e.g., user profiling information), we directly join the secondary table with incoming tuples in the main table and retrieve the whole or a partial set of join results; and if they are of one-to-many relationship (e.g., historical transactions of a user), we first join the secondary and main tables and than perform aggregations on the join results. The adopted aggregation functions depend on the secondary table type (e.g., *count* operator for static tables, *groupby_count* operator for appendable tables). Each mapped operator pattern corresponds to a candidate feature (represented by an output column).

Step 3 (feature enumerator): After extracting all the candidate features, we utilize beam search[1] to iteratively generate effective feature sets. That is, we first initialize a root node (level 0) denoting the basic features in origin tables. Next, in each iteration, we select one most promising node N to expand nodes of next level (e.g., adding a candidate feature to the feature set of N) based on metrics like AUC (measuring the model inference accuracy with the updated feature set[2]) and selection frequency (the occurrence numbers

[1] V. Steinbiss, B.-H. Tran, and H. Ney. Improvements in beam search. In Third international conference on spoken language processing, 1994.

[2] E. R. DeLong, D. M. DeLong, and D. L. Clarke-Pearson. Comparing the areas under two or more correlated receiver operating

Secondary Table	Relationship	Operator Pattern
static/attribute table	one-to-one	last join
	one-to-many	aggregation + left join
appendable table	one-to-many	aggregation (events)
snapshot table	one-to-one	last join
	one-to-many	aggregation (status)

Table 3.1: Relationships (with the main table) and the mapped operators. *Events* indicate recent activities; *Status* denotes long-term properties.

of different columns). This iterative procedure is terminated once a specified condition (e.g., the maximum iteration time) is met and the feature set of the best leaf node is chosen.

The detailed feature sets of the datasets in FEBench can be seen in Appendix B.

Step 4 (SQL converter): Finally, the selected features are converted into a semantically equivalent SQL query, which needs to integrate into the Feature Store before evaluation (e.g., the "DEPLOY" command in OpenMLDB). Note for a new Feature Store, the SQL converter can be easily adapted provided the SQL grammar of this system is known. The generated SQL queries for real datasets are available at github.com/decis-bench/febench.

3.2 Query Definition

In consideration of space limitations, we have included the detailed OpenMLDB and Flink queries in Appendices D and E, respectively. For the purpose of analyzing the query characteristics of FEBench, we will use the abbreviated OpenMLDB query here.

3.2.1 Ride Duration Prediction (Q0)

```
select *,
train_dropoff_longitude_divide_11 / train_pickup_longitude_divide_11,
train_pickup_longitude_divide_12 / train_dropoff_longitude_divide_12,
train_pickup_latitude_divide_13 / train_dropoff_latitude_divide_13,
train_dropoff_latitude_divide_14 / train_pickup_latitude_divide_14,
train_pickup_longitude_multiply_15 * train_dropoff_latitude_multiply_15 *
    train_dropoff_longitude_multiply_15,
train_pickup_longitude_multiply_16 * train_dropoff_latitude_multiply_16,
train_pickup_longitude_multiply_17 * train_pickup_latitude_multiply_17 *
    train_dropoff_longitude_multiply_17,
train_pickup_longitude_multiply_18 * train_dropoff_longitude_multiply_18,
train_pickup_latitude_multiply_19 * train_dropoff_longitude_multiply_19
from
(select
`id` as id_1,
`pickup_datetime` as train_pickup_datetime_original_0,
`id` as train_id_original_1,
`trip_duration` as train_trip_duration_original_2,
`dropoff_datetime` as train_dropoff_datetime_original_3,
`dropoff_latitude` as train_dropoff_latitude_original_4,
`dropoff_longitude` as train_dropoff_longitude_original_5,
`passenger_count` as train_passenger_count_original_6,
`pickup_latitude` as train_pickup_latitude_original_7,
`pickup_longitude` as train_pickup_longitude_original_8,
`store_and_fwd_flag` as train_store_and_fwd_flag_original_9,
```

characteristic curves: a nonparametric approach. Biometrics, pages 837–845, 1988.

```
‘vendor_id‘ as train_vendor_id_original_10,
‘dropoff_longitude‘ as train_dropoff_longitude_divide_11,
‘pickup_longitude‘ as train_pickup_longitude_divide_11,
‘pickup_longitude‘ as train_pickup_longitude_divide_12,
‘dropoff_longitude‘ as train_dropoff_longitude_divide_12,
‘pickup_latitude‘ as train_pickup_latitude_divide_13,
‘dropoff_latitude‘ as train_dropoff_latitude_divide_13,
‘dropoff_latitude‘ as train_dropoff_latitude_divide_14,
‘pickup_latitude‘ as train_pickup_latitude_divide_14,
‘pickup_longitude‘ as train_pickup_longitude_multiply_15,
‘dropoff_latitude‘ as train_dropoff_latitude_multiply_15,
‘dropoff_longitude‘ as train_dropoff_longitude_multiply_15,
‘pickup_longitude‘ as train_pickup_longitude_multiply_16,
‘dropoff_latitude‘ as train_dropoff_latitude_multiply_16,
‘pickup_longitude‘ as train_pickup_longitude_multiply_17,
‘pickup_latitude‘ as train_pickup_latitude_multiply_17,
‘dropoff_longitude‘ as train_dropoff_longitude_multiply_17,
‘pickup_longitude‘ as train_pickup_longitude_multiply_18,
‘dropoff_longitude‘ as train_dropoff_longitude_multiply_18,
‘pickup_latitude‘ as train_pickup_latitude_multiply_19,
‘dropoff_longitude‘ as train_dropoff_longitude_multiply_19,
hour(timestamp(‘dropoff_datetime‘)) as train_dropoff_datetime_hourofday_20,
hour(timestamp(‘pickup_datetime‘)) as train_pickup_datetime_hourofday_21,
case when !isnull(at(‘store_and_fwd_flag‘, 0)) over train_vendor_id_pickup_datetime_0s_1h_200 then
    count_where(‘store_and_fwd_flag‘, ‘store_and_fwd_flag‘ = at(‘store_and_fwd_flag‘, 0)) over
    train_vendor_id_pickup_datetime_0s_1h_200 else null end as train_store_and_fwd_flag_window_count_22,
sum(‘pickup_latitude‘) over train_vendor_id_pickup_datetime_0s_1h_200 as
    train_pickup_latitude_window_sum_23,
sum(‘pickup_latitude‘) over train_vendor_id_pickup_datetime_0s_2h_200 as
    train_pickup_latitude_window_sum_24,
sum(‘dropoff_latitude‘) over train_vendor_id_pickup_datetime_0s_1h_200 as
    train_dropoff_latitude_window_sum_25,
case when !isnull(at(‘store_and_fwd_flag‘, 0)) over train_vendor_id_pickup_datetime_0s_2h_200 then
    count_where(‘store_and_fwd_flag‘, ‘store_and_fwd_flag‘ = at(‘store_and_fwd_flag‘, 0)) over
    train_vendor_id_pickup_datetime_0s_2h_200 else null end as train_store_and_fwd_flag_window_count_26,
sum(‘dropoff_latitude‘) over train_vendor_id_pickup_datetime_0s_2h_200 as
    train_dropoff_latitude_window_sum_27
from
‘train‘
window train_vendor_id_pickup_datetime_0s_1h_200 as (partition by ‘vendor_id‘ order by ‘pickup_datetime‘
    rows_range between 1h open preceding and 0s preceding MAXSIZE 200),
train_vendor_id_pickup_datetime_0s_2h_200 as (partition by ‘vendor_id‘ order by ‘pickup_datetime‘
    rows_range between 2h open preceding and 0s preceding MAXSIZE 200))
;
```

The features (output columns) in the query Q0 include three parts: (i) all the origin table columns (basic features);(ii) aggregation features separately from two time windows (e.g., distinct counts of "pickup_latitude" in last 1/2 hour); (iii) aggregation features computed across different time windows (e.g., the division of the 1h/2h window features). Since there is only one base table, Q0 is limited to fundamental RTFE operators (e.g., aggregations), and windows over the same table.

3.2.2 Flu Forecast (Q1)

```
   select
‘Id‘ as Id_1,
‘Date‘ as train_Date_original_0,
‘Id‘ as train_Id_original_1,
‘ConfirmedCases‘ as train_ConfirmedCases_original_2,
```

```
`Country_Region` as train_Country_Region_original_3,
`Fatalities` as train_Fatalities_original_4,
`Province_State` as train_Province_State_original_5,
log(`Fatalities`) as train_Fatalities_log_6,
min(`Fatalities`) over train_Province_State_Date_0s_2d_200 as train_Fatalities_window_min_7,
min(`Fatalities`) over train_Province_State_Date_0s_7d_200 as train_Fatalities_window_min_8,
`Province_State`,
`Country_Region`,
concat(Province_State, Country_Region) as train_combine_9,
min(`Fatalities`) over train_Country_Region_Date_0s_2d_100 as train_Fatalities_window_min_10,
min(`Fatalities`) over train_Country_Region_Date_0s_5d_200 as train_Fatalities_window_min_11,
avg(`Fatalities`) over train_Province_State_Date_0s_2d_200 as train_Fatalities_window_avg_12,
avg(`Fatalities`) over train_Province_State_Date_0s_5d_200 as train_Fatalities_window_avg_13,
sum(`Fatalities`) over train_Province_State_Date_0s_7d_100 as train_Fatalities_window_sum_14,
avg(`Fatalities`) over train_Country_Region_Date_0s_2d_100 as train_Fatalities_window_avg_15,
max(`Fatalities`) over train_Country_Region_Date_0s_5d_200 as train_Fatalities_window_max_16,
max(`Fatalities`) over train_Country_Region_Date_0s_14d_200 as train_Fatalities_window_max_17,
avg(`Fatalities`) over train_Country_Region_Date_0_10_ as train_Fatalities_window_avg_18,
top1_ratio(`Province_State`) over train_Country_Region_Date_0_10_ as
    train_Province_State_window_top1_ratio_19,
case when !isnull(at(`Country_Region`, 0)) over train_Province_State_Date_0s_14d_100 then
    count_where(`Country_Region`, `Country_Region` = at(`Country_Region`, 0)) over
    train_Province_State_Date_0s_14d_100 else null end as train_Country_Region_window_count_20,
case when !isnull(at(`Country_Region`, 0)) over train_Province_State_Date_0s_64d_100 then
    count_where(`Country_Region`, `Country_Region` = at(`Country_Region`, 0)) over
    train_Province_State_Date_0s_64d_100 else null end as train_Country_Region_window_count_21,
dayofweek(timestamp(`Date`)) as train_Date_dayofweek_22,
case when 1 < dayofweek(timestamp(`Date`)) and dayofweek(timestamp(`Date`)) < 7 then 1 else 0 end as
    train_Date_isweekday_23
from
`train`
window train_Province_State_Date_0s_2d_200 as (partition by `Province_State` order by `Date` rows_range
    between 2d open preceding and 0s preceding MAXSIZE 200),
train_Province_State_Date_0s_7d_200 as (partition by `Province_State` order by `Date` rows_range between
    7d open preceding and 0s preceding MAXSIZE 200),
train_Country_Region_Date_0s_2d_100 as (partition by `Country_Region` order by `Date` rows_range between
    2d open preceding and 0s preceding MAXSIZE 100),
train_Country_Region_Date_0s_5d_200 as (partition by `Country_Region` order by `Date` rows_range between
    5d open preceding and 0s preceding MAXSIZE 200),
train_Province_State_Date_0s_5d_200 as (partition by `Province_State` order by `Date` rows_range between
    5d open preceding and 0s preceding MAXSIZE 200),
train_Province_State_Date_0s_7d_100 as (partition by `Province_State` order by `Date` rows_range between
    7d open preceding and 0s preceding MAXSIZE 100),
train_Country_Region_Date_0s_14d_200 as (partition by `Country_Region` order by `Date` rows_range between
    14d open preceding and 0s preceding MAXSIZE 200),
train_Country_Region_Date_0_10_ as (partition by `Country_Region` order by `Date` rows between 10 open
    preceding and 0 preceding),
train_Province_State_Date_0s_14d_100 as (partition by `Province_State` order by `Date` rows_range between
    14d open preceding and 0s preceding MAXSIZE 100),
train_Province_State_Date_0s_64d_100 as (partition by `Province_State` order by `Date` rows_range between
    64d open preceding and 0s preceding MAXSIZE 100)
;
```

First, different from Q0, the query Q1 involves more window operators. The reason is that Q1 contains much fewer basic features (6 table columns) and it is vital to derive effective new features to support accurate forecast. Second, Q1 involves 10 different sizes of time windows. The query plan is more complicated than Q0.

3.2.3 Wind Energy Forecasting (Q2)

```
   select * from
(
select
`date` as date_1,
`date` as train_date_original_0,
`wp7` as train_wp7_original_2,
`wp1` as train_wp1_original_32,
`wp2` as train_wp2_original_33,
`wp3` as train_wp3_original_34,
`wp4` as train_wp4_original_35,
`wp5` as train_wp5_original_36,
`wp6` as train_wp6_original_37,
log(`wp6`) as train_wp6_log_38,
log(`wp3`) as train_wp3_log_39,
dayofweek(timestamp(`date`)) as train_date_dayofweek_40,
hour(timestamp(`date`)) as train_date_hourofday_41,
case when 1 < dayofweek(timestamp(`date`)) and dayofweek(timestamp(`date`)) < 7 then 1 else 0 end as
    train_date_isweekday_42,
log(`wp2`) as train_wp2_log_43
from
`train`
)
as out0
last join
(
select
`train`.`date` as date_3,
`windforecasts_wf1_date`.`hors` as windforecasts_wf1_hors_multi_direct_3,
`windforecasts_wf1_date`.`u` as windforecasts_wf1_u_multi_direct_4,
`windforecasts_wf1_date`.`v` as windforecasts_wf1_v_multi_direct_5,
`windforecasts_wf1_date`.`wd` as windforecasts_wf1_wd_multi_direct_6,
`windforecasts_wf1_date`.`ws` as windforecasts_wf1_ws_multi_direct_7,
`windforecasts_wf2_date`.`u` as windforecasts_wf2_u_multi_direct_8,
`windforecasts_wf2_date`.`v` as windforecasts_wf2_v_multi_direct_9,
`windforecasts_wf2_date`.`wd` as windforecasts_wf2_wd_multi_direct_10,
`windforecasts_wf2_date`.`ws` as windforecasts_wf2_ws_multi_direct_11,
`windforecasts_wf3_date`.`u` as windforecasts_wf3_u_multi_direct_12,
`windforecasts_wf3_date`.`v` as windforecasts_wf3_v_multi_direct_13,
`windforecasts_wf3_date`.`wd` as windforecasts_wf3_wd_multi_direct_14,
`windforecasts_wf3_date`.`ws` as windforecasts_wf3_ws_multi_direct_15,
`windforecasts_wf4_date`.`u` as windforecasts_wf4_u_multi_direct_16,
`windforecasts_wf4_date`.`v` as windforecasts_wf4_v_multi_direct_17,
`windforecasts_wf4_date`.`wd` as windforecasts_wf4_wd_multi_direct_18,
`windforecasts_wf4_date`.`ws` as windforecasts_wf4_ws_multi_direct_19,
`windforecasts_wf5_date`.`u` as windforecasts_wf5_u_multi_direct_20,
`windforecasts_wf5_date`.`v` as windforecasts_wf5_v_multi_direct_21,
`windforecasts_wf5_date`.`wd` as windforecasts_wf5_wd_multi_direct_22,
`windforecasts_wf5_date`.`ws` as windforecasts_wf5_ws_multi_direct_23,
`windforecasts_wf6_date`.`u` as windforecasts_wf6_u_multi_direct_24,
`windforecasts_wf6_date`.`v` as windforecasts_wf6_v_multi_direct_25,
`windforecasts_wf6_date`.`wd` as windforecasts_wf6_wd_multi_direct_26,
`windforecasts_wf6_date`.`ws` as windforecasts_wf6_ws_multi_direct_27,
`windforecasts_wf7_date`.`u` as windforecasts_wf7_u_multi_direct_28,
`windforecasts_wf7_date`.`v` as windforecasts_wf7_v_multi_direct_29,
`windforecasts_wf7_date`.`wd` as windforecasts_wf7_wd_multi_direct_30,
`windforecasts_wf7_date`.`ws` as windforecasts_wf7_ws_multi_direct_31
from
`train`
```

```
last join ‘windforecasts_wf1‘ as ‘windforecasts_wf1_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf1_date‘.‘date‘
last join ‘windforecasts_wf2‘ as ‘windforecasts_wf2_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf2_date‘.‘date‘
last join ‘windforecasts_wf3‘ as ‘windforecasts_wf3_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf3_date‘.‘date‘
last join ‘windforecasts_wf4‘ as ‘windforecasts_wf4_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf4_date‘.‘date‘
last join ‘windforecasts_wf5‘ as ‘windforecasts_wf5_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf5_date‘.‘date‘
last join ‘windforecasts_wf6‘ as ‘windforecasts_wf6_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf6_date‘.‘date‘
last join ‘windforecasts_wf7‘ as ‘windforecasts_wf7_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf7_date‘.‘date‘)
as out1
on out0.date_1 = out1.date_3
;
```

In the query Q2, joint features are computed from multiple tables (e.g., features of nearby farms and recent hours) by conducting the last join operator on 7 farm tables and 1 training table, providing a useful test for online one-to-one joining performance. Interestingly, Q2 mainly extracts temporal features (e.g., the last distinct values of timestamp features), which is different from other queries that involve a large number of aggregations on numeric columns. Note that Q2 does not contain time windows, so all the historical tuples could contribute to the feature computation with incoming tuples, which is markedly different from traditional stream cases.

3.2.4 Sales Prediction (Q3)

```
   select
... --117 features
from
(
select
... --9 basic features
case when !isnull(at(‘Q3_Col34‘, 0)) over flatten_request_Q3_Col3_Q3_Col32_0s_7d_100 then
    count_where(‘Q3_Col34‘, ‘Q3_Col34‘ = at(‘Q3_Col34‘, 0)) over
    flatten_request_Q3_Col3_Q3_Col32_0s_7d_100 else null end as flatten_request_Q3_Col34_window_count_98
from
‘train‘
window flatten_request_Q3_Col3_Q3_Col32_0s_7d_100 as (partition by ‘Q3_Col3‘ order by ‘Q3_Col32‘
    rows_range between 7d preceding and 0s preceding MAXSIZE 100))
as out0
last join
(
select
... --32 basic features
from
‘train‘
last join ‘feedback‘ as ‘feedback_Q3_Col31‘ on ‘train‘.‘Q3_Col31‘ = ‘feedback_Q3_Col31‘.‘Q3_Col31‘
last join ‘product_sku‘ as ‘product_Q3_Col3_Q3_Col3‘ on ‘train‘.‘Q3_Col3‘ =
    ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col3‘
last join ‘product_item‘ as ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘ order by
    product_item_Q3_Col6__Q3_Col32_0s_1d.‘Q3_Col0‘ on ‘train‘.‘Q3_Col6‘ =
    ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col6‘ and
    ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col0‘ < ‘train‘.‘Q3_Col32‘ - 0 and
    ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col0‘ > ‘train‘.‘Q3_Col32‘ - 86400000
last join ‘shipping_sku‘ as ‘shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d‘ order by
    shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d.‘Q3_Col0‘ on ‘train‘.‘Q3_Col3‘ =
```

```
    `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`Q3_Col3` and
    `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`Q3_Col0` < `train`.`Q3_Col32` - 0 and
    `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`Q3_Col0` > `train`.`Q3_Col32` - 86400000)
as out1
on out0.Q3_Col31_1 = out1.Q3_Col31_3
last join
(
select
`Q3_Col31` as Q3_Col31_4,
avg(`Q3_Col4`) over order_cancel_return_Q3_Col3_Q3_Col0_0s_64d_100 as
    order_cancel_return_Q3_Col4_multi_avg_3
from
(select `Q3_Col32` as `Q3_Col0`, timestamp('2019-07-18 09:20:20') as `Q3_Col1`, '' as `Q3_Col2`,
    `Q3_Col3` as `Q3_Col3`, int(0) as `Q3_Col4`, '' as `Q3_Col5`, Q3_Col31 from `train`)
window order_cancel_return_Q3_Col3_Q3_Col0_0s_64d_100 as (
UNION (select `Q3_Col0`, `Q3_Col1`, `Q3_Col2`, `Q3_Col3`, `Q3_Col4`, `Q3_Col5`, '' as Q3_Col31 from
    `order_cancel_return`) partition by `Q3_Col3` order by `Q3_Col0` rows_range between 64d preceding
    and 0s preceding MAXSIZE 100 INSTANCE_NOT_IN_WINDOW))
as out2
on out0.Q3_Col31_1 = out2.Q3_Col31_4
last join
(
select
`Q3_Col31` as Q3_Col31_5,
... --58 aggregation features
from
(select `Q3_Col32` as `Q3_Col0`, '' as `Q3_Col35`, '' as `Q3_Col36`, '' as `Q3_Col37`, '' as `Q3_Col38`,
    '' as `Q3_Col39`, '' as `Q3_Col40`, '' as `Q3_Col41`, '' as `Q3_Col42`, '' as `Q3_Col2`, '' as
    `Q3_Col43`, '' as `Q3_Col44`, '' as `Q3_Col45`, timestamp('2019-07-18 09:20:20') as `Q3_Col46`,
    bigint(0) as `Q3_Col4`, double(0) as `Q3_Col47`, double(0) as `Q3_Col48`, `Q3_Col3` as `Q3_Col3`, ''
    as `Q3_Col49`, '' as `Q3_Col50`, '' as `Q3_Col6`, '' as `Q3_Col51`, '' as `Q3_Col52`, double(0) as
    `Q3_Col53`, double(0) as `Q3_Col54`, double(0) as `Q3_Col55`, double(0) as `Q3_Col56`, '' as
    `Q3_Col57`, Q3_Col31 from `train`)
window order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as (
UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
    `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
    `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
    `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
    partition by `Q3_Col3` order by `Q3_Col0` rows_range between 10h preceding and 0s preceding MAXSIZE
    100 INSTANCE_NOT_IN_WINDOW),
order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as (
UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
    `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
    `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
    `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
    partition by `Q3_Col3` order by `Q3_Col0` rows_range between 2d preceding and 0s preceding MAXSIZE
    100 INSTANCE_NOT_IN_WINDOW),
order_sales_Q3_Col3_Q3_Col0_0s_14d_100 as (
UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
    `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
    `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
    `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
    partition by `Q3_Col3` order by `Q3_Col0` rows_range between 14d preceding and 0s preceding MAXSIZE
    100 INSTANCE_NOT_IN_WINDOW),
order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as (
UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
    `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
    `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
    `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
    partition by `Q3_Col3` order by `Q3_Col0` rows_range between 5d preceding and 0s preceding MAXSIZE
    100 INSTANCE_NOT_IN_WINDOW),
```

```
order_sales_Q3_Col3_Q3_Col0_0s_64d_100 as (
UNION (select ‘Q3_Col0‘, ‘Q3_Col35‘, ‘Q3_Col36‘, ‘Q3_Col37‘, ‘Q3_Col38‘, ‘Q3_Col39‘, ‘Q3_Col40‘,
    ‘Q3_Col41‘, ‘Q3_Col42‘, ‘Q3_Col2‘, ‘Q3_Col43‘, ‘Q3_Col44‘, ‘Q3_Col45‘, ‘Q3_Col46‘, ‘Q3_Col4‘,
    ‘Q3_Col47‘, ‘Q3_Col48‘, ‘Q3_Col3‘, ‘Q3_Col49‘, ‘Q3_Col50‘, ‘Q3_Col6‘, ‘Q3_Col51‘, ‘Q3_Col52‘,
    ‘Q3_Col53‘, ‘Q3_Col54‘, ‘Q3_Col55‘, ‘Q3_Col56‘, ‘Q3_Col57‘, '' as Q3_Col31 from ‘order_sales‘)
    partition by ‘Q3_Col3‘ order by ‘Q3_Col0‘ rows_range between 64d preceding and 0s preceding MAXSIZE
    100 INSTANCE_NOT_IN_WINDOW),
order_sales_Q3_Col3_Q3_Col0_0s_7d_100 as (
UNION (select ‘Q3_Col0‘, ‘Q3_Col35‘, ‘Q3_Col36‘, ‘Q3_Col37‘, ‘Q3_Col38‘, ‘Q3_Col39‘, ‘Q3_Col40‘,
    ‘Q3_Col41‘, ‘Q3_Col42‘, ‘Q3_Col2‘, ‘Q3_Col43‘, ‘Q3_Col44‘, ‘Q3_Col45‘, ‘Q3_Col46‘, ‘Q3_Col4‘,
    ‘Q3_Col47‘, ‘Q3_Col48‘, ‘Q3_Col3‘, ‘Q3_Col49‘, ‘Q3_Col50‘, ‘Q3_Col6‘, ‘Q3_Col51‘, ‘Q3_Col52‘,
    ‘Q3_Col53‘, ‘Q3_Col54‘, ‘Q3_Col55‘, ‘Q3_Col56‘, ‘Q3_Col57‘, '' as Q3_Col31 from ‘order_sales‘)
    partition by ‘Q3_Col3‘ order by ‘Q3_Col0‘ rows_range between 7d preceding and 0s preceding MAXSIZE
    100 INSTANCE_NOT_IN_WINDOW))
as out3
on out0.Q3_Col31_1 = out3.Q3_Col31_5
;
```

For the query Q3, it involves 113 RTFE operators and 15GB batch data, most of which are aggregations over joined window tables. Besides, different from above templates (Q0Q2), (i) Q3 performs set conjunction operators (e.g., unions) over two data streams, since multiple tables in Q3 have some of the same feature columns; (ii) Q3 has up to 6level subqueries that include both the whole tables (e.g., all tuples in 'product_item') and tables over time windows (e.g., sales within a 10hour period). These types of subqueries can be costly to process due to the large amount of data involved and the computational overhead required for aggregating data over different time windows. Thus, Q3 is useful to test the performance of complex subquery processing.

3.2.5 Loan Evaluation (Q4)

```
select
... --263 features
from
(
-- train
select
... --134 basic features and 1 aggregation feature
from
‘train‘
window flattenRequest_Q4_Col78_Q4_Col41_0s_10h_100 as (partition by ‘Q4_Col78‘ order by ‘Q4_Col41‘
    rows_range between 10h preceding and 0s preceding MAXSIZE 100))
as out0
last join
(
select
‘train‘.‘Q4_Col40‘ as Q4_Col40_3,
‘action_Q4_Col40‘.‘Q4_Col42‘ as action_Q4_Col42_multi_direct_2
from
‘train‘
last join ‘action‘ as ‘action_Q4_Col40‘ on ‘train‘.‘Q4_Col40‘ = ‘action_Q4_Col40‘.‘Q4_Col40‘)
as out1
on out0.Q4_Col40_1 = out1.Q4_Col40_3
last join
(
select
‘Q4_Col2‘ as Q4_Col40_4,
... --14 aggregation features
from
(select ‘Q4_Col41‘ as ‘Q4_Col0‘, bigint(0) as ‘Q4_Col1‘, ‘Q4_Col40‘ as ‘Q4_Col2‘, bigint(0) as ‘Q4_Col3‘,
    double(0) as ‘Q4_Col199‘, double(0) as ‘Q4_Col200‘, '' as ‘Q4_Col21‘, bigint(0) as ‘Q4_Col22‘,
```

```
    bigint(0) as ‘Q4_Col23‘ from ‘train‘)
window bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as (
UNION ‘bo_POS_CASH_balance‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 100 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW),
bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_ as (
UNION ‘bo_POS_CASH_balance‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 10 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW))
as out2
on out0.Q4_Col40_1 = out2.Q4_Col40_4
last join
(
select
‘Q4_Col2‘ as Q4_Col40_7,
... --61 aggregation features
from
(select ‘Q4_Col41‘ as ‘Q4_Col0‘, ‘Q4_Col40‘ as ‘Q4_Col2‘, bigint(0) as ‘Q4_Col24‘, '' as ‘Q4_Col25‘, ''
    as ‘Q4_Col26‘, bigint(0) as ‘Q4_Col27‘, bigint(0) as ‘Q4_Col28‘, double(0) as ‘Q4_Col29‘, double(0)
    as ‘Q4_Col30‘, double(0) as ‘Q4_Col31‘, bigint(0) as ‘Q4_Col32‘, double(0) as ‘Q4_Col33‘, double(0)
    as ‘Q4_Col34‘, double(0) as ‘Q4_Col35‘, double(0) as ‘Q4_Col36‘, '' as ‘Q4_Col37‘, bigint(0) as
    ‘Q4_Col38‘, double(0) as ‘Q4_Col39‘ from ‘train‘)
window bo_bureau_Q4_Col2_Q4_Col0_0_100_ as (
UNION ‘bo_bureau‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 100 preceding and 0 preceding
    INSTANCE_NOT_IN_WINDOW),
bo_bureau_Q4_Col2_Q4_Col0_0_10_ as (
UNION ‘bo_bureau‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 10 preceding and 0 preceding
    INSTANCE_NOT_IN_WINDOW))
as out3
on out0.Q4_Col40_1 = out3.Q4_Col40_7
last join
(
select
‘Q4_Col2‘ as Q4_Col40_11,
... --13 aggregation features
from
(select ‘Q4_Col41‘ as ‘Q4_Col0‘, bigint(0) as ‘Q4_Col1‘, ‘Q4_Col40‘ as ‘Q4_Col2‘, double(0) as
    ‘Q4_Col193‘, bigint(0) as ‘Q4_Col194‘, double(0) as ‘Q4_Col195‘, double(0) as ‘Q4_Col196‘, double(0)
    as ‘Q4_Col197‘, double(0) as ‘Q4_Col198‘ from ‘train‘)
window bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as (
UNION ‘bo_installment_payment‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 10 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW),
bo_installment_payment_Q4_Col2_Q4_Col0_0_100_ as (
UNION ‘bo_installment_payment‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 100 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW))
as out4
on out0.Q4_Col40_1 = out4.Q4_Col40_11
last join
(
select
‘Q4_Col40‘ as Q4_Col40_14,
... --7 aggregation features
from
(select ‘Q4_Col41‘ as ‘Q4_Col0‘, ‘Q4_Col77‘ as ‘Q4_Col77‘, ‘Q4_Col78‘ as ‘Q4_Col78‘, ‘Q4_Col79‘ as
    ‘Q4_Col79‘, ‘Q4_Col80‘ as ‘Q4_Col80‘, ‘Q4_Col81‘ as ‘Q4_Col81‘, double(0) as ‘Q4_Col82‘, double(0)
    as ‘Q4_Col83‘, double(0) as ‘Q4_Col84‘, double(0) as ‘Q4_Col85‘, double(0) as ‘Q4_Col45‘, double(0)
    as ‘Q4_Col39‘, double(0) as ‘Q4_Col47‘, double(0) as ‘Q4_Col86‘, double(0) as ‘Q4_Col87‘, Q4_Col40
    from ‘train‘)
window bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as (
UNION (select ‘Q4_Col0‘, ‘Q4_Col77‘, ‘Q4_Col78‘, ‘Q4_Col79‘, ‘Q4_Col80‘, ‘Q4_Col81‘, ‘Q4_Col82‘,
    ‘Q4_Col83‘, ‘Q4_Col84‘, ‘Q4_Col85‘, ‘Q4_Col45‘, ‘Q4_Col39‘, ‘Q4_Col47‘, ‘Q4_Col86‘, ‘Q4_Col87‘, ''
    as Q4_Col40 from ‘bo_part‘) partition by ‘Q4_Col77‘,‘Q4_Col78‘,‘Q4_Col79‘,‘Q4_Col80‘,‘Q4_Col81‘
    order by ‘Q4_Col0‘ rows between 10 preceding and 0 preceding INSTANCE_NOT_IN_WINDOW))
```

```
as out5
on out0.Q4_Col40_1 = out5.Q4_Col40_14
last join
(
select
`Q4_Col2` as Q4_Col40_18,
... --43 aggregation features
from
(select `Q4_Col41` as `Q4_Col0`, bigint(0) as `Q4_Col1`, `Q4_Col40` as `Q4_Col2`, '' as `Q4_Col43`,
    double(0) as `Q4_Col39`, double(0) as `Q4_Col44`, double(0) as `Q4_Col45`, double(0) as `Q4_Col46`,
    double(0) as `Q4_Col47`, '' as `Q4_Col48`, bigint(0) as `Q4_Col49`, '' as `Q4_Col50`, bigint(0) as
    `Q4_Col51`, double(0) as `Q4_Col52`, double(0) as `Q4_Col53`, double(0) as `Q4_Col54`, '' as
    `Q4_Col55`, '' as `Q4_Col21`, bigint(0) as `Q4_Col56`, '' as `Q4_Col57`, '' as `Q4_Col58`, '' as
    `Q4_Col59`, '' as `Q4_Col60`, '' as `Q4_Col61`, '' as `Q4_Col62`, '' as `Q4_Col63`, '' as
    `Q4_Col64`, bigint(0) as `Q4_Col65`, '' as `Q4_Col66`, double(0) as `Q4_Col67`, '' as `Q4_Col68`, ''
    as `Q4_Col69`, double(0) as `Q4_Col70`, double(0) as `Q4_Col71`, double(0) as `Q4_Col72`, double(0)
    as `Q4_Col73`, double(0) as `Q4_Col74`, double(0) as `Q4_Col75` from `train`)
window bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as (
UNION `bo_previous_applicatio` partition by `Q4_Col2` order by `Q4_Col0` rows between 10 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW),
bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as (
UNION `bo_previous_applicatio` partition by `Q4_Col2` order by `Q4_Col0` rows between 100 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW))
as out6
on out0.Q4_Col40_1 = out6.Q4_Col40_18
last join
(
select
`Q4_Col2` as Q4_Col40_67,
topn_frequency(`Q4_Col3`, 3) over bo_bureau_balance_Q4_Col2_Q4_Col0_0_10_ as
    bo_bureau_balance_Q4_Col3_multi_top3frequency_66
from
(select `Q4_Col41` as `Q4_Col0`, bigint(0) as `Q4_Col24`, bigint(0) as `Q4_Col3`, '' as `Q4_Col76`,
    `Q4_Col40` as `Q4_Col2` from `train`)
window bo_bureau_balance_Q4_Col2_Q4_Col0_0_10_ as (
UNION `bo_bureau_balance` partition by `Q4_Col2` order by `Q4_Col0` rows between 10 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW))
as out7
on out0.Q4_Col40_1 = out7.Q4_Col40_67
last join
(
select
`Q4_Col2` as Q4_Col40_86,
... --6 aggregation features
from
(select `Q4_Col41` as `Q4_Col0`, bigint(0) as `Q4_Col1`, `Q4_Col40` as `Q4_Col2`, bigint(0) as `Q4_Col3`,
    double(0) as `Q4_Col4`, bigint(0) as `Q4_Col5`, double(0) as `Q4_Col6`, double(0) as `Q4_Col7`,
    double(0) as `Q4_Col8`, double(0) as `Q4_Col9`, double(0) as `Q4_Col10`, double(0) as `Q4_Col11`,
    double(0) as `Q4_Col12`, double(0) as `Q4_Col13`, double(0) as `Q4_Col14`, double(0) as `Q4_Col15`,
    double(0) as `Q4_Col16`, bigint(0) as `Q4_Col17`, double(0) as `Q4_Col18`, double(0) as `Q4_Col19`,
    double(0) as `Q4_Col20`, '' as `Q4_Col21`, bigint(0) as `Q4_Col22`, bigint(0) as `Q4_Col23` from
    `train`)
window bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_ as (
UNION `bo_credit_card_balance` partition by `Q4_Col2` order by `Q4_Col0` rows between 10 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW),
bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_ as (
UNION `bo_credit_card_balance` partition by `Q4_Col2` order by `Q4_Col0` rows between 100 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW))
as out8
on out0.Q4_Col40_1 = out8.Q4_Col40_86
;
```

The task aims to predict whether customers will pay back their loans on time for a credit card company. In the query Q4, it involves 110 features from the origin tables and 122 aggregations. Since it needs to characterize the customer behaviors, there are multiple window-count operators to reflect the recent activities of the customers. Besides, it has 17 subqueries, which involve origin tables, single-table windows, or multi-table windows. Thus, Q4 is a bit more complex than Q3 in the operator patterns, and the relatively large intermediate table sizes in Q4 can significantly affect the processing efficiency.

3.2.6 Fraud Detection (Q5)

```
select
... --661 features
from
(
select
... --5 basic features
from
‘train‘
)
as out0
last join
(
select
.. --638 basic features
from
‘train‘
last join ‘feedback‘ as ‘b9feedback_Q5_Col100‘ on ‘train‘.‘Q5_Col100‘ = ‘b9feedback_Q5_Col100‘.‘Q5_Col100‘
last join ‘CUST_f7‘ as ‘b1CUST_f7_Q5_Col0‘ on ‘train‘.‘Q5_Col0‘ = ‘b1CUST_f7_Q5_Col0‘.‘Q5_Col0‘
last join ‘sag_efs_tbproduct_F_b‘ as ‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘ order by
    b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col102‘ =
    ‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col102‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘LINK2_f6‘ as ‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘ order by
    b10LINK2_f6_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘LINK1_f5‘ as ‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘ order by
    b11LINK1_f5_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘AUM_f4‘ as ‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘ order by
    b12AUM_f4_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘debit3_f3‘ as ‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘ order by
    b4debit3_f3_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘debit2_f2‘ as ‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘ order by
    b6debit2_f2_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘debit1_f1‘ as ‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘ order by
    b8debit1_f1_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘)
as out1
on out0.Q5_Col100_1 = out1.Q5_Col100_3
;
```

Fraud detection is a special type of the outlier detection problems, which aims to estimate the likelihood of fraudulent activities within milliseconds. Here we consider a fraud detection case in banking scenario. The temporal data was inserted periodically, with peak values around 8,000 in each cycle. The query Q5 contains the most query operators among the 6 query templates, incorporating 659 RTFE operators, most of which are multi_last_value directly derived from the results of multi-table joins. Similar to Q2, the query of Q5 does not involve time windows, which leverages the entire dataset (all past user behaviors) to compute features for incoming tuples

Chapter 4

Execution Rules and Metrics

4.1 Overview of FEBench Implementation

The implementation of FEBench consists of two main phases: query generation and performance testing. During the query generation phase, the feature definition of the dataset is transformed into a SQL query that adheres to the syntax requirements of the system under test (SUT). The second phase, performance testing, is further divided into two sub-steps: data loading and actual performance testing.

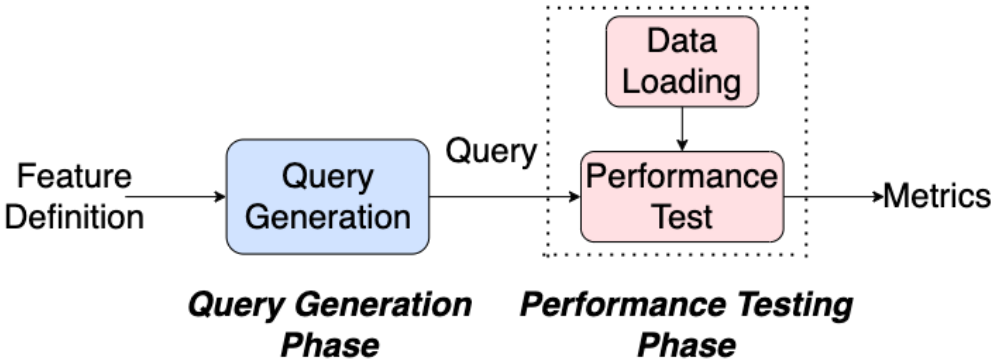


Figure 4.1: The implementation workflow of FEBench into a new SUT

4.1.1 Query Generation

FEBench defines a set of features for each dataset used in the benchmarking process, as described in Section 3.1. These features are listed in Appendix B. However, as different real-time feature extraction (RTFE) systems may have different grammars, engineers must first transform the feature definition into a SQL query that adheres to the syntax of the system under test (SUT). This step is necessary to ensure that the RTFE procedure in FEBench generates the correct output and that the benchmark results are meaningful.

Transforming the feature definition into a valid SQL query for the SUT can be a challenging task, especially if the SUT uses a different query language or has different syntax requirements. Therefore, FEBench provides a reference implementation of SQL queries for two RTFE systems, namely OpenMLDB and Flink, to assist users in this process.

It is worth noting that the SQL query used in the benchmark must adhere to the execution rules specified in Section 4.2 to ensure consistency across different benchmarking runs. By following these rules, users can compare the performance of different RTFE systems using FEBench in a fair and standardized manner.

4.1.2 Data Loading

The data loading process in FEBench is a critical step that prepares the SUT for executing the benchmark queries. As mentioned in Section 2.2, FEBench datasets consist of a main table and several secondary tables. The main table is inserted into the SUT one row at a time to simulate real data streaming cases, whereas the secondary tables must be loaded into the SUT before executing the FEBench queries.

It is important to note that to ensure fairness in the benchmark results, all secondary tables must be loaded into the SUT before the performance test. Failure to do so may result in inaccurate and unreliable results. Therefore, users of FEBench must carefully follow the data loading process and ensure that all tables have been properly loaded before conducting the benchmark test.

4.1.3 Performance Testing

The performance testing in FEBench involves inserting data into the main table of the benchmark dataset in the SUT one row at a time, followed by the execution of the RTFE procedure to extract pre-defined features such as minimum, maximum, and average values of specific attributes. The SUT then outputs these features. The real-time nature of the RTFE procedure enables FEBench to evaluate the responsiveness and scalability of the SUT.

FEBench uses JMH, a Java harness, to provide a test environment for evaluating the performance of OpenMLDB and Flink. The test comprises two warm-up iterations before monitoring the performance, followed by five iterations to calculate the average results. The benchmark metrics are defined in Section **??**, and FEBench provides the flexibility for users to adapt the benchmark code to test other systems or customize it to meet specific requirements, provided that it follows the execution rules outlined in Section 4.2. With this flexibility, users can evaluate the performance of different systems under different conditions.

4.2 Execution rules

This section outlines the guidelines that must be followed to ensure fair and meaningful performance testing using FEBench. The following are the execution rules that should be followed:

1. The queries used to test the SUT must be semantically consistent with the definition of features provided in Appendix B.
2. The output feature must be consistent in stream and batch mode. This implies that the real-time features generated during the test should be equivalent to those produced in batch mode.
3. Prior to conducting performance testing, all the secondary tables must be loaded into the SUT.
4. The performance test should adhere to the logic where a data stream inputs real-time data, and after processing each data in the stream, the SUT generates the corresponding feature in real-time.
5. The performance test should follow the data loading process. However, any system activity between the end of the loading process and the beginning of the performance test should be limited to actions that are unlikely to improve the test results. Any such activity must be disclosed.
6. The total test must be executed under the same conditions, using the same hardware and software configuration, and the same data manager and operating system parameters. All such parameters must be reported.

Adhering to these execution rules would help to ensure that the performance testing process is consistent, and the results obtained from the test are meaningful and useful.

4.3 Metrics

In addition to the execution rules outlined in Section 4.2, it is important to establish clear and appropriate metrics for evaluating the performance of real-time feature extraction systems. In this regard, this section defines the metrics that should be used to compare the performance of different systems.

- **TP-50, TP-99, and TP-999 latency**: The first set of metrics are TP-50, TP-99, and TP-999 latency, which are used to represent the 50th, 99th, and 99.9th percentile latencies, respectively, of the response time for each transaction. These metrics can help identify the distribution of response times and provide insight into the system's responsiveness under different loads. For instance, TP-99.9 latency represents the maximum amount of time it takes for 99.9
- **Tail latency**: Another important metric is tail latency, which is defined in FEBench as TP-99/TP-999. This metric provides insight into the worst-case performance of the system under test and can help identify any outliers or anomalies in the response times.
- **QPS(Query Per Second)**: The number of queries that can be processed by the system in one second is another critical metric for evaluating the performance of real-time feature extraction systems. This metric provides insight into the system's scalability and its ability to handle increasing workloads.
- **Execution Time Breakdown metric**: Finally, the execution time breakdown metric breaks down the total execution time into retiring (the time of retiring instructions), bad speculation (the time wasted due to branch prediction errors), backend_bound (instructions that cannot be dispatched due to resource shortage), frontend_bound (the time of fetching instructions and decoding them into executable micro-instructions). This allows users to identify bottlenecks in the system and optimize accordingly, improving its performance.

Overall, these metrics are essential for evaluating the performance of real-time feature extraction systems, and they should be used in conjunction with the execution rules to ensure fair and meaningful performance testing.

Appendices

Appendix A

Real-Time Feature Extraction

RTFE computes the requested features from incoming data tuples in ultra-low latency, which requires:

- The storage of a large volume of incoming data (e.g., for aggregation features)
- The execution of complex operations over multiple varying-length windows
- The ability to handle high-concurrency query requests

Here's an example of how RTFE works in Figure A.1.

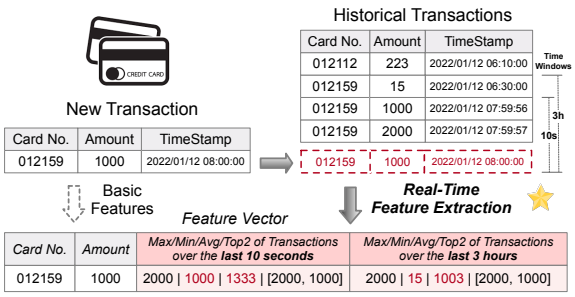


Figure A.1: An example of real-time feature extraction

For the banking industry, it is crucial to identify fraudulent activities (such as multi-location withdrawals) in real time, so as to avoid serious financial loss. As shown in Figure A.1, for a new transaction, if the average transaction amount within 10 seconds (one real-time feature) is much larger than that within the last 3 hours, it may indicate a potential fraud event. In addition to average values, 8 aggregation features (including a customized operator *"Top 2"*) are computed over the two time windows to provide a more informative feature vector. This real-time feature extraction process helps to quickly identify suspicious transactions and minimize the potential financial loss.

Appendix B

Feature Set

We provide feature definitions for six queries by using functions, which can be translated into target systems, e.g., OpenMLDB, Flink, Spark, Python. Each line corresponds to one feature. The function definitions are listed at Appendix C.

B.1 Ride Duration Prediction (Q0)

```
w_feature_output = window(table=train_output, output="w_output_feature_table")
f_original_pickup_datetime_0_1 = discrete(w_feature_output.f_original_pickup_datetime_0[0])
f_original_id_1_2 = discrete(w_feature_output.f_original_id_1[0])
f_original_trip_duration_2_3 = regression_label(ifnull(w_feature_output.f_original_trip_duration_2[0], 0))
f_original_dropoff_datetime_3_4 = discrete(w_feature_output.f_original_dropoff_datetime_3[0])
f_original_dropoff_latitude_4_5 = continuous(w_feature_output.f_original_dropoff_latitude_4[0])
f_original_dropoff_longitude_5_6 = continuous(w_feature_output.f_original_dropoff_longitude_5[0])
f_original_passenger_count_6_7 = discrete(w_feature_output.f_original_passenger_count_6[0])
f_original_pickup_latitude_7_8 = continuous(w_feature_output.f_original_pickup_latitude_7[0])
f_original_pickup_longitude_8_9 = continuous(w_feature_output.f_original_pickup_longitude_8[0])
f_original_store_and_fwd_flag_9_10 = discrete(w_feature_output.f_original_store_and_fwd_flag_9[0])
f_original_vendor_id_10_11 = discrete(w_feature_output.f_original_vendor_id_10[0])
f_divide_11 = continuous(w_feature_output.f_divide_11_12[0] / w_feature_output.f_divide_11_13[0])
f_divide_12 = continuous(w_feature_output.f_divide_12_14[0] / w_feature_output.f_divide_12_15[0])
f_divide_13 = continuous(w_feature_output.f_divide_13_16[0] / w_feature_output.f_divide_13_17[0])
f_divide_14 = continuous(w_feature_output.f_divide_14_18[0] / w_feature_output.f_divide_14_19[0])
f_multiply_15 = continuous(w_feature_output.f_multiply_15_20[0] * w_feature_output.f_multiply_15_21[0] *
    w_feature_output.f_multiply_15_22[0])
f_multiply_16 = continuous(w_feature_output.f_multiply_16_23[0] * w_feature_output.f_multiply_16_24[0])
f_multiply_17 = continuous(w_feature_output.f_multiply_17_25[0] * w_feature_output.f_multiply_17_26[0] *
    w_feature_output.f_multiply_17_27[0])
f_multiply_18 = continuous(w_feature_output.f_multiply_18_28[0] * w_feature_output.f_multiply_18_29[0])
f_multiply_19 = continuous(w_feature_output.f_multiply_19_30[0] * w_feature_output.f_multiply_19_31[0])
f_hourofday_20_33 = discrete(w_feature_output.f_hourofday_20[0])
f_hourofday_21_35 = discrete(w_feature_output.f_hourofday_21[0])
f_train_window_count_store_and_fwd_flag_22_36 =
    continuous(w_feature_output.f_train_window_count_store_and_fwd_flag_22[0])
f_train_window_sum_pickup_latitude_23_37 =
    continuous(w_feature_output.f_train_window_sum_pickup_latitude_23[0])
f_train_window_sum_pickup_latitude_24_38 =
    continuous(w_feature_output.f_train_window_sum_pickup_latitude_24[0])
f_train_window_sum_dropoff_latitude_25_39 =
    continuous(w_feature_output.f_train_window_sum_dropoff_latitude_25[0])
```

```
f_train_window_count_store_and_fwd_flag_26_40 =
    continuous(w_feature_output.f_train_window_count_store_and_fwd_flag_26[0])
f_train_window_sum_dropoff_latitude_27_41 =
    continuous(w_feature_output.f_train_window_sum_dropoff_latitude_27[0])
```

B.2 Flu Forecast (Q1)

```
w_feature_output = window(table=train_output, output="w_output_feature_table")
f_original_Date_0_1 = discrete(w_feature_output.f_original_Date_0[0])
f_original_Id_1_2 = discrete(w_feature_output.f_original_Id_1[0])
f_original_ConfirmedCases_2_3 = regression_label(ifnull(w_feature_output.f_original_ConfirmedCases_2[0],
    0.0D))
f_original_Country_Region_3_4 = discrete(w_feature_output.f_original_Country_Region_3[0])
f_original_Fatalities_4_5 = continuous(w_feature_output.f_original_Fatalities_4[0])
f_original_Province_State_5_6 = discrete(w_feature_output.f_original_Province_State_5[0])
f_log_6_8 = discrete(w_feature_output.f_log_6[0])
f_train_window_min_Fatalities_7_9 = continuous(w_feature_output.f_train_window_min_Fatalities_7[0])
f_train_window_min_Fatalities_8_10 = continuous(w_feature_output.f_train_window_min_Fatalities_8[0])
f_combine_9 = discrete(combine(w_feature_output.f_combine_9_11[0],w_feature_output.f_combine_9_12[0]))
f_train_window_min_Fatalities_10_13 = continuous(w_feature_output.f_train_window_min_Fatalities_10[0])
f_train_window_min_Fatalities_11_14 = continuous(w_feature_output.f_train_window_min_Fatalities_11[0])
f_train_window_avg_Fatalities_12_15 = continuous(w_feature_output.f_train_window_avg_Fatalities_12[0])
f_train_window_avg_Fatalities_13_16 = continuous(w_feature_output.f_train_window_avg_Fatalities_13[0])
f_train_window_sum_Fatalities_14_17 = continuous(w_feature_output.f_train_window_sum_Fatalities_14[0])
f_train_window_avg_Fatalities_15_18 = continuous(w_feature_output.f_train_window_avg_Fatalities_15[0])
f_train_window_max_Fatalities_16_19 = continuous(w_feature_output.f_train_window_max_Fatalities_16[0])
f_train_window_max_Fatalities_17_20 = continuous(w_feature_output.f_train_window_max_Fatalities_17[0])
f_train_window_avg_Fatalities_18_21 = continuous(w_feature_output.f_train_window_avg_Fatalities_18[0])
f_train_window_top1_ratio_Province_State_19_22 =
    continuous(w_feature_output.f_train_window_top1_ratio_Province_State_19[0])
f_train_window_count_Country_Region_20_23 =
    continuous(w_feature_output.f_train_window_count_Country_Region_20[0])
f_train_window_count_Country_Region_21_24 =
    continuous(w_feature_output.f_train_window_count_Country_Region_21[0])
f_dayofweek_22_26 = discrete(w_feature_output.f_dayofweek_22[0])
f_isweekday_23_28 = discrete(w_feature_output.f_isweekday_23[0])
```

B.3 Wind Energy Forecasting (Q2)

```
w_feature_output =
    window(table=join_train_join_windforecasts_wf1_left_join_windforecasts_wf2_left_join_windforecasts_wf3_left_join_wi
    output="w_output_feature_table")
f_original_date_0_2 = discrete(w_feature_output.f_original_date_0[0])
f_original_date_1_3 = discrete(w_feature_output.f_original_date_1[0])
f_original_wp7_2_4 = regression_label(ifnull(w_feature_output.f_original_wp7_2[0], 0.0D))
f_original_wp1_32_5 = continuous(w_feature_output.f_original_wp1_32[0])
f_original_wp2_33_6 = continuous(w_feature_output.f_original_wp2_33[0])
f_original_wp3_34_7 = continuous(w_feature_output.f_original_wp3_34[0])
f_original_wp4_35_8 = continuous(w_feature_output.f_original_wp4_35[0])
f_original_wp5_36_9 = continuous(w_feature_output.f_original_wp5_36[0])
f_original_wp6_37_10 = continuous(w_feature_output.f_original_wp6_37[0])
f_log_38_12 = discrete(w_feature_output.f_log_38[0])
f_log_39_14 = discrete(w_feature_output.f_log_39[0])
f_dayofweek_40_16 = discrete(w_feature_output.f_dayofweek_40[0])
```

```
f_hourofday_41_18 = discrete(w_feature_output.f_hourofday_41[0])
f_isweekday_42_20 = discrete(w_feature_output.f_isweekday_42[0])
f_log_43_22 = discrete(w_feature_output.f_log_43[0])
f_train_windforecasts_wf1_hors_direct_3_24 =
    discrete(w_feature_output.f_train_windforecasts_wf1_hors_direct_3[0])
f_train_windforecasts_wf1_u_direct_4_26 =
    discrete(w_feature_output.f_train_windforecasts_wf1_u_direct_4[0])
f_train_windforecasts_wf1_v_direct_5_28 =
    discrete(w_feature_output.f_train_windforecasts_wf1_v_direct_5[0])
f_train_windforecasts_wf1_wd_direct_6_30 =
    discrete(w_feature_output.f_train_windforecasts_wf1_wd_direct_6[0])
f_train_windforecasts_wf1_ws_direct_7_32 =
    discrete(w_feature_output.f_train_windforecasts_wf1_ws_direct_7[0])
f_train_windforecasts_wf2_u_direct_8_34 =
    discrete(w_feature_output.f_train_windforecasts_wf2_u_direct_8[0])
f_train_windforecasts_wf2_v_direct_9_36 =
    discrete(w_feature_output.f_train_windforecasts_wf2_v_direct_9[0])
f_train_windforecasts_wf2_wd_direct_10_38 =
    discrete(w_feature_output.f_train_windforecasts_wf2_wd_direct_10[0])
f_train_windforecasts_wf2_ws_direct_11_40 =
    discrete(w_feature_output.f_train_windforecasts_wf2_ws_direct_11[0])
f_train_windforecasts_wf3_u_direct_12_42 =
    discrete(w_feature_output.f_train_windforecasts_wf3_u_direct_12[0])
f_train_windforecasts_wf3_v_direct_13_44 =
    discrete(w_feature_output.f_train_windforecasts_wf3_v_direct_13[0])
f_train_windforecasts_wf3_wd_direct_14_46 =
    discrete(w_feature_output.f_train_windforecasts_wf3_wd_direct_14[0])
f_train_windforecasts_wf3_ws_direct_15_48 =
    discrete(w_feature_output.f_train_windforecasts_wf3_ws_direct_15[0])
f_train_windforecasts_wf4_u_direct_16_50 =
    discrete(w_feature_output.f_train_windforecasts_wf4_u_direct_16[0])
f_train_windforecasts_wf4_v_direct_17_52 =
    discrete(w_feature_output.f_train_windforecasts_wf4_v_direct_17[0])
f_train_windforecasts_wf4_wd_direct_18_54 =
    discrete(w_feature_output.f_train_windforecasts_wf4_wd_direct_18[0])
f_train_windforecasts_wf4_ws_direct_19_56 =
    discrete(w_feature_output.f_train_windforecasts_wf4_ws_direct_19[0])
f_train_windforecasts_wf5_u_direct_20_58 =
    discrete(w_feature_output.f_train_windforecasts_wf5_u_direct_20[0])
f_train_windforecasts_wf5_v_direct_21_60 =
    discrete(w_feature_output.f_train_windforecasts_wf5_v_direct_21[0])
f_train_windforecasts_wf5_wd_direct_22_62 =
    discrete(w_feature_output.f_train_windforecasts_wf5_wd_direct_22[0])
f_train_windforecasts_wf5_ws_direct_23_64 =
    discrete(w_feature_output.f_train_windforecasts_wf5_ws_direct_23[0])
f_train_windforecasts_wf6_u_direct_24_66 =
    discrete(w_feature_output.f_train_windforecasts_wf6_u_direct_24[0])
f_train_windforecasts_wf6_v_direct_25_68 =
    discrete(w_feature_output.f_train_windforecasts_wf6_v_direct_25[0])
f_train_windforecasts_wf6_wd_direct_26_70 =
    discrete(w_feature_output.f_train_windforecasts_wf6_wd_direct_26[0])
f_train_windforecasts_wf6_ws_direct_27_72 =
    discrete(w_feature_output.f_train_windforecasts_wf6_ws_direct_27[0])
f_train_windforecasts_wf7_u_direct_28_74 =
    discrete(w_feature_output.f_train_windforecasts_wf7_u_direct_28[0])
f_train_windforecasts_wf7_v_direct_29_76 =
    discrete(w_feature_output.f_train_windforecasts_wf7_v_direct_29[0])
f_train_windforecasts_wf7_wd_direct_30_78 =
    discrete(w_feature_output.f_train_windforecasts_wf7_wd_direct_30[0])
f_train_windforecasts_wf7_ws_direct_31_80 =
    discrete(w_feature_output.f_train_windforecasts_wf7_ws_direct_31[0])
```

B.4 Sales Prediction (Q3)

```
w_feature_output =
    window(table=join_flatten_request_join_feedback_left_join_feedback_left_join_flatten_request_left_join_flatten_requ
    output="w_output_feature_table")
f_original_Q3_Col32_0_2 = discrete(w_feature_output.f_original_Q3_Col32_0[0])
f_original_Q3_Col31_1_3 = discrete(w_feature_output.f_original_Q3_Col31_1[0])
f_flatten_request_orders_sales_Q3_Col54_avg_3_4 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col54_avg_3[0])
f_flatten_request_orders_sales_Q3_Col56_avg_4_5 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col56_avg_4[0])
f_flatten_request_orders_sales_Q3_Col53_avg_5_6 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col53_avg_5[0])
f_flatten_request_orders_sales_Q3_Col55_avg_6_7 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col55_avg_6[0])
f_flatten_request_orders_sales_Q3_Col48_avg_7_8 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col48_avg_7[0])
f_flatten_request_orders_sales_Q3_Col47_avg_8_9 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col47_avg_8[0])
f_flatten_request_orders_sales_Q3_Col56_avg_9_10 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col56_avg_9[0])
f_flatten_request_orders_sales_Q3_Col53_avg_10_11 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col53_avg_10[0])
f_flatten_request_orders_sales_Q3_Col55_avg_11_12 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col55_avg_11[0])
f_flatten_request_orders_sales_Q3_Col48_max_30_13 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col48_max_30[0])
f_flatten_request_orders_sales_Q3_Col47_max_31_14 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col47_max_31[0])
f_flatten_request_orders_sales_Q3_Col55_max_32_15 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col55_max_32[0])
f_flatten_request_orders_sales_Q3_Col56_max_33_16 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col56_max_33[0])
f_flatten_request_orders_sales_clean_Q3_Col48_max_34_17 =
    continuous(w_feature_output.f_flatten_request_orders_sales_clean_Q3_Col48_max_34[0])
f_flatten_request_orders_sales_Q3_Col48_min_35_18 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col48_min_35[0])
f_flatten_request_orders_sales_Q3_Col48_min_36_19 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col48_min_36[0])
f_flatten_request_orders_sales_Q3_Col47_min_37_20 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col47_min_37[0])
f_flatten_request_orders_sales_Q3_Col47_min_38_21 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col47_min_38[0])
f_flatten_request_orders_sales_Q3_Col54_min_39_22 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col54_min_39[0])
f_flatten_request_orders_sales_Q3_Col54_min_40_23 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col54_min_40[0])
f_flatten_request_orders_sales_Q3_Col56_min_41_24 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col56_min_41[0])
f_flatten_request_orders_sales_Q3_Col56_min_42_25 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col56_min_42[0])
f_flatten_request_orders_sales_Q3_Col55_min_43_26 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col55_min_43[0])
f_flatten_request_orders_sales_Q3_Col56_min_44_27 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col56_min_44[0])
f_flatten_request_orders_sales_Q3_Col44_top3frequency_45_28 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col44_top3frequency_45[0], ","))
f_flatten_request_orders_sales_Q3_Col40_top3frequency_46_29 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col40_top3frequency_46[0], ","))
```

```
f_flatten_request_orders_sales_Q3_Col41_top3frequency_47_30 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col41_top3frequency_47[0], ","))
f_flatten_request_orders_sales_Q3_Col42_top3frequency_48_31 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col42_top3frequency_48[0], ","))
f_flatten_request_orders_sales_Q3_Col39_top3frequency_49_32 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col39_top3frequency_49[0], ","))
f_flatten_request_orders_sales_Q3_Col39_top3frequency_50_33 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col39_top3frequency_50[0], ","))
f_flatten_request_orders_sales_Q3_Col38_top3frequency_51_34 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col38_top3frequency_51[0], ","))
f_flatten_request_orders_sales_Q3_Col38_top3frequency_52_35 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col38_top3frequency_52[0], ","))
f_flatten_request_orders_sales_Q3_Col6_top3frequency_53_36 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col6_top3frequency_53[0], ","))
f_flatten_request_orders_sales_Q3_Col6_top3frequency_54_37 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col6_top3frequency_54[0], ","))
f_flatten_request_orders_sales_Q3_Col45_top3frequency_55_38 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col45_top3frequency_55[0], ","))
f_flatten_request_orders_sales_Q3_Col57_top3frequency_56_39 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col57_top3frequency_56[0], ","))
f_flatten_request_orders_sales_Q3_Col57_top3frequency_57_40 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col57_top3frequency_57[0], ","))
f_flatten_request_orders_sales_Q3_Col36_top3frequency_58_41 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col36_top3frequency_58[0], ","))
f_flatten_request_orders_sales_Q3_Col4_top3frequency_59_42 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col4_top3frequency_59[0], ","))
f_flatten_request_orders_sales_Q3_Col49_top3frequency_60_43 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col49_top3frequency_60[0], ","))
f_flatten_request_orders_sales_Q3_Col51_top3frequency_61_44 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col51_top3frequency_61[0], ","))
f_flatten_request_orders_sales_Q3_Col51_top3frequency_62_45 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col51_top3frequency_62[0], ","))
f_flatten_request_orders_sales_Q3_Col52_top3frequency_63_46 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col52_top3frequency_63[0], ","))
f_flatten_request_orders_sales_Q3_Col52_top3frequency_64_47 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col52_top3frequency_64[0], ","))
f_flatten_request_orders_sales_Q3_Col50_top3frequency_65_48 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col50_top3frequency_65[0], ","))
f_flatten_request_orders_sales_Q3_Col44_top3frequency_66_49 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col44_top3frequency_66[0], ","))
f_flatten_request_orders_sales_Q3_Col41_top3frequency_67_50 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col41_top3frequency_67[0], ","))
f_flatten_request_orders_sales_Q3_Col6_top3frequency_68_51 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col6_top3frequency_68[0], ","))
f_flatten_request_orders_sales_Q3_Col49_top3frequency_69_52 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col49_top3frequency_69[0], ","))
f_flatten_request_orders_sales_Q3_Col51_top3frequency_70_53 =
    discrete(split(w_feature_output.f_flatten_request_orders_sales_Q3_Col51_top3frequency_70[0], ","))
f_flatten_request_product_item_Q3_Col30_top3frequency_71_54 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col30_top3frequency_71[0], ","))
f_flatten_request_product_item_Q3_Col12_top3frequency_72_55 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col12_top3frequency_72[0], ","))
f_flatten_request_product_item_Q3_Col16_top3frequency_73_56 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col16_top3frequency_73[0], ","))
f_flatten_request_product_item_Q3_Col26_top3frequency_74_57 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col26_top3frequency_74[0], ","))
f_flatten_request_product_item_Q3_Col27_top3frequency_75_58 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col27_top3frequency_75[0], ","))
f_flatten_request_product_item_Q3_Col9_top3frequency_76_59 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col9_top3frequency_76[0], ","))
```

```
f_flatten_request_product_item_Q3_Col11_top3frequency_77_60 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col11_top3frequency_77[0], ","))
f_flatten_request_product_item_Q3_Col8_top3frequency_78_61 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col8_top3frequency_78[0], ","))
f_flatten_request_product_item_Q3_Col7_top3frequency_79_62 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col7_top3frequency_79[0], ","))
f_flatten_request_product_item_Q3_Col29_top3frequency_80_63 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col29_top3frequency_80[0], ","))
f_flatten_request_product_item_Q3_Col28_top3frequency_81_64 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col28_top3frequency_81[0], ","))
f_flatten_request_product_item_Q3_Col18_top3frequency_82_65 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col18_top3frequency_82[0], ","))
f_flatten_request_product_item_Q3_Col20_top3frequency_83_66 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col20_top3frequency_83[0], ","))
f_flatten_request_product_item_Q3_Col21_top3frequency_84_67 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col21_top3frequency_84[0], ","))
f_flatten_request_product_item_Q3_Col22_top3frequency_85_68 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col22_top3frequency_85[0], ","))
f_flatten_request_product_item_Q3_Col23_top3frequency_86_69 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col23_top3frequency_86[0], ","))
f_flatten_request_product_item_Q3_Col24_top3frequency_87_70 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col24_top3frequency_87[0], ","))
f_flatten_request_product_item_Q3_Col25_top3frequency_88_71 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col25_top3frequency_88[0], ","))
f_flatten_request_product_item_Q3_Col19_top3frequency_89_72 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col19_top3frequency_89[0], ","))
f_flatten_request_product_item_Q3_Col14_top3frequency_90_73 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col14_top3frequency_90[0], ","))
f_flatten_request_product_item_Q3_Col15_top3frequency_91_74 =
    discrete(split(w_feature_output.f_flatten_request_product_item_Q3_Col15_top3frequency_91[0], ","))
f_flatten_request_shipping_Q3_Col3_Q3_Col54_top3frequency_92_75 =
    discrete(split(w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_top3frequency_92[0],
    ","))
f_flatten_request_shipping_Q3_Col3_Q3_Col54_top3frequency_93_76 =
    discrete(split(w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_top3frequency_93[0],
    ","))
f_flatten_request_orders_sales_Q3_Col43_distinct_count_94_77 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col43_distinct_count_94[0])
f_flatten_request_orders_sales_Q3_Col43_distinct_count_95_78 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col43_distinct_count_95[0])
f_flatten_request_orders_sales_Q3_Col40_distinct_count_96_79 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col40_distinct_count_96[0])
f_flatten_request_orders_sales_Q3_Col39_distinct_count_97_80 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col39_distinct_count_97[0])
f_flatten_request_orders_sales_Q3_Col38_distinct_count_98_81 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col38_distinct_count_98[0])
f_flatten_request_orders_sales_Q3_Col2_distinct_count_99_82 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col2_distinct_count_99[0])
f_flatten_request_orders_sales_Q3_Col2_distinct_count_100_83 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col2_distinct_count_100[0])
f_flatten_request_orders_sales_Q3_Col35_distinct_count_101_84 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col35_distinct_count_101[0])
f_flatten_request_orders_sales_Q3_Col35_distinct_count_102_85 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col35_distinct_count_102[0])
f_flatten_request_orders_sales_Q3_Col4_distinct_count_103_86 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col4_distinct_count_103[0])
f_flatten_request_orders_sales_Q3_Col49_distinct_count_104_87 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col49_distinct_count_104[0])
f_flatten_request_orders_sales_convert_Q3_Col2_distinct_count_105_88 =
    continuous(w_feature_output.f_flatten_request_orders_sales_convert_Q3_Col2_distinct_count_105[0])
```

```
f_flatten_request_orders_sales_convert_Q3_Col2_distinct_count_106_89 =
    continuous(w_feature_output.f_flatten_request_orders_sales_convert_Q3_Col2_distinct_count_106[0])
f_flatten_request_orders_sales_Q3_Col43_distinct_count_107_90 =
    continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col43_distinct_count_107[0])
f_flatten_request_product_item_Q3_Col30_distinct_count_108_91 =
    continuous(w_feature_output.f_flatten_request_product_item_Q3_Col30_distinct_count_108[0])
f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109_92 =
    continuous(w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109[0])
f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_110_93 =
    continuous(w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_110[0])
f_original_Q3_Col34_111_94 = discrete(w_feature_output.f_original_Q3_Col34_111[0])
f_original_Q3_Col3_112_95 = discrete(w_feature_output.f_original_Q3_Col3_112[0])
f_original_Q3_Col33_113_96 = discrete(w_feature_output.f_original_Q3_Col33_113[0])
f_combine_114 =
    discrete(combine(w_feature_output.f_combine_114_97[0],split(w_feature_output.f_flatten_request_orders_sales_Q3_Col3
    ","")))
f_flatten_request_window_count_Q3_Col34_115_99 =
    continuous(w_feature_output.f_flatten_request_window_count_Q3_Col34_115[0])
f_flatten_request_window_count_Q3_Col34_116_100 =
    continuous(w_feature_output.f_flatten_request_window_count_Q3_Col34_116[0])
f_combine_117 =
    discrete(combine(w_feature_output.f_combine_117_101[0],w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col62_
f_combine_118 =
    discrete(combine(w_feature_output.f_combine_118_104[0],split(w_feature_output.f_flatten_request_orders_sales_Q3_Col
    ","")))
f_combine_119 =
    discrete(combine(w_feature_output.f_combine_119_106[0],split(w_feature_output.f_flatten_request_product_item_Q3_Col
    ","")))
f_combine_120 =
    discrete(combine(w_feature_output.f_combine_120_108[0],w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col62_
f_combine_121 =
    discrete(combine(w_feature_output.f_combine_121_111[0],split(w_feature_output.f_flatten_request_orders_sales_Q3_Col
    ","")))
f_combine_122 =
    discrete(combine(w_feature_output.f_combine_122_113[0],split(w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3
    ","")))
f_divide_123 =
    continuous(w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109[0] /
    w_feature_output.f_flatten_request_orders_sales_Q3_Col55_avg_6[0])
f_divide_124 =
    continuous(w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109[0] /
    w_feature_output.f_flatten_request_orders_sales_Q3_Col55_min_43[0])
f_divide_125 =
    continuous(w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109[0] /
    w_feature_output.f_flatten_request_orders_sales_Q3_Col55_max_32[0])
f_multiply_126 = continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col53_avg_5[0] *
    w_feature_output.f_flatten_request_orders_sales_Q3_Col54_avg_3[0])
f_multiply_127 = continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col55_min_43[0] *
    w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109[0])
f_multiply_128 = continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col47_min_38[0] *
    w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109[0])
f_multiply_129 = continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col55_avg_6[0] *
    w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109[0])
f_divide_130 = continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col48_min_36[0] /
    w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109[0])
f_divide_131 = continuous(w_feature_output.f_flatten_request_orders_sales_Q3_Col47_min_38[0] /
    w_feature_output.f_flatten_request_shipping_Q3_Col3_Q3_Col54_distinct_count_109[0])
f_flatten_request_feedback_Q3_Col32_direct_12_134 =
    discrete(w_feature_output.f_flatten_request_feedback_Q3_Col32_direct_12[0])
f_flatten_request_feedback_Q3_Col58_direct_13_136 =
    continuous(w_feature_output.f_flatten_request_feedback_Q3_Col58_direct_13[0])
```

```
f_flatten_request_flatten_request_Q3_Col34_direct_14_138 =
    discrete(w_feature_output.f_flatten_request_flatten_request_Q3_Col34_direct_14[0])
f_flatten_request_flatten_request_Q3_Col32_direct_15_140 =
    discrete(w_feature_output.f_flatten_request_flatten_request_Q3_Col32_direct_15[0])
f_flatten_request_flatten_request_Q3_Col3_direct_16_142 =
    discrete(w_feature_output.f_flatten_request_flatten_request_Q3_Col3_direct_16[0])
f_flatten_request_flatten_request_Q3_Col33_direct_17_144 =
    discrete(w_feature_output.f_flatten_request_flatten_request_Q3_Col33_direct_17[0])
f_flatten_request_flatten_request_clean_Q3_Col34_direct_18_146 =
    discrete(w_feature_output.f_flatten_request_flatten_request_clean_Q3_Col34_direct_18[0])
f_flatten_request_flatten_request_clean_Q3_Col32_direct_19_148 =
    discrete(w_feature_output.f_flatten_request_flatten_request_clean_Q3_Col32_direct_19[0])
f_flatten_request_flatten_request_clean_Q3_Col3_direct_20_150 =
    discrete(w_feature_output.f_flatten_request_flatten_request_clean_Q3_Col3_direct_20[0])
f_flatten_request_flatten_request_clean_Q3_Col33_direct_21_152 =
    discrete(w_feature_output.f_flatten_request_flatten_request_clean_Q3_Col33_direct_21[0])
f_flatten_request_product_Q3_Col3_Q3_Col60_direct_22_154 =
    discrete(w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col60_direct_22[0])
f_flatten_request_product_Q3_Col3_Q3_Col61_direct_23_156 =
    discrete(w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col61_direct_23[0])
f_flatten_request_product_Q3_Col3_Q3_Col0_direct_24_158 =
    discrete(w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col0_direct_24[0])
f_flatten_request_product_Q3_Col3_Q3_Col59_direct_25_160 =
    discrete(w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col59_direct_25[0])
f_flatten_request_product_Q3_Col3_Q3_Col64_direct_26_162 =
    discrete(w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col64_direct_26[0])
f_flatten_request_product_Q3_Col3_Q3_Col65_direct_27_164 =
    discrete(w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col65_direct_27[0])
f_flatten_request_product_Q3_Col3_Q3_Col62_direct_28_166 =
    discrete(w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col62_direct_28[0])
f_flatten_request_product_Q3_Col3_Q3_Col63_direct_29_168 =
    discrete(w_feature_output.f_flatten_request_product_Q3_Col3_Q3_Col63_direct_29[0])
f_flatten_request_feedback_Q3_Col58_direct_2_170 =
    regression_label(ifnull(w_feature_output.f_flatten_request_feedback_Q3_Col58_direct_2[0], 0.0D))
```

B.5 Loan Evaluation (Q4)

```
key_flattenRequest_Q4_Col40_1 = window(table=flattenRequest, output="flattenRequest_output")
flattenRequest_outputkey_flattenRequest_Q4_Col40 = output(key_flattenRequest_Q4_Col40_1.Q4_Col40[0])
f_original_Q4_Col41_0 = column(key_flattenRequest_Q4_Col40_1.Q4_Col41[0])
f_original_Q4_Col40_1 = column(key_flattenRequest_Q4_Col40_1.Q4_Col40[0])
f_original_Q4_Col39_107 = column(key_flattenRequest_Q4_Col40_1.Q4_Col39[0])
f_original_Q4_Col45_108 = column(key_flattenRequest_Q4_Col40_1.Q4_Col45[0])
f_original_Q4_Col47_109 = column(key_flattenRequest_Q4_Col40_1.Q4_Col47[0])
f_original_Q4_Col187_110 = column(key_flattenRequest_Q4_Col40_1.Q4_Col187[0])
f_original_Q4_Col186_111 = column(key_flattenRequest_Q4_Col40_1.Q4_Col186[0])
f_original_Q4_Col189_112 = column(key_flattenRequest_Q4_Col40_1.Q4_Col189[0])
f_original_Q4_Col190_113 = column(key_flattenRequest_Q4_Col40_1.Q4_Col190[0])
f_original_Q4_Col188_114 = column(key_flattenRequest_Q4_Col40_1.Q4_Col188[0])
f_original_Q4_Col191_115 = column(key_flattenRequest_Q4_Col40_1.Q4_Col191[0])
f_original_Q4_Col114_116 = column(key_flattenRequest_Q4_Col40_1.Q4_Col114[0])
f_original_Q4_Col142_117 = column(key_flattenRequest_Q4_Col40_1.Q4_Col142[0])
f_original_Q4_Col128_118 = column(key_flattenRequest_Q4_Col40_1.Q4_Col128[0])
f_original_Q4_Col115_119 = column(key_flattenRequest_Q4_Col40_1.Q4_Col115[0])
f_original_Q4_Col143_120 = column(key_flattenRequest_Q4_Col40_1.Q4_Col143[0])
f_original_Q4_Col129_121 = column(key_flattenRequest_Q4_Col40_1.Q4_Col129[0])
f_original_Q4_Col90_122 = column(key_flattenRequest_Q4_Col40_1.Q4_Col90[0])
f_original_Q4_Col105_123 = column(key_flattenRequest_Q4_Col40_1.Q4_Col105[0])
```

```
f_original_Q4_Col80_124 = column(key_flattenRequest_Q4_Col40_1.Q4_Col80[0])
f_original_Q4_Col118_125 = column(key_flattenRequest_Q4_Col40_1.Q4_Col118[0])
f_original_Q4_Col146_126 = column(key_flattenRequest_Q4_Col40_1.Q4_Col146[0])
f_original_Q4_Col132_127 = column(key_flattenRequest_Q4_Col40_1.Q4_Col132[0])
f_original_Q4_Col81_128 = column(key_flattenRequest_Q4_Col40_1.Q4_Col81[0])
f_original_Q4_Col97_129 = column(key_flattenRequest_Q4_Col40_1.Q4_Col97[0])
f_original_Q4_Col165_130 = column(key_flattenRequest_Q4_Col40_1.Q4_Col165[0])
f_original_Q4_Col96_131 = column(key_flattenRequest_Q4_Col40_1.Q4_Col96[0])
f_original_Q4_Col162_132 = column(key_flattenRequest_Q4_Col40_1.Q4_Col162[0])
f_original_Q4_Col164_133 = column(key_flattenRequest_Q4_Col40_1.Q4_Col164[0])
f_original_Q4_Col119_134 = column(key_flattenRequest_Q4_Col40_1.Q4_Col119[0])
f_original_Q4_Col147_135 = column(key_flattenRequest_Q4_Col40_1.Q4_Col147[0])
f_original_Q4_Col133_136 = column(key_flattenRequest_Q4_Col40_1.Q4_Col133[0])
f_original_Q4_Col160_137 = column(key_flattenRequest_Q4_Col40_1.Q4_Col160[0])
f_original_Q4_Col120_138 = column(key_flattenRequest_Q4_Col40_1.Q4_Col120[0])
f_original_Q4_Col148_139 = column(key_flattenRequest_Q4_Col40_1.Q4_Col148[0])
f_original_Q4_Col134_140 = column(key_flattenRequest_Q4_Col40_1.Q4_Col134[0])
f_original_Q4_Col82_141 = column(key_flattenRequest_Q4_Col40_1.Q4_Col82[0])
f_original_Q4_Col83_142 = column(key_flattenRequest_Q4_Col40_1.Q4_Col83[0])
f_original_Q4_Col84_143 = column(key_flattenRequest_Q4_Col40_1.Q4_Col84[0])
f_original_Q4_Col102_144 = column(key_flattenRequest_Q4_Col40_1.Q4_Col102[0])
f_original_Q4_Col177_145 = column(key_flattenRequest_Q4_Col40_1.Q4_Col177[0])
f_original_Q4_Col178_146 = column(key_flattenRequest_Q4_Col40_1.Q4_Col178[0])
f_original_Q4_Col180_147 = column(key_flattenRequest_Q4_Col40_1.Q4_Col180[0])
f_original_Q4_Col182_148 = column(key_flattenRequest_Q4_Col40_1.Q4_Col182[0])
f_original_Q4_Col183_149 = column(key_flattenRequest_Q4_Col40_1.Q4_Col183[0])
f_original_Q4_Col166_150 = column(key_flattenRequest_Q4_Col40_1.Q4_Col166[0])
f_original_Q4_Col184_151 = column(key_flattenRequest_Q4_Col40_1.Q4_Col184[0])
f_original_Q4_Col185_152 = column(key_flattenRequest_Q4_Col40_1.Q4_Col185[0])
f_original_Q4_Col167_153 = column(key_flattenRequest_Q4_Col40_1.Q4_Col167[0])
f_original_Q4_Col169_154 = column(key_flattenRequest_Q4_Col40_1.Q4_Col169[0])
f_original_Q4_Col170_155 = column(key_flattenRequest_Q4_Col40_1.Q4_Col170[0])
f_original_Q4_Col172_156 = column(key_flattenRequest_Q4_Col40_1.Q4_Col172[0])
f_original_Q4_Col104_157 = column(key_flattenRequest_Q4_Col40_1.Q4_Col104[0])
f_original_Q4_Col100_158 = column(key_flattenRequest_Q4_Col40_1.Q4_Col100[0])
f_original_Q4_Col88_159 = column(key_flattenRequest_Q4_Col40_1.Q4_Col88[0])
f_original_Q4_Col89_160 = column(key_flattenRequest_Q4_Col40_1.Q4_Col89[0])
f_original_Q4_Col103_161 = column(key_flattenRequest_Q4_Col40_1.Q4_Col103[0])
f_original_Q4_Col101_162 = column(key_flattenRequest_Q4_Col40_1.Q4_Col101[0])
f_original_Q4_Col121_163 = column(key_flattenRequest_Q4_Col40_1.Q4_Col121[0])
f_original_Q4_Col149_164 = column(key_flattenRequest_Q4_Col40_1.Q4_Col149[0])
f_original_Q4_Col135_165 = column(key_flattenRequest_Q4_Col40_1.Q4_Col135[0])
f_original_Q4_Col122_166 = column(key_flattenRequest_Q4_Col40_1.Q4_Col122[0])
f_original_Q4_Col150_167 = column(key_flattenRequest_Q4_Col40_1.Q4_Col150[0])
f_original_Q4_Col136_168 = column(key_flattenRequest_Q4_Col40_1.Q4_Col136[0])
f_original_Q4_Col156_169 = column(key_flattenRequest_Q4_Col40_1.Q4_Col156[0])
f_original_Q4_Col49_170 = column(key_flattenRequest_Q4_Col40_1.Q4_Col49[0])
f_original_Q4_Col157_171 = column(key_flattenRequest_Q4_Col40_1.Q4_Col157[0])
f_original_Q4_Col123_172 = column(key_flattenRequest_Q4_Col40_1.Q4_Col123[0])
f_original_Q4_Col151_173 = column(key_flattenRequest_Q4_Col40_1.Q4_Col151[0])
f_original_Q4_Col137_174 = column(key_flattenRequest_Q4_Col40_1.Q4_Col137[0])
f_original_Q4_Col113_175 = column(key_flattenRequest_Q4_Col40_1.Q4_Col113[0])
f_original_Q4_Col124_176 = column(key_flattenRequest_Q4_Col40_1.Q4_Col124[0])
f_original_Q4_Col152_177 = column(key_flattenRequest_Q4_Col40_1.Q4_Col152[0])
f_original_Q4_Col138_178 = column(key_flattenRequest_Q4_Col40_1.Q4_Col138[0])
f_original_Q4_Col125_179 = column(key_flattenRequest_Q4_Col40_1.Q4_Col125[0])
f_original_Q4_Col153_180 = column(key_flattenRequest_Q4_Col40_1.Q4_Col153[0])
f_original_Q4_Col139_181 = column(key_flattenRequest_Q4_Col40_1.Q4_Col139[0])
f_original_Q4_Col43_182 = column(key_flattenRequest_Q4_Col40_1.Q4_Col43[0])
f_original_Q4_Col78_183 = column(key_flattenRequest_Q4_Col40_1.Q4_Col78[0])
f_original_Q4_Col92_184 = column(key_flattenRequest_Q4_Col40_1.Q4_Col92[0])
```

```
f_original_Q4_Col93_185 = column(key_flattenRequest_Q4_Col40_1.Q4_Col93[0])
f_original_Q4_Col91_186 = column(key_flattenRequest_Q4_Col40_1.Q4_Col91[0])
f_original_Q4_Col59_187 = column(key_flattenRequest_Q4_Col40_1.Q4_Col59[0])
f_original_Q4_Col126_188 = column(key_flattenRequest_Q4_Col40_1.Q4_Col126[0])
f_original_Q4_Col154_189 = column(key_flattenRequest_Q4_Col40_1.Q4_Col154[0])
f_original_Q4_Col140_190 = column(key_flattenRequest_Q4_Col40_1.Q4_Col140[0])
f_original_Q4_Col127_191 = column(key_flattenRequest_Q4_Col40_1.Q4_Col127[0])
f_original_Q4_Col155_192 = column(key_flattenRequest_Q4_Col40_1.Q4_Col155[0])
f_original_Q4_Col141_193 = column(key_flattenRequest_Q4_Col40_1.Q4_Col141[0])
f_original_Q4_Col161_194 = column(key_flattenRequest_Q4_Col40_1.Q4_Col161[0])
f_original_Q4_Col163_195 = column(key_flattenRequest_Q4_Col40_1.Q4_Col163[0])
f_original_Q4_Col79_196 = column(key_flattenRequest_Q4_Col40_1.Q4_Col79[0])
f_original_Q4_Col77_197 = column(key_flattenRequest_Q4_Col40_1.Q4_Col77[0])
f_original_Q4_Col98_198 = column(key_flattenRequest_Q4_Col40_1.Q4_Col98[0])
f_original_Q4_Col94_199 = column(key_flattenRequest_Q4_Col40_1.Q4_Col94[0])
f_original_Q4_Col106_200 = column(key_flattenRequest_Q4_Col40_1.Q4_Col106[0])
f_original_Q4_Col107_201 = column(key_flattenRequest_Q4_Col40_1.Q4_Col107[0])
f_original_Q4_Col111_202 = column(key_flattenRequest_Q4_Col40_1.Q4_Col111[0])
f_original_Q4_Col112_203 = column(key_flattenRequest_Q4_Col40_1.Q4_Col112[0])
f_original_Q4_Col108_204 = column(key_flattenRequest_Q4_Col40_1.Q4_Col108[0])
f_original_Q4_Col109_205 = column(key_flattenRequest_Q4_Col40_1.Q4_Col109[0])
f_original_Q4_Col158_206 = column(key_flattenRequest_Q4_Col40_1.Q4_Col158[0])
f_original_Q4_Col159_207 = column(key_flattenRequest_Q4_Col40_1.Q4_Col159[0])
f_original_Q4_Col48_208 = column(key_flattenRequest_Q4_Col40_1.Q4_Col48[0])
f_original_Q4_Col116_209 = column(key_flattenRequest_Q4_Col40_1.Q4_Col116[0])
f_original_Q4_Col144_210 = column(key_flattenRequest_Q4_Col40_1.Q4_Col144[0])
f_original_Q4_Col130_211 = column(key_flattenRequest_Q4_Col40_1.Q4_Col130[0])
f_original_Q4_Col117_212 = column(key_flattenRequest_Q4_Col40_1.Q4_Col117[0])
f_original_Q4_Col145_213 = column(key_flattenRequest_Q4_Col40_1.Q4_Col145[0])
f_original_Q4_Col131_214 = column(key_flattenRequest_Q4_Col40_1.Q4_Col131[0])
f_divide_215_216 = column(key_flattenRequest_Q4_Col40_1.Q4_Col45[0])
f_divide_215_217 = column(key_flattenRequest_Q4_Col40_1.Q4_Col39[0])
f_divide_216_218 = column(key_flattenRequest_Q4_Col40_1.Q4_Col39[0])
f_divide_216_219 = column(key_flattenRequest_Q4_Col40_1.Q4_Col45[0])
f_divide_217_220 = column(key_flattenRequest_Q4_Col40_1.Q4_Col47[0])
f_divide_217_221 = column(key_flattenRequest_Q4_Col40_1.Q4_Col39[0])
f_divide_218_222 = column(key_flattenRequest_Q4_Col40_1.Q4_Col39[0])
f_divide_218_223 = column(key_flattenRequest_Q4_Col40_1.Q4_Col47[0])
f_multiply_219_224 = column(key_flattenRequest_Q4_Col40_1.Q4_Col83[0])
f_multiply_219_225 = column(key_flattenRequest_Q4_Col40_1.Q4_Col84[0])
f_divide_220_226 = column(key_flattenRequest_Q4_Col40_1.Q4_Col47[0])
f_divide_221_228 = column(key_flattenRequest_Q4_Col40_1.Q4_Col47[0])
f_divide_221_229 = column(key_flattenRequest_Q4_Col40_1.Q4_Col45[0])
f_combine_222_230 = column(key_flattenRequest_Q4_Col40_1.Q4_Col80[0])
f_combine_222_231 = column(key_flattenRequest_Q4_Col40_1.Q4_Col92[0])
f_divide_223_232 = column(key_flattenRequest_Q4_Col40_1.Q4_Col45[0])
f_divide_223_233 = column(key_flattenRequest_Q4_Col40_1.Q4_Col47[0])
f_combine_224_234 = column(key_flattenRequest_Q4_Col40_1.Q4_Col159[0])
f_combine_225_237 = column(key_flattenRequest_Q4_Col40_1.Q4_Col160[0])
f_divide_227_240 = column(key_flattenRequest_Q4_Col40_1.Q4_Col83[0])
f_combine_228_242 = column(key_flattenRequest_Q4_Col40_1.Q4_Col157[0])
f_combine_229_244 = column(key_flattenRequest_Q4_Col40_1.Q4_Col92[0])
f_combine_231_249 = column(key_flattenRequest_Q4_Col40_1.Q4_Col180[0])
select_bo_POS_CASH_balance = select(flattenRequest, Q4_Col41 as Q4_Col0,0L as Q4_Col1,Q4_Col40 as
    Q4_Col2,0L as Q4_Col3,0.0D as Q4_Col199,0.0D as Q4_Col200,'' as Q4_Col21,0L as Q4_Col22,0L as
    Q4_Col23)
bo_POS_CASH_balance_union_window = window(table=select_bo_POS_CASH_balance,
    other_table=[bo_POS_CASH_balance], keys=[Q4_Col2], order=Q4_Col0, at_least=100, max_size=101,
    offset=0s, instance_is_window=false, output="flattenRequest_output")
f_flattenRequest_bo_POS_CASH_balance_Q4_Col199_avg_3 =
    column(avg(bo_POS_CASH_balance_union_window.Q4_Col199[0:100]))
```

```
f_flattenRequest_bo_POS_CASH_balance_Q4_Col199_avg_4 = column(avg(bo_POS_CASH_balance_union_window.Q4_Col199[0:10]))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col200_avg_5 = column(avg(bo_POS_CASH_balance_union_window.Q4_Col200[0:10]))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col199_max_27 = column(max(bo_POS_CASH_balance_union_window.Q4_Col199[0:100]))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col200_max_28 = column(max(bo_POS_CASH_balance_union_window.Q4_Col200[0:100]))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col200_min_47 = column(min(bo_POS_CASH_balance_union_window.Q4_Col200[0:10]))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col3_top3frequency_59 = column(join(",", "NULL", range(get_keys(sort_by_value(map(group_by(bo_POS_CASH_balance_union_window[0:100], "Q4_Col3"), x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col21_top3frequency_60 = column(join(",", "NULL", range(get_keys(sort_by_value(map(group_by(bo_POS_CASH_balance_union_window[0:100], "Q4_Col21"), x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col22_top3frequency_61 = column(join(",", "NULL", range(get_keys(sort_by_value(map(group_by(bo_POS_CASH_balance_union_window[0:100], "Q4_Col22"), x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col22_top3frequency_62 = column(join(",", "NULL", range(get_keys(sort_by_value(map(group_by(bo_POS_CASH_balance_union_window[0:10], "Q4_Col22"), x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col3_distinct_count_75 = column(distinct_count(bo_POS_CASH_balance_union_window.Q4_Col3[0:100]))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col3_distinct_count_76 = column(distinct_count(bo_POS_CASH_balance_union_window.Q4_Col3[0:10]))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col1_distinct_count_77 = column(distinct_count(bo_POS_CASH_balance_union_window.Q4_Col1[0:100]))
f_flattenRequest_bo_POS_CASH_balance_Q4_Col23_top3frequency_224 = column(join(",", "NULL", range(get_keys(sort_by_value(map(group_by(bo_POS_CASH_balance_union_window[0:100], "Q4_Col23"), x->count_of_window(x)))), 0, 3)))
select_bo_bureau = select(flattenRequest, Q4_Col41 as Q4_Col0,Q4_Col40 as Q4_Col2,0L as Q4_Col24,'' as Q4_Col25,'' as Q4_Col26,0L as Q4_Col27,0L as Q4_Col28,0.0D as Q4_Col29,0.0D as Q4_Col30,0.0D as Q4_Col31,0L as Q4_Col32,0.0D as Q4_Col33,0.0D as Q4_Col34,0.0D as Q4_Col35,0.0D as Q4_Col36,'' as Q4_Col37,0L as Q4_Col38,0.0D as Q4_Col39)
bo_bureau_union_window = window(table=select_bo_bureau, other_table=[bo_bureau], keys=[Q4_Col2], order=Q4_Col0, at_least=100, max_size=101, offset=0s, instance_is_window=false, output="flattenRequest_output")
f_flattenRequest_bo_bureau_Q4_Col33_avg_6 = column(avg(bo_bureau_union_window.Q4_Col33[0:100]))
f_flattenRequest_bo_bureau_Q4_Col35_avg_7 = column(avg(bo_bureau_union_window.Q4_Col35[0:100]))
f_flattenRequest_bo_bureau_Q4_Col29_avg_8 = column(avg(bo_bureau_union_window.Q4_Col29[0:10]))
f_flattenRequest_bo_bureau_Q4_Col30_avg_9 = column(avg(bo_bureau_union_window.Q4_Col30[0:10]))
f_flattenRequest_bo_bureau_Q4_Col34_max_29 = column(max(bo_bureau_union_window.Q4_Col34[0:100]))
f_flattenRequest_bo_bureau_Q4_Col36_max_30 = column(max(bo_bureau_union_window.Q4_Col36[0:100]))
f_flattenRequest_bo_bureau_Q4_Col29_max_31 = column(max(bo_bureau_union_window.Q4_Col29[0:10]))
f_flattenRequest_bo_bureau_Q4_Col30_max_32 = column(max(bo_bureau_union_window.Q4_Col30[0:10]))
f_flattenRequest_bo_bureau_Q4_Col31_min_48 = column(min(bo_bureau_union_window.Q4_Col31[0:10]))
f_flattenRequest_bo_bureau_Q4_Col29_min_49 = column(min(bo_bureau_union_window.Q4_Col29[0:10]))
f_flattenRequest_bo_bureau_Q4_Col30_min_50 = column(min(bo_bureau_union_window.Q4_Col30[0:10]))
f_flattenRequest_bo_bureau_Q4_Col37_top3frequency_63 = column(join(",", "NULL", range(get_keys(sort_by_value(map(group_by(bo_bureau_union_window[0:100], "Q4_Col37"), x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_bureau_Q4_Col27_top3frequency_64 = column(join(",", "NULL", range(get_keys(sort_by_value(map(group_by(bo_bureau_union_window[0:10], "Q4_Col27"), x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_bureau_Q4_Col38_top3frequency_65 = column(join(",", "NULL", range(get_keys(sort_by_value(map(group_by(bo_bureau_union_window[0:10], "Q4_Col38"), x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_bureau_Q4_Col32_distinct_count_78 = column(distinct_count(bo_bureau_union_window.Q4_Col32[0:100]))
```

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169 f_flattenRequest_bo_bureau_Q4_Col25_distinct_count_79 =
        column(distinct_count(bo_bureau_union_window.Q4_Col25[0:100]))
170 f_flattenRequest_bo_bureau_Q4_Col26_distinct_count_80 =
        column(distinct_count(bo_bureau_union_window.Q4_Col26[0:100]))
171 f_flattenRequest_bo_bureau_Q4_Col28_distinct_count_81 =
        column(distinct_count(bo_bureau_union_window.Q4_Col28[0:100]))
172 f_flattenRequest_bo_bureau_Q4_Col37_distinct_count_82 =
        column(distinct_count(bo_bureau_union_window.Q4_Col37[0:10]))
173 f_flattenRequest_bo_bureau_Q4_Col27_distinct_count_83 =
        column(distinct_count(bo_bureau_union_window.Q4_Col27[0:10]))
174 f_flattenRequest_bo_bureau_Q4_Col38_distinct_count_84 =
        column(distinct_count(bo_bureau_union_window.Q4_Col38[0:100]))
175 select_bo_bureau_balance = select(flattenRequest, Q4_Col41 as Q4_Col0,0L as Q4_Col24,0L as Q4_Col3,'' as
        Q4_Col76,Q4_Col40 as Q4_Col2)
176 bo_bureau_balance_union_window = window(table=select_bo_bureau_balance, other_table=[bo_bureau_balance],
        keys=[Q4_Col2], order=Q4_Col0, at_least=100, max_size=101, offset=0s, instance_is_window=false,
        output="flattenRequest_output")
177 f_flattenRequest_bo_bureau_balance_Q4_Col3_top3frequency_66 = column(join(",", "NULL",
        range(get_keys(sort_by_value(map(group_by(bo_bureau_balance_union_window[0:10], "Q4_Col3"),
        x->count_of_window(x)))), 0, 3)))
178 select_bo_credit_card_balance = select(flattenRequest, Q4_Col41 as Q4_Col0,0L as Q4_Col1,Q4_Col40 as
        Q4_Col2,0L as Q4_Col3,0.0D as Q4_Col4,0L as Q4_Col5,0.0D as Q4_Col6,0.0D as Q4_Col7,0.0D as
        Q4_Col8,0.0D as Q4_Col9,0.0D as Q4_Col10,0.0D as Q4_Col11,0.0D as Q4_Col12,0.0D as Q4_Col13,0.0D as
        Q4_Col14,0.0D as Q4_Col15,0.0D as Q4_Col16,0L as Q4_Col17,0.0D as Q4_Col18,0.0D as Q4_Col19,0.0D as
        Q4_Col20,'' as Q4_Col21,0L as Q4_Col22,0L as Q4_Col23)
179 bo_credit_card_balance_union_window = window(table=select_bo_credit_card_balance,
        other_table=[bo_credit_card_balance], keys=[Q4_Col2], order=Q4_Col0, at_least=100, max_size=101,
        offset=0s, instance_is_window=false, output="flattenRequest_output")
180 f_flattenRequest_bo_credit_card_balance_Q4_Col5_distinct_count_85 =
        column(distinct_count(bo_credit_card_balance_union_window.Q4_Col5[0:10]))
181 f_flattenRequest_bo_credit_card_balance_Q4_Col17_distinct_count_86 =
        column(distinct_count(bo_credit_card_balance_union_window.Q4_Col17[0:100]))
182 f_flattenRequest_bo_credit_card_balance_Q4_Col17_distinct_count_87 =
        column(distinct_count(bo_credit_card_balance_union_window.Q4_Col17[0:10]))
183 f_flattenRequest_bo_credit_card_balance_Q4_Col3_distinct_count_88 =
        column(distinct_count(bo_credit_card_balance_union_window.Q4_Col3[0:100]))
184 f_flattenRequest_bo_credit_card_balance_Q4_Col21_distinct_count_89 =
        column(distinct_count(bo_credit_card_balance_union_window.Q4_Col21[0:100]))
185 f_flattenRequest_bo_credit_card_balance_Q4_Col1_distinct_count_90 =
        column(distinct_count(bo_credit_card_balance_union_window.Q4_Col1[0:10]))
186 select_bo_installment_payment = select(flattenRequest, Q4_Col41 as Q4_Col0,0L as Q4_Col1,Q4_Col40 as
        Q4_Col2,0.0D as Q4_Col193,0L as Q4_Col194,0.0D as Q4_Col195,0.0D as Q4_Col196,0.0D as Q4_Col197,0.0D
        as Q4_Col198)
187 bo_installment_payment_union_window = window(table=select_bo_installment_payment,
        other_table=[bo_installment_payment], keys=[Q4_Col2], order=Q4_Col0, at_least=100, max_size=101,
        offset=0s, instance_is_window=false, output="flattenRequest_output")
188 f_flattenRequest_bo_installment_payment_Q4_Col198_avg_10 =
        column(avg(bo_installment_payment_union_window.Q4_Col198[0:10]))
189 f_flattenRequest_bo_installment_payment_Q4_Col195_avg_11 =
        column(avg(bo_installment_payment_union_window.Q4_Col195[0:100]))
190 f_flattenRequest_bo_installment_payment_Q4_Col193_avg_12 =
        column(avg(bo_installment_payment_union_window.Q4_Col193[0:10]))
191 f_flattenRequest_bo_installment_payment_Q4_Col197_max_33 =
        column(max(bo_installment_payment_union_window.Q4_Col197[0:100]))
192 f_flattenRequest_bo_installment_payment_Q4_Col197_max_34 =
        column(max(bo_installment_payment_union_window.Q4_Col197[0:10]))
193 f_flattenRequest_bo_installment_payment_Q4_Col198_max_35 =
        column(max(bo_installment_payment_union_window.Q4_Col198[0:100]))
194 f_flattenRequest_bo_installment_payment_Q4_Col198_max_36 =
        column(max(bo_installment_payment_union_window.Q4_Col198[0:10]))
```

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f_flattenRequest_bo_installment_payment_Q4_Col193_max_37 = column(max(bo_installment_payment_union_window.Q4_Col193[0:10]))
f_flattenRequest_bo_installment_payment_Q4_Col196_min_51 = column(min(bo_installment_payment_union_window.Q4_Col196[0:100]))
f_flattenRequest_bo_installment_payment_Q4_Col195_min_52 = column(min(bo_installment_payment_union_window.Q4_Col195[0:10]))
f_flattenRequest_bo_installment_payment_Q4_Col194_top3frequency_67 = column(join(",", "NULL", range(get_keys(sort_by_value(map(group_by(bo_installment_payment_union_window[0:10], "Q4_Col194"), x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_installment_payment_Q4_Col194_distinct_count_91 = column(distinct_count(bo_installment_payment_union_window.Q4_Col194[0:100]))
f_flattenRequest_bo_installment_payment_Q4_Col1_distinct_count_92 = column(distinct_count(bo_installment_payment_union_window.Q4_Col1[0:10]))
select_bo_part = select(flattenRequest, Q4_Col41 as Q4_Col0,Q4_Col77 as Q4_Col77,Q4_Col78 as Q4_Col78,Q4_Col79 as Q4_Col79,Q4_Col80 as Q4_Col80,Q4_Col81 as Q4_Col81,0.0D as Q4_Col82,0.0D as Q4_Col83,0.0D as Q4_Col84,0.0D as Q4_Col85,0.0D as Q4_Col45,0.0D as Q4_Col39,0.0D as Q4_Col47,0.0D as Q4_Col86,0.0D as Q4_Col87)
bo_part_union_window = window(table=select_bo_part, other_table=[bo_part], keys=[Q4_Col77,Q4_Col78,Q4_Col79,Q4_Col80,Q4_Col81], order=Q4_Col0, at_least=100, max_size=101, offset=0s, instance_is_window=false, output="flattenRequest_output")
f_flattenRequest_bo_part_Q4_Col47_avg_13 = column(avg(bo_part_union_window.Q4_Col47[0:10]))
f_flattenRequest_bo_part_Q4_Col86_avg_14 = column(avg(bo_part_union_window.Q4_Col86[0:10]))
f_flattenRequest_bo_part_Q4_Col83_avg_15 = column(avg(bo_part_union_window.Q4_Col83[0:10]))
f_flattenRequest_bo_part_Q4_Col87_avg_16 = column(avg(bo_part_union_window.Q4_Col87[0:10]))
f_flattenRequest_bo_part_Q4_Col45_max_38 = column(max(bo_part_union_window.Q4_Col45[0:10]))
f_flattenRequest_bo_part_Q4_Col82_max_39 = column(max(bo_part_union_window.Q4_Col82[0:10]))
f_flattenRequest_bo_part_Q4_Col84_min_53 = column(min(bo_part_union_window.Q4_Col84[0:10]))
select_bo_previous_applicatio = select(flattenRequest, Q4_Col41 as Q4_Col0,0L as Q4_Col1,Q4_Col40 as Q4_Col2,'' as Q4_Col43,0.0D as Q4_Col39,0.0D as Q4_Col44,0.0D as Q4_Col45,0.0D as Q4_Col46,0.0D as Q4_Col47,'' as Q4_Col48,0L as Q4_Col49,'' as Q4_Col50,0L as Q4_Col51,0.0D as Q4_Col52,0.0D as Q4_Col53,0.0D as Q4_Col54,'' as Q4_Col55,'' as Q4_Col21,0L as Q4_Col56,'' as Q4_Col57,'' as Q4_Col58,'' as Q4_Col59,'' as Q4_Col60,'' as Q4_Col61,'' as Q4_Col62,'' as Q4_Col63,'' as Q4_Col64,0L as Q4_Col65,'' as Q4_Col66,0.0D as Q4_Col67,'' as Q4_Col68,'' as Q4_Col69,0.0D as Q4_Col70,0.0D as Q4_Col71,0.0D as Q4_Col72,0.0D as Q4_Col73,0.0D as Q4_Col74,0.0D as Q4_Col75)
bo_previous_applicatio_union_window = window(table=select_bo_previous_applicatio, other_table=[bo_previous_applicatio], keys=[Q4_Col2], order=Q4_Col0, at_least=100, max_size=101, offset=0s, instance_is_window=false, output="flattenRequest_output")
f_flattenRequest_bo_previous_applicatio_Q4_Col44_avg_17 = column(avg(bo_previous_applicatio_union_window.Q4_Col44[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col45_avg_18 = column(avg(bo_previous_applicatio_union_window.Q4_Col45[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col47_avg_19 = column(avg(bo_previous_applicatio_union_window.Q4_Col47[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col67_avg_20 = column(avg(bo_previous_applicatio_union_window.Q4_Col67[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col70_avg_21 = column(avg(bo_previous_applicatio_union_window.Q4_Col70[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col71_avg_22 = column(avg(bo_previous_applicatio_union_window.Q4_Col71[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col73_avg_23 = column(avg(bo_previous_applicatio_union_window.Q4_Col73[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col74_avg_24 = column(avg(bo_previous_applicatio_union_window.Q4_Col74[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col75_avg_25 = column(avg(bo_previous_applicatio_union_window.Q4_Col75[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col52_avg_26 = column(avg(bo_previous_applicatio_union_window.Q4_Col52[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col39_max_40 = column(max(bo_previous_applicatio_union_window.Q4_Col39[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col44_max_41 = column(max(bo_previous_applicatio_union_window.Q4_Col44[0:100]))
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f_flattenRequest_bo_previous_applicatio_Q4_Col45_max_42 =
    column(max(bo_previous_applicatio_union_window.Q4_Col45[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col46_max_43 =
    column(max(bo_previous_applicatio_union_window.Q4_Col46[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col47_max_44 =
    column(max(bo_previous_applicatio_union_window.Q4_Col47[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col72_max_45 =
    column(max(bo_previous_applicatio_union_window.Q4_Col72[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col52_max_46 =
    column(max(bo_previous_applicatio_union_window.Q4_Col52[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col45_min_54 =
    column(min(bo_previous_applicatio_union_window.Q4_Col45[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col47_min_55 =
    column(min(bo_previous_applicatio_union_window.Q4_Col47[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col67_min_56 =
    column(min(bo_previous_applicatio_union_window.Q4_Col67[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col74_min_57 =
    column(min(bo_previous_applicatio_union_window.Q4_Col74[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col52_min_58 =
    column(min(bo_previous_applicatio_union_window.Q4_Col52[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col64_top3frequency_68 = column(join(",", "NULL",
    range(get_keys(sort_by_value(map(group_by(bo_previous_applicatio_union_window[0:100], "Q4_Col64"),
    x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_previous_applicatio_Q4_Col66_top3frequency_69 = column(join(",", "NULL",
    range(get_keys(sort_by_value(map(group_by(bo_previous_applicatio_union_window[0:100], "Q4_Col66"),
    x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_previous_applicatio_Q4_Col66_top3frequency_70 = column(join(",", "NULL",
    range(get_keys(sort_by_value(map(group_by(bo_previous_applicatio_union_window[0:10], "Q4_Col66"),
    x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_previous_applicatio_Q4_Col59_top3frequency_71 = column(join(",", "NULL",
    range(get_keys(sort_by_value(map(group_by(bo_previous_applicatio_union_window[0:10], "Q4_Col59"),
    x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_previous_applicatio_Q4_Col68_top3frequency_72 = column(join(",", "NULL",
    range(get_keys(sort_by_value(map(group_by(bo_previous_applicatio_union_window[0:10], "Q4_Col68"),
    x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_previous_applicatio_Q4_Col69_top3frequency_73 = column(join(",", "NULL",
    range(get_keys(sort_by_value(map(group_by(bo_previous_applicatio_union_window[0:10], "Q4_Col69"),
    x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_previous_applicatio_Q4_Col65_top3frequency_74 = column(join(",", "NULL",
    range(get_keys(sort_by_value(map(group_by(bo_previous_applicatio_union_window[0:10], "Q4_Col65"),
    x->count_of_window(x)))), 0, 3)))
f_flattenRequest_bo_previous_applicatio_Q4_Col64_distinct_count_93 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col64[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col58_distinct_count_94 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col58[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col56_distinct_count_95 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col56[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col50_distinct_count_96 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col50[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col49_distinct_count_97 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col49[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col55_distinct_count_98 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col55[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col21_distinct_count_99 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col21[0:100]))
f_flattenRequest_bo_previous_applicatio_Q4_Col61_distinct_count_100 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col61[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col57_distinct_count_101 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col57[0:10]))
f_flattenRequest_bo_previous_applicatio_Q4_Col66_distinct_count_102 =
    column(distinct_count(bo_previous_applicatio_union_window.Q4_Col66[0:10]))
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251 f_flattenRequest_bo_previous_applicatio_Q4_Col68_distinct_count_103 =
        column(distinct_count(bo_previous_applicatio_union_window.Q4_Col68[0:10]))
252 f_flattenRequest_bo_previous_applicatio_Q4_Col51_distinct_count_104 =
        column(distinct_count(bo_previous_applicatio_union_window.Q4_Col51[0:10]))
253 f_flattenRequest_bo_previous_applicatio_Q4_Col69_distinct_count_105 =
        column(distinct_count(bo_previous_applicatio_union_window.Q4_Col69[0:100]))
254 f_flattenRequest_bo_previous_applicatio_Q4_Col1_distinct_count_106 =
        column(distinct_count(bo_previous_applicatio_union_window.Q4_Col1[0:100]))
255 flattenRequest_Q4_Col41_Q4_Col78 = window(table=flattenRequest, keys=[Q4_Col78], order=Q4_Col41,
        max_size=100, offset=10h, output="flattenRequest_output")
256 f_flattenRequest_window_count_Q4_Col43_226 = column(if(flattenRequest_Q4_Col41_Q4_Col78.Q4_Col43[0] !=
        null, count(flattenRequest_Q4_Col41_Q4_Col78.Q4_Col43[0],
        flattenRequest_Q4_Col41_Q4_Col78.Q4_Col43[0s:10h]), null))
257 join_flattenRequest = select(flattenRequest, Q4_Col40 as flattenRequest_Q4_Col40, Q4_Col41 as
        flattenRequest_Q4_Col41, Q4_Col43 as flattenRequest_Q4_Col43, Q4_Col80 as flattenRequest_Q4_Col80,
        Q4_Col88 as flattenRequest_Q4_Col88, Q4_Col89 as flattenRequest_Q4_Col89, Q4_Col90 as
        flattenRequest_Q4_Col90, Q4_Col85 as flattenRequest_Q4_Col85, Q4_Col45 as flattenRequest_Q4_Col45,
        Q4_Col39 as flattenRequest_Q4_Col39, Q4_Col47 as flattenRequest_Q4_Col47, Q4_Col59 as
        flattenRequest_Q4_Col59, Q4_Col91 as flattenRequest_Q4_Col91, Q4_Col78 as flattenRequest_Q4_Col78,
        Q4_Col92 as flattenRequest_Q4_Col92, Q4_Col93 as flattenRequest_Q4_Col93, Q4_Col94 as
        flattenRequest_Q4_Col94, Q4_Col81 as flattenRequest_Q4_Col81, Q4_Col95 as flattenRequest_Q4_Col95,
        Q4_Col96 as flattenRequest_Q4_Col96, Q4_Col97 as flattenRequest_Q4_Col97, Q4_Col98 as
        flattenRequest_Q4_Col98, Q4_Col99 as flattenRequest_Q4_Col99, Q4_Col100 as flattenRequest_Q4_Col100,
        Q4_Col101 as flattenRequest_Q4_Col101, Q4_Col102 as flattenRequest_Q4_Col102, Q4_Col103 as
        flattenRequest_Q4_Col103, Q4_Col104 as flattenRequest_Q4_Col104, Q4_Col79 as
        flattenRequest_Q4_Col79, Q4_Col105 as flattenRequest_Q4_Col105, Q4_Col106 as
        flattenRequest_Q4_Col106, Q4_Col107 as flattenRequest_Q4_Col107, Q4_Col48 as
        flattenRequest_Q4_Col48, Q4_Col49 as flattenRequest_Q4_Col49, Q4_Col108 as flattenRequest_Q4_Col108,
        Q4_Col109 as flattenRequest_Q4_Col109, Q4_Col110 as flattenRequest_Q4_Col110, Q4_Col111 as
        flattenRequest_Q4_Col111, Q4_Col112 as flattenRequest_Q4_Col112, Q4_Col113 as
        flattenRequest_Q4_Col113, Q4_Col77 as flattenRequest_Q4_Col77, Q4_Col82 as flattenRequest_Q4_Col82,
        Q4_Col83 as flattenRequest_Q4_Col83, Q4_Col84 as flattenRequest_Q4_Col84, Q4_Col114 as
        flattenRequest_Q4_Col114, Q4_Col115 as flattenRequest_Q4_Col115, Q4_Col116 as
        flattenRequest_Q4_Col116, Q4_Col117 as flattenRequest_Q4_Col117, Q4_Col118 as
        flattenRequest_Q4_Col118, Q4_Col119 as flattenRequest_Q4_Col119, Q4_Col120 as
        flattenRequest_Q4_Col120, Q4_Col121 as flattenRequest_Q4_Col121, Q4_Col122 as
        flattenRequest_Q4_Col122, Q4_Col123 as flattenRequest_Q4_Col123, Q4_Col124 as
        flattenRequest_Q4_Col124, Q4_Col125 as flattenRequest_Q4_Col125, Q4_Col126 as
        flattenRequest_Q4_Col126, Q4_Col127 as flattenRequest_Q4_Col127, Q4_Col128 as
        flattenRequest_Q4_Col128, Q4_Col129 as flattenRequest_Q4_Col129, Q4_Col130 as
        flattenRequest_Q4_Col130, Q4_Col131 as flattenRequest_Q4_Col131, Q4_Col132 as
        flattenRequest_Q4_Col132, Q4_Col133 as flattenRequest_Q4_Col133, Q4_Col134 as
        flattenRequest_Q4_Col134, Q4_Col135 as flattenRequest_Q4_Col135, Q4_Col136 as
        flattenRequest_Q4_Col136, Q4_Col137 as flattenRequest_Q4_Col137, Q4_Col138 as
        flattenRequest_Q4_Col138, Q4_Col139 as flattenRequest_Q4_Col139, Q4_Col140 as
        flattenRequest_Q4_Col140, Q4_Col141 as flattenRequest_Q4_Col141, Q4_Col142 as
        flattenRequest_Q4_Col142, Q4_Col143 as flattenRequest_Q4_Col143, Q4_Col144 as
        flattenRequest_Q4_Col144, Q4_Col145 as flattenRequest_Q4_Col145, Q4_Col146 as
        flattenRequest_Q4_Col146, Q4_Col147 as flattenRequest_Q4_Col147, Q4_Col148 as
        flattenRequest_Q4_Col148, Q4_Col149 as flattenRequest_Q4_Col149, Q4_Col150 as
        flattenRequest_Q4_Col150, Q4_Col151 as flattenRequest_Q4_Col151, Q4_Col152 as
        flattenRequest_Q4_Col152, Q4_Col153 as flattenRequest_Q4_Col153, Q4_Col154 as
        flattenRequest_Q4_Col154, Q4_Col155 as flattenRequest_Q4_Col155, Q4_Col156 as
        flattenRequest_Q4_Col156, Q4_Col157 as flattenRequest_Q4_Col157, Q4_Col158 as
        flattenRequest_Q4_Col158, Q4_Col159 as flattenRequest_Q4_Col159, Q4_Col160 as
        flattenRequest_Q4_Col160, Q4_Col161 as flattenRequest_Q4_Col161, Q4_Col162 as
        flattenRequest_Q4_Col162, Q4_Col163 as flattenRequest_Q4_Col163, Q4_Col164 as
        flattenRequest_Q4_Col164, Q4_Col165 as flattenRequest_Q4_Col165, Q4_Col166 as
        flattenRequest_Q4_Col166, Q4_Col167 as flattenRequest_Q4_Col167, Q4_Col168 as
        flattenRequest_Q4_Col168, Q4_Col169 as flattenRequest_Q4_Col169, Q4_Col170 as
        flattenRequest_Q4_Col170, Q4_Col171 as flattenRequest_Q4_Col171, Q4_Col172 as
```

```
    flattenRequest_Q4_Col172, Q4_Col173 as flattenRequest_Q4_Col173, Q4_Col174 as
    flattenRequest_Q4_Col174, Q4_Col175 as flattenRequest_Q4_Col175, Q4_Col176 as
    flattenRequest_Q4_Col176, Q4_Col177 as flattenRequest_Q4_Col177, Q4_Col178 as
    flattenRequest_Q4_Col178, Q4_Col179 as flattenRequest_Q4_Col179, Q4_Col180 as
    flattenRequest_Q4_Col180, Q4_Col181 as flattenRequest_Q4_Col181, Q4_Col182 as
    flattenRequest_Q4_Col182, Q4_Col183 as flattenRequest_Q4_Col183, Q4_Col184 as
    flattenRequest_Q4_Col184, Q4_Col185 as flattenRequest_Q4_Col185, Q4_Col186 as
    flattenRequest_Q4_Col186, Q4_Col187 as flattenRequest_Q4_Col187, Q4_Col188 as
    flattenRequest_Q4_Col188, Q4_Col189 as flattenRequest_Q4_Col189, Q4_Col190 as
    flattenRequest_Q4_Col190, Q4_Col191 as flattenRequest_Q4_Col191, Q4_Col192 as
    flattenRequest_Q4_Col192)
join_action = select(action, Q4_Col40 as action_Q4_Col40, Q4_Col41 as action_Q4_Col41, Q4_Col0 as
    action_Q4_Col0, Q4_Col42 as action_Q4_Col42)
join_flattenRequest_join_action_left = leftjoin(join_flattenRequest, join_action,
    "join_flattenRequest.flattenRequest_Q4_Col40 = join_action.action_Q4_Col40")
join_flattenRequest_join_action_left_window = window(join_flattenRequest_join_action_left,
    "join_flattenRequest_join_action_left_join_output")
f_flattenRequest_action_Q4_Col42_direct_2 =
    column(join_flattenRequest_join_action_left_window.action_Q4_Col42[0])
leftjoinkey_flattenRequest_Q4_Col40 =
    output(join_flattenRequest_join_action_left_window.flattenRequest_Q4_Col40[0])
join_flattenRequest_join_action_left_join_output_flattenRequest_output =
    leftjoin(join_flattenRequest_join_action_left_join_output, flattenRequest_output,
    "join_flattenRequest_join_action_left_join_output.leftjoinkey_flattenRequest_Q4_Col40 =
    flattenRequest_output.flattenRequest_outputkey_flattenRequest_Q4_Col40")
```

B.6 Fraud Detection (Q5)

```
key_flatten_request_Q5_Col100_1 = window(table=flatten_request, output="flatten_request_output")
flatten_request_outputkey_flatten_request_Q5_Col100 = output(key_flatten_request_Q5_Col100_1.Q5_Col100[0])
f_original_Q5_Col101_0 = column(key_flatten_request_Q5_Col100_1.Q5_Col101[0])
f_original_Q5_Col100_1 = column(key_flatten_request_Q5_Col100_1.Q5_Col100[0])
f_original_Q5_Col0_639 = column(key_flatten_request_Q5_Col100_1.Q5_Col0[0])
f_original_Q5_Col102_640 = column(key_flatten_request_Q5_Col100_1.Q5_Col102[0])
join_flatten_request = select(flatten_request, Q5_Col100 as flatten_request_Q5_Col100, Q5_Col101 as
    flatten_request_Q5_Col101, Q5_Col0 as flatten_request_Q5_Col0, Q5_Col102 as
    flatten_request_Q5_Col102)
join_feedback = select(feedback, Q5_Col100 as feedback_Q5_Col100, Q5_Col101 as feedback_Q5_Col101,
    Q5_Col1 as feedback_Q5_Col1, Q5_Col203 as feedback_Q5_Col203)
join_CUST_f7 = select(CUST_f7, Q5_Col1 as CUST_f7_Q5_Col1, Q5_Col0 as CUST_f7_Q5_Col0, Q5_Col147 as
    CUST_f7_Q5_Col147, Q5_Col148 as CUST_f7_Q5_Col148, Q5_Col149 as CUST_f7_Q5_Col149, Q5_Col150 as
    CUST_f7_Q5_Col150, Q5_Col151 as CUST_f7_Q5_Col151, Q5_Col152 as CUST_f7_Q5_Col152, Q5_Col153 as
    CUST_f7_Q5_Col153, Q5_Col154 as CUST_f7_Q5_Col154)
join_sag_efs_tbproduct_F_b = select(sag_efs_tbproduct_F_b, Q5_Col1 as sag_efs_tbproduct_F_b_Q5_Col1,
    Q5_Col102 as sag_efs_tbproduct_F_b_Q5_Col102, Q5_Col204 as sag_efs_tbproduct_F_b_Q5_Col204,
    Q5_Col205 as sag_efs_tbproduct_F_b_Q5_Col205, Q5_Col206 as sag_efs_tbproduct_F_b_Q5_Col206,
    Q5_Col207 as sag_efs_tbproduct_F_b_Q5_Col207, Q5_Col208 as sag_efs_tbproduct_F_b_Q5_Col208,
    Q5_Col209 as sag_efs_tbproduct_F_b_Q5_Col209, Q5_Col210 as sag_efs_tbproduct_F_b_Q5_Col210,
    Q5_Col211 as sag_efs_tbproduct_F_b_Q5_Col211, Q5_Col212 as sag_efs_tbproduct_F_b_Q5_Col212,
    Q5_Col213 as sag_efs_tbproduct_F_b_Q5_Col213, Q5_Col214 as sag_efs_tbproduct_F_b_Q5_Col214,
    Q5_Col215 as sag_efs_tbproduct_F_b_Q5_Col215, Q5_Col216 as sag_efs_tbproduct_F_b_Q5_Col216,
    Q5_Col217 as sag_efs_tbproduct_F_b_Q5_Col217, Q5_Col218 as sag_efs_tbproduct_F_b_Q5_Col218,
    Q5_Col219 as sag_efs_tbproduct_F_b_Q5_Col219, Q5_Col220 as sag_efs_tbproduct_F_b_Q5_Col220,
    Q5_Col221 as sag_efs_tbproduct_F_b_Q5_Col221, Q5_Col222 as sag_efs_tbproduct_F_b_Q5_Col222,
    Q5_Col223 as sag_efs_tbproduct_F_b_Q5_Col223, Q5_Col224 as sag_efs_tbproduct_F_b_Q5_Col224,
    Q5_Col225 as sag_efs_tbproduct_F_b_Q5_Col225, Q5_Col226 as sag_efs_tbproduct_F_b_Q5_Col226,
    Q5_Col227 as sag_efs_tbproduct_F_b_Q5_Col227, Q5_Col228 as sag_efs_tbproduct_F_b_Q5_Col228,
    Q5_Col229 as sag_efs_tbproduct_F_b_Q5_Col229, Q5_Col230 as sag_efs_tbproduct_F_b_Q5_Col230,
```

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Q5_Col231 as sag_efs_tbproduct_F_b_Q5_Col231, Q5_Col232 as sag_efs_tbproduct_F_b_Q5_Col232,
Q5_Col233 as sag_efs_tbproduct_F_b_Q5_Col233, Q5_Col234 as sag_efs_tbproduct_F_b_Q5_Col234,
Q5_Col235 as sag_efs_tbproduct_F_b_Q5_Col235, Q5_Col236 as sag_efs_tbproduct_F_b_Q5_Col236,
Q5_Col237 as sag_efs_tbproduct_F_b_Q5_Col237, Q5_Col238 as sag_efs_tbproduct_F_b_Q5_Col238,
Q5_Col239 as sag_efs_tbproduct_F_b_Q5_Col239, Q5_Col240 as sag_efs_tbproduct_F_b_Q5_Col240,
Q5_Col241 as sag_efs_tbproduct_F_b_Q5_Col241, Q5_Col242 as sag_efs_tbproduct_F_b_Q5_Col242,
Q5_Col243 as sag_efs_tbproduct_F_b_Q5_Col243, Q5_Col244 as sag_efs_tbproduct_F_b_Q5_Col244,
Q5_Col245 as sag_efs_tbproduct_F_b_Q5_Col245, Q5_Col246 as sag_efs_tbproduct_F_b_Q5_Col246,
Q5_Col247 as sag_efs_tbproduct_F_b_Q5_Col247, Q5_Col248 as sag_efs_tbproduct_F_b_Q5_Col248,
Q5_Col249 as sag_efs_tbproduct_F_b_Q5_Col249, Q5_Col250 as sag_efs_tbproduct_F_b_Q5_Col250,
Q5_Col251 as sag_efs_tbproduct_F_b_Q5_Col251, Q5_Col252 as sag_efs_tbproduct_F_b_Q5_Col252,
Q5_Col253 as sag_efs_tbproduct_F_b_Q5_Col253, Q5_Col254 as sag_efs_tbproduct_F_b_Q5_Col254,
Q5_Col255 as sag_efs_tbproduct_F_b_Q5_Col255, Q5_Col256 as sag_efs_tbproduct_F_b_Q5_Col256,
Q5_Col257 as sag_efs_tbproduct_F_b_Q5_Col257, Q5_Col258 as sag_efs_tbproduct_F_b_Q5_Col258,
Q5_Col259 as sag_efs_tbproduct_F_b_Q5_Col259, Q5_Col260 as sag_efs_tbproduct_F_b_Q5_Col260,
Q5_Col261 as sag_efs_tbproduct_F_b_Q5_Col261, Q5_Col262 as sag_efs_tbproduct_F_b_Q5_Col262,
Q5_Col263 as sag_efs_tbproduct_F_b_Q5_Col263, Q5_Col264 as sag_efs_tbproduct_F_b_Q5_Col264,
Q5_Col265 as sag_efs_tbproduct_F_b_Q5_Col265, Q5_Col266 as sag_efs_tbproduct_F_b_Q5_Col266,
Q5_Col267 as sag_efs_tbproduct_F_b_Q5_Col267, Q5_Col268 as sag_efs_tbproduct_F_b_Q5_Col268,
Q5_Col269 as sag_efs_tbproduct_F_b_Q5_Col269, Q5_Col270 as sag_efs_tbproduct_F_b_Q5_Col270,
Q5_Col271 as sag_efs_tbproduct_F_b_Q5_Col271, Q5_Col272 as sag_efs_tbproduct_F_b_Q5_Col272,
Q5_Col273 as sag_efs_tbproduct_F_b_Q5_Col273, Q5_Col274 as sag_efs_tbproduct_F_b_Q5_Col274,
Q5_Col275 as sag_efs_tbproduct_F_b_Q5_Col275, Q5_Col276 as sag_efs_tbproduct_F_b_Q5_Col276,
Q5_Col277 as sag_efs_tbproduct_F_b_Q5_Col277, Q5_Col278 as sag_efs_tbproduct_F_b_Q5_Col278,
Q5_Col279 as sag_efs_tbproduct_F_b_Q5_Col279, Q5_Col280 as sag_efs_tbproduct_F_b_Q5_Col280,
Q5_Col281 as sag_efs_tbproduct_F_b_Q5_Col281, Q5_Col282 as sag_efs_tbproduct_F_b_Q5_Col282,
Q5_Col283 as sag_efs_tbproduct_F_b_Q5_Col283, Q5_Col284 as sag_efs_tbproduct_F_b_Q5_Col284,
Q5_Col285 as sag_efs_tbproduct_F_b_Q5_Col285, Q5_Col286 as sag_efs_tbproduct_F_b_Q5_Col286,
Q5_Col287 as sag_efs_tbproduct_F_b_Q5_Col287, Q5_Col288 as sag_efs_tbproduct_F_b_Q5_Col288,
Q5_Col289 as sag_efs_tbproduct_F_b_Q5_Col289, Q5_Col290 as sag_efs_tbproduct_F_b_Q5_Col290,
Q5_Col291 as sag_efs_tbproduct_F_b_Q5_Col291, Q5_Col292 as sag_efs_tbproduct_F_b_Q5_Col292,
Q5_Col293 as sag_efs_tbproduct_F_b_Q5_Col293, Q5_Col294 as sag_efs_tbproduct_F_b_Q5_Col294,
Q5_Col295 as sag_efs_tbproduct_F_b_Q5_Col295, Q5_Col296 as sag_efs_tbproduct_F_b_Q5_Col296,
Q5_Col297 as sag_efs_tbproduct_F_b_Q5_Col297, Q5_Col298 as sag_efs_tbproduct_F_b_Q5_Col298,
Q5_Col299 as sag_efs_tbproduct_F_b_Q5_Col299, Q5_Col300 as sag_efs_tbproduct_F_b_Q5_Col300,
Q5_Col301 as sag_efs_tbproduct_F_b_Q5_Col301, Q5_Col302 as sag_efs_tbproduct_F_b_Q5_Col302,
Q5_Col303 as sag_efs_tbproduct_F_b_Q5_Col303, Q5_Col304 as sag_efs_tbproduct_F_b_Q5_Col304,
Q5_Col305 as sag_efs_tbproduct_F_b_Q5_Col305, Q5_Col306 as sag_efs_tbproduct_F_b_Q5_Col306,
Q5_Col307 as sag_efs_tbproduct_F_b_Q5_Col307, Q5_Col308 as sag_efs_tbproduct_F_b_Q5_Col308,
Q5_Col201 as sag_efs_tbproduct_F_b_Q5_Col201, Q5_Col309 as sag_efs_tbproduct_F_b_Q5_Col309,
Q5_Col310 as sag_efs_tbproduct_F_b_Q5_Col310, Q5_Col311 as sag_efs_tbproduct_F_b_Q5_Col311,
Q5_Col312 as sag_efs_tbproduct_F_b_Q5_Col312, Q5_Col313 as sag_efs_tbproduct_F_b_Q5_Col313,
Q5_Col314 as sag_efs_tbproduct_F_b_Q5_Col314, Q5_Col315 as sag_efs_tbproduct_F_b_Q5_Col315,
Q5_Col316 as sag_efs_tbproduct_F_b_Q5_Col316, Q5_Col317 as sag_efs_tbproduct_F_b_Q5_Col317,
Q5_Col318 as sag_efs_tbproduct_F_b_Q5_Col318, Q5_Col319 as sag_efs_tbproduct_F_b_Q5_Col319,
Q5_Col320 as sag_efs_tbproduct_F_b_Q5_Col320, Q5_Col321 as sag_efs_tbproduct_F_b_Q5_Col321,
Q5_Col322 as sag_efs_tbproduct_F_b_Q5_Col322, Q5_Col323 as sag_efs_tbproduct_F_b_Q5_Col323,
Q5_Col324 as sag_efs_tbproduct_F_b_Q5_Col324, Q5_Col325 as sag_efs_tbproduct_F_b_Q5_Col325,
Q5_Col326 as sag_efs_tbproduct_F_b_Q5_Col326, Q5_Col327 as sag_efs_tbproduct_F_b_Q5_Col327,
Q5_Col328 as sag_efs_tbproduct_F_b_Q5_Col328, Q5_Col329 as sag_efs_tbproduct_F_b_Q5_Col329,
Q5_Col330 as sag_efs_tbproduct_F_b_Q5_Col330, Q5_Col331 as sag_efs_tbproduct_F_b_Q5_Col331,
Q5_Col332 as sag_efs_tbproduct_F_b_Q5_Col332, Q5_Col333 as sag_efs_tbproduct_F_b_Q5_Col333,
Q5_Col334 as sag_efs_tbproduct_F_b_Q5_Col334, Q5_Col335 as sag_efs_tbproduct_F_b_Q5_Col335,
Q5_Col336 as sag_efs_tbproduct_F_b_Q5_Col336, Q5_Col337 as sag_efs_tbproduct_F_b_Q5_Col337,
Q5_Col338 as sag_efs_tbproduct_F_b_Q5_Col338, Q5_Col339 as sag_efs_tbproduct_F_b_Q5_Col339,
Q5_Col340 as sag_efs_tbproduct_F_b_Q5_Col340, Q5_Col341 as sag_efs_tbproduct_F_b_Q5_Col341,
Q5_Col342 as sag_efs_tbproduct_F_b_Q5_Col342, Q5_Col343 as sag_efs_tbproduct_F_b_Q5_Col343,
Q5_Col344 as sag_efs_tbproduct_F_b_Q5_Col344, Q5_Col345 as sag_efs_tbproduct_F_b_Q5_Col345,
Q5_Col346 as sag_efs_tbproduct_F_b_Q5_Col346, Q5_Col347 as sag_efs_tbproduct_F_b_Q5_Col347,
Q5_Col348 as sag_efs_tbproduct_F_b_Q5_Col348, Q5_Col349 as sag_efs_tbproduct_F_b_Q5_Col349,
Q5_Col350 as sag_efs_tbproduct_F_b_Q5_Col350, Q5_Col351 as sag_efs_tbproduct_F_b_Q5_Col351,
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```
    Q5_Col352 as sag_efs_tbproduct_F_b_Q5_Col352, Q5_Col353 as sag_efs_tbproduct_F_b_Q5_Col353,
    Q5_Col354 as sag_efs_tbproduct_F_b_Q5_Col354, Q5_Col355 as sag_efs_tbproduct_F_b_Q5_Col355)
join_LINK2_f6 = select(LINK2_f6, Q5_Col1 as LINK2_f6_Q5_Col1, Q5_Col0 as LINK2_f6_Q5_Col0, Q5_Col155 as
    LINK2_f6_Q5_Col155, Q5_Col156 as LINK2_f6_Q5_Col156, Q5_Col157 as LINK2_f6_Q5_Col157, Q5_Col158 as
    LINK2_f6_Q5_Col158, Q5_Col159 as LINK2_f6_Q5_Col159, Q5_Col160 as LINK2_f6_Q5_Col160, Q5_Col161 as
    LINK2_f6_Q5_Col161, Q5_Col162 as LINK2_f6_Q5_Col162, Q5_Col163 as LINK2_f6_Q5_Col163, Q5_Col164 as
    LINK2_f6_Q5_Col164, Q5_Col165 as LINK2_f6_Q5_Col165, Q5_Col166 as LINK2_f6_Q5_Col166, Q5_Col167 as
    LINK2_f6_Q5_Col167, Q5_Col168 as LINK2_f6_Q5_Col168, Q5_Col169 as LINK2_f6_Q5_Col169, Q5_Col170 as
    LINK2_f6_Q5_Col170, Q5_Col171 as LINK2_f6_Q5_Col171, Q5_Col172 as LINK2_f6_Q5_Col172, Q5_Col173 as
    LINK2_f6_Q5_Col173, Q5_Col174 as LINK2_f6_Q5_Col174, Q5_Col175 as LINK2_f6_Q5_Col175, Q5_Col176 as
    LINK2_f6_Q5_Col176, Q5_Col177 as LINK2_f6_Q5_Col177, Q5_Col178 as LINK2_f6_Q5_Col178, Q5_Col179 as
    LINK2_f6_Q5_Col179, Q5_Col180 as LINK2_f6_Q5_Col180, Q5_Col181 as LINK2_f6_Q5_Col181, Q5_Col182 as
    LINK2_f6_Q5_Col182, Q5_Col183 as LINK2_f6_Q5_Col183, Q5_Col184 as LINK2_f6_Q5_Col184, Q5_Col185 as
    LINK2_f6_Q5_Col185, Q5_Col186 as LINK2_f6_Q5_Col186, Q5_Col187 as LINK2_f6_Q5_Col187, Q5_Col188 as
    LINK2_f6_Q5_Col188, Q5_Col189 as LINK2_f6_Q5_Col189, Q5_Col190 as LINK2_f6_Q5_Col190, Q5_Col191 as
    LINK2_f6_Q5_Col191, Q5_Col192 as LINK2_f6_Q5_Col192, Q5_Col193 as LINK2_f6_Q5_Col193, Q5_Col194 as
    LINK2_f6_Q5_Col194, Q5_Col195 as LINK2_f6_Q5_Col195, Q5_Col196 as LINK2_f6_Q5_Col196, Q5_Col197 as
    LINK2_f6_Q5_Col197, Q5_Col198 as LINK2_f6_Q5_Col198, Q5_Col199 as LINK2_f6_Q5_Col199, Q5_Col200 as
    LINK2_f6_Q5_Col200, Q5_Col201 as LINK2_f6_Q5_Col201, Q5_Col202 as LINK2_f6_Q5_Col202, Q5_Col33 as
    LINK2_f6_Q5_Col33, Q5_Col34 as LINK2_f6_Q5_Col34, Q5_Col35 as LINK2_f6_Q5_Col35, Q5_Col36 as
    LINK2_f6_Q5_Col36, Q5_Col37 as LINK2_f6_Q5_Col37, Q5_Col38 as LINK2_f6_Q5_Col38, Q5_Col39 as
    LINK2_f6_Q5_Col39, Q5_Col40 as LINK2_f6_Q5_Col40, Q5_Col41 as LINK2_f6_Q5_Col41, Q5_Col42 as
    LINK2_f6_Q5_Col42, Q5_Col43 as LINK2_f6_Q5_Col43, Q5_Col44 as LINK2_f6_Q5_Col44, Q5_Col45 as
    LINK2_f6_Q5_Col45, Q5_Col46 as LINK2_f6_Q5_Col46, Q5_Col47 as LINK2_f6_Q5_Col47, Q5_Col48 as
    LINK2_f6_Q5_Col48, Q5_Col49 as LINK2_f6_Q5_Col49, Q5_Col50 as LINK2_f6_Q5_Col50, Q5_Col51 as
    LINK2_f6_Q5_Col51, Q5_Col52 as LINK2_f6_Q5_Col52, Q5_Col53 as LINK2_f6_Q5_Col53, Q5_Col54 as
    LINK2_f6_Q5_Col54, Q5_Col55 as LINK2_f6_Q5_Col55, Q5_Col56 as LINK2_f6_Q5_Col56, Q5_Col57 as
    LINK2_f6_Q5_Col57, Q5_Col58 as LINK2_f6_Q5_Col58, Q5_Col59 as LINK2_f6_Q5_Col59, Q5_Col60 as
    LINK2_f6_Q5_Col60, Q5_Col61 as LINK2_f6_Q5_Col61, Q5_Col62 as LINK2_f6_Q5_Col62, Q5_Col63 as
    LINK2_f6_Q5_Col63, Q5_Col64 as LINK2_f6_Q5_Col64, Q5_Col65 as LINK2_f6_Q5_Col65, Q5_Col66 as
    LINK2_f6_Q5_Col66, Q5_Col67 as LINK2_f6_Q5_Col67, Q5_Col68 as LINK2_f6_Q5_Col68, Q5_Col69 as
    LINK2_f6_Q5_Col69, Q5_Col70 as LINK2_f6_Q5_Col70, Q5_Col71 as LINK2_f6_Q5_Col71, Q5_Col72 as
    LINK2_f6_Q5_Col72, Q5_Col73 as LINK2_f6_Q5_Col73, Q5_Col74 as LINK2_f6_Q5_Col74, Q5_Col75 as
    LINK2_f6_Q5_Col75, Q5_Col76 as LINK2_f6_Q5_Col76, Q5_Col77 as LINK2_f6_Q5_Col77, Q5_Col78 as
    LINK2_f6_Q5_Col78, Q5_Col79 as LINK2_f6_Q5_Col79, Q5_Col80 as LINK2_f6_Q5_Col80, Q5_Col81 as
    LINK2_f6_Q5_Col81, Q5_Col82 as LINK2_f6_Q5_Col82)
join_LINK1_f5 = select(LINK1_f5, Q5_Col1 as LINK1_f5_Q5_Col1, Q5_Col0 as LINK1_f5_Q5_Col0, Q5_Col155 as
    LINK1_f5_Q5_Col155, Q5_Col156 as LINK1_f5_Q5_Col156, Q5_Col157 as LINK1_f5_Q5_Col157, Q5_Col158 as
    LINK1_f5_Q5_Col158, Q5_Col159 as LINK1_f5_Q5_Col159, Q5_Col160 as LINK1_f5_Q5_Col160, Q5_Col161 as
    LINK1_f5_Q5_Col161, Q5_Col162 as LINK1_f5_Q5_Col162, Q5_Col163 as LINK1_f5_Q5_Col163, Q5_Col164 as
    LINK1_f5_Q5_Col164, Q5_Col165 as LINK1_f5_Q5_Col165, Q5_Col166 as LINK1_f5_Q5_Col166, Q5_Col167 as
    LINK1_f5_Q5_Col167, Q5_Col168 as LINK1_f5_Q5_Col168, Q5_Col169 as LINK1_f5_Q5_Col169, Q5_Col170 as
    LINK1_f5_Q5_Col170, Q5_Col171 as LINK1_f5_Q5_Col171, Q5_Col172 as LINK1_f5_Q5_Col172, Q5_Col173 as
    LINK1_f5_Q5_Col173, Q5_Col174 as LINK1_f5_Q5_Col174, Q5_Col175 as LINK1_f5_Q5_Col175, Q5_Col176 as
    LINK1_f5_Q5_Col176, Q5_Col177 as LINK1_f5_Q5_Col177, Q5_Col178 as LINK1_f5_Q5_Col178, Q5_Col179 as
    LINK1_f5_Q5_Col179, Q5_Col180 as LINK1_f5_Q5_Col180, Q5_Col181 as LINK1_f5_Q5_Col181, Q5_Col182 as
    LINK1_f5_Q5_Col182, Q5_Col183 as LINK1_f5_Q5_Col183, Q5_Col184 as LINK1_f5_Q5_Col184, Q5_Col185 as
    LINK1_f5_Q5_Col185, Q5_Col186 as LINK1_f5_Q5_Col186, Q5_Col187 as LINK1_f5_Q5_Col187, Q5_Col188 as
    LINK1_f5_Q5_Col188, Q5_Col189 as LINK1_f5_Q5_Col189, Q5_Col190 as LINK1_f5_Q5_Col190, Q5_Col191 as
    LINK1_f5_Q5_Col191, Q5_Col192 as LINK1_f5_Q5_Col192, Q5_Col193 as LINK1_f5_Q5_Col193, Q5_Col194 as
    LINK1_f5_Q5_Col194, Q5_Col195 as LINK1_f5_Q5_Col195, Q5_Col196 as LINK1_f5_Q5_Col196, Q5_Col197 as
    LINK1_f5_Q5_Col197, Q5_Col198 as LINK1_f5_Q5_Col198, Q5_Col199 as LINK1_f5_Q5_Col199, Q5_Col200 as
    LINK1_f5_Q5_Col200, Q5_Col201 as LINK1_f5_Q5_Col201, Q5_Col202 as LINK1_f5_Q5_Col202, Q5_Col33 as
    LINK1_f5_Q5_Col33, Q5_Col34 as LINK1_f5_Q5_Col34, Q5_Col35 as LINK1_f5_Q5_Col35, Q5_Col36 as
    LINK1_f5_Q5_Col36, Q5_Col37 as LINK1_f5_Q5_Col37, Q5_Col38 as LINK1_f5_Q5_Col38, Q5_Col39 as
    LINK1_f5_Q5_Col39, Q5_Col40 as LINK1_f5_Q5_Col40, Q5_Col41 as LINK1_f5_Q5_Col41, Q5_Col42 as
    LINK1_f5_Q5_Col42, Q5_Col43 as LINK1_f5_Q5_Col43, Q5_Col44 as LINK1_f5_Q5_Col44, Q5_Col45 as
    LINK1_f5_Q5_Col45, Q5_Col46 as LINK1_f5_Q5_Col46, Q5_Col47 as LINK1_f5_Q5_Col47, Q5_Col48 as
    LINK1_f5_Q5_Col48, Q5_Col49 as LINK1_f5_Q5_Col49, Q5_Col50 as LINK1_f5_Q5_Col50, Q5_Col51 as
    LINK1_f5_Q5_Col51, Q5_Col52 as LINK1_f5_Q5_Col52, Q5_Col53 as LINK1_f5_Q5_Col53, Q5_Col54 as
    LINK1_f5_Q5_Col54, Q5_Col55 as LINK1_f5_Q5_Col55, Q5_Col56 as LINK1_f5_Q5_Col56, Q5_Col57 as
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    LINK1_f5_Q5_Col57, Q5_Col58 as LINK1_f5_Q5_Col58, Q5_Col59 as LINK1_f5_Q5_Col59, Q5_Col60 as
    LINK1_f5_Q5_Col60, Q5_Col61 as LINK1_f5_Q5_Col61, Q5_Col62 as LINK1_f5_Q5_Col62, Q5_Col63 as
    LINK1_f5_Q5_Col63, Q5_Col64 as LINK1_f5_Q5_Col64, Q5_Col65 as LINK1_f5_Q5_Col65, Q5_Col66 as
    LINK1_f5_Q5_Col66, Q5_Col67 as LINK1_f5_Q5_Col67, Q5_Col68 as LINK1_f5_Q5_Col68, Q5_Col69 as
    LINK1_f5_Q5_Col69, Q5_Col70 as LINK1_f5_Q5_Col70, Q5_Col71 as LINK1_f5_Q5_Col71, Q5_Col72 as
    LINK1_f5_Q5_Col72, Q5_Col73 as LINK1_f5_Q5_Col73, Q5_Col74 as LINK1_f5_Q5_Col74, Q5_Col75 as
    LINK1_f5_Q5_Col75, Q5_Col76 as LINK1_f5_Q5_Col76, Q5_Col77 as LINK1_f5_Q5_Col77, Q5_Col78 as
    LINK1_f5_Q5_Col78, Q5_Col79 as LINK1_f5_Q5_Col79, Q5_Col80 as LINK1_f5_Q5_Col80, Q5_Col81 as
    LINK1_f5_Q5_Col81, Q5_Col82 as LINK1_f5_Q5_Col82)
13 join_AUM_f4 = select(AUM_f4, Q5_Col1 as AUM_f4_Q5_Col1, Q5_Col0 as AUM_f4_Q5_Col0, Q5_Col103 as
    AUM_f4_Q5_Col103, Q5_Col104 as AUM_f4_Q5_Col104, Q5_Col105 as AUM_f4_Q5_Col105, Q5_Col106 as
    AUM_f4_Q5_Col106, Q5_Col107 as AUM_f4_Q5_Col107, Q5_Col108 as AUM_f4_Q5_Col108, Q5_Col109 as
    AUM_f4_Q5_Col109, Q5_Col110 as AUM_f4_Q5_Col110, Q5_Col111 as AUM_f4_Q5_Col111, Q5_Col112 as
    AUM_f4_Q5_Col112, Q5_Col113 as AUM_f4_Q5_Col113, Q5_Col114 as AUM_f4_Q5_Col114, Q5_Col115 as
    AUM_f4_Q5_Col115, Q5_Col116 as AUM_f4_Q5_Col116, Q5_Col117 as AUM_f4_Q5_Col117, Q5_Col118 as
    AUM_f4_Q5_Col118, Q5_Col119 as AUM_f4_Q5_Col119, Q5_Col120 as AUM_f4_Q5_Col120, Q5_Col121 as
    AUM_f4_Q5_Col121, Q5_Col122 as AUM_f4_Q5_Col122, Q5_Col123 as AUM_f4_Q5_Col123, Q5_Col124 as
    AUM_f4_Q5_Col124, Q5_Col125 as AUM_f4_Q5_Col125, Q5_Col126 as AUM_f4_Q5_Col126, Q5_Col127 as
    AUM_f4_Q5_Col127, Q5_Col128 as AUM_f4_Q5_Col128, Q5_Col129 as AUM_f4_Q5_Col129, Q5_Col130 as
    AUM_f4_Q5_Col130, Q5_Col131 as AUM_f4_Q5_Col131, Q5_Col132 as AUM_f4_Q5_Col132, Q5_Col133 as
    AUM_f4_Q5_Col133, Q5_Col134 as AUM_f4_Q5_Col134, Q5_Col135 as AUM_f4_Q5_Col135, Q5_Col136 as
    AUM_f4_Q5_Col136, Q5_Col137 as AUM_f4_Q5_Col137, Q5_Col138 as AUM_f4_Q5_Col138, Q5_Col139 as
    AUM_f4_Q5_Col139, Q5_Col140 as AUM_f4_Q5_Col140, Q5_Col141 as AUM_f4_Q5_Col141, Q5_Col142 as
    AUM_f4_Q5_Col142, Q5_Col30 as AUM_f4_Q5_Col30, Q5_Col143 as AUM_f4_Q5_Col143, Q5_Col144 as
    AUM_f4_Q5_Col144, Q5_Col145 as AUM_f4_Q5_Col145, Q5_Col146 as AUM_f4_Q5_Col146, Q5_Col33 as
    AUM_f4_Q5_Col33, Q5_Col34 as AUM_f4_Q5_Col34, Q5_Col35 as AUM_f4_Q5_Col35, Q5_Col36 as
    AUM_f4_Q5_Col36, Q5_Col37 as AUM_f4_Q5_Col37, Q5_Col38 as AUM_f4_Q5_Col38, Q5_Col39 as
    AUM_f4_Q5_Col39, Q5_Col40 as AUM_f4_Q5_Col40, Q5_Col41 as AUM_f4_Q5_Col41, Q5_Col42 as
    AUM_f4_Q5_Col42, Q5_Col43 as AUM_f4_Q5_Col43, Q5_Col44 as AUM_f4_Q5_Col44, Q5_Col45 as
    AUM_f4_Q5_Col45, Q5_Col46 as AUM_f4_Q5_Col46, Q5_Col47 as AUM_f4_Q5_Col47, Q5_Col48 as
    AUM_f4_Q5_Col48, Q5_Col49 as AUM_f4_Q5_Col49, Q5_Col50 as AUM_f4_Q5_Col50, Q5_Col51 as
    AUM_f4_Q5_Col51, Q5_Col52 as AUM_f4_Q5_Col52, Q5_Col53 as AUM_f4_Q5_Col53, Q5_Col54 as
    AUM_f4_Q5_Col54, Q5_Col55 as AUM_f4_Q5_Col55, Q5_Col56 as AUM_f4_Q5_Col56, Q5_Col57 as
    AUM_f4_Q5_Col57, Q5_Col58 as AUM_f4_Q5_Col58, Q5_Col59 as AUM_f4_Q5_Col59, Q5_Col60 as
    AUM_f4_Q5_Col60, Q5_Col61 as AUM_f4_Q5_Col61, Q5_Col62 as AUM_f4_Q5_Col62, Q5_Col63 as
    AUM_f4_Q5_Col63, Q5_Col64 as AUM_f4_Q5_Col64, Q5_Col65 as AUM_f4_Q5_Col65, Q5_Col66 as
    AUM_f4_Q5_Col66, Q5_Col67 as AUM_f4_Q5_Col67, Q5_Col68 as AUM_f4_Q5_Col68, Q5_Col69 as
    AUM_f4_Q5_Col69, Q5_Col70 as AUM_f4_Q5_Col70, Q5_Col71 as AUM_f4_Q5_Col71, Q5_Col72 as
    AUM_f4_Q5_Col72, Q5_Col73 as AUM_f4_Q5_Col73, Q5_Col74 as AUM_f4_Q5_Col74, Q5_Col75 as
    AUM_f4_Q5_Col75, Q5_Col76 as AUM_f4_Q5_Col76, Q5_Col77 as AUM_f4_Q5_Col77, Q5_Col78 as
    AUM_f4_Q5_Col78, Q5_Col79 as AUM_f4_Q5_Col79, Q5_Col80 as AUM_f4_Q5_Col80, Q5_Col81 as
    AUM_f4_Q5_Col81, Q5_Col82 as AUM_f4_Q5_Col82, Q5_Col83 as AUM_f4_Q5_Col83, Q5_Col84 as
    AUM_f4_Q5_Col84, Q5_Col85 as AUM_f4_Q5_Col85)
14 join_debit3_f3 = select(debit3_f3, Q5_Col0 as debit3_f3_Q5_Col0, Q5_Col1 as debit3_f3_Q5_Col1, Q5_Col2 as
    debit3_f3_Q5_Col2, Q5_Col3 as debit3_f3_Q5_Col3, Q5_Col4 as debit3_f3_Q5_Col4, Q5_Col5 as
    debit3_f3_Q5_Col5, Q5_Col6 as debit3_f3_Q5_Col6, Q5_Col7 as debit3_f3_Q5_Col7, Q5_Col8 as
    debit3_f3_Q5_Col8, Q5_Col9 as debit3_f3_Q5_Col9, Q5_Col10 as debit3_f3_Q5_Col10, Q5_Col11 as
    debit3_f3_Q5_Col11, Q5_Col12 as debit3_f3_Q5_Col12, Q5_Col13 as debit3_f3_Q5_Col13, Q5_Col14 as
    debit3_f3_Q5_Col14, Q5_Col15 as debit3_f3_Q5_Col15, Q5_Col16 as debit3_f3_Q5_Col16, Q5_Col17 as
    debit3_f3_Q5_Col17, Q5_Col18 as debit3_f3_Q5_Col18, Q5_Col19 as debit3_f3_Q5_Col19, Q5_Col20 as
    debit3_f3_Q5_Col20, Q5_Col21 as debit3_f3_Q5_Col21, Q5_Col22 as debit3_f3_Q5_Col22, Q5_Col23 as
    debit3_f3_Q5_Col23, Q5_Col24 as debit3_f3_Q5_Col24, Q5_Col25 as debit3_f3_Q5_Col25, Q5_Col26 as
    debit3_f3_Q5_Col26, Q5_Col27 as debit3_f3_Q5_Col27, Q5_Col28 as debit3_f3_Q5_Col28, Q5_Col29 as
    debit3_f3_Q5_Col29, Q5_Col30 as debit3_f3_Q5_Col30, Q5_Col31 as debit3_f3_Q5_Col31, Q5_Col32 as
    debit3_f3_Q5_Col32, Q5_Col33 as debit3_f3_Q5_Col33, Q5_Col34 as debit3_f3_Q5_Col34, Q5_Col35 as
    debit3_f3_Q5_Col35, Q5_Col36 as debit3_f3_Q5_Col36, Q5_Col37 as debit3_f3_Q5_Col37, Q5_Col38 as
    debit3_f3_Q5_Col38, Q5_Col39 as debit3_f3_Q5_Col39, Q5_Col40 as debit3_f3_Q5_Col40, Q5_Col41 as
    debit3_f3_Q5_Col41, Q5_Col42 as debit3_f3_Q5_Col42, Q5_Col43 as debit3_f3_Q5_Col43, Q5_Col44 as
    debit3_f3_Q5_Col44, Q5_Col45 as debit3_f3_Q5_Col45, Q5_Col46 as debit3_f3_Q5_Col46, Q5_Col47 as
    debit3_f3_Q5_Col47, Q5_Col48 as debit3_f3_Q5_Col48, Q5_Col49 as debit3_f3_Q5_Col49, Q5_Col50 as
    debit3_f3_Q5_Col50, Q5_Col51 as debit3_f3_Q5_Col51, Q5_Col52 as debit3_f3_Q5_Col52, Q5_Col53 as
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    debit3_f3_Q5_Col53, Q5_Col54 as debit3_f3_Q5_Col54, Q5_Col55 as debit3_f3_Q5_Col55, Q5_Col56 as
    debit3_f3_Q5_Col56, Q5_Col57 as debit3_f3_Q5_Col57, Q5_Col58 as debit3_f3_Q5_Col58, Q5_Col59 as
    debit3_f3_Q5_Col59, Q5_Col60 as debit3_f3_Q5_Col60, Q5_Col61 as debit3_f3_Q5_Col61, Q5_Col62 as
    debit3_f3_Q5_Col62, Q5_Col63 as debit3_f3_Q5_Col63, Q5_Col64 as debit3_f3_Q5_Col64, Q5_Col65 as
    debit3_f3_Q5_Col65, Q5_Col66 as debit3_f3_Q5_Col66, Q5_Col67 as debit3_f3_Q5_Col67, Q5_Col68 as
    debit3_f3_Q5_Col68, Q5_Col69 as debit3_f3_Q5_Col69, Q5_Col70 as debit3_f3_Q5_Col70, Q5_Col71 as
    debit3_f3_Q5_Col71, Q5_Col72 as debit3_f3_Q5_Col72, Q5_Col73 as debit3_f3_Q5_Col73, Q5_Col74 as
    debit3_f3_Q5_Col74, Q5_Col75 as debit3_f3_Q5_Col75, Q5_Col76 as debit3_f3_Q5_Col76, Q5_Col77 as
    debit3_f3_Q5_Col77, Q5_Col78 as debit3_f3_Q5_Col78, Q5_Col79 as debit3_f3_Q5_Col79, Q5_Col80 as
    debit3_f3_Q5_Col80, Q5_Col81 as debit3_f3_Q5_Col81, Q5_Col82 as debit3_f3_Q5_Col82, Q5_Col83 as
    debit3_f3_Q5_Col83, Q5_Col84 as debit3_f3_Q5_Col84, Q5_Col85 as debit3_f3_Q5_Col85, Q5_Col86 as
    debit3_f3_Q5_Col86, Q5_Col87 as debit3_f3_Q5_Col87, Q5_Col88 as debit3_f3_Q5_Col88, Q5_Col89 as
    debit3_f3_Q5_Col89, Q5_Col90 as debit3_f3_Q5_Col90, Q5_Col91 as debit3_f3_Q5_Col91, Q5_Col92 as
    debit3_f3_Q5_Col92, Q5_Col93 as debit3_f3_Q5_Col93, Q5_Col94 as debit3_f3_Q5_Col94, Q5_Col95 as
    debit3_f3_Q5_Col95, Q5_Col96 as debit3_f3_Q5_Col96, Q5_Col97 as debit3_f3_Q5_Col97, Q5_Col98 as
    debit3_f3_Q5_Col98, Q5_Col99 as debit3_f3_Q5_Col99)
join_debit2_f2 = select(debit2_f2, Q5_Col0 as debit2_f2_Q5_Col0, Q5_Col1 as debit2_f2_Q5_Col1, Q5_Col2 as
    debit2_f2_Q5_Col2, Q5_Col3 as debit2_f2_Q5_Col3, Q5_Col4 as debit2_f2_Q5_Col4, Q5_Col5 as
    debit2_f2_Q5_Col5, Q5_Col6 as debit2_f2_Q5_Col6, Q5_Col7 as debit2_f2_Q5_Col7, Q5_Col8 as
    debit2_f2_Q5_Col8, Q5_Col9 as debit2_f2_Q5_Col9, Q5_Col10 as debit2_f2_Q5_Col10, Q5_Col11 as
    debit2_f2_Q5_Col11, Q5_Col12 as debit2_f2_Q5_Col12, Q5_Col13 as debit2_f2_Q5_Col13, Q5_Col14 as
    debit2_f2_Q5_Col14, Q5_Col15 as debit2_f2_Q5_Col15, Q5_Col16 as debit2_f2_Q5_Col16, Q5_Col17 as
    debit2_f2_Q5_Col17, Q5_Col18 as debit2_f2_Q5_Col18, Q5_Col19 as debit2_f2_Q5_Col19, Q5_Col20 as
    debit2_f2_Q5_Col20, Q5_Col21 as debit2_f2_Q5_Col21, Q5_Col22 as debit2_f2_Q5_Col22, Q5_Col23 as
    debit2_f2_Q5_Col23, Q5_Col24 as debit2_f2_Q5_Col24, Q5_Col25 as debit2_f2_Q5_Col25, Q5_Col26 as
    debit2_f2_Q5_Col26, Q5_Col27 as debit2_f2_Q5_Col27, Q5_Col28 as debit2_f2_Q5_Col28, Q5_Col29 as
    debit2_f2_Q5_Col29, Q5_Col30 as debit2_f2_Q5_Col30, Q5_Col31 as debit2_f2_Q5_Col31, Q5_Col32 as
    debit2_f2_Q5_Col32, Q5_Col33 as debit2_f2_Q5_Col33, Q5_Col34 as debit2_f2_Q5_Col34, Q5_Col35 as
    debit2_f2_Q5_Col35, Q5_Col36 as debit2_f2_Q5_Col36, Q5_Col37 as debit2_f2_Q5_Col37, Q5_Col38 as
    debit2_f2_Q5_Col38, Q5_Col39 as debit2_f2_Q5_Col39, Q5_Col40 as debit2_f2_Q5_Col40, Q5_Col41 as
    debit2_f2_Q5_Col41, Q5_Col42 as debit2_f2_Q5_Col42, Q5_Col43 as debit2_f2_Q5_Col43, Q5_Col44 as
    debit2_f2_Q5_Col44, Q5_Col45 as debit2_f2_Q5_Col45, Q5_Col46 as debit2_f2_Q5_Col46, Q5_Col47 as
    debit2_f2_Q5_Col47, Q5_Col48 as debit2_f2_Q5_Col48, Q5_Col49 as debit2_f2_Q5_Col49, Q5_Col50 as
    debit2_f2_Q5_Col50, Q5_Col51 as debit2_f2_Q5_Col51, Q5_Col52 as debit2_f2_Q5_Col52, Q5_Col53 as
    debit2_f2_Q5_Col53, Q5_Col54 as debit2_f2_Q5_Col54, Q5_Col55 as debit2_f2_Q5_Col55, Q5_Col56 as
    debit2_f2_Q5_Col56, Q5_Col57 as debit2_f2_Q5_Col57, Q5_Col58 as debit2_f2_Q5_Col58, Q5_Col59 as
    debit2_f2_Q5_Col59, Q5_Col60 as debit2_f2_Q5_Col60, Q5_Col61 as debit2_f2_Q5_Col61, Q5_Col62 as
    debit2_f2_Q5_Col62, Q5_Col63 as debit2_f2_Q5_Col63, Q5_Col64 as debit2_f2_Q5_Col64, Q5_Col65 as
    debit2_f2_Q5_Col65, Q5_Col66 as debit2_f2_Q5_Col66, Q5_Col67 as debit2_f2_Q5_Col67, Q5_Col68 as
    debit2_f2_Q5_Col68, Q5_Col69 as debit2_f2_Q5_Col69, Q5_Col70 as debit2_f2_Q5_Col70, Q5_Col71 as
    debit2_f2_Q5_Col71, Q5_Col72 as debit2_f2_Q5_Col72, Q5_Col73 as debit2_f2_Q5_Col73, Q5_Col74 as
    debit2_f2_Q5_Col74, Q5_Col75 as debit2_f2_Q5_Col75, Q5_Col76 as debit2_f2_Q5_Col76, Q5_Col77 as
    debit2_f2_Q5_Col77, Q5_Col78 as debit2_f2_Q5_Col78, Q5_Col79 as debit2_f2_Q5_Col79, Q5_Col80 as
    debit2_f2_Q5_Col80, Q5_Col81 as debit2_f2_Q5_Col81, Q5_Col82 as debit2_f2_Q5_Col82, Q5_Col83 as
    debit2_f2_Q5_Col83, Q5_Col84 as debit2_f2_Q5_Col84, Q5_Col85 as debit2_f2_Q5_Col85, Q5_Col86 as
    debit2_f2_Q5_Col86, Q5_Col87 as debit2_f2_Q5_Col87, Q5_Col88 as debit2_f2_Q5_Col88, Q5_Col89 as
    debit2_f2_Q5_Col89, Q5_Col90 as debit2_f2_Q5_Col90, Q5_Col91 as debit2_f2_Q5_Col91, Q5_Col92 as
    debit2_f2_Q5_Col92, Q5_Col93 as debit2_f2_Q5_Col93, Q5_Col94 as debit2_f2_Q5_Col94, Q5_Col95 as
    debit2_f2_Q5_Col95, Q5_Col96 as debit2_f2_Q5_Col96, Q5_Col97 as debit2_f2_Q5_Col97, Q5_Col98 as
    debit2_f2_Q5_Col98, Q5_Col99 as debit2_f2_Q5_Col99)
join_debit1_f1 = select(debit1_f1, Q5_Col0 as debit1_f1_Q5_Col0, Q5_Col1 as debit1_f1_Q5_Col1, Q5_Col2 as
    debit1_f1_Q5_Col2, Q5_Col3 as debit1_f1_Q5_Col3, Q5_Col4 as debit1_f1_Q5_Col4, Q5_Col5 as
    debit1_f1_Q5_Col5, Q5_Col6 as debit1_f1_Q5_Col6, Q5_Col7 as debit1_f1_Q5_Col7, Q5_Col8 as
    debit1_f1_Q5_Col8, Q5_Col9 as debit1_f1_Q5_Col9, Q5_Col10 as debit1_f1_Q5_Col10, Q5_Col11 as
    debit1_f1_Q5_Col11, Q5_Col12 as debit1_f1_Q5_Col12, Q5_Col13 as debit1_f1_Q5_Col13, Q5_Col14 as
    debit1_f1_Q5_Col14, Q5_Col15 as debit1_f1_Q5_Col15, Q5_Col16 as debit1_f1_Q5_Col16, Q5_Col17 as
    debit1_f1_Q5_Col17, Q5_Col18 as debit1_f1_Q5_Col18, Q5_Col19 as debit1_f1_Q5_Col19, Q5_Col20 as
    debit1_f1_Q5_Col20, Q5_Col21 as debit1_f1_Q5_Col21, Q5_Col22 as debit1_f1_Q5_Col22, Q5_Col23 as
    debit1_f1_Q5_Col23, Q5_Col24 as debit1_f1_Q5_Col24, Q5_Col25 as debit1_f1_Q5_Col25, Q5_Col26 as
    debit1_f1_Q5_Col26, Q5_Col27 as debit1_f1_Q5_Col27, Q5_Col28 as debit1_f1_Q5_Col28, Q5_Col29 as
    debit1_f1_Q5_Col29, Q5_Col30 as debit1_f1_Q5_Col30, Q5_Col31 as debit1_f1_Q5_Col31, Q5_Col32 as
```

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    debit1_f1_Q5_Col32, Q5_Col33 as debit1_f1_Q5_Col33, Q5_Col34 as debit1_f1_Q5_Col34, Q5_Col35 as
    debit1_f1_Q5_Col35, Q5_Col36 as debit1_f1_Q5_Col36, Q5_Col37 as debit1_f1_Q5_Col37, Q5_Col38 as
    debit1_f1_Q5_Col38, Q5_Col39 as debit1_f1_Q5_Col39, Q5_Col40 as debit1_f1_Q5_Col40, Q5_Col41 as
    debit1_f1_Q5_Col41, Q5_Col42 as debit1_f1_Q5_Col42, Q5_Col43 as debit1_f1_Q5_Col43, Q5_Col44 as
    debit1_f1_Q5_Col44, Q5_Col45 as debit1_f1_Q5_Col45, Q5_Col46 as debit1_f1_Q5_Col46, Q5_Col47 as
    debit1_f1_Q5_Col47, Q5_Col48 as debit1_f1_Q5_Col48, Q5_Col49 as debit1_f1_Q5_Col49, Q5_Col50 as
    debit1_f1_Q5_Col50, Q5_Col51 as debit1_f1_Q5_Col51, Q5_Col52 as debit1_f1_Q5_Col52, Q5_Col53 as
    debit1_f1_Q5_Col53, Q5_Col54 as debit1_f1_Q5_Col54, Q5_Col55 as debit1_f1_Q5_Col55, Q5_Col56 as
    debit1_f1_Q5_Col56, Q5_Col57 as debit1_f1_Q5_Col57, Q5_Col58 as debit1_f1_Q5_Col58, Q5_Col59 as
    debit1_f1_Q5_Col59, Q5_Col60 as debit1_f1_Q5_Col60, Q5_Col61 as debit1_f1_Q5_Col61, Q5_Col62 as
    debit1_f1_Q5_Col62, Q5_Col63 as debit1_f1_Q5_Col63, Q5_Col64 as debit1_f1_Q5_Col64, Q5_Col65 as
    debit1_f1_Q5_Col65, Q5_Col66 as debit1_f1_Q5_Col66, Q5_Col67 as debit1_f1_Q5_Col67, Q5_Col68 as
    debit1_f1_Q5_Col68, Q5_Col69 as debit1_f1_Q5_Col69, Q5_Col70 as debit1_f1_Q5_Col70, Q5_Col71 as
    debit1_f1_Q5_Col71, Q5_Col72 as debit1_f1_Q5_Col72, Q5_Col73 as debit1_f1_Q5_Col73, Q5_Col74 as
    debit1_f1_Q5_Col74, Q5_Col75 as debit1_f1_Q5_Col75, Q5_Col76 as debit1_f1_Q5_Col76, Q5_Col77 as
    debit1_f1_Q5_Col77, Q5_Col78 as debit1_f1_Q5_Col78, Q5_Col79 as debit1_f1_Q5_Col79, Q5_Col80 as
    debit1_f1_Q5_Col80, Q5_Col81 as debit1_f1_Q5_Col81, Q5_Col82 as debit1_f1_Q5_Col82, Q5_Col83 as
    debit1_f1_Q5_Col83, Q5_Col84 as debit1_f1_Q5_Col84, Q5_Col85 as debit1_f1_Q5_Col85, Q5_Col86 as
    debit1_f1_Q5_Col86, Q5_Col87 as debit1_f1_Q5_Col87, Q5_Col88 as debit1_f1_Q5_Col88, Q5_Col89 as
    debit1_f1_Q5_Col89, Q5_Col90 as debit1_f1_Q5_Col90, Q5_Col91 as debit1_f1_Q5_Col91, Q5_Col92 as
    debit1_f1_Q5_Col92, Q5_Col93 as debit1_f1_Q5_Col93, Q5_Col94 as debit1_f1_Q5_Col94, Q5_Col95 as
    debit1_f1_Q5_Col95, Q5_Col96 as debit1_f1_Q5_Col96, Q5_Col97 as debit1_f1_Q5_Col97, Q5_Col98 as
    debit1_f1_Q5_Col98, Q5_Col99 as debit1_f1_Q5_Col99)
17 join_flatten_request_join_sag_efs_tbproduct_F_b_last = lastjoin(join_flatten_request,
    join_sag_efs_tbproduct_F_b, join_flatten_request.flatten_request_Q5_Col102 ==
    join_sag_efs_tbproduct_F_b.sag_efs_tbproduct_F_b_Q5_Col102,
    join_sag_efs_tbproduct_F_b.sag_efs_tbproduct_F_b_Q5_Col1 between (unbound,
    join_flatten_request.flatten_request_Q5_Col101))
18 join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last =
    lastjoin(join_flatten_request_join_sag_efs_tbproduct_F_b_last, join_LINK2_f6,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last.flatten_request_Q5_Col0 ==
    join_LINK2_f6.LINK2_f6_Q5_Col0, join_LINK2_f6.LINK2_f6_Q5_Col1 between (unbound,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last.flatten_request_Q5_Col101))
19 join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last =
    lastjoin(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last, join_LINK1_f5,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last.flatten_request_Q5_Col0 ==
    join_LINK1_f5.LINK1_f5_Q5_Col0, join_LINK1_f5.LINK1_f5_Q5_Col1 between (unbound,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last.flatten_request_Q5_Col101))
20 join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last
    =
    lastjoin(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last,
    join_AUM_f4,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last.flatten_request_Q5_Col0
    == join_AUM_f4.AUM_f4_Q5_Col0, join_AUM_f4.AUM_f4_Q5_Col1 between (unbound,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last.flatten_request_Q5_Col10
21 join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_debit3_
    =
    lastjoin(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_las
    join_debit3_f3,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last.flatten
    == join_debit3_f3.debit3_f3_Q5_Col0, join_debit3_f3.debit3_f3_Q5_Col1 between (unbound,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last.flatten
22 join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_debit3_
    =
    lastjoin(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_las
    join_debit2_f2,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_de
    == join_debit2_f2.debit2_f2_Q5_Col0, join_debit2_f2.debit2_f2_Q5_Col1 between (unbound,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_de
23 join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_debit3_
    =
```

```
    lastjoin(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_las
    join_debit1_f1,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_de
    == join_debit1_f1.debit1_f1_Q5_Col0, join_debit1_f1.debit1_f1_Q5_Col1 between (unbound,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_de
join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_debit3_
    =
    window(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
    "join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_d
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col267_lastvalue_11 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col353_lastvalue_12 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col355_lastvalue_13 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col232_lastvalue_14 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col278_lastvalue_15 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col233_lastvalue_16 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col297_lastvalue_17 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col250_lastvalue_18 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col349_lastvalue_19 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col352_lastvalue_20 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col285_lastvalue_21 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col317_lastvalue_22 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col219_lastvalue_23 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col280_lastvalue_24 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col235_lastvalue_25 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col282_lastvalue_26 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col237_lastvalue_27 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col243_lastvalue_28 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col225_lastvalue_29 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col223_lastvalue_30 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col310_lastvalue_31 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col238_lastvalue_32 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col201_lastvalue_33 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col299_lastvalue_34 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col265_lastvalue_35 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col224_lastvalue_36 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
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f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col227_lastvalue_37 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col303_lastvalue_38 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col226_lastvalue_39 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col283_lastvalue_40 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col221_lastvalue_41 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col276_lastvalue_42 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col311_lastvalue_43 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col318_lastvalue_44 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col228_lastvalue_45 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col343_lastvalue_46 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col344_lastvalue_47 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col246_lastvalue_48 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col247_lastvalue_49 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col248_lastvalue_50 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col350_lastvalue_51 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col240_lastvalue_52 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col309_lastvalue_53 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col212_lastvalue_54 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col333_lastvalue_55 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col332_lastvalue_56 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col342_lastvalue_57 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col341_lastvalue_58 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col337_lastvalue_59 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col339_lastvalue_60 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col335_lastvalue_61 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col334_lastvalue_62 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col336_lastvalue_63 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col340_lastvalue_64 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col239_lastvalue_65 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col293_lastvalue_66 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col231_lastvalue_67 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col338_lastvalue_68 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col274_lastvalue_69 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col270_lastvalue_70 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col322_lastvalue_71 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col321_lastvalue_72 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col330_lastvalue_73 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col326_lastvalue_74 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col328_lastvalue_75 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col324_lastvalue_76 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col323_lastvalue_77 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col325_lastvalue_78 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col329_lastvalue_79 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col316_lastvalue_80 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col313_lastvalue_81 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col315_lastvalue_82 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col312_lastvalue_83 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col314_lastvalue_84 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col319_lastvalue_85 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col327_lastvalue_86 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col273_lastvalue_87 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col230_lastvalue_88 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col345_lastvalue_89 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col347_lastvalue_90 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col346_lastvalue_91 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col236_lastvalue_92 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col289_lastvalue_93 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col348_lastvalue_94 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col291_lastvalue_95 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col304_lastvalue_96 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col305_lastvalue_97 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col306_lastvalue_98 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col259_lastvalue_99 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col254_lastvalue_100 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col251_lastvalue_101 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col298_lastvalue_102 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col275_lastvalue_103 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col320_lastvalue_104 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_sag_efs_tbproduct_F_b_Q5_Col351_lastvalue_105 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col172_lastvalue_106 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col189_lastvalue_107 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col163_lastvalue_108 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col186_lastvalue_109 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col181_lastvalue_110 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col195_lastvalue_111 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col187_lastvalue_112 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col173_lastvalue_113 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col170_lastvalue_114 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col159_lastvalue_115 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col156_lastvalue_116 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col179_lastvalue_117 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col190_lastvalue_118 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col162_lastvalue_119 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col161_lastvalue_120 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col188_lastvalue_121 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col166_lastvalue_122 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col193_lastvalue_123 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col167_lastvalue_124 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col180_lastvalue_125 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col185_lastvalue_126 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_LINK2_f6_Q5_Col165_lastvalue_127 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col174_lastvalue_128 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col176_lastvalue_129 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col175_lastvalue_130 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col177_lastvalue_131 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col182_lastvalue_132 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col191_lastvalue_133 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col199_lastvalue_134 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col200_lastvalue_135 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col155_lastvalue_136 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col168_lastvalue_137 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col171_lastvalue_138 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col178_lastvalue_139 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col192_lastvalue_140 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col158_lastvalue_141 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col197_lastvalue_142 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col160_lastvalue_143 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col184_lastvalue_144 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col198_lastvalue_145 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col169_lastvalue_146 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col183_lastvalue_147 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col164_lastvalue_148 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col157_lastvalue_149 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col196_lastvalue_150 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col194_lastvalue_151 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col33_lastvalue_152 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col42_lastvalue_153 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col43_lastvalue_154 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col44_lastvalue_155 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col45_lastvalue_156 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_LINK2_f6_Q5_Col46_lastvalue_157 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col47_lastvalue_158 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col48_lastvalue_159 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col49_lastvalue_160 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col50_lastvalue_161 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col51_lastvalue_162 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col34_lastvalue_163 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col52_lastvalue_164 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col53_lastvalue_165 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col54_lastvalue_166 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col55_lastvalue_167 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col56_lastvalue_168 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col57_lastvalue_169 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col58_lastvalue_170 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col59_lastvalue_171 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col60_lastvalue_172 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col61_lastvalue_173 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col35_lastvalue_174 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col62_lastvalue_175 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col63_lastvalue_176 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col64_lastvalue_177 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col65_lastvalue_178 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col66_lastvalue_179 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col67_lastvalue_180 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col68_lastvalue_181 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col69_lastvalue_182 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col70_lastvalue_183 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col71_lastvalue_184 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col36_lastvalue_185 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col72_lastvalue_186 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_LINK2_f6_Q5_Col73_lastvalue_187 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col74_lastvalue_188 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col75_lastvalue_189 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col76_lastvalue_190 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col77_lastvalue_191 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col78_lastvalue_192 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col79_lastvalue_193 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col80_lastvalue_194 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col81_lastvalue_195 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col37_lastvalue_196 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col82_lastvalue_197 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col38_lastvalue_198 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col39_lastvalue_199 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col40_lastvalue_200 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col41_lastvalue_201 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col201_lastvalue_202 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK2_f6_Q5_Col202_lastvalue_203 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col172_lastvalue_204 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col189_lastvalue_205 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col186_lastvalue_206 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col181_lastvalue_207 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col195_lastvalue_208 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col187_lastvalue_209 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col173_lastvalue_210 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col159_lastvalue_211 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col156_lastvalue_212 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col179_lastvalue_213 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col190_lastvalue_214 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col162_lastvalue_215 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col188_lastvalue_216 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_LINK1_f5_Q5_Col166_lastvalue_217 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col167_lastvalue_218 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col185_lastvalue_219 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col165_lastvalue_220 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col174_lastvalue_221 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col176_lastvalue_222 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col175_lastvalue_223 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col182_lastvalue_224 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col199_lastvalue_225 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col200_lastvalue_226 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col168_lastvalue_227 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col171_lastvalue_228 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col197_lastvalue_229 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col160_lastvalue_230 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col184_lastvalue_231 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col198_lastvalue_232 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col169_lastvalue_233 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col183_lastvalue_234 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col164_lastvalue_235 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col157_lastvalue_236 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col196_lastvalue_237 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col194_lastvalue_238 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col33_lastvalue_239 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col42_lastvalue_240 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col44_lastvalue_241 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col45_lastvalue_242 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col46_lastvalue_243 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col47_lastvalue_244 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col48_lastvalue_245 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col49_lastvalue_246 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_LINK1_f5_Q5_Col51_lastvalue_247 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col52_lastvalue_248 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col53_lastvalue_249 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col54_lastvalue_250 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col55_lastvalue_251 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col56_lastvalue_252 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col59_lastvalue_253 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col61_lastvalue_254 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col62_lastvalue_255 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col63_lastvalue_256 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col64_lastvalue_257 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col65_lastvalue_258 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col66_lastvalue_259 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col67_lastvalue_260 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col68_lastvalue_261 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col69_lastvalue_262 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col70_lastvalue_263 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col36_lastvalue_264 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col74_lastvalue_265 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col75_lastvalue_266 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col76_lastvalue_267 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col77_lastvalue_268 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col78_lastvalue_269 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col79_lastvalue_270 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col80_lastvalue_271 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col81_lastvalue_272 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col37_lastvalue_273 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col82_lastvalue_274 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col39_lastvalue_275 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col40_lastvalue_276 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_LINK1_f5_Q5_Col201_lastvalue_277 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_LINK1_f5_Q5_Col202_lastvalue_278 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col104_lastvalue_279 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col114_lastvalue_280 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col119_lastvalue_281 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col121_lastvalue_282 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col120_lastvalue_283 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col113_lastvalue_284 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col118_lastvalue_285 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col122_lastvalue_286 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col117_lastvalue_287 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col115_lastvalue_288 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col143_lastvalue_289 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col144_lastvalue_290 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col124_lastvalue_291 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col129_lastvalue_292 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col131_lastvalue_293 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col123_lastvalue_294 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col128_lastvalue_295 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col132_lastvalue_296 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col30_lastvalue_297 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col109_lastvalue_298 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col111_lastvalue_299 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col110_lastvalue_300 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col139_lastvalue_301 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col146_lastvalue_302 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col141_lastvalue_303 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col133_lastvalue_304 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col138_lastvalue_305 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col136_lastvalue_306 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_AUM_f4_Q5_Col142_lastvalue_307 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col137_lastvalue_308 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col135_lastvalue_309 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col108_lastvalue_310 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col106_lastvalue_311 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col112_lastvalue_312 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col107_lastvalue_313 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col33_lastvalue_314 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col42_lastvalue_315 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col43_lastvalue_316 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col44_lastvalue_317 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col45_lastvalue_318 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col46_lastvalue_319 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col47_lastvalue_320 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col49_lastvalue_321 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col50_lastvalue_322 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col51_lastvalue_323 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col34_lastvalue_324 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col52_lastvalue_325 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col53_lastvalue_326 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col54_lastvalue_327 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col55_lastvalue_328 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col56_lastvalue_329 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col60_lastvalue_330 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col61_lastvalue_331 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col63_lastvalue_332 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col64_lastvalue_333 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col65_lastvalue_334 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col67_lastvalue_335 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col68_lastvalue_336 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

```
f_flatten_request_AUM_f4_Q5_Col69_lastvalue_337 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col70_lastvalue_338 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col71_lastvalue_339 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col36_lastvalue_340 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col73_lastvalue_341 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col74_lastvalue_342 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col75_lastvalue_343 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col76_lastvalue_344 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col77_lastvalue_345 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col79_lastvalue_346 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col80_lastvalue_347 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col81_lastvalue_348 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col82_lastvalue_349 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col83_lastvalue_350 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col85_lastvalue_351 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col38_lastvalue_352 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col39_lastvalue_353 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col40_lastvalue_354 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_AUM_f4_Q5_Col41_lastvalue_355 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col7_lastvalue_356 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col6_lastvalue_357 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col3_lastvalue_358 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col2_lastvalue_359 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col21_lastvalue_360 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col24_lastvalue_361 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col9_lastvalue_362 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col12_lastvalue_363 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col8_lastvalue_364 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col14_lastvalue_365 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col27_lastvalue_366 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_debit3_f3_Q5_Col16_lastvalue_367 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col5_lastvalue_368 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col28_lastvalue_369 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col30_lastvalue_370 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col17_lastvalue_371 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col20_lastvalue_372 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col23_lastvalue_373 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col13_lastvalue_374 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col22_lastvalue_375 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col25_lastvalue_376 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col10_lastvalue_377 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col4_lastvalue_378 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col15_lastvalue_379 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col18_lastvalue_380 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col19_lastvalue_381 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col11_lastvalue_382 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col26_lastvalue_383 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col32_lastvalue_384 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col29_lastvalue_385 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col33_lastvalue_386 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col42_lastvalue_387 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col43_lastvalue_388 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col44_lastvalue_389 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col45_lastvalue_390 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col46_lastvalue_391 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col47_lastvalue_392 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col48_lastvalue_393 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col49_lastvalue_394 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col50_lastvalue_395 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col51_lastvalue_396 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_debit3_f3_Q5_Col34_lastvalue_397 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col52_lastvalue_398 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col53_lastvalue_399 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col54_lastvalue_400 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col55_lastvalue_401 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col56_lastvalue_402 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col57_lastvalue_403 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col58_lastvalue_404 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col59_lastvalue_405 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col60_lastvalue_406 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col61_lastvalue_407 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col35_lastvalue_408 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col62_lastvalue_409 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col63_lastvalue_410 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col65_lastvalue_411 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col66_lastvalue_412 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col67_lastvalue_413 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col68_lastvalue_414 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col69_lastvalue_415 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col70_lastvalue_416 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col71_lastvalue_417 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col36_lastvalue_418 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col72_lastvalue_419 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col73_lastvalue_420 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col74_lastvalue_421 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col75_lastvalue_422 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col76_lastvalue_423 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col77_lastvalue_424 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col78_lastvalue_425 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col79_lastvalue_426 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_debit3_f3_Q5_Col80_lastvalue_427 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col81_lastvalue_428 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col37_lastvalue_429 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col82_lastvalue_430 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col83_lastvalue_431 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col84_lastvalue_432 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col85_lastvalue_433 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col86_lastvalue_434 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col87_lastvalue_435 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col88_lastvalue_436 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col89_lastvalue_437 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col90_lastvalue_438 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col91_lastvalue_439 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col38_lastvalue_440 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col92_lastvalue_441 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col93_lastvalue_442 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col94_lastvalue_443 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col95_lastvalue_444 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col96_lastvalue_445 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col97_lastvalue_446 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col98_lastvalue_447 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col99_lastvalue_448 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col39_lastvalue_449 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col40_lastvalue_450 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit3_f3_Q5_Col41_lastvalue_451 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col7_lastvalue_452 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col6_lastvalue_453 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col3_lastvalue_454 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col2_lastvalue_455 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col21_lastvalue_456 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_debit2_f2_Q5_Col24_lastvalue_457 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col9_lastvalue_458 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col12_lastvalue_459 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col8_lastvalue_460 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col14_lastvalue_461 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col27_lastvalue_462 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col16_lastvalue_463 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col5_lastvalue_464 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col28_lastvalue_465 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col30_lastvalue_466 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col17_lastvalue_467 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col20_lastvalue_468 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col23_lastvalue_469 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col13_lastvalue_470 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col22_lastvalue_471 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col25_lastvalue_472 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col10_lastvalue_473 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col4_lastvalue_474 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col15_lastvalue_475 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col18_lastvalue_476 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col19_lastvalue_477 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col11_lastvalue_478 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col26_lastvalue_479 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col32_lastvalue_480 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col29_lastvalue_481 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col33_lastvalue_482 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col42_lastvalue_483 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col43_lastvalue_484 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col44_lastvalue_485 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col45_lastvalue_486 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_debit2_f2_Q5_Col46_lastvalue_487 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col47_lastvalue_488 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col48_lastvalue_489 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col49_lastvalue_490 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col50_lastvalue_491 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col51_lastvalue_492 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col34_lastvalue_493 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col52_lastvalue_494 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col53_lastvalue_495 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col54_lastvalue_496 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col55_lastvalue_497 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col56_lastvalue_498 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col57_lastvalue_499 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col58_lastvalue_500 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col59_lastvalue_501 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col60_lastvalue_502 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col61_lastvalue_503 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col35_lastvalue_504 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col62_lastvalue_505 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col63_lastvalue_506 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col65_lastvalue_507 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col66_lastvalue_508 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col67_lastvalue_509 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col68_lastvalue_510 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col69_lastvalue_511 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col70_lastvalue_512 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col71_lastvalue_513 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col36_lastvalue_514 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col72_lastvalue_515 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col73_lastvalue_516 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_debit2_f2_Q5_Col74_lastvalue_517 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col75_lastvalue_518 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col76_lastvalue_519 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col77_lastvalue_520 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col78_lastvalue_521 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col79_lastvalue_522 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col80_lastvalue_523 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col81_lastvalue_524 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col37_lastvalue_525 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col82_lastvalue_526 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col83_lastvalue_527 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col84_lastvalue_528 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col85_lastvalue_529 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col86_lastvalue_530 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col87_lastvalue_531 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col88_lastvalue_532 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col89_lastvalue_533 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col90_lastvalue_534 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col91_lastvalue_535 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col38_lastvalue_536 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col92_lastvalue_537 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col93_lastvalue_538 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col94_lastvalue_539 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col95_lastvalue_540 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col96_lastvalue_541 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col97_lastvalue_542 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col98_lastvalue_543 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col99_lastvalue_544 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col39_lastvalue_545 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit2_f2_Q5_Col40_lastvalue_546 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_debit2_f2_Q5_Col41_lastvalue_547 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col7_lastvalue_548 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col6_lastvalue_549 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col31_lastvalue_550 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col3_lastvalue_551 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col2_lastvalue_552 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col24_lastvalue_553 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col9_lastvalue_554 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col12_lastvalue_555 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col8_lastvalue_556 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col14_lastvalue_557 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col27_lastvalue_558 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col16_lastvalue_559 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col5_lastvalue_560 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col28_lastvalue_561 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col30_lastvalue_562 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col17_lastvalue_563 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col20_lastvalue_564 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col23_lastvalue_565 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col13_lastvalue_566 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col22_lastvalue_567 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col25_lastvalue_568 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col10_lastvalue_569 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col4_lastvalue_570 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col18_lastvalue_571 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col19_lastvalue_572 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col11_lastvalue_573 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col26_lastvalue_574 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col32_lastvalue_575 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col29_lastvalue_576 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_debit1_f1_Q5_Col33_lastvalue_577 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col42_lastvalue_578 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col43_lastvalue_579 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col44_lastvalue_580 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col45_lastvalue_581 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col46_lastvalue_582 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col47_lastvalue_583 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col49_lastvalue_584 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col50_lastvalue_585 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col51_lastvalue_586 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col34_lastvalue_587 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col52_lastvalue_588 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col53_lastvalue_589 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col55_lastvalue_590 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col56_lastvalue_591 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col57_lastvalue_592 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col58_lastvalue_593 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col59_lastvalue_594 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col60_lastvalue_595 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col61_lastvalue_596 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col35_lastvalue_597 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col62_lastvalue_598 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col63_lastvalue_599 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col64_lastvalue_600 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col65_lastvalue_601 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col66_lastvalue_602 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col67_lastvalue_603 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col68_lastvalue_604 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col69_lastvalue_605 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col70_lastvalue_606 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

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f_flatten_request_debit1_f1_Q5_Col71_lastvalue_607 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col36_lastvalue_608 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col72_lastvalue_609 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col73_lastvalue_610 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col74_lastvalue_611 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col75_lastvalue_612 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col76_lastvalue_613 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col77_lastvalue_614 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col78_lastvalue_615 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col79_lastvalue_616 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col81_lastvalue_617 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col37_lastvalue_618 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col82_lastvalue_619 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col83_lastvalue_620 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col84_lastvalue_621 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col85_lastvalue_622 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col87_lastvalue_623 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col88_lastvalue_624 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col89_lastvalue_625 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col90_lastvalue_626 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col91_lastvalue_627 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col38_lastvalue_628 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col92_lastvalue_629 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col93_lastvalue_630 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col95_lastvalue_631 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col96_lastvalue_632 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col97_lastvalue_633 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col98_lastvalue_634 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col99_lastvalue_635 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col39_lastvalue_636 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
```

```
f_flatten_request_debit1_f1_Q5_Col40_lastvalue_637 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
f_flatten_request_debit1_f1_Q5_Col41_lastvalue_638 =
    column(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
lastjoinkey_flatten_request_Q5_Col100 =
    output(join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_
join_flatten_request_join_feedback_left = leftjoin(join_flatten_request, join_feedback,
    "join_flatten_request.flatten_request_Q5_Col100 = join_feedback.feedback_Q5_Col100")
join_flatten_request_join_feedback_left_join_CUST_f7_left =
    leftjoin(join_flatten_request_join_feedback_left, join_CUST_f7,
    "join_flatten_request_join_feedback_left.flatten_request_Q5_Col0 = join_CUST_f7.CUST_f7_Q5_Col0")
join_flatten_request_join_feedback_left_join_CUST_f7_left_window =
    window(join_flatten_request_join_feedback_left_join_CUST_f7_left,
    "join_flatten_request_join_feedback_left_join_CUST_f7_left_join_output")
f_flatten_request_feedback_Q5_Col101_direct_3 =
    column(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.feedback_Q5_Col101[0])
f_flatten_request_feedback_Q5_Col1_direct_4 =
    column(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.feedback_Q5_Col1[0])
f_flatten_request_CUST_f7_Q5_Col147_direct_5 =
    column(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.CUST_f7_Q5_Col147[0])
f_flatten_request_CUST_f7_Q5_Col154_direct_6 =
    column(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.CUST_f7_Q5_Col154[0])
f_flatten_request_CUST_f7_Q5_Col153_direct_7 =
    column(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.CUST_f7_Q5_Col153[0])
f_flatten_request_CUST_f7_Q5_Col150_direct_8 =
    column(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.CUST_f7_Q5_Col150[0])
f_flatten_request_CUST_f7_Q5_Col149_direct_9 =
    column(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.CUST_f7_Q5_Col149[0])
f_flatten_request_CUST_f7_Q5_Col1_direct_10 =
    column(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.CUST_f7_Q5_Col1[0])
f_flatten_request_feedback_Q5_Col203_direct_2 =
    column(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.feedback_Q5_Col203[0])
leftjoinkey_flatten_request_Q5_Col100 =
    output(join_flatten_request_join_feedback_left_join_CUST_f7_left_window.flatten_request_Q5_Col100[0])
join_flatten_request_join_feedback_left_join_CUST_f7_left_join_output_join_flatten_request_join_sag_efs_tbproduct_F_b_la
    = leftjoin(join_flatten_request_join_feedback_left_join_CUST_f7_left_join_output,
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_de
    "join_flatten_request_join_feedback_left_join_CUST_f7_left_join_output.leftjoinkey_flatten_request_Q5_Col100
    =
    join_flatten_request_join_sag_efs_tbproduct_F_b_last_join_LINK2_f6_last_join_LINK1_f5_last_join_AUM_f4_last_join_de
join_flatten_request_join_feedback_left_join_CUST_f7_left_join_output_join_flatten_request_join_sag_efs_tbproduct_F_b_la
    =
    leftjoin(join_flatten_request_join_feedback_left_join_CUST_f7_left_join_output_join_flatten_request_join_sag_efs_tb
    flatten_request_output,
    "join_flatten_request_join_feedback_left_join_CUST_f7_left_join_output_join_flatten_request_join_sag_efs_tbproduct_
    = flatten_request_output.flatten_request_outputkey_flatten_request_Q5_Col100")
```

Appendix C

Function Definition

1. avg

```
Y = avg(col)
Y = avg(w.col)
```

It calculates the average value of input. It should always be used together with the *window* function. Null value in the input is not counted.

- Parameters

  - col : A column of data. Types bigint, smallint, int, float, double are supported.

- Return Value

  The average value of input, double type.

- Example

```
col = [1,2,3]
avg(col) = 2
# Take the average value of column ‘amt‘ of windows ‘w1‘ as feature
f_col = discrete(avg(w1.amt))
```

2. column

```
y = column(col,"Rename")
y = column(w.col[0])
```

It outputs the column data, with rename supported.

- Example

```
# Output the data of the column ‘amt‘ in the window ‘w1‘. The data is inputed row by row. w1.amt[0]
    refers to the current field.
w1 = window(trade,"trade_id","time",1000,3600,"t1")
col_amt = column(w1.amt[0])
```

3. combine

```
Y = combine(list)
Y = combine(X1,X2,...)
Y = combine(w.col1[0],w.col2[0],...)
```

It combines multiple input fields. The input is processed using Cartesian product if there's a list as input. The output supports discrete feature processing.

- Parameters

  - X1, X2: Any type, also can takes a list as input

- Return Value

  The output is a string if input is non-list. The output is a string list if input contains list. The null value in the input list is ignored. Essentially, the input is processed by for-loop structure and then converted into strings.

- Example

```
# Input non-list, output string
# X1 = 1, X2 = 2, X3 = 3
Y = combine(X1,X2,X3) # Y = "1-2-3"
# Input list, output string list
# X1 = ["1","2"], X2 = ["3","4"]
Y = combine(X1) # Y = ["1-2"]
Y = combine(X1,X2) # Y = ["1-3","1-4","2-3","2-4"] Cartesian product
# Take the result as features
f_col = discrete(combine(X1,X2))

# If there's null value in the input
combine(1,null,3,4,5)=1-3-4-5

# If the input contains list and non-list, conduct Cartesian product,
# e.g. [1,[2,3],4] ==> [[1-2-4],[1-3-4]]
```

4. continuous

```
f_col = continuous(X)
f_col = continuous(w.col[0])
```

It process features by continuous encoding. It can be used in certain cases and algorithms. For example, continuous features are more suitable for decision-tree models, but work not so good for linear regression algorithms.

- Parameters

  - X: A column or a single data. Type 'int', 'smallint', 'bigint', 'float', and 'double' are supported.

- Return Value

  Continuous labeled features that can be used for model training. The output is null is there's exception in the input.

5. count

```
Y = count(col)
// count for the number of rows of a certain column
Y = column(count(w.col))
// count for the number of occurrences of a certain element in the column of a window
```

```
Y = column(count(w.col[0],w.col))
Y = column(count(w.col[0],w.col[0s,1d]))
Y = column(count(9,w.col[0s,1d]))
```

It counts for the number of rows of a column. It can also be used to count for the number of occurrences of a certain element in the given column. Note that the element and the column must be the same type in the second usage, which is the same with *count_of_window*.

- Parameters

  - w.col/list: Column of any type, usually the same as those in a window.

- Return Value

  An integer, always int type.

- Example

```
# w.amt = [1,2,1,1,2]
Y = count(w.amt[0],w.amt) # Y =3
# take the number of rows of column *amt* in window *w1* as feature
f_col = discrete(count(w.amt))
```

6. count_of_window

```
// count for the number of rows of the window
Y = count_of_window(w)
// same as *count*
Y = count_of_window(w.col[0],w.col)
```

It counts for the number of rows of a window. It can also be used to count for the number of appearances of a certain elements in the given column in a window. Note that the element and the column must be the same type in the second usage, which is the same with *count*.

- Parameters

  - w: Window of any type.

- Return Value

  An integer, always int type.

- Example

```
# take the number of rows of window *w1* as feature
f_col = discrete(count_of_window(w1))
```

7. discrete

```
f_col = discrete(X)
f_col = discrete(w.col[0])
```

It processes features by discrete encoding. It can be used in certain cases and algorithms. For example, discrete features are not suggested for GBDT-tree model, which may decrease the training efficiency or even cause the program failed.

- Parameters

  - X: A column or a single data of any type

- Return Value

  Discrete encoded features that can be used for model training.

8. distinct_count

```
Y = distinct_count(col)
Y = column(distinct_count(w.col))
```

It counts for the number of distinct rows of input.

- Parameters

  - w.col/list: Column of any type, usually that are in a window.

- Return Value

  An integer, always int type.

- Example

```
# take the number of distinct rows of column *amt* in window *w1* as feature
f_col = discrete(distinct_count(w1.amt))
```

9. get_keys

```
Y = get_keys(X)
Y = column(get_keys(w.col[0]))
```

It takes out the keys in the key-value structure(or the output of *splitbykey*). It is compatible with *getkey*.

- Parameters

  - X: key-value structured data or the output of *splitbykey* or type conversion result of output of *splitbykey*.

- Return Value

  A list of keys.

- Example

```
# use together with splitbykey
col= ["Monday:50;Tuesday:70";"Wednesday:100"]
Y = get_keys(splitbykey(col,;   ,   :   )) # output ["Monday""Tuesday";"Wednesday"]
# use the result as input for *discrete*
f_col = discrete(get_keys(splitbykey(col,; ,   :   )))
# use together with *map* and *group by*
f_col = discrete(get_keys(map(group_by(w,"string_diffname"),count)))
```

10. group_by

```
Y = group_by(window,"col")
Y = group_by(window/list, x->lambda)
```

It groups the data in the given window. It supports lambda expression, the result of which is the key of group.

- Parameters

  - window/list: A window or a list.

  - col: A column name. The function returns null value if the column is not in window/list.

- Return Value

  Grouped data. The null value in the input is ignored.

- Example

```
# Group the data in window *w1* according to 'trx_type'. Calculate the summery of column *amt* of
    each group, and then generate (type, sum) pairs.
f_col = discrete(get_pairs(map(group_by(w1,"trx_type"), x-> sum(x.amt))))
```

11. if

```
Y = discrete(if(bool, V, V))
Y = column(if(window.id[0] in (12, 1213), 0, 1))
```

It supports nested 'if', but the return value must be the same type and cannot be null value.

- Example

```
w=window(t1, "string_desc", "timestamp", 5, 3000)
f1=discrete(if(if(w.int[0]>2,false,true),4,5))
# input data:
#    ["a", 1521526671000, 1]
#    ["a", 1521526672000, 2]
#    ["a", 1521526673000, 3]
# output: [4,4,5]
```

12. ifnull

```
Y = ifnull(X,"defualt value")
Y = column(ifnull(w.col[0],"defualt value"))
```

It returns the default value if input data is null; otherwise returns the original data.

- Parameters

  - col: The column to be processed.

  - defualt value: Any basic types, list/map and constant value.

- Return Value

  Return the default value if input data is null. Otherwise return the original data.

- Example

```
f_col = discrete(ifnull(w.trx_type[0], "0"))
f_col = discrete(ifnull(w.trx_type[0], 0))
f_col = discrete(ifnull(w.trx_type[0], 0L))
f_col = discrete(ifnull(w.trx_type[0], 0.0))
f_col = discrete(ifnull(w.trx_type[0], 0.0D))
f_col = discrete(ifnull(w.trx_type[0], false))
```

13. join

```
Y = join("junction symbol","default value",X1,X2,..,Xn)
Y = join("junction symbol","default value",w.col)
Y = join("junction symbol","default value",list)
```

It supports the concatenation of given data, column in window or list data. It returns string data.

- Parameters

  - X1, X2,.., Xn: Any basic type or constant value, it can be different type.

  - w.col/list: A column in a window or a list.

  - junction symbol: String type data used to concatenate input data. Empty if input is null.

  - default valueString type data to fill in the null data of input. Don't fill in any data if set null.

- Return Value

  Concatenated string of input.

- Example

```
Y = join("-",null,1,2,"3") # Y = "1-2-3"
# list = [1,2,3,null]
Y = join("-","NA",list) # Y = "1-2-3-NA"
Y = join(null,null,list) # Y = "123"
# Take the concatenated result as feature
f_col = discrete(join("-","NA",list))
```

14. lastjoin(also last_join)

```
t3 = last_join(t1, t2, "condition", t2.tscol)
t3 = last_join(t1, t2, "condition", t2.tscol between (unbound, t1.ts))
```

It performs left join over the given two table, and the second table is ordered by the given column, which must be a timestamp/bigint column of the second table. If the condition contains primary keys of two tables, then it works the same as *left_join*. Otherwise, this function will concatenate the rows in the first table with the first row in the second table that satisfies the condition. Note that it doesn't conduct Cartesian product.

- Parameters

  - t1/t2: Join the second given table(t2) to the first given table(t1). Note that the function will throw error if there's duplicated column name in the given tables. You can first use *select* to rename. - condition: Support one or more equation conditions connected by 'and'. Do not support for inequation as condition. Note that the condition must be surround with double quotation marks. - t2.tscol: The timestamp column of the secondary table is used as the key for sorting, supporting 'timestamp' and 'bigint'. The column is configurable, e.g., t2.tscol. - t2.tscol: The column of t2 used to sort. Must be timestamp or bigint type. You can define the query range of this column in the following way: - between + interval. "[" / "]" means including the boundary, and "(" / ")" means excluding the boundary. - The boundary can be constant value, "unbound", or a column of t1. "unbound" means no boundary. The type of constant value and column must be timestamp or bigint. - Note that the right boundary must be bigger than the left boundary.

- Return Value

  The joint table. Return empty table if there's no available data in the query range.

- Example

```
joined = last_join(t1, t2, t1.colt1 == t2.colt2, t2.tsCol between (t1.lastweek and t1.yesterday])
joined = last_join(t1, t2, t1.colt1 == t2.colt2, t2.tsCol between (unbound, 2019-08-20T])
joined = last_join(t1, t2, t1.colt1 == t2.colt2, t2.tsCol between (2019-08-20T20:20:20,
    t1.yesterday))
```

15. leftjoin(also left_join)

```
t3 = left_join(t1, t2, "condition")
```

Left join the given two table. In the off-line mode, it will conduct Cartesian product if the fields in the "condition" are not primary key. In the on-line mode, it will choose one to join randomly if there are multiple matched rows. It's suggested that there's no multiple matched rows. Otherwise, the off-line result will be different from the on-line result.

- Parameters

  - t1/t2: Join the second given table(t2) to the first given table(t1). t1 is the primary table and t2 is the secondary table. - condition: Support one or more conditions connected by *and*. Support for inequation as condition. Note that the condition must be surround with double quotation marks.

- Return Value

  The left_joined table. If there are columns with the same name, they will be renamed as "tableName_columnName".

- Example

```
t3 = left_join(t1,t2,"t1.card_no = t2.crd_nbr and t1.time > t2.t")
```

16. map

```
Y = map(window,function)
```

It conducts function in the given window(s).

- Parameters

  Support for single window, multiple windows and list. Multiple windows are always obtained by cutting sub-windows within a window, e.g. w1.amt[1d,5d,10d].

Function	Description
sum/max/min/avg	Support type BigInt, SmallInt, Int, Float, Double.
first_of_window	The first value of the given window(s). Support any type.
last_of_window	The last value of the given window(s). Support any type.
is_in_window	Exist in the window or not. Return "1" if exist and "0" if not. Support any type.
distinct_count	Count for the distinct rows in the given window(s). Support any type.
count	Count for the rows in the given window(s). Support any type.
lambda expression	e.g. x -> log(x + 1), which is conducted for each row in the window.

Table C.1: Functions in Windowed Queries

- Return Value

  Key-value pairs.

- Example

```
f_col = discrete(get_values(map(w1.amt[5m,1d,3d],max)))
```

17. max

```
Y = max(col)
Y = column(max(w.col))
```

It returns the max value of input.

- Parameters

  - col: A column. Support type bigint, smallint, int, long, float, double.

- Return Value

  The max value of input.

- Example

```
col = [1,2,3]
max(col) = 3
f_col = discrete(max(w1.amt))
```

18. min

```
Y = min(col)
Y = column(min(w.col))
```

It returns the min value of input.

- Parameters

  - col: A column. Support type bigint, smallint, int, long, float, double.

- Return Value

  The min value of input.

- Example

```
col = [1,2,3]
min(col) = 1
f_col = discrete(min(w1.amt))
```

19. output

```
Y = output(w.col1[0])
```

It is mainly used to define a primary key, used together with *left_join_feature*.

- Parameters

  - col: A column of a table.

- Return Value

  The information of primary key of the window.

- Example

```
# left_join *trade* and *user*. *trade* is primary table.
join_table1 = left_join(trade,user,"trade.userid = user.id")
w1 = window(join_table1,"trade_id","time",1000,3600,"t1")
# take *trade_id* of window *w1* as primary key.
a = output(w1.trade_id[0])
b = discrete(max(w1.amount[0:4]))
c = discrete(max(w1.amount[0:4]))

# left_join *trade* and *product*. *trade* is primary table.
join_table2 = left_join(trade, product,"trade.productid = product.id")
w2 = window(join_table2,"trade_id","time",1000,3600,"t2")
# take *trade_id* of window *w2* as primary key.
d = output(w2.trade_id[0])
e = discrete(max(w2.price[0:4]))
label = multiclass_label(int(w2.trade_id))
# get the final feature using *trade_id* in *w1* and *w2*
final = left_join_feature(t1,t2,"t1.a=t2.d")
```

20. range

```
Y = range(col,start,stop)
```

It returns the value of column in the given range.

- Parameters

  - col: A column. - start: Positive integer representing the row id, starting from 1. - stop: Positive integer. Must be larger than start.

- Return Value

  A list with length (stop-start).

- Example

```
# Get the first three rows of w.amt
range(w.amt,1,4)
```

21. regression_label

```
f_label = regression_label(target_column)
f_label = regression_label(w.col[0])
```

It returns the label value of a column for regression algorithms.

- Parameters

  - target_column: A column. Support type bigint, smallint, int, long, float, double.

- Return Value

  The score in the regression scenario. The null value in the input is ignored.

22. select

```
t2 = select(t1, col1, col2, col3, col4)
t2 = select(t1.col1, t1.col2, t1.col3, t1.col4)
t2 = select(t1, "" as col1, 0.0 as col2, 0.0D as col3, 2019-07-18T as datecol)
```

It selects certain fields of input table. It supports to rename columns using 'as' and add constant value columns.

- Parameters

  - t1: The table to be selected.

  - col: The fields to be selected. Can be renamed using 'as'.

  - constant value: Support to output constant value column. The corresponding relation of type and constant value is as follows:

Value	Type
0.0	float
0.0D	double
0L	bigint
0	int
2019-07-18T	date
2019-07-18T09:20:20	timestamp

Table C.2: Data Types and Example Values

- Output Value

  A table contains the selected fields. The types of fields are the same with original table or are specified.

- Example

```
# Input table *trade*. Filter several fields as an output table.
t_select = select(trade, amt, trade_id, time)
w1 = window(trade,"trade_id","time",1000,3600,"t1")
col_amt = column(sum(w1.amt))
col_time = column(w1.time[0])
col_id = column(w1.id[0])
# Select some fileds and add a constant value column.
t_selected = select(t1, col_amt as amt1, col_time as time1, 1 as label)
t_select = select(trade, amt, trade_id as id, time, user_id)
w = window(t_select,"id","time",1000,1d)
f1 = discrete(w.amt[0])
f2 = discrete(w.time[0])
f3 = discrete(w.user_id[0])
```

23. sort_by_value

```
Y = sort_by_value(key-value pairs, true/false)
```

It sorts the key-value pairs using value.

- Parameters

  - key_value pairs: Key-value structured data. - true/false: Optional, 'true' means sorting from largest to smallest and 'false' means sorting from smallest to largest . Default to be false.

- Return Value

  The sorted key-value pairs.

- Example

```
res = sort_by_value(map(group_by(w,"string_diffname"), x->sum(x.int)))
```

24. split

```
Y = split(X,"separator","type")
Y = split(w.col[0],"separator","type")
```

It splits the given data or column by a separator.

- Parameters

  - X: string data. - separator: The separator or the corresponding ASCII. - type: Optional, the type of return value. Default to be string.

- Return Value

  A list of type "type".

- Example

```
# str = "hello,world"
Y = split(str,",") # Y = ["hello","world"]
f_col = discrete(split(str,","))
```

25. window

```
w =
    window(table,[other_table],[keys,order],[max_size],[atleast],[offset],[filter_output],[instance_is_window],[output]
```

It defines a time window that acts as a two-dimensional array.

- Parameters

  - table: The table from which to construct the window.

  - other_table: Optional, feature table. Given in a list if there are multiple table, e.g. other_table=[t2,t3]. These tables must be with the same schema with "table".

  - keys, order: Optional, both or none. Group by keys and sort by order. There can be multiple keys, and if so, you must provide them in a list, e.g. keys=[key1,key2], order=ts. The 'order' is usually a column of type timestamp, date or bigint.

  - max_size: Optional. The max number of rows in the window. Default to be 10000. It's suggested to define max_size less than 1000 to ensure the efficiency.

  - atleast: Optional. The min number of rows in the window. Default to be 0.

  - offset: Optional. The time range from current data to the past or future.

  - The left boundary is included and the right boundary is excluded. The unit is default to be ms and it's also supported to use s, m, h, d.

  - filter_output: Optional. Only the rows that fit the condition 'filter_output' will be in the window. You must specify the table name together with column name. e.g. filter_output= t.col=="source".

  - instance_is_window: Optional. If instance_is_window=false, only 'other_table' will be in the window. If instance_is_window=true, 'table' and 'other_table' will be in the window.

  - output: Optional. The name of the result.

- Return Value

  The window constructed. Direct output is not supported.

- Example

```
# Group by 'card_no'. Take the data from 5d ago till the end of current day into the window. e.g.
    from 26th Dec 00:00:00 to 30th Dec 23:59:59
w1 = window(t,"card_no","ts",1000,5d,"t1")
# with condition
w2 = window(t,"card_no","ts",1000,5d,t.card_no == "321534324","t2")

f_col = discrete(get_values(map(w1.amt[10m,1h,3d], x->log(max(x.amt)+1))))
```

```
# Using both table and other_table
w = window(table =t1, other_table =[t2, t3], keys=[key1, key2], order=ts, max_size=100, offset=30d,
    output="w_out")
# with condition
w = window(table =t1, other_table =[t2, t3], keys=[key1, key2], order=ts, max_size=100, offset=30d,
    filter_output= t1.channel != "")

# select from org_t1
t1 = select(org_t1, col1, col2, c3 as col3, c4 as col4, 0.0 as amt)
# select from org_t2
t2 = select(org_t2, column1 as col1, column2 as col2, "" as col3, 0.0D as col4, amt)
# window on t1 and t2
w = window(table = t1, other_table=[t2], keys=[col1], order = col2, max_size=100, offset=30d)
famt = column(sum(w.amt))
```

Appendix D

Query For OpenMLDB

D.1 Ride Duration Prediction (Q0)

```
-- define your deployment here
select *,
train_dropoff_longitude_divide_11 / train_pickup_longitude_divide_11,
train_pickup_longitude_divide_12 / train_dropoff_longitude_divide_12,
train_pickup_latitude_divide_13 / train_dropoff_latitude_divide_13,
train_dropoff_latitude_divide_14 / train_pickup_latitude_divide_14,
train_pickup_longitude_multiply_15 * train_dropoff_latitude_multiply_15 *
    train_dropoff_longitude_multiply_15,
train_pickup_longitude_multiply_16 * train_dropoff_latitude_multiply_16,
train_pickup_longitude_multiply_17 * train_pickup_latitude_multiply_17 *
    train_dropoff_longitude_multiply_17,
train_pickup_longitude_multiply_18 * train_dropoff_longitude_multiply_18,
train_pickup_latitude_multiply_19 * train_dropoff_longitude_multiply_19
from
(select
`id` as id_1,
`pickup_datetime` as train_pickup_datetime_original_0,
`id` as train_id_original_1,
`trip_duration` as train_trip_duration_original_2,
`dropoff_datetime` as train_dropoff_datetime_original_3,
`dropoff_latitude` as train_dropoff_latitude_original_4,
`dropoff_longitude` as train_dropoff_longitude_original_5,
`passenger_count` as train_passenger_count_original_6,
`pickup_latitude` as train_pickup_latitude_original_7,
`pickup_longitude` as train_pickup_longitude_original_8,
`store_and_fwd_flag` as train_store_and_fwd_flag_original_9,
`vendor_id` as train_vendor_id_original_10,
`dropoff_longitude` as train_dropoff_longitude_divide_11,
`pickup_longitude` as train_pickup_longitude_divide_11,
`pickup_longitude` as train_pickup_longitude_divide_12,
`dropoff_longitude` as train_dropoff_longitude_divide_12,
`pickup_latitude` as train_pickup_latitude_divide_13,
`dropoff_latitude` as train_dropoff_latitude_divide_13,
`dropoff_latitude` as train_dropoff_latitude_divide_14,
`pickup_latitude` as train_pickup_latitude_divide_14,
`pickup_longitude` as train_pickup_longitude_multiply_15,
`dropoff_latitude` as train_dropoff_latitude_multiply_15,
`dropoff_longitude` as train_dropoff_longitude_multiply_15,
`pickup_longitude` as train_pickup_longitude_multiply_16,
`dropoff_latitude` as train_dropoff_latitude_multiply_16,
```

```
‘pickup_longitude‘ as train_pickup_longitude_multiply_17,
‘pickup_latitude‘ as train_pickup_latitude_multiply_17,
‘dropoff_longitude‘ as train_dropoff_longitude_multiply_17,
‘pickup_longitude‘ as train_pickup_longitude_multiply_18,
‘dropoff_longitude‘ as train_dropoff_longitude_multiply_18,
‘pickup_latitude‘ as train_pickup_latitude_multiply_19,
‘dropoff_longitude‘ as train_dropoff_longitude_multiply_19,
hour(timestamp(‘dropoff_datetime‘)) as train_dropoff_datetime_hourofday_20,
hour(timestamp(‘pickup_datetime‘)) as train_pickup_datetime_hourofday_21,
case when !isnull(at(‘store_and_fwd_flag‘, 0)) over train_vendor_id_pickup_datetime_0s_1h_200 then
    count_where(‘store_and_fwd_flag‘, ‘store_and_fwd_flag‘ = at(‘store_and_fwd_flag‘, 0)) over
    train_vendor_id_pickup_datetime_0s_1h_200 else null end as train_store_and_fwd_flag_window_count_22,
sum(‘pickup_latitude‘) over train_vendor_id_pickup_datetime_0s_1h_200 as
    train_pickup_latitude_window_sum_23,
sum(‘pickup_latitude‘) over train_vendor_id_pickup_datetime_0s_2h_200 as
    train_pickup_latitude_window_sum_24,
sum(‘dropoff_latitude‘) over train_vendor_id_pickup_datetime_0s_1h_200 as
    train_dropoff_latitude_window_sum_25,
case when !isnull(at(‘store_and_fwd_flag‘, 0)) over train_vendor_id_pickup_datetime_0s_2h_200 then
    count_where(‘store_and_fwd_flag‘, ‘store_and_fwd_flag‘ = at(‘store_and_fwd_flag‘, 0)) over
    train_vendor_id_pickup_datetime_0s_2h_200 else null end as train_store_and_fwd_flag_window_count_26,
sum(‘dropoff_latitude‘) over train_vendor_id_pickup_datetime_0s_2h_200 as
    train_dropoff_latitude_window_sum_27
from
‘train‘
window train_vendor_id_pickup_datetime_0s_1h_200 as (partition by ‘vendor_id‘ order by ‘pickup_datetime‘
    rows_range between 1h open preceding and 0s preceding MAXSIZE 200),
train_vendor_id_pickup_datetime_0s_2h_200 as (partition by ‘vendor_id‘ order by ‘pickup_datetime‘
    rows_range between 2h open preceding and 0s preceding MAXSIZE 200))
;
```

D.2 Flu Forecast (Q1)

```
select
‘Id‘ as Id_1,
‘Date‘ as train_Date_original_0,
‘Id‘ as train_Id_original_1,
‘ConfirmedCases‘ as train_ConfirmedCases_original_2,
‘Country_Region‘ as train_Country_Region_original_3,
‘Fatalities‘ as train_Fatalities_original_4,
‘Province_State‘ as train_Province_State_original_5,
log(‘Fatalities‘) as train_Fatalities_log_6,
min(‘Fatalities‘) over train_Province_State_Date_0s_2d_200 as train_Fatalities_window_min_7,
min(‘Fatalities‘) over train_Province_State_Date_0s_7d_200 as train_Fatalities_window_min_8,
‘Province_State‘,
‘Country_Region‘,
concat(Province_State, Country_Region) as train_combine_9,
min(‘Fatalities‘) over train_Country_Region_Date_0s_2d_100 as train_Fatalities_window_min_10,
min(‘Fatalities‘) over train_Country_Region_Date_0s_5d_200 as train_Fatalities_window_min_11,
avg(‘Fatalities‘) over train_Province_State_Date_0s_2d_200 as train_Fatalities_window_avg_12,
avg(‘Fatalities‘) over train_Province_State_Date_0s_5d_200 as train_Fatalities_window_avg_13,
sum(‘Fatalities‘) over train_Province_State_Date_0s_7d_100 as train_Fatalities_window_sum_14,
avg(‘Fatalities‘) over train_Country_Region_Date_0s_2d_100 as train_Fatalities_window_avg_15,
max(‘Fatalities‘) over train_Country_Region_Date_0s_5d_200 as train_Fatalities_window_max_16,
max(‘Fatalities‘) over train_Country_Region_Date_0s_14d_200 as train_Fatalities_window_max_17,
avg(‘Fatalities‘) over train_Country_Region_Date_0_10_ as train_Fatalities_window_avg_18,
top1_ratio(‘Province_State‘) over train_Country_Region_Date_0_10_ as
    train_Province_State_window_top1_ratio_19,
```

```
case when !isnull(at(`Country_Region`, 0)) over train_Province_State_Date_0s_14d_100 then
    count_where(`Country_Region`, `Country_Region` = at(`Country_Region`, 0)) over
    train_Province_State_Date_0s_14d_100 else null end as train_Country_Region_window_count_20,
case when !isnull(at(`Country_Region`, 0)) over train_Province_State_Date_0s_64d_100 then
    count_where(`Country_Region`, `Country_Region` = at(`Country_Region`, 0)) over
    train_Province_State_Date_0s_64d_100 else null end as train_Country_Region_window_count_21,
dayofweek(timestamp(`Date`)) as train_Date_dayofweek_22,
case when 1 < dayofweek(timestamp(`Date`)) and dayofweek(timestamp(`Date`)) < 7 then 1 else 0 end as
    train_Date_isweekday_23
from
`train`
window train_Province_State_Date_0s_2d_200 as (partition by `Province_State` order by `Date` rows_range
    between 2d open preceding and 0s preceding MAXSIZE 200),
train_Province_State_Date_0s_7d_200 as (partition by `Province_State` order by `Date` rows_range between
    7d open preceding and 0s preceding MAXSIZE 200),
train_Country_Region_Date_0s_2d_100 as (partition by `Country_Region` order by `Date` rows_range between
    2d open preceding and 0s preceding MAXSIZE 100),
train_Country_Region_Date_0s_5d_200 as (partition by `Country_Region` order by `Date` rows_range between
    5d open preceding and 0s preceding MAXSIZE 200),
train_Province_State_Date_0s_5d_200 as (partition by `Province_State` order by `Date` rows_range between
    5d open preceding and 0s preceding MAXSIZE 200),
train_Province_State_Date_0s_7d_100 as (partition by `Province_State` order by `Date` rows_range between
    7d open preceding and 0s preceding MAXSIZE 100),
train_Country_Region_Date_0s_14d_200 as (partition by `Country_Region` order by `Date` rows_range between
    14d open preceding and 0s preceding MAXSIZE 200),
train_Country_Region_Date_0_10_ as (partition by `Country_Region` order by `Date` rows between 10 open
    preceding and 0 preceding),
train_Province_State_Date_0s_14d_100 as (partition by `Province_State` order by `Date` rows_range between
    14d open preceding and 0s preceding MAXSIZE 100),
train_Province_State_Date_0s_64d_100 as (partition by `Province_State` order by `Date` rows_range between
    64d open preceding and 0s preceding MAXSIZE 100)
;
```

D.3 Wind Energy Forecasting (Q2)

```
select * from
(
select
`date` as date_1,
`date` as train_date_original_0,
`wp7` as train_wp7_original_2,
`wp1` as train_wp1_original_32,
`wp2` as train_wp2_original_33,
`wp3` as train_wp3_original_34,
`wp4` as train_wp4_original_35,
`wp5` as train_wp5_original_36,
`wp6` as train_wp6_original_37,
log(`wp6`) as train_wp6_log_38,
log(`wp3`) as train_wp3_log_39,
dayofweek(timestamp(`date`)) as train_date_dayofweek_40,
hour(timestamp(`date`)) as train_date_hourofday_41,
case when 1 < dayofweek(timestamp(`date`)) and dayofweek(timestamp(`date`)) < 7 then 1 else 0 end as
    train_date_isweekday_42,
log(`wp2`) as train_wp2_log_43
from
`train`
)
as out0
```

```
last join
(
select
‘train‘.‘date‘ as date_3,
‘windforecasts_wf1_date‘.‘hors‘ as windforecasts_wf1_hors_multi_direct_3,
‘windforecasts_wf1_date‘.‘u‘ as windforecasts_wf1_u_multi_direct_4,
‘windforecasts_wf1_date‘.‘v‘ as windforecasts_wf1_v_multi_direct_5,
‘windforecasts_wf1_date‘.‘wd‘ as windforecasts_wf1_wd_multi_direct_6,
‘windforecasts_wf1_date‘.‘ws‘ as windforecasts_wf1_ws_multi_direct_7,
‘windforecasts_wf2_date‘.‘u‘ as windforecasts_wf2_u_multi_direct_8,
‘windforecasts_wf2_date‘.‘v‘ as windforecasts_wf2_v_multi_direct_9,
‘windforecasts_wf2_date‘.‘wd‘ as windforecasts_wf2_wd_multi_direct_10,
‘windforecasts_wf2_date‘.‘ws‘ as windforecasts_wf2_ws_multi_direct_11,
‘windforecasts_wf3_date‘.‘u‘ as windforecasts_wf3_u_multi_direct_12,
‘windforecasts_wf3_date‘.‘v‘ as windforecasts_wf3_v_multi_direct_13,
‘windforecasts_wf3_date‘.‘wd‘ as windforecasts_wf3_wd_multi_direct_14,
‘windforecasts_wf3_date‘.‘ws‘ as windforecasts_wf3_ws_multi_direct_15,
‘windforecasts_wf4_date‘.‘u‘ as windforecasts_wf4_u_multi_direct_16,
‘windforecasts_wf4_date‘.‘v‘ as windforecasts_wf4_v_multi_direct_17,
‘windforecasts_wf4_date‘.‘wd‘ as windforecasts_wf4_wd_multi_direct_18,
‘windforecasts_wf4_date‘.‘ws‘ as windforecasts_wf4_ws_multi_direct_19,
‘windforecasts_wf5_date‘.‘u‘ as windforecasts_wf5_u_multi_direct_20,
‘windforecasts_wf5_date‘.‘v‘ as windforecasts_wf5_v_multi_direct_21,
‘windforecasts_wf5_date‘.‘wd‘ as windforecasts_wf5_wd_multi_direct_22,
‘windforecasts_wf5_date‘.‘ws‘ as windforecasts_wf5_ws_multi_direct_23,
‘windforecasts_wf6_date‘.‘u‘ as windforecasts_wf6_u_multi_direct_24,
‘windforecasts_wf6_date‘.‘v‘ as windforecasts_wf6_v_multi_direct_25,
‘windforecasts_wf6_date‘.‘wd‘ as windforecasts_wf6_wd_multi_direct_26,
‘windforecasts_wf6_date‘.‘ws‘ as windforecasts_wf6_ws_multi_direct_27,
‘windforecasts_wf7_date‘.‘u‘ as windforecasts_wf7_u_multi_direct_28,
‘windforecasts_wf7_date‘.‘v‘ as windforecasts_wf7_v_multi_direct_29,
‘windforecasts_wf7_date‘.‘wd‘ as windforecasts_wf7_wd_multi_direct_30,
‘windforecasts_wf7_date‘.‘ws‘ as windforecasts_wf7_ws_multi_direct_31
from
‘train‘
last join ‘windforecasts_wf1‘ as ‘windforecasts_wf1_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf1_date‘.‘date‘
last join ‘windforecasts_wf2‘ as ‘windforecasts_wf2_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf2_date‘.‘date‘
last join ‘windforecasts_wf3‘ as ‘windforecasts_wf3_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf3_date‘.‘date‘
last join ‘windforecasts_wf4‘ as ‘windforecasts_wf4_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf4_date‘.‘date‘
last join ‘windforecasts_wf5‘ as ‘windforecasts_wf5_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf5_date‘.‘date‘
last join ‘windforecasts_wf6‘ as ‘windforecasts_wf6_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf6_date‘.‘date‘
last join ‘windforecasts_wf7‘ as ‘windforecasts_wf7_date‘ on ‘train‘.‘date‘ =
    ‘windforecasts_wf7_date‘.‘date‘)
as out1
on out0.date_1 = out1.date_3
;
```

D.4 Sales Prediction (Q3)

```
select
Q3_Col31_1,
flatten_request_Q3_Col32_original_0,
```

```
flatten_request_Q3_Col31_original_1,
flatten_request_Q3_Col34_original_92,
flatten_request_Q3_Col3_original_93,
flatten_request_Q3_Col33_original_94,
flatten_request_Q3_Col3_95,
flatten_request_Q3_Col3_96,
flatten_request_Q3_Col3_97,
flatten_request_Q3_Col34_window_count_98,
Q3_Col31_3,
feedback_Q3_Col58_multi_direct_2,
product_Q3_Col3_Q3_Col60_multi_direct_15,
product_Q3_Col3_Q3_Col61_multi_direct_16,
product_Q3_Col3_Q3_Col0_multi_direct_17,
product_Q3_Col3_Q3_Col59_multi_direct_18,
product_Q3_Col3_Q3_Col64_multi_direct_19,
product_Q3_Col3_Q3_Col65_multi_direct_20,
product_Q3_Col3_Q3_Col62_multi_direct_21,
product_Q3_Col3_Q3_Col63_multi_direct_22,
product_item_Q3_Col12_multi_last_value_23,
product_item_Q3_Col16_multi_last_value_24,
product_item_Q3_Col26_multi_last_value_25,
product_item_Q3_Col27_multi_last_value_26,
product_item_Q3_Col9_multi_last_value_27,
product_item_Q3_Col11_multi_last_value_28,
product_item_Q3_Col8_multi_last_value_29,
product_item_Q3_Col7_multi_last_value_30,
product_item_Q3_Col18_multi_last_value_31,
product_item_Q3_Col20_multi_last_value_32,
product_item_Q3_Col21_multi_last_value_33,
product_item_Q3_Col22_multi_last_value_34,
product_item_Q3_Col23_multi_last_value_35,
product_item_Q3_Col24_multi_last_value_36,
product_item_Q3_Col25_multi_last_value_37,
product_item_Q3_Col19_multi_last_value_38,
product_item_Q3_Col14_multi_last_value_39,
product_item_Q3_Col15_multi_last_value_40,
shipping_Q3_Col3_Q3_Col54_multi_last_value_41,
shipping_Q3_Col3_rfc_price_end_dt_multi_last_value_42,
shipping_Q3_Col3_rfc_price_start_dt_multi_last_value_43,
shipping_Q3_Col3_shipping_dt_multi_last_value_44,
Q3_Col31_4,
order_cancel_return_Q3_Col4_multi_avg_3,
Q3_Col31_5,
order_sales_Q3_Col48_multi_avg_4,
order_sales_Q3_Col48_multi_avg_4 / order_sales_Q3_Col55_multi_avg_12,
order_sales_Q3_Col48_multi_avg_5,
order_sales_Q3_Col48_multi_avg_5 / shipping_Q3_Col3_Q3_Col54_multi_last_value_41,
order_sales_Q3_Col48_multi_avg_5 / order_sales_Q3_Col54_multi_min_49,
order_sales_Q3_Col47_multi_avg_6,
order_sales_Q3_Col47_multi_avg_6 / order_sales_Q3_Col40_multi_unique_count_82,
order_sales_Q3_Col47_multi_avg_6 / order_sales_Q3_Col55_multi_avg_12,
order_sales_Q3_Col47_multi_avg_6 / order_sales_Q3_Col55_multi_avg_12,
order_sales_Q3_Col47_multi_avg_7,
order_sales_Q3_Col47_multi_avg_7 / order_sales_Q3_Col40_multi_unique_count_81,
order_sales_Q3_Col47_multi_avg_7 / shipping_Q3_Col3_Q3_Col54_multi_last_value_41,
order_sales_Q3_Col54_multi_avg_8,
order_sales_Q3_Col54_multi_avg_9,
order_sales_Q3_Col56_multi_avg_10,
order_sales_Q3_Col53_multi_avg_11,
order_sales_Q3_Col53_multi_avg_11 / order_sales_Q3_Col47_multi_avg_7,
order_sales_Q3_Col55_multi_avg_12,
```

```
order_sales_Q3_Col4_multi_avg_13,
order_sales_Q3_Col4_multi_avg_14,
order_sales_Q3_Col4_multi_avg_14 / order_sales_Q3_Col55_multi_avg_12,
order_sales_Q3_Col56_multi_max_45,
order_sales_Q3_Col4_multi_max_46,
order_sales_Q3_Col48_multi_min_47,
order_sales_Q3_Col47_multi_min_48,
order_sales_Q3_Col54_multi_min_49,
order_sales_Q3_Col54_multi_min_49 / order_sales_Q3_Col48_multi_avg_5,
order_sales_Q3_Col56_multi_min_50,
order_sales_Q3_Col43_multi_top3frequency_51,
order_sales_Q3_Col43_multi_top3frequency_52,
order_sales_Q3_Col44_multi_top3frequency_53,
order_sales_Q3_Col40_multi_top3frequency_54,
order_sales_Q3_Col41_multi_top3frequency_55,
order_sales_Q3_Col42_multi_top3frequency_56,
order_sales_Q3_Col39_multi_top3frequency_57,
order_sales_Q3_Col39_multi_top3frequency_58,
order_sales_Q3_Col38_multi_top3frequency_59,
order_sales_Q3_Col38_multi_top3frequency_60,
order_sales_Q3_Col6_multi_top3frequency_61,
order_sales_Q3_Col6_multi_top3frequency_62,
order_sales_Q3_Col2_multi_top3frequency_63,
order_sales_Q3_Col2_multi_top3frequency_64,
order_sales_Q3_Col45_multi_top3frequency_65,
order_sales_Q3_Col45_multi_top3frequency_66,
order_sales_Q3_Col35_multi_top3frequency_67,
order_sales_Q3_Col35_multi_top3frequency_68,
order_sales_Q3_Col57_multi_top3frequency_69,
order_sales_Q3_Col57_multi_top3frequency_70,
order_sales_Q3_Col36_multi_top3frequency_71,
order_sales_Q3_Col51_multi_top3frequency_72,
order_sales_Q3_Col51_multi_top3frequency_73,
order_sales_Q3_Col52_multi_top3frequency_74,
order_sales_Q3_Col52_multi_top3frequency_75,
order_sales_Q3_Col50_multi_top3frequency_76,
order_sales_Q3_Col50_multi_top3frequency_77,
order_sales_Q3_Col43_multi_unique_count_78,
order_sales_Q3_Col43_multi_unique_count_78 / order_sales_Q3_Col55_multi_avg_12,
order_sales_Q3_Col44_multi_unique_count_79,
order_sales_Q3_Col44_multi_unique_count_80,
order_sales_Q3_Col40_multi_unique_count_81,
order_sales_Q3_Col40_multi_unique_count_82,
order_sales_Q3_Col40_multi_unique_count_82 / order_sales_Q3_Col47_multi_avg_6,
order_sales_Q3_Col41_multi_unique_count_83,
order_sales_Q3_Col41_multi_unique_count_84,
order_sales_Q3_Col39_multi_unique_count_85,
order_sales_Q3_Col38_multi_unique_count_86,
order_sales_Q3_Col2_multi_unique_count_87,
order_sales_Q3_Col2_multi_unique_count_87 / order_sales_Q3_Col55_multi_avg_12,
order_sales_Q3_Col45_multi_unique_count_88,
order_sales_Q3_Col35_multi_unique_count_89,
order_sales_Q3_Col36_multi_unique_count_90,
order_sales_Q3_Col36_multi_unique_count_91
from
(
select
`Q3_Col31` as Q3_Col31_1,
`Q3_Col32` as flatten_request_Q3_Col32_original_0,
`Q3_Col31` as flatten_request_Q3_Col31_original_1,
`Q3_Col34` as flatten_request_Q3_Col34_original_92,
```

```
126 ‘Q3_Col3‘ as flatten_request_Q3_Col3_original_93,
127 ‘Q3_Col33‘ as flatten_request_Q3_Col33_original_94,
128 ‘Q3_Col3‘ as flatten_request_Q3_Col3_95,
129 ‘Q3_Col3‘ as flatten_request_Q3_Col3_96,
130 ‘Q3_Col3‘ as flatten_request_Q3_Col3_97,
131 case when !isnull(at(‘Q3_Col34‘, 0)) over flatten_request_Q3_Col3_Q3_Col32_0s_7d_100 then
        count_where(‘Q3_Col34‘, ‘Q3_Col34‘ = at(‘Q3_Col34‘, 0)) over
        flatten_request_Q3_Col3_Q3_Col32_0s_7d_100 else null end as flatten_request_Q3_Col34_window_count_98
132 from
133 ‘train‘
134 window flatten_request_Q3_Col3_Q3_Col32_0s_7d_100 as (partition by ‘Q3_Col3‘ order by ‘Q3_Col32‘
        rows_range between 7d preceding and 0s preceding MAXSIZE 100))
135 as out0
136 last join
137 (
138 select
139 ‘train‘.‘Q3_Col31‘ as Q3_Col31_3,
140 ‘feedback_Q3_Col31‘.‘Q3_Col58‘ as feedback_Q3_Col58_multi_direct_2,
141 ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col60‘ as product_Q3_Col3_Q3_Col60_multi_direct_15,
142 ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col61‘ as product_Q3_Col3_Q3_Col61_multi_direct_16,
143 ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col0‘ as product_Q3_Col3_Q3_Col0_multi_direct_17,
144 ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col59‘ as product_Q3_Col3_Q3_Col59_multi_direct_18,
145 ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col64‘ as product_Q3_Col3_Q3_Col64_multi_direct_19,
146 ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col65‘ as product_Q3_Col3_Q3_Col65_multi_direct_20,
147 ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col62‘ as product_Q3_Col3_Q3_Col62_multi_direct_21,
148 ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col63‘ as product_Q3_Col3_Q3_Col63_multi_direct_22,
149 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col12‘ as product_item_Q3_Col12_multi_last_value_23,
150 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col16‘ as product_item_Q3_Col16_multi_last_value_24,
151 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col26‘ as product_item_Q3_Col26_multi_last_value_25,
152 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col27‘ as product_item_Q3_Col27_multi_last_value_26,
153 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col9‘ as product_item_Q3_Col9_multi_last_value_27,
154 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col11‘ as product_item_Q3_Col11_multi_last_value_28,
155 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col8‘ as product_item_Q3_Col8_multi_last_value_29,
156 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col7‘ as product_item_Q3_Col7_multi_last_value_30,
157 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col18‘ as product_item_Q3_Col18_multi_last_value_31,
158 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col20‘ as product_item_Q3_Col20_multi_last_value_32,
159 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col21‘ as product_item_Q3_Col21_multi_last_value_33,
160 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col22‘ as product_item_Q3_Col22_multi_last_value_34,
161 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col23‘ as product_item_Q3_Col23_multi_last_value_35,
162 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col24‘ as product_item_Q3_Col24_multi_last_value_36,
163 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col25‘ as product_item_Q3_Col25_multi_last_value_37,
164 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col19‘ as product_item_Q3_Col19_multi_last_value_38,
165 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col14‘ as product_item_Q3_Col14_multi_last_value_39,
166 ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col15‘ as product_item_Q3_Col15_multi_last_value_40,
167 ‘shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d‘.‘Q3_Col54‘ as shipping_Q3_Col3_Q3_Col54_multi_last_value_41,
168 ‘shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d‘.‘rfc_price_end_dt‘ as
        shipping_Q3_Col3_rfc_price_end_dt_multi_last_value_42,
169 ‘shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d‘.‘rfc_price_start_dt‘ as
        shipping_Q3_Col3_rfc_price_start_dt_multi_last_value_43,
170 ‘shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d‘.‘shipping_dt‘ as
        shipping_Q3_Col3_shipping_dt_multi_last_value_44
171 from
172 ‘train‘
173 last join ‘feedback‘ as ‘feedback_Q3_Col31‘ on ‘train‘.‘Q3_Col31‘ = ‘feedback_Q3_Col31‘.‘Q3_Col31‘
174 last join ‘product_sku‘ as ‘product_Q3_Col3_Q3_Col3‘ on ‘train‘.‘Q3_Col3‘ =
        ‘product_Q3_Col3_Q3_Col3‘.‘Q3_Col3‘
175 last join ‘product_item‘ as ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘ order by
        product_item_Q3_Col6__Q3_Col32_0s_1d.‘Q3_Col0‘ on ‘train‘.‘Q3_Col6‘ =
        ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col6‘ and
        ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col0‘ < ‘train‘.‘Q3_Col32‘ - 0 and
        ‘product_item_Q3_Col6__Q3_Col32_0s_1d‘.‘Q3_Col0‘ > ‘train‘.‘Q3_Col32‘ - 86400000
```

```
last join ‘shipping_sku‘ as ‘shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d‘ order by
    shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d.‘Q3_Col0‘ on ‘train‘.‘Q3_Col3‘ =
    ‘shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d‘.‘Q3_Col3‘ and
    ‘shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d‘.‘Q3_Col0‘ < ‘train‘.‘Q3_Col32‘ - 0 and
    ‘shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d‘.‘Q3_Col0‘ > ‘train‘.‘Q3_Col32‘ - 86400000)
as out1
on out0.Q3_Col31_1 = out1.Q3_Col31_3
last join
(
select
‘Q3_Col31‘ as Q3_Col31_4,
avg(‘Q3_Col4‘) over order_cancel_return_Q3_Col3_Q3_Col0_0s_64d_100 as
    order_cancel_return_Q3_Col4_multi_avg_3
from
(select ‘Q3_Col32‘ as ‘Q3_Col0‘, timestamp(’2019-07-18 09:20:20’) as ‘Q3_Col1‘, ’’ as ‘Q3_Col2‘,
    ‘Q3_Col3‘ as ‘Q3_Col3‘, int(0) as ‘Q3_Col4‘, ’’ as ‘Q3_Col5‘, Q3_Col31 from ‘train‘)
window order_cancel_return_Q3_Col3_Q3_Col0_0s_64d_100 as (
UNION (select ‘Q3_Col0‘, ‘Q3_Col1‘, ‘Q3_Col2‘, ‘Q3_Col3‘, ‘Q3_Col4‘, ‘Q3_Col5‘, ’’ as Q3_Col31 from
    ‘order_cancel_return‘) partition by ‘Q3_Col3‘ order by ‘Q3_Col0‘ rows_range between 64d preceding
    and 0s preceding MAXSIZE 100 INSTANCE_NOT_IN_WINDOW))
as out2
on out0.Q3_Col31_1 = out2.Q3_Col31_4
last join
(
select
‘Q3_Col31‘ as Q3_Col31_5,
avg(‘Q3_Col48‘) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as order_sales_Q3_Col48_multi_avg_4,
avg(‘Q3_Col48‘) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as order_sales_Q3_Col48_multi_avg_5,
avg(‘Q3_Col47‘) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as order_sales_Q3_Col47_multi_avg_6,
avg(‘Q3_Col47‘) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as order_sales_Q3_Col47_multi_avg_7,
avg(‘Q3_Col54‘) over order_sales_Q3_Col3_Q3_Col0_0s_14d_100 as order_sales_Q3_Col54_multi_avg_8,
avg(‘Q3_Col54‘) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as order_sales_Q3_Col54_multi_avg_9,
avg(‘Q3_Col56‘) over order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as order_sales_Q3_Col56_multi_avg_10,
avg(‘Q3_Col53‘) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as order_sales_Q3_Col53_multi_avg_11,
avg(‘Q3_Col55‘) over order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as order_sales_Q3_Col55_multi_avg_12,
avg(‘Q3_Col4‘) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as order_sales_Q3_Col4_multi_avg_13,
avg(‘Q3_Col4‘) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as order_sales_Q3_Col4_multi_avg_14,
max(‘Q3_Col56‘) over order_sales_Q3_Col3_Q3_Col0_0s_14d_100 as order_sales_Q3_Col56_multi_max_45,
max(‘Q3_Col4‘) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as order_sales_Q3_Col4_multi_max_46,
min(‘Q3_Col48‘) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as order_sales_Q3_Col48_multi_min_47,
min(‘Q3_Col47‘) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as order_sales_Q3_Col47_multi_min_48,
min(‘Q3_Col54‘) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as order_sales_Q3_Col54_multi_min_49,
min(‘Q3_Col56‘) over order_sales_Q3_Col3_Q3_Col0_0s_64d_100 as order_sales_Q3_Col56_multi_min_50,
topn_frequency(‘Q3_Col43‘, 3) over order_sales_Q3_Col3_Q3_Col0_0s_14d_100 as
    order_sales_Q3_Col43_multi_top3frequency_51,
topn_frequency(‘Q3_Col43‘, 3) over order_sales_Q3_Col3_Q3_Col0_0s_64d_100 as
    order_sales_Q3_Col43_multi_top3frequency_52,
topn_frequency(‘Q3_Col44‘, 3) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
    order_sales_Q3_Col44_multi_top3frequency_53,
topn_frequency(‘Q3_Col40‘, 3) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
    order_sales_Q3_Col40_multi_top3frequency_54,
topn_frequency(‘Q3_Col41‘, 3) over order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as
    order_sales_Q3_Col41_multi_top3frequency_55,
topn_frequency(‘Q3_Col42‘, 3) over order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as
    order_sales_Q3_Col42_multi_top3frequency_56,
topn_frequency(‘Q3_Col39‘, 3) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
    order_sales_Q3_Col39_multi_top3frequency_57,
topn_frequency(‘Q3_Col39‘, 3) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as
    order_sales_Q3_Col39_multi_top3frequency_58,
topn_frequency(‘Q3_Col38‘, 3) over order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as
    order_sales_Q3_Col38_multi_top3frequency_59,
```

```
220 topn_frequency(`Q3_Col38`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_64d_100 as
        order_sales_Q3_Col38_multi_top3frequency_60,
221 topn_frequency(`Q3_Col6`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col6_multi_top3frequency_61,
222 topn_frequency(`Q3_Col6`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as
        order_sales_Q3_Col6_multi_top3frequency_62,
223 topn_frequency(`Q3_Col2`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_14d_100 as
        order_sales_Q3_Col2_multi_top3frequency_63,
224 topn_frequency(`Q3_Col2`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_64d_100 as
        order_sales_Q3_Col2_multi_top3frequency_64,
225 topn_frequency(`Q3_Col45`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_14d_100 as
        order_sales_Q3_Col45_multi_top3frequency_65,
226 topn_frequency(`Q3_Col45`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_7d_100 as
        order_sales_Q3_Col45_multi_top3frequency_66,
227 topn_frequency(`Q3_Col35`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_14d_100 as
        order_sales_Q3_Col35_multi_top3frequency_67,
228 topn_frequency(`Q3_Col35`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_64d_100 as
        order_sales_Q3_Col35_multi_top3frequency_68,
229 topn_frequency(`Q3_Col57`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col57_multi_top3frequency_69,
230 topn_frequency(`Q3_Col57`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as
        order_sales_Q3_Col57_multi_top3frequency_70,
231 topn_frequency(`Q3_Col36`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col36_multi_top3frequency_71,
232 topn_frequency(`Q3_Col51`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col51_multi_top3frequency_72,
233 topn_frequency(`Q3_Col51`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as
        order_sales_Q3_Col51_multi_top3frequency_73,
234 topn_frequency(`Q3_Col52`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col52_multi_top3frequency_74,
235 topn_frequency(`Q3_Col52`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as
        order_sales_Q3_Col52_multi_top3frequency_75,
236 topn_frequency(`Q3_Col50`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col50_multi_top3frequency_76,
237 topn_frequency(`Q3_Col50`, 3) over order_sales_Q3_Col3_Q3_Col0_0s_7d_100 as
        order_sales_Q3_Col50_multi_top3frequency_77,
238 distinct_count(`Q3_Col43`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col43_multi_unique_count_78,
239 distinct_count(`Q3_Col44`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col44_multi_unique_count_79,
240 distinct_count(`Q3_Col44`) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as
        order_sales_Q3_Col44_multi_unique_count_80,
241 distinct_count(`Q3_Col40`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col40_multi_unique_count_81,
242 distinct_count(`Q3_Col40`) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as
        order_sales_Q3_Col40_multi_unique_count_82,
243 distinct_count(`Q3_Col41`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col41_multi_unique_count_83,
244 distinct_count(`Q3_Col41`) over order_sales_Q3_Col3_Q3_Col0_0s_64d_100 as
        order_sales_Q3_Col41_multi_unique_count_84,
245 distinct_count(`Q3_Col39`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col39_multi_unique_count_85,
246 distinct_count(`Q3_Col38`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col38_multi_unique_count_86,
247 distinct_count(`Q3_Col2`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col2_multi_unique_count_87,
248 distinct_count(`Q3_Col45`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col45_multi_unique_count_88,
249 distinct_count(`Q3_Col35`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col35_multi_unique_count_89,
```

```
250 distinct_count(`Q3_Col36`) over order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as
        order_sales_Q3_Col36_multi_unique_count_90,
251 distinct_count(`Q3_Col36`) over order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as
        order_sales_Q3_Col36_multi_unique_count_91
252 from
253 (select `Q3_Col32` as `Q3_Col0`, '' as `Q3_Col35`, '' as `Q3_Col36`, '' as `Q3_Col37`, '' as `Q3_Col38`,
        '' as `Q3_Col39`, '' as `Q3_Col40`, '' as `Q3_Col41`, '' as `Q3_Col42`, '' as `Q3_Col2`, '' as
        `Q3_Col43`, '' as `Q3_Col44`, '' as `Q3_Col45`, timestamp('2019-07-18 09:20:20') as `Q3_Col46`,
        bigint(0) as `Q3_Col4`, double(0) as `Q3_Col47`, double(0) as `Q3_Col48`, `Q3_Col3` as `Q3_Col3`, ''
        as `Q3_Col49`, '' as `Q3_Col50`, '' as `Q3_Col6`, '' as `Q3_Col51`, '' as `Q3_Col52`, double(0) as
        `Q3_Col53`, double(0) as `Q3_Col54`, double(0) as `Q3_Col55`, double(0) as `Q3_Col56`, '' as
        `Q3_Col57`, Q3_Col31 from `train`)
254 window order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as (
255 UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
        `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
        `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
        `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
        partition by `Q3_Col3` order by `Q3_Col0` rows_range between 10h preceding and 0s preceding MAXSIZE
        100 INSTANCE_NOT_IN_WINDOW),
256 order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as (
257 UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
        `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
        `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
        `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
        partition by `Q3_Col3` order by `Q3_Col0` rows_range between 2d preceding and 0s preceding MAXSIZE
        100 INSTANCE_NOT_IN_WINDOW),
258 order_sales_Q3_Col3_Q3_Col0_0s_14d_100 as (
259 UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
        `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
        `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
        `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
        partition by `Q3_Col3` order by `Q3_Col0` rows_range between 14d preceding and 0s preceding MAXSIZE
        100 INSTANCE_NOT_IN_WINDOW),
260 order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as (
261 UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
        `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
        `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
        `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
        partition by `Q3_Col3` order by `Q3_Col0` rows_range between 5d preceding and 0s preceding MAXSIZE
        100 INSTANCE_NOT_IN_WINDOW),
262 order_sales_Q3_Col3_Q3_Col0_0s_64d_100 as (
263 UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
        `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
        `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
        `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
        partition by `Q3_Col3` order by `Q3_Col0` rows_range between 64d preceding and 0s preceding MAXSIZE
        100 INSTANCE_NOT_IN_WINDOW),
264 order_sales_Q3_Col3_Q3_Col0_0s_7d_100 as (
265 UNION (select `Q3_Col0`, `Q3_Col35`, `Q3_Col36`, `Q3_Col37`, `Q3_Col38`, `Q3_Col39`, `Q3_Col40`,
        `Q3_Col41`, `Q3_Col42`, `Q3_Col2`, `Q3_Col43`, `Q3_Col44`, `Q3_Col45`, `Q3_Col46`, `Q3_Col4`,
        `Q3_Col47`, `Q3_Col48`, `Q3_Col3`, `Q3_Col49`, `Q3_Col50`, `Q3_Col6`, `Q3_Col51`, `Q3_Col52`,
        `Q3_Col53`, `Q3_Col54`, `Q3_Col55`, `Q3_Col56`, `Q3_Col57`, '' as Q3_Col31 from `order_sales`)
        partition by `Q3_Col3` order by `Q3_Col0` rows_range between 7d preceding and 0s preceding MAXSIZE
        100 INSTANCE_NOT_IN_WINDOW))
266 as out3
267 on out0.Q3_Col31_1 = out3.Q3_Col31_5
268 ;
```

D.5 Loan Evaluation (Q4)

```
select
Q4_Col40_1,
flattenRequest_Q4_Col41_original_0,
flattenRequest_Q4_Col40_original_1,
flattenRequest_Q4_Col39_original_107,
flattenRequest_Q4_Col45_original_108,
flattenRequest_Q4_Col47_original_109,
flattenRequest_Q4_Col187_original_110,
flattenRequest_Q4_Col186_original_111,
flattenRequest_Q4_Col189_original_112,
flattenRequest_Q4_Col190_original_113,
flattenRequest_Q4_Col188_original_114,
flattenRequest_Q4_Col191_original_115,
flattenRequest_Q4_Col114_original_116,
flattenRequest_Q4_Col142_original_117,
flattenRequest_Q4_Col128_original_118,
flattenRequest_Q4_Col115_original_119,
flattenRequest_Q4_Col143_original_120,
flattenRequest_Q4_Col129_original_121,
flattenRequest_Q4_Col90_original_122,
flattenRequest_Q4_Col105_original_123,
flattenRequest_Q4_Col80_original_124,
flattenRequest_Q4_Col118_original_125,
flattenRequest_Q4_Col146_original_126,
flattenRequest_Q4_Col132_original_127,
flattenRequest_Q4_Col81_original_128,
flattenRequest_Q4_Col97_original_129,
flattenRequest_Q4_Col165_original_130,
flattenRequest_Q4_Col96_original_131,
flattenRequest_Q4_Col162_original_132,
flattenRequest_Q4_Col164_original_133,
flattenRequest_Q4_Col119_original_134,
flattenRequest_Q4_Col147_original_135,
flattenRequest_Q4_Col133_original_136,
flattenRequest_Q4_Col160_original_137,
flattenRequest_Q4_Col120_original_138,
flattenRequest_Q4_Col148_original_139,
flattenRequest_Q4_Col134_original_140,
flattenRequest_Q4_Col82_original_141,
flattenRequest_Q4_Col83_original_142,
flattenRequest_Q4_Col84_original_143,
flattenRequest_Q4_Col102_original_144,
flattenRequest_Q4_Col177_original_145,
flattenRequest_Q4_Col178_original_146,
flattenRequest_Q4_Col180_original_147,
flattenRequest_Q4_Col182_original_148,
flattenRequest_Q4_Col183_original_149,
flattenRequest_Q4_Col166_original_150,
flattenRequest_Q4_Col184_original_151,
flattenRequest_Q4_Col185_original_152,
flattenRequest_Q4_Col167_original_153,
flattenRequest_Q4_Col169_original_154,
flattenRequest_Q4_Col170_original_155,
flattenRequest_Q4_Col172_original_156,
flattenRequest_Q4_Col104_original_157,
flattenRequest_Q4_Col100_original_158,
flattenRequest_Q4_Col88_original_159,
flattenRequest_Q4_Col89_original_160,
```

```
flattenRequest_Q4_Col103_original_161,
flattenRequest_Q4_Col101_original_162,
flattenRequest_Q4_Col121_original_163,
flattenRequest_Q4_Col149_original_164,
flattenRequest_Q4_Col135_original_165,
flattenRequest_Q4_Col122_original_166,
flattenRequest_Q4_Col150_original_167,
flattenRequest_Q4_Col136_original_168,
flattenRequest_Q4_Col156_original_169,
flattenRequest_Q4_Col49_original_170,
flattenRequest_Q4_Col157_original_171,
flattenRequest_Q4_Col123_original_172,
flattenRequest_Q4_Col151_original_173,
flattenRequest_Q4_Col137_original_174,
flattenRequest_Q4_Col113_original_175,
flattenRequest_Q4_Col124_original_176,
flattenRequest_Q4_Col152_original_177,
flattenRequest_Q4_Col138_original_178,
flattenRequest_Q4_Col125_original_179,
flattenRequest_Q4_Col153_original_180,
flattenRequest_Q4_Col139_original_181,
flattenRequest_Q4_Col43_original_182,
flattenRequest_Q4_Col78_original_183,
flattenRequest_Q4_Col92_original_184,
flattenRequest_Q4_Col93_original_185,
flattenRequest_Q4_Col91_original_186,
flattenRequest_Q4_Col59_original_187,
flattenRequest_Q4_Col126_original_188,
flattenRequest_Q4_Col154_original_189,
flattenRequest_Q4_Col140_original_190,
flattenRequest_Q4_Col127_original_191,
flattenRequest_Q4_Col155_original_192,
flattenRequest_Q4_Col141_original_193,
flattenRequest_Q4_Col161_original_194,
flattenRequest_Q4_Col163_original_195,
flattenRequest_Q4_Col79_original_196,
flattenRequest_Q4_Col77_original_197,
flattenRequest_Q4_Col98_original_198,
flattenRequest_Q4_Col94_original_199,
flattenRequest_Q4_Col106_original_200,
flattenRequest_Q4_Col107_original_201,
flattenRequest_Q4_Col111_original_202,
flattenRequest_Q4_Col112_original_203,
flattenRequest_Q4_Col108_original_204,
flattenRequest_Q4_Col109_original_205,
flattenRequest_Q4_Col158_original_206,
flattenRequest_Q4_Col159_original_207,
flattenRequest_Q4_Col48_original_208,
flattenRequest_Q4_Col116_original_209,
flattenRequest_Q4_Col144_original_210,
flattenRequest_Q4_Col130_original_211,
flattenRequest_Q4_Col117_original_212,
flattenRequest_Q4_Col145_original_213,
flattenRequest_Q4_Col131_original_214,
flattenRequest_Q4_Col45_divide_215,
flattenRequest_Q4_Col45_divide_215 / flattenRequest_Q4_Col39_divide_215,
flattenRequest_Q4_Col39_divide_215,
flattenRequest_Q4_Col39_divide_216,
flattenRequest_Q4_Col39_divide_216 / flattenRequest_Q4_Col45_divide_216,
flattenRequest_Q4_Col45_divide_216,
flattenRequest_Q4_Col47_divide_217,
```

```
flattenRequest_Q4_Col47_divide_217 / flattenRequest_Q4_Col39_divide_217,
flattenRequest_Q4_Col39_divide_217,
flattenRequest_Q4_Col39_divide_218,
flattenRequest_Q4_Col39_divide_218 / flattenRequest_Q4_Col47_divide_218,
flattenRequest_Q4_Col47_divide_218,
flattenRequest_Q4_Col83_multiply_219,
flattenRequest_Q4_Col83_multiply_219 * flattenRequest_Q4_Col84_multiply_219,
flattenRequest_Q4_Col84_multiply_219,
flattenRequest_Q4_Col47_divide_220,
flattenRequest_Q4_Col47_divide_220 / bo_previous_applicatio_Q4_Col58_multi_unique_count_94,
flattenRequest_Q4_Col47_divide_221,
flattenRequest_Q4_Col47_divide_221 / flattenRequest_Q4_Col45_divide_221,
flattenRequest_Q4_Col45_divide_221,
flattenRequest_Q4_Col80_combine_222,
concat(flattenRequest_Q4_Col80_combine_222,flattenRequest_Q4_Col92_combine_222),
flattenRequest_Q4_Col92_combine_222,
flattenRequest_Q4_Col45_divide_223,
flattenRequest_Q4_Col45_divide_223 / flattenRequest_Q4_Col47_divide_223,
flattenRequest_Q4_Col47_divide_223,
flattenRequest_Q4_Col159_combine_224,
concat(flattenRequest_Q4_Col159_combine_224,bo_POS_CASH_balance_Q4_Col23_multi_top3frequency_224),
flattenRequest_Q4_Col160_combine_225,
concat(flattenRequest_Q4_Col160_combine_225,bo_POS_CASH_balance_Q4_Col23_multi_top3frequency_224),
flattenRequest_Q4_Col43_window_count_226,
flattenRequest_Q4_Col83_divide_227,
flattenRequest_Q4_Col83_divide_227 / bo_previous_applicatio_Q4_Col21_multi_unique_count_99,
flattenRequest_Q4_Col157_combine_228,
concat(flattenRequest_Q4_Col157_combine_228,bo_POS_CASH_balance_Q4_Col23_multi_top3frequency_224),
flattenRequest_Q4_Col92_combine_229,
concat(flattenRequest_Q4_Col92_combine_229,bo_POS_CASH_balance_Q4_Col23_multi_top3frequency_224),
flattenRequest_Q4_Col180_combine_231,
Q4_Col40_4,
bo_POS_CASH_balance_Q4_Col199_multi_avg_3,
bo_POS_CASH_balance_Q4_Col199_multi_avg_4,
bo_POS_CASH_balance_Q4_Col200_multi_avg_5,
bo_POS_CASH_balance_Q4_Col199_multi_max_27,
bo_POS_CASH_balance_Q4_Col200_multi_max_28,
bo_POS_CASH_balance_Q4_Col200_multi_min_47,
bo_POS_CASH_balance_Q4_Col3_multi_top3frequency_59,
bo_POS_CASH_balance_Q4_Col21_multi_top3frequency_60,
bo_POS_CASH_balance_Q4_Col22_multi_top3frequency_61,
concat(bo_POS_CASH_balance_Q4_Col22_multi_top3frequency_61,flattenRequest_Q4_Col180_combine_231),
bo_POS_CASH_balance_Q4_Col22_multi_top3frequency_62,
bo_POS_CASH_balance_Q4_Col3_multi_unique_count_75,
bo_POS_CASH_balance_Q4_Col3_multi_unique_count_76,
bo_POS_CASH_balance_Q4_Col1_multi_unique_count_77,
bo_POS_CASH_balance_Q4_Col23_multi_top3frequency_224,
Q4_Col40_7,
bo_bureau_Q4_Col33_multi_avg_6,
bo_bureau_Q4_Col35_multi_avg_7,
bo_bureau_Q4_Col29_multi_avg_8,
bo_bureau_Q4_Col30_multi_avg_9,
bo_bureau_Q4_Col34_multi_max_29,
bo_bureau_Q4_Col36_multi_max_30,
bo_bureau_Q4_Col29_multi_max_31,
bo_bureau_Q4_Col30_multi_max_32,
bo_bureau_Q4_Col30_multi_max_32 / bo_bureau_Q4_Col30_multi_avg_9,
bo_bureau_Q4_Col31_multi_min_48,
bo_bureau_Q4_Col29_multi_min_49,
bo_bureau_Q4_Col30_multi_min_50,
bo_bureau_Q4_Col37_multi_top3frequency_63,
```

```
bo_bureau_Q4_Col27_multi_top3frequency_64,
bo_bureau_Q4_Col38_multi_top3frequency_65,
bo_bureau_Q4_Col32_multi_unique_count_78,
bo_bureau_Q4_Col25_multi_unique_count_79,
bo_bureau_Q4_Col26_multi_unique_count_80,
bo_bureau_Q4_Col28_multi_unique_count_81,
bo_bureau_Q4_Col37_multi_unique_count_82,
bo_bureau_Q4_Col27_multi_unique_count_83,
bo_bureau_Q4_Col38_multi_unique_count_84,
Q4_Col40_11,
bo_installment_payment_Q4_Col198_multi_avg_10,
bo_installment_payment_Q4_Col195_multi_avg_11,
bo_installment_payment_Q4_Col193_multi_avg_12,
bo_installment_payment_Q4_Col197_multi_max_33,
bo_installment_payment_Q4_Col197_multi_max_34,
bo_installment_payment_Q4_Col198_multi_max_35,
bo_installment_payment_Q4_Col198_multi_max_36,
bo_installment_payment_Q4_Col193_multi_max_37,
bo_installment_payment_Q4_Col196_multi_min_51,
bo_installment_payment_Q4_Col195_multi_min_52,
bo_installment_payment_Q4_Col194_multi_top3frequency_67,
bo_installment_payment_Q4_Col194_multi_unique_count_91,
bo_installment_payment_Q4_Col1_multi_unique_count_92,
Q4_Col40_14,
bo_part_Q4_Col47_multi_avg_13,
bo_part_Q4_Col86_multi_avg_14,
bo_part_Q4_Col83_multi_avg_15,
bo_part_Q4_Col87_multi_avg_16,
bo_part_Q4_Col45_multi_max_38,
bo_part_Q4_Col82_multi_max_39,
bo_part_Q4_Col84_multi_min_53,
Q4_Col40_18,
bo_previous_applicatio_Q4_Col44_multi_avg_17,
bo_previous_applicatio_Q4_Col45_multi_avg_18,
bo_previous_applicatio_Q4_Col47_multi_avg_19,
bo_previous_applicatio_Q4_Col67_multi_avg_20,
bo_previous_applicatio_Q4_Col70_multi_avg_21,
bo_previous_applicatio_Q4_Col71_multi_avg_22,
bo_previous_applicatio_Q4_Col73_multi_avg_23,
bo_previous_applicatio_Q4_Col74_multi_avg_24,
bo_previous_applicatio_Q4_Col75_multi_avg_25,
bo_previous_applicatio_Q4_Col52_multi_avg_26,
bo_previous_applicatio_Q4_Col39_multi_max_40,
bo_previous_applicatio_Q4_Col44_multi_max_41,
bo_previous_applicatio_Q4_Col45_multi_max_42,
bo_previous_applicatio_Q4_Col46_multi_max_43,
bo_previous_applicatio_Q4_Col47_multi_max_44,
bo_previous_applicatio_Q4_Col72_multi_max_45,
bo_previous_applicatio_Q4_Col52_multi_max_46,
bo_previous_applicatio_Q4_Col45_multi_min_54,
bo_previous_applicatio_Q4_Col47_multi_min_55,
bo_previous_applicatio_Q4_Col67_multi_min_56,
bo_previous_applicatio_Q4_Col74_multi_min_57,
bo_previous_applicatio_Q4_Col52_multi_min_58,
bo_previous_applicatio_Q4_Col64_multi_top3frequency_68,
bo_previous_applicatio_Q4_Col66_multi_top3frequency_69,
bo_previous_applicatio_Q4_Col66_multi_top3frequency_70,
bo_previous_applicatio_Q4_Col59_multi_top3frequency_71,
bo_previous_applicatio_Q4_Col68_multi_top3frequency_72,
bo_previous_applicatio_Q4_Col69_multi_top3frequency_73,
bo_previous_applicatio_Q4_Col65_multi_top3frequency_74,
```

```
bo_previous_applicatio_Q4_Col64_multi_unique_count_93,
bo_previous_applicatio_Q4_Col58_multi_unique_count_94,
bo_previous_applicatio_Q4_Col56_multi_unique_count_95,
bo_previous_applicatio_Q4_Col50_multi_unique_count_96,
bo_previous_applicatio_Q4_Col49_multi_unique_count_97,
bo_previous_applicatio_Q4_Col55_multi_unique_count_98,
bo_previous_applicatio_Q4_Col21_multi_unique_count_99,
bo_previous_applicatio_Q4_Col61_multi_unique_count_100,
bo_previous_applicatio_Q4_Col57_multi_unique_count_101,
bo_previous_applicatio_Q4_Col66_multi_unique_count_102,
bo_previous_applicatio_Q4_Col68_multi_unique_count_103,
bo_previous_applicatio_Q4_Col51_multi_unique_count_104,
bo_previous_applicatio_Q4_Col69_multi_unique_count_105,
bo_previous_applicatio_Q4_Col1_multi_unique_count_106,
Q4_Col40_67,
bo_bureau_balance_Q4_Col3_multi_top3frequency_66,
Q4_Col40_86,
bo_credit_card_balance_Q4_Col5_multi_unique_count_85,
bo_credit_card_balance_Q4_Col17_multi_unique_count_86,
bo_credit_card_balance_Q4_Col17_multi_unique_count_87,
bo_credit_card_balance_Q4_Col3_multi_unique_count_88,
bo_credit_card_balance_Q4_Col21_multi_unique_count_89,
bo_credit_card_balance_Q4_Col1_multi_unique_count_90
from
(
-- train
select
`Q4_Col40` as Q4_Col40_1,
`Q4_Col41` as flattenRequest_Q4_Col41_original_0,
`Q4_Col40` as flattenRequest_Q4_Col40_original_1,
`Q4_Col39` as flattenRequest_Q4_Col39_original_107,
`Q4_Col45` as flattenRequest_Q4_Col45_original_108,
`Q4_Col47` as flattenRequest_Q4_Col47_original_109,
`Q4_Col187` as flattenRequest_Q4_Col187_original_110,
`Q4_Col186` as flattenRequest_Q4_Col186_original_111,
`Q4_Col189` as flattenRequest_Q4_Col189_original_112,
`Q4_Col190` as flattenRequest_Q4_Col190_original_113,
`Q4_Col188` as flattenRequest_Q4_Col188_original_114,
`Q4_Col191` as flattenRequest_Q4_Col191_original_115,
`Q4_Col114` as flattenRequest_Q4_Col114_original_116,
`Q4_Col142` as flattenRequest_Q4_Col142_original_117,
`Q4_Col128` as flattenRequest_Q4_Col128_original_118,
`Q4_Col115` as flattenRequest_Q4_Col115_original_119,
`Q4_Col143` as flattenRequest_Q4_Col143_original_120,
`Q4_Col129` as flattenRequest_Q4_Col129_original_121,
`Q4_Col90` as flattenRequest_Q4_Col90_original_122,
`Q4_Col105` as flattenRequest_Q4_Col105_original_123,
`Q4_Col80` as flattenRequest_Q4_Col80_original_124,
`Q4_Col118` as flattenRequest_Q4_Col118_original_125,
`Q4_Col146` as flattenRequest_Q4_Col146_original_126,
`Q4_Col132` as flattenRequest_Q4_Col132_original_127,
`Q4_Col81` as flattenRequest_Q4_Col81_original_128,
`Q4_Col97` as flattenRequest_Q4_Col97_original_129,
`Q4_Col165` as flattenRequest_Q4_Col165_original_130,
`Q4_Col96` as flattenRequest_Q4_Col96_original_131,
`Q4_Col162` as flattenRequest_Q4_Col162_original_132,
`Q4_Col164` as flattenRequest_Q4_Col164_original_133,
`Q4_Col119` as flattenRequest_Q4_Col119_original_134,
`Q4_Col147` as flattenRequest_Q4_Col147_original_135,
`Q4_Col133` as flattenRequest_Q4_Col133_original_136,
`Q4_Col160` as flattenRequest_Q4_Col160_original_137,
```

```
‘Q4_Col120‘ as flattenRequest_Q4_Col120_original_138,
‘Q4_Col148‘ as flattenRequest_Q4_Col148_original_139,
‘Q4_Col134‘ as flattenRequest_Q4_Col134_original_140,
‘Q4_Col82‘ as flattenRequest_Q4_Col82_original_141,
‘Q4_Col83‘ as flattenRequest_Q4_Col83_original_142,
‘Q4_Col84‘ as flattenRequest_Q4_Col84_original_143,
‘Q4_Col102‘ as flattenRequest_Q4_Col102_original_144,
‘Q4_Col177‘ as flattenRequest_Q4_Col177_original_145,
‘Q4_Col178‘ as flattenRequest_Q4_Col178_original_146,
‘Q4_Col180‘ as flattenRequest_Q4_Col180_original_147,
‘Q4_Col182‘ as flattenRequest_Q4_Col182_original_148,
‘Q4_Col183‘ as flattenRequest_Q4_Col183_original_149,
‘Q4_Col166‘ as flattenRequest_Q4_Col166_original_150,
‘Q4_Col184‘ as flattenRequest_Q4_Col184_original_151,
‘Q4_Col185‘ as flattenRequest_Q4_Col185_original_152,
‘Q4_Col167‘ as flattenRequest_Q4_Col167_original_153,
‘Q4_Col169‘ as flattenRequest_Q4_Col169_original_154,
‘Q4_Col170‘ as flattenRequest_Q4_Col170_original_155,
‘Q4_Col172‘ as flattenRequest_Q4_Col172_original_156,
‘Q4_Col104‘ as flattenRequest_Q4_Col104_original_157,
‘Q4_Col100‘ as flattenRequest_Q4_Col100_original_158,
‘Q4_Col88‘ as flattenRequest_Q4_Col88_original_159,
‘Q4_Col89‘ as flattenRequest_Q4_Col89_original_160,
‘Q4_Col103‘ as flattenRequest_Q4_Col103_original_161,
‘Q4_Col101‘ as flattenRequest_Q4_Col101_original_162,
‘Q4_Col121‘ as flattenRequest_Q4_Col121_original_163,
‘Q4_Col149‘ as flattenRequest_Q4_Col149_original_164,
‘Q4_Col135‘ as flattenRequest_Q4_Col135_original_165,
‘Q4_Col122‘ as flattenRequest_Q4_Col122_original_166,
‘Q4_Col150‘ as flattenRequest_Q4_Col150_original_167,
‘Q4_Col136‘ as flattenRequest_Q4_Col136_original_168,
‘Q4_Col156‘ as flattenRequest_Q4_Col156_original_169,
‘Q4_Col49‘ as flattenRequest_Q4_Col49_original_170,
‘Q4_Col157‘ as flattenRequest_Q4_Col157_original_171,
‘Q4_Col123‘ as flattenRequest_Q4_Col123_original_172,
‘Q4_Col151‘ as flattenRequest_Q4_Col151_original_173,
‘Q4_Col137‘ as flattenRequest_Q4_Col137_original_174,
‘Q4_Col113‘ as flattenRequest_Q4_Col113_original_175,
‘Q4_Col124‘ as flattenRequest_Q4_Col124_original_176,
‘Q4_Col152‘ as flattenRequest_Q4_Col152_original_177,
‘Q4_Col138‘ as flattenRequest_Q4_Col138_original_178,
‘Q4_Col125‘ as flattenRequest_Q4_Col125_original_179,
‘Q4_Col153‘ as flattenRequest_Q4_Col153_original_180,
‘Q4_Col139‘ as flattenRequest_Q4_Col139_original_181,
‘Q4_Col43‘ as flattenRequest_Q4_Col43_original_182,
‘Q4_Col78‘ as flattenRequest_Q4_Col78_original_183,
‘Q4_Col92‘ as flattenRequest_Q4_Col92_original_184,
‘Q4_Col93‘ as flattenRequest_Q4_Col93_original_185,
‘Q4_Col91‘ as flattenRequest_Q4_Col91_original_186,
‘Q4_Col59‘ as flattenRequest_Q4_Col59_original_187,
‘Q4_Col126‘ as flattenRequest_Q4_Col126_original_188,
‘Q4_Col154‘ as flattenRequest_Q4_Col154_original_189,
‘Q4_Col140‘ as flattenRequest_Q4_Col140_original_190,
‘Q4_Col127‘ as flattenRequest_Q4_Col127_original_191,
‘Q4_Col155‘ as flattenRequest_Q4_Col155_original_192,
‘Q4_Col141‘ as flattenRequest_Q4_Col141_original_193,
‘Q4_Col161‘ as flattenRequest_Q4_Col161_original_194,
‘Q4_Col163‘ as flattenRequest_Q4_Col163_original_195,
‘Q4_Col79‘ as flattenRequest_Q4_Col79_original_196,
‘Q4_Col77‘ as flattenRequest_Q4_Col77_original_197,
‘Q4_Col98‘ as flattenRequest_Q4_Col98_original_198,
```

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364 ‘Q4_Col94‘ as flattenRequest_Q4_Col94_original_199,
365 ‘Q4_Col106‘ as flattenRequest_Q4_Col106_original_200,
366 ‘Q4_Col107‘ as flattenRequest_Q4_Col107_original_201,
367 ‘Q4_Col111‘ as flattenRequest_Q4_Col111_original_202,
368 ‘Q4_Col112‘ as flattenRequest_Q4_Col112_original_203,
369 ‘Q4_Col108‘ as flattenRequest_Q4_Col108_original_204,
370 ‘Q4_Col109‘ as flattenRequest_Q4_Col109_original_205,
371 ‘Q4_Col158‘ as flattenRequest_Q4_Col158_original_206,
372 ‘Q4_Col159‘ as flattenRequest_Q4_Col159_original_207,
373 ‘Q4_Col48‘ as flattenRequest_Q4_Col48_original_208,
374 ‘Q4_Col116‘ as flattenRequest_Q4_Col116_original_209,
375 ‘Q4_Col144‘ as flattenRequest_Q4_Col144_original_210,
376 ‘Q4_Col130‘ as flattenRequest_Q4_Col130_original_211,
377 ‘Q4_Col117‘ as flattenRequest_Q4_Col117_original_212,
378 ‘Q4_Col145‘ as flattenRequest_Q4_Col145_original_213,
379 ‘Q4_Col131‘ as flattenRequest_Q4_Col131_original_214,
380 ‘Q4_Col45‘ as flattenRequest_Q4_Col45_divide_215,
381 ‘Q4_Col39‘ as flattenRequest_Q4_Col39_divide_215,
382 ‘Q4_Col39‘ as flattenRequest_Q4_Col39_divide_216,
383 ‘Q4_Col45‘ as flattenRequest_Q4_Col45_divide_216,
384 ‘Q4_Col47‘ as flattenRequest_Q4_Col47_divide_217,
385 ‘Q4_Col39‘ as flattenRequest_Q4_Col39_divide_217,
386 ‘Q4_Col39‘ as flattenRequest_Q4_Col39_divide_218,
387 ‘Q4_Col47‘ as flattenRequest_Q4_Col47_divide_218,
388 ‘Q4_Col83‘ as flattenRequest_Q4_Col83_multiply_219,
389 ‘Q4_Col84‘ as flattenRequest_Q4_Col84_multiply_219,
390 ‘Q4_Col47‘ as flattenRequest_Q4_Col47_divide_220,
391 ‘Q4_Col47‘ as flattenRequest_Q4_Col47_divide_221,
392 ‘Q4_Col45‘ as flattenRequest_Q4_Col45_divide_221,
393 ‘Q4_Col80‘ as flattenRequest_Q4_Col80_combine_222,
394 ‘Q4_Col92‘ as flattenRequest_Q4_Col92_combine_222,
395 ‘Q4_Col45‘ as flattenRequest_Q4_Col45_divide_223,
396 ‘Q4_Col47‘ as flattenRequest_Q4_Col47_divide_223,
397 ‘Q4_Col159‘ as flattenRequest_Q4_Col159_combine_224,
398 ‘Q4_Col160‘ as flattenRequest_Q4_Col160_combine_225,
399 case when !isnull(at(‘Q4_Col43‘, 0)) over flattenRequest_Q4_Col78_Q4_Col41_0s_10h_100 then
        count_where(‘Q4_Col43‘, ‘Q4_Col43‘ = at(‘Q4_Col43‘, 0)) over
        flattenRequest_Q4_Col78_Q4_Col41_0s_10h_100 else null end as
        flattenRequest_Q4_Col43_window_count_226,
400 ‘Q4_Col83‘ as flattenRequest_Q4_Col83_divide_227,
401 ‘Q4_Col157‘ as flattenRequest_Q4_Col157_combine_228,
402 ‘Q4_Col92‘ as flattenRequest_Q4_Col92_combine_229,
403 ‘Q4_Col180‘ as flattenRequest_Q4_Col180_combine_231
404 from
405 ‘train‘
406 window flattenRequest_Q4_Col78_Q4_Col41_0s_10h_100 as (partition by ‘Q4_Col78‘ order by ‘Q4_Col41‘
        rows_range between 10h preceding and 0s preceding MAXSIZE 100))
407 as out0
408 last join
409 (
410 select
411 ‘train‘.‘Q4_Col40‘ as Q4_Col40_3,
412 ‘action_Q4_Col40‘.‘Q4_Col42‘ as action_Q4_Col42_multi_direct_2
413 from
414 ‘train‘
415 last join ‘action‘ as ‘action_Q4_Col40‘ on ‘train‘.‘Q4_Col40‘ = ‘action_Q4_Col40‘.‘Q4_Col40‘)
416 as out1
417 on out0.Q4_Col40_1 = out1.Q4_Col40_3
418 last join
419 (
420 select
```

```
‘Q4_Col2‘ as Q4_Col40_4,
avg(‘Q4_Col199‘) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as bo_POS_CASH_balance_Q4_Col199_multi_avg_3,
avg(‘Q4_Col199‘) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_ as bo_POS_CASH_balance_Q4_Col199_multi_avg_4,
avg(‘Q4_Col200‘) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_ as bo_POS_CASH_balance_Q4_Col200_multi_avg_5,
max(‘Q4_Col199‘) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as bo_POS_CASH_balance_Q4_Col199_multi_max_27,
max(‘Q4_Col200‘) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as bo_POS_CASH_balance_Q4_Col200_multi_max_28,
min(‘Q4_Col200‘) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_ as bo_POS_CASH_balance_Q4_Col200_multi_min_47,
topn_frequency(‘Q4_Col3‘, 3) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as bo_POS_CASH_balance_Q4_Col3_multi_top3frequency_59,
topn_frequency(‘Q4_Col21‘, 3) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as bo_POS_CASH_balance_Q4_Col21_multi_top3frequency_60,
topn_frequency(‘Q4_Col22‘, 3) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as bo_POS_CASH_balance_Q4_Col22_multi_top3frequency_61,
topn_frequency(‘Q4_Col22‘, 3) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_ as bo_POS_CASH_balance_Q4_Col22_multi_top3frequency_62,
distinct_count(‘Q4_Col3‘) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as bo_POS_CASH_balance_Q4_Col3_multi_unique_count_75,
distinct_count(‘Q4_Col3‘) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_ as bo_POS_CASH_balance_Q4_Col3_multi_unique_count_76,
distinct_count(‘Q4_Col1‘) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as bo_POS_CASH_balance_Q4_Col1_multi_unique_count_77,
topn_frequency(‘Q4_Col23‘, 3) over bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as bo_POS_CASH_balance_Q4_Col23_multi_top3frequency_224
from
(select ‘Q4_Col41‘ as ‘Q4_Col0‘, bigint(0) as ‘Q4_Col1‘, ‘Q4_Col40‘ as ‘Q4_Col2‘, bigint(0) as ‘Q4_Col3‘, double(0) as ‘Q4_Col199‘, double(0) as ‘Q4_Col200‘, ’’ as ‘Q4_Col21‘, bigint(0) as ‘Q4_Col22‘, bigint(0) as ‘Q4_Col23‘ from ‘train‘)
window bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as (
UNION ‘bo_POS_CASH_balance‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 100 preceding and 0 preceding INSTANCE_NOT_IN_WINDOW),
bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_ as (
UNION ‘bo_POS_CASH_balance‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 10 preceding and 0 preceding INSTANCE_NOT_IN_WINDOW))
as out2
on out0.Q4_Col40_1 = out2.Q4_Col40_4
last join
(
select
‘Q4_Col2‘ as Q4_Col40_7,
avg(‘Q4_Col33‘) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as bo_bureau_Q4_Col33_multi_avg_6,
avg(‘Q4_Col35‘) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as bo_bureau_Q4_Col35_multi_avg_7,
avg(‘Q4_Col29‘) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as bo_bureau_Q4_Col29_multi_avg_8,
avg(‘Q4_Col30‘) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as bo_bureau_Q4_Col30_multi_avg_9,
max(‘Q4_Col34‘) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as bo_bureau_Q4_Col34_multi_max_29,
max(‘Q4_Col36‘) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as bo_bureau_Q4_Col36_multi_max_30,
max(‘Q4_Col29‘) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as bo_bureau_Q4_Col29_multi_max_31,
max(‘Q4_Col30‘) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as bo_bureau_Q4_Col30_multi_max_32,
min(‘Q4_Col31‘) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as bo_bureau_Q4_Col31_multi_min_48,
min(‘Q4_Col29‘) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as bo_bureau_Q4_Col29_multi_min_49,
min(‘Q4_Col30‘) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as bo_bureau_Q4_Col30_multi_min_50,
topn_frequency(‘Q4_Col37‘, 3) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as bo_bureau_Q4_Col37_multi_top3frequency_63,
topn_frequency(‘Q4_Col27‘, 3) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as bo_bureau_Q4_Col27_multi_top3frequency_64,
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461 topn_frequency(`Q4_Col38`, 3) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as
        bo_bureau_Q4_Col38_multi_top3frequency_65,
462 distinct_count(`Q4_Col32`) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as
        bo_bureau_Q4_Col32_multi_unique_count_78,
463 distinct_count(`Q4_Col25`) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as
        bo_bureau_Q4_Col25_multi_unique_count_79,
464 distinct_count(`Q4_Col26`) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as
        bo_bureau_Q4_Col26_multi_unique_count_80,
465 distinct_count(`Q4_Col28`) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as
        bo_bureau_Q4_Col28_multi_unique_count_81,
466 distinct_count(`Q4_Col37`) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as
        bo_bureau_Q4_Col37_multi_unique_count_82,
467 distinct_count(`Q4_Col27`) over bo_bureau_Q4_Col2_Q4_Col0_0_10_ as
        bo_bureau_Q4_Col27_multi_unique_count_83,
468 distinct_count(`Q4_Col38`) over bo_bureau_Q4_Col2_Q4_Col0_0_100_ as
        bo_bureau_Q4_Col38_multi_unique_count_84
469 from
470 (select `Q4_Col41` as `Q4_Col0`, `Q4_Col40` as `Q4_Col2`, bigint(0) as `Q4_Col24`, '' as `Q4_Col25`, ''
        as `Q4_Col26`, bigint(0) as `Q4_Col27`, bigint(0) as `Q4_Col28`, double(0) as `Q4_Col29`, double(0)
        as `Q4_Col30`, double(0) as `Q4_Col31`, bigint(0) as `Q4_Col32`, double(0) as `Q4_Col33`, double(0)
        as `Q4_Col34`, double(0) as `Q4_Col35`, double(0) as `Q4_Col36`, '' as `Q4_Col37`, bigint(0) as
        `Q4_Col38`, double(0) as `Q4_Col39` from `train`)
471 window bo_bureau_Q4_Col2_Q4_Col0_0_100_ as (
472 UNION `bo_bureau` partition by `Q4_Col2` order by `Q4_Col0` rows between 100 preceding and 0 preceding
        INSTANCE_NOT_IN_WINDOW),
473 bo_bureau_Q4_Col2_Q4_Col0_0_10_ as (
474 UNION `bo_bureau` partition by `Q4_Col2` order by `Q4_Col0` rows between 10 preceding and 0 preceding
        INSTANCE_NOT_IN_WINDOW))
475 as out3
476 on out0.Q4_Col40_1 = out3.Q4_Col40_7
477 last join
478 (
479 select
480 `Q4_Col2` as Q4_Col40_11,
481 avg(`Q4_Col198`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as
        bo_installment_payment_Q4_Col198_multi_avg_10,
482 avg(`Q4_Col195`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_100_ as
        bo_installment_payment_Q4_Col195_multi_avg_11,
483 avg(`Q4_Col193`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as
        bo_installment_payment_Q4_Col193_multi_avg_12,
484 max(`Q4_Col197`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_100_ as
        bo_installment_payment_Q4_Col197_multi_max_33,
485 max(`Q4_Col197`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as
        bo_installment_payment_Q4_Col197_multi_max_34,
486 max(`Q4_Col198`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_100_ as
        bo_installment_payment_Q4_Col198_multi_max_35,
487 max(`Q4_Col198`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as
        bo_installment_payment_Q4_Col198_multi_max_36,
488 max(`Q4_Col193`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as
        bo_installment_payment_Q4_Col193_multi_max_37,
489 min(`Q4_Col196`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_100_ as
        bo_installment_payment_Q4_Col196_multi_min_51,
490 min(`Q4_Col195`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as
        bo_installment_payment_Q4_Col195_multi_min_52,
491 topn_frequency(`Q4_Col194`, 3) over bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as
        bo_installment_payment_Q4_Col194_multi_top3frequency_67,
492 distinct_count(`Q4_Col194`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_100_ as
        bo_installment_payment_Q4_Col194_multi_unique_count_91,
493 distinct_count(`Q4_Col1`) over bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as
        bo_installment_payment_Q4_Col1_multi_unique_count_92
494 from
```

```
(select ‘Q4_Col41‘ as ‘Q4_Col0‘, bigint(0) as ‘Q4_Col1‘, ‘Q4_Col40‘ as ‘Q4_Col2‘, double(0) as ‘Q4_Col193‘, bigint(0) as ‘Q4_Col194‘, double(0) as ‘Q4_Col195‘, double(0) as ‘Q4_Col196‘, double(0) as ‘Q4_Col197‘, double(0) as ‘Q4_Col198‘ from ‘train‘)
window bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as (
UNION ‘bo_installment_payment‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 10 preceding and 0 preceding INSTANCE_NOT_IN_WINDOW),
bo_installment_payment_Q4_Col2_Q4_Col0_0_100_ as (
UNION ‘bo_installment_payment‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 100 preceding and 0 preceding INSTANCE_NOT_IN_WINDOW))
as out4
on out0.Q4_Col40_1 = out4.Q4_Col40_11
last join
(
select
‘Q4_Col40‘ as Q4_Col40_14,
avg(‘Q4_Col47‘) over bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as bo_part_Q4_Col47_multi_avg_13,
avg(‘Q4_Col86‘) over bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as bo_part_Q4_Col86_multi_avg_14,
avg(‘Q4_Col83‘) over bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as bo_part_Q4_Col83_multi_avg_15,
avg(‘Q4_Col87‘) over bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as bo_part_Q4_Col87_multi_avg_16,
max(‘Q4_Col45‘) over bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as bo_part_Q4_Col45_multi_max_38,
max(‘Q4_Col82‘) over bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as bo_part_Q4_Col82_multi_max_39,
min(‘Q4_Col84‘) over bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as bo_part_Q4_Col84_multi_min_53
from
(select ‘Q4_Col41‘ as ‘Q4_Col0‘, ‘Q4_Col77‘ as ‘Q4_Col77‘, ‘Q4_Col78‘ as ‘Q4_Col78‘, ‘Q4_Col79‘ as ‘Q4_Col79‘, ‘Q4_Col80‘ as ‘Q4_Col80‘, ‘Q4_Col81‘ as ‘Q4_Col81‘, double(0) as ‘Q4_Col82‘, double(0) as ‘Q4_Col83‘, double(0) as ‘Q4_Col84‘, double(0) as ‘Q4_Col85‘, double(0) as ‘Q4_Col45‘, double(0) as ‘Q4_Col39‘, double(0) as ‘Q4_Col47‘, double(0) as ‘Q4_Col86‘, double(0) as ‘Q4_Col87‘, Q4_Col40 from ‘train‘)
window bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as (
UNION (select ‘Q4_Col0‘, ‘Q4_Col77‘, ‘Q4_Col78‘, ‘Q4_Col79‘, ‘Q4_Col80‘, ‘Q4_Col81‘, ‘Q4_Col82‘, ‘Q4_Col83‘, ‘Q4_Col84‘, ‘Q4_Col85‘, ‘Q4_Col45‘, ‘Q4_Col39‘, ‘Q4_Col47‘, ‘Q4_Col86‘, ‘Q4_Col87‘, '' as Q4_Col40 from ‘bo_part‘) partition by ‘Q4_Col77‘,‘Q4_Col78‘,‘Q4_Col79‘,‘Q4_Col80‘,‘Q4_Col81‘ order by ‘Q4_Col0‘ rows between 10 preceding and 0 preceding INSTANCE_NOT_IN_WINDOW))
as out5
on out0.Q4_Col40_1 = out5.Q4_Col40_14
last join
(
select
‘Q4_Col2‘ as Q4_Col40_18,
avg(‘Q4_Col44‘) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as bo_previous_applicatio_Q4_Col44_multi_avg_17,
avg(‘Q4_Col45‘) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as bo_previous_applicatio_Q4_Col45_multi_avg_18,
avg(‘Q4_Col47‘) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as bo_previous_applicatio_Q4_Col47_multi_avg_19,
avg(‘Q4_Col67‘) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as bo_previous_applicatio_Q4_Col67_multi_avg_20,
avg(‘Q4_Col70‘) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as bo_previous_applicatio_Q4_Col70_multi_avg_21,
avg(‘Q4_Col71‘) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as bo_previous_applicatio_Q4_Col71_multi_avg_22,
avg(‘Q4_Col73‘) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as bo_previous_applicatio_Q4_Col73_multi_avg_23,
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avg(`Q4_Col74`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col74_multi_avg_24,
avg(`Q4_Col75`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col75_multi_avg_25,
avg(`Q4_Col52`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col52_multi_avg_26,
max(`Q4_Col39`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col39_multi_max_40,
max(`Q4_Col44`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col44_multi_max_41,
max(`Q4_Col45`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col45_multi_max_42,
max(`Q4_Col46`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col46_multi_max_43,
max(`Q4_Col47`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col47_multi_max_44,
max(`Q4_Col72`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col72_multi_max_45,
max(`Q4_Col52`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col52_multi_max_46,
min(`Q4_Col45`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col45_multi_min_54,
min(`Q4_Col47`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col47_multi_min_55,
min(`Q4_Col67`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col67_multi_min_56,
min(`Q4_Col74`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col74_multi_min_57,
min(`Q4_Col52`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col52_multi_min_58,
topn_frequency(`Q4_Col64`, 3) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col64_multi_top3frequency_68,
topn_frequency(`Q4_Col66`, 3) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col66_multi_top3frequency_69,
topn_frequency(`Q4_Col66`, 3) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col66_multi_top3frequency_70,
topn_frequency(`Q4_Col59`, 3) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col59_multi_top3frequency_71,
topn_frequency(`Q4_Col68`, 3) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col68_multi_top3frequency_72,
topn_frequency(`Q4_Col69`, 3) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col69_multi_top3frequency_73,
topn_frequency(`Q4_Col65`, 3) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col65_multi_top3frequency_74,
distinct_count(`Q4_Col64`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col64_multi_unique_count_93,
distinct_count(`Q4_Col58`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col58_multi_unique_count_94,
distinct_count(`Q4_Col56`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col56_multi_unique_count_95,
distinct_count(`Q4_Col50`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col50_multi_unique_count_96,
distinct_count(`Q4_Col49`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col49_multi_unique_count_97,
distinct_count(`Q4_Col55`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col55_multi_unique_count_98,
distinct_count(`Q4_Col21`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as
    bo_previous_applicatio_Q4_Col21_multi_unique_count_99,
distinct_count(`Q4_Col61`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as
    bo_previous_applicatio_Q4_Col61_multi_unique_count_100,
```

```
distinct_count(`Q4_Col57`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as bo_previous_applicatio_Q4_Col57_multi_unique_count_101,
distinct_count(`Q4_Col66`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as bo_previous_applicatio_Q4_Col66_multi_unique_count_102,
distinct_count(`Q4_Col68`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as bo_previous_applicatio_Q4_Col68_multi_unique_count_103,
distinct_count(`Q4_Col51`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as bo_previous_applicatio_Q4_Col51_multi_unique_count_104,
distinct_count(`Q4_Col69`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as bo_previous_applicatio_Q4_Col69_multi_unique_count_105,
distinct_count(`Q4_Col1`) over bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as bo_previous_applicatio_Q4_Col1_multi_unique_count_106
from
(select `Q4_Col41` as `Q4_Col0`, bigint(0) as `Q4_Col1`, `Q4_Col40` as `Q4_Col2`, '' as `Q4_Col43`, double(0) as `Q4_Col39`, double(0) as `Q4_Col44`, double(0) as `Q4_Col45`, double(0) as `Q4_Col46`, double(0) as `Q4_Col47`, '' as `Q4_Col48`, bigint(0) as `Q4_Col49`, '' as `Q4_Col50`, bigint(0) as `Q4_Col51`, double(0) as `Q4_Col52`, double(0) as `Q4_Col53`, double(0) as `Q4_Col54`, '' as `Q4_Col55`, '' as `Q4_Col21`, bigint(0) as `Q4_Col56`, '' as `Q4_Col57`, '' as `Q4_Col58`, '' as `Q4_Col59`, '' as `Q4_Col60`, '' as `Q4_Col61`, '' as `Q4_Col62`, '' as `Q4_Col63`, '' as `Q4_Col64`, bigint(0) as `Q4_Col65`, '' as `Q4_Col66`, double(0) as `Q4_Col67`, '' as `Q4_Col68`, '' as `Q4_Col69`, double(0) as `Q4_Col70`, double(0) as `Q4_Col71`, double(0) as `Q4_Col72`, double(0) as `Q4_Col73`, double(0) as `Q4_Col74`, double(0) as `Q4_Col75` from `train`)
window bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as (
UNION `bo_previous_applicatio` partition by `Q4_Col2` order by `Q4_Col0` rows between 10 preceding and 0 preceding INSTANCE_NOT_IN_WINDOW),
bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as (
UNION `bo_previous_applicatio` partition by `Q4_Col2` order by `Q4_Col0` rows between 100 preceding and 0 preceding INSTANCE_NOT_IN_WINDOW))
as out6
on out0.Q4_Col40_1 = out6.Q4_Col40_18
last join
(
select
`Q4_Col2` as Q4_Col40_67,
topn_frequency(`Q4_Col3`, 3) over bo_bureau_balance_Q4_Col2_Q4_Col0_0_10_ as bo_bureau_balance_Q4_Col3_multi_top3frequency_66
from
(select `Q4_Col41` as `Q4_Col0`, bigint(0) as `Q4_Col24`, bigint(0) as `Q4_Col3`, '' as `Q4_Col76`, `Q4_Col40` as `Q4_Col2` from `train`)
window bo_bureau_balance_Q4_Col2_Q4_Col0_0_10_ as (
UNION `bo_bureau_balance` partition by `Q4_Col2` order by `Q4_Col0` rows between 10 preceding and 0 preceding INSTANCE_NOT_IN_WINDOW))
as out7
on out0.Q4_Col40_1 = out7.Q4_Col40_67
last join
(
select
`Q4_Col2` as Q4_Col40_86,
distinct_count(`Q4_Col5`) over bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_ as bo_credit_card_balance_Q4_Col5_multi_unique_count_85,
distinct_count(`Q4_Col17`) over bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_ as bo_credit_card_balance_Q4_Col17_multi_unique_count_86,
distinct_count(`Q4_Col17`) over bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_ as bo_credit_card_balance_Q4_Col17_multi_unique_count_87,
distinct_count(`Q4_Col3`) over bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_ as bo_credit_card_balance_Q4_Col3_multi_unique_count_88,
distinct_count(`Q4_Col21`) over bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_ as bo_credit_card_balance_Q4_Col21_multi_unique_count_89,
distinct_count(`Q4_Col1`) over bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_ as bo_credit_card_balance_Q4_Col1_multi_unique_count_90
from
```

```
(select ‘Q4_Col41‘ as ‘Q4_Col0‘, bigint(0) as ‘Q4_Col1‘, ‘Q4_Col40‘ as ‘Q4_Col2‘, bigint(0) as ‘Q4_Col3‘,
    double(0) as ‘Q4_Col4‘, bigint(0) as ‘Q4_Col5‘, double(0) as ‘Q4_Col6‘, double(0) as ‘Q4_Col7‘,
    double(0) as ‘Q4_Col8‘, double(0) as ‘Q4_Col9‘, double(0) as ‘Q4_Col10‘, double(0) as ‘Q4_Col11‘,
    double(0) as ‘Q4_Col12‘, double(0) as ‘Q4_Col13‘, double(0) as ‘Q4_Col14‘, double(0) as ‘Q4_Col15‘,
    double(0) as ‘Q4_Col16‘, bigint(0) as ‘Q4_Col17‘, double(0) as ‘Q4_Col18‘, double(0) as ‘Q4_Col19‘,
    double(0) as ‘Q4_Col20‘, ’’ as ‘Q4_Col21‘, bigint(0) as ‘Q4_Col22‘, bigint(0) as ‘Q4_Col23‘ from
    ‘train‘)
window bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_ as (
UNION ‘bo_credit_card_balance‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 10 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW),
bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_ as (
UNION ‘bo_credit_card_balance‘ partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between 100 preceding and 0
    preceding INSTANCE_NOT_IN_WINDOW))
as out8
on out0.Q4_Col40_1 = out8.Q4_Col40_86
;
```

D.6 Fraud Detection (Q5)

```
select
Q5_Col100_1,
flatten_request_eT_original_0,
flatten_request_Q5_Col100_original_1,
flatten_request_Q5_Col0_original_639,
flatten_request_Q5_Col102_original_640,
Q5_Col100_3,
feedback_Q5_Col203_multi_direct_2,
feedback_eT_multi_direct_3,
feedback_Q5_Col1_multi_direct_4,
b16CUST_f7_Q5_Col147_multi_direct_5,
b1CUST_f7_Q5_Col154_multi_direct_6,
concat(b1CUST_f7_Q5_Col154_multi_direct_6,b2sag_efs_tbp_F_b_Q5_Col251_multi_lv_101),
concat(b1CUST_f7_Q5_Col154_multi_direct_6,b2sag_efs_tbp_F_b_Q5_Col247_multi_lv_49),
concat(b1CUST_f7_Q5_Col154_multi_direct_6,b2sag_efs_tbp_F_b_invest_ft_multi_lv_40),
concat(b1CUST_f7_Q5_Col154_multi_direct_6,b2sag_efs_tbp_F_b_Q5_Col274_multi_lv_69),
b16CUST_f7_Q5_Col153_multi_direct_7,
b16CUST_f7_Q5_Col150_multi_direct_8,
b1CUST_f7_Q5_Col149_multi_direct_9,
b16CUST_f7_Q5_Col1_multi_direct_10,
sag_efs_tbproduct_F_b_Q5_Col267_multi_lv_11,
sag_efs_tbproduct_F_b_Q5_Col353_multi_lv_12,
sag_efs_tbproduct_F_b_Q5_Col355_multi_lv_13,
sag_efs_tbproduct_F_b_Q5_Col232_multi_lv_14,
sag_efs_tbproduct_F_b_Q5_Col278_multi_lv_15,
sag_efs_tbproduct_F_b_Q5_Col233_multi_lv_16,
sag_efs_tbproduct_F_b_Q5_Col297_multi_lv_17,
sag_efs_tbproduct_F_b_Q5_Col250_multi_lv_18,
sag_efs_tbproduct_F_b_Q5_Col349_multi_lv_19,
sag_efs_tbproduct_F_b_Q5_Col352_multi_lv_20,
sag_efs_tbproduct_F_b_Q5_Col285_multi_lv_21,
sag_efs_tbproduct_F_b_Q5_Col317_multi_lv_22,
sag_efs_tbproduct_F_b_Q5_Col219_multi_lv_23,
sag_efs_tbproduct_F_b_Q5_Col280_multi_lv_24,
sag_efs_tbproduct_F_b_Q5_Col235_multi_lv_25,
sag_efs_tbproduct_F_b_Q5_Col282_multi_lv_26,
sag_efs_tbproduct_F_b_Q5_Col237_multi_lv_27,
sag_efs_tbproduct_F_b_Q5_Col243_multi_lv_28,
sag_efs_tbproduct_F_b_Q5_Col225_multi_lv_29,
```

```
sag_efs_tbproduct_F_b_Q5_Col223_multi_lv_30,
sag_efs_tbproduct_F_b_Q5_Col310_multi_lv_31,
sag_efs_tbproduct_F_b_Q5_Col238_multi_lv_32,
sag_efs_tbproduct_F_b_Q5_Col201_multi_lv_33,
sag_efs_tbproduct_F_b_Q5_Col299_multi_lv_34,
sag_efs_tbproduct_F_b_Q5_Col265_multi_lv_35,
sag_efs_tbproduct_F_b_Q5_Col224_multi_lv_36,
sag_efs_tbproduct_F_b_Q5_Col227_multi_lv_37,
sag_efs_tbproduct_F_b_Q5_Col303_multi_lv_38,
sag_efs_tbproduct_F_b_Q5_Col226_multi_lv_39,
b2sag_efs_tbp_F_b_invest_ft_multi_lv_40,
sag_efs_tbproduct_F_b_Q5_Col221_multi_lv_41,
sag_efs_tbproduct_F_b_Q5_Col276_multi_lv_42,
sag_efs_tbproduct_F_b_Q5_Col311_multi_lv_43,
sag_efs_tbproduct_F_b_Q5_Col318_multi_lv_44,
sag_efs_tbproduct_F_b_Q5_Col228_multi_lv_45,
sag_efs_tbproduct_F_b_Q5_Col343_multi_lv_46,
sag_efs_tbproduct_F_b_Q5_Col344_multi_lv_47,
sag_efs_tbproduct_F_b_Q5_Col246_multi_lv_48,
b2sag_efs_tbp_F_b_Q5_Col247_multi_lv_49,
sag_efs_tbproduct_F_b_Q5_Col248_multi_lv_50,
sag_efs_tbproduct_F_b_Q5_Col350_multi_lv_51,
sag_efs_tbproduct_F_b_Q5_Col240_multi_lv_52,
sag_efs_tbproduct_F_b_Q5_Col309_multi_lv_53,
sag_efs_tbproduct_F_b_Q5_Col212_multi_lv_54,
sag_efs_tbproduct_F_b_Q5_Col333_multi_lv_55,
sag_efs_tbproduct_F_b_Q5_Col332_multi_lv_56,
sag_efs_tbproduct_F_b_Q5_Col342_multi_lv_57,
sag_efs_tbproduct_F_b_Q5_Col341_multi_lv_58,
sag_efs_tbproduct_F_b_Q5_Col337_multi_lv_59,
sag_efs_tbproduct_F_b_Q5_Col339_multi_lv_60,
sag_efs_tbproduct_F_b_Q5_Col335_multi_lv_61,
sag_efs_tbproduct_F_b_Q5_Col334_multi_lv_62,
sag_efs_tbproduct_F_b_Q5_Col336_multi_lv_63,
sag_efs_tbproduct_F_b_Q5_Col340_multi_lv_64,
sag_efs_tbproduct_F_b_Q5_Col239_multi_lv_65,
sag_efs_tbproduct_F_b_Q5_Col293_multi_lv_66,
sag_efs_tbproduct_F_b_Q5_Col231_multi_lv_67,
sag_efs_tbproduct_F_b_Q5_Col338_multi_lv_68,
b2sag_efs_tbp_F_b_Q5_Col274_multi_lv_69,
sag_efs_tbproduct_F_b_Q5_Col270_multi_lv_70,
sag_efs_tbproduct_F_b_Q5_Col322_multi_lv_71,
sag_efs_tbproduct_F_b_Q5_Col321_multi_lv_72,
sag_efs_tbproduct_F_b_Q5_Col330_multi_lv_73,
sag_efs_tbproduct_F_b_Q5_Col326_multi_lv_74,
sag_efs_tbproduct_F_b_Q5_Col328_multi_lv_75,
sag_efs_tbproduct_F_b_Q5_Col324_multi_lv_76,
sag_efs_tbproduct_F_b_Q5_Col323_multi_lv_77,
sag_efs_tbproduct_F_b_Q5_Col325_multi_lv_78,
sag_efs_tbproduct_F_b_Q5_Col329_multi_lv_79,
sag_efs_tbproduct_F_b_Q5_Col316_multi_lv_80,
sag_efs_tbproduct_F_b_Q5_Col313_multi_lv_81,
sag_efs_tbproduct_F_b_Q5_Col315_multi_lv_82,
sag_efs_tbproduct_F_b_Q5_Col312_multi_lv_83,
sag_efs_tbproduct_F_b_Q5_Col314_multi_lv_84,
sag_efs_tbproduct_F_b_Q5_Col319_multi_lv_85,
sag_efs_tbproduct_F_b_Q5_Col327_multi_lv_86,
sag_efs_tbproduct_F_b_Q5_Col273_multi_lv_87,
sag_efs_tbproduct_F_b_Q5_Col230_multi_lv_88,
sag_efs_tbproduct_F_b_Q5_Col345_multi_lv_89,
sag_efs_tbproduct_F_b_Q5_Col347_multi_lv_90,
```

```
sag_efs_tbproduct_F_b_Q5_Col346_multi_lv_91,
sag_efs_tbproduct_F_b_Q5_Col236_multi_lv_92,
sag_efs_tbproduct_F_b_Q5_Col289_multi_lv_93,
sag_efs_tbproduct_F_b_Q5_Col348_multi_lv_94,
sag_efs_tbproduct_F_b_Q5_Col291_multi_lv_95,
sag_efs_tbproduct_F_b_Q5_Col304_multi_lv_96,
sag_efs_tbproduct_F_b_Q5_Col305_multi_lv_97,
sag_efs_tbproduct_F_b_Q5_Col306_multi_lv_98,
sag_efs_tbproduct_F_b_Q5_Col259_multi_lv_99,
sag_efs_tbproduct_F_b_Q5_Col254_multi_lv_100,
b2sag_efs_tbp_F_b_Q5_Col251_multi_lv_101,
sag_efs_tbproduct_F_b_Q5_Col298_multi_lv_102,
sag_efs_tbproduct_F_b_Q5_Col275_multi_lv_103,
sag_efs_tbproduct_F_b_Q5_Col320_multi_lv_104,
sag_efs_tbproduct_F_b_Q5_Col351_multi_lv_105,
b13LINK2_f6_Q5_Col172_multi_lv_106,
b13LINK2_f6_Q5_Col189_multi_lv_107,
b13LINK2_f6_Q5_Col163_multi_lv_108,
b13LINK2_f6_Q5_Col186_multi_lv_109,
b13LINK2_f6_Q5_Col181_multi_lv_110,
b13LINK2_f6_Q5_Col195_multi_lv_111,
b13LINK2_f6_Q5_Col187_multi_lv_112,
b13LINK2_f6_Q5_Col173_multi_lv_113,
b13LINK2_f6_Q5_Col170_multi_lv_114,
b13LINK2_f6_Q5_Col159_multi_lv_115,
b13LINK2_f6_Q5_Col156_multi_lv_116,
b13LINK2_f6_Q5_Col179_multi_lv_117,
b13LINK2_f6_Q5_Col190_multi_lv_118,
b13LINK2_f6_Q5_Col162_multi_lv_119,
b13LINK2_f6_Q5_Col161_multi_lv_120,
b13LINK2_f6_Q5_Col188_multi_lv_121,
b13LINK2_f6_Q5_Col166_multi_lv_122,
b13LINK2_f6_Q5_Col193_multi_lv_123,
b13LINK2_f6_Q5_Col167_multi_lv_124,
b13LINK2_f6_Q5_Col180_multi_lv_125,
b13LINK2_f6_Q5_Col185_multi_lv_126,
b13LINK2_f6_Q5_Col165_multi_lv_127,
b13LINK2_f6_Q5_Col174_multi_lv_128,
b13LINK2_f6_Q5_Col176_multi_lv_129,
b13LINK2_f6_Q5_Col175_multi_lv_130,
b13LINK2_f6_Q5_Col177_multi_lv_131,
b13LINK2_f6_Q5_Col182_multi_lv_132,
b13LINK2_f6_Q5_Col191_multi_lv_133,
b13LINK2_f6_Q5_Col199_multi_lv_134,
b13LINK2_f6_Q5_Col200_multi_lv_135,
b13LINK2_f6_Q5_Col155_multi_lv_136,
b13LINK2_f6_Q5_Col168_multi_lv_137,
b13LINK2_f6_Q5_Col171_multi_lv_138,
b13LINK2_f6_Q5_Col178_multi_lv_139,
b13LINK2_f6_Q5_Col192_multi_lv_140,
b13LINK2_f6_Q5_Col158_multi_lv_141,
b13LINK2_f6_Q5_Col197_multi_lv_142,
b13LINK2_f6_Q5_Col160_multi_lv_143,
b13LINK2_f6_Q5_Col184_multi_lv_144,
b13LINK2_f6_Q5_Col198_multi_lv_145,
b13LINK2_f6_Q5_Col169_multi_lv_146,
b13LINK2_f6_Q5_Col183_multi_lv_147,
b13LINK2_f6_Q5_Col164_multi_lv_148,
b13LINK2_f6_Q5_Col157_multi_lv_149,
b13LINK2_f6_Q5_Col196_multi_lv_150,
b13LINK2_f6_Q5_Col194_multi_lv_151,
```

```
b13LINK2_f6_Q5_Col33_multi_lv_152,
b13LINK2_f6_Q5_Col42_multi_lv_153,
b13LINK2_f6_Q5_Col43_multi_lv_154,
b13LINK2_f6_Q5_Col44_multi_lv_155,
b13LINK2_f6_Q5_Col45_multi_lv_156,
b13LINK2_f6_Q5_Col46_multi_lv_157,
b13LINK2_f6_Q5_Col47_multi_lv_158,
b13LINK2_f6_Q5_Col48_multi_lv_159,
b13LINK2_f6_Q5_Col49_multi_lv_160,
b13LINK2_f6_Q5_Col50_multi_lv_161,
b13LINK2_f6_Q5_Col51_multi_lv_162,
b13LINK2_f6_Q5_Col34_multi_lv_163,
b13LINK2_f6_Q5_Col52_multi_lv_164,
b13LINK2_f6_Q5_Col53_multi_lv_165,
b13LINK2_f6_Q5_Col54_multi_lv_166,
b13LINK2_f6_Q5_Col55_multi_lv_167,
b13LINK2_f6_Q5_Col56_multi_lv_168,
b13LINK2_f6_Q5_Col57_multi_lv_169,
b13LINK2_f6_Q5_Col58_multi_lv_170,
b13LINK2_f6_Q5_Col59_multi_lv_171,
b13LINK2_f6_Q5_Col60_multi_lv_172,
b13LINK2_f6_Q5_Col61_multi_lv_173,
b13LINK2_f6_Q5_Col35_multi_lv_174,
b13LINK2_f6_Q5_Col62_multi_lv_175,
b13LINK2_f6_Q5_Col63_multi_lv_176,
b13LINK2_f6_Q5_Col64_multi_lv_177,
b13LINK2_f6_Q5_Col65_multi_lv_178,
b13LINK2_f6_Q5_Col66_multi_lv_179,
b13LINK2_f6_Q5_Col67_multi_lv_180,
b13LINK2_f6_Q5_Col68_multi_lv_181,
b13LINK2_f6_Q5_Col69_multi_lv_182,
b13LINK2_f6_Q5_Col70_multi_lv_183,
b13LINK2_f6_Q5_Col71_multi_lv_184,
b13LINK2_f6_Q5_Col36_multi_lv_185,
b13LINK2_f6_Q5_Col72_multi_lv_186,
b13LINK2_f6_Q5_Col73_multi_lv_187,
b13LINK2_f6_Q5_Col74_multi_lv_188,
b13LINK2_f6_Q5_Col75_multi_lv_189,
b13LINK2_f6_Q5_Col76_multi_lv_190,
b13LINK2_f6_Q5_Col77_multi_lv_191,
b13LINK2_f6_Q5_Col78_multi_lv_192,
b13LINK2_f6_Q5_Col79_multi_lv_193,
b13LINK2_f6_Q5_Col80_multi_lv_194,
b13LINK2_f6_Q5_Col81_multi_lv_195,
b13LINK2_f6_Q5_Col37_multi_lv_196,
b13LINK2_f6_Q5_Col82_multi_lv_197,
b13LINK2_f6_Q5_Col38_multi_lv_198,
b13LINK2_f6_Q5_Col39_multi_lv_199,
b13LINK2_f6_Q5_Col40_multi_lv_200,
b13LINK2_f6_Q5_Col41_multi_lv_201,
b13LINK2_f6_Q5_Col201_multi_lv_202,
b13LINK2_f6_Q5_Col202_multi_lv_203,
b14LINK1_f5_Q5_Col172_multi_lv_204,
b14LINK1_f5_Q5_Col189_multi_lv_205,
b14LINK1_f5_Q5_Col186_multi_lv_206,
b14LINK1_f5_Q5_Col181_multi_lv_207,
b14LINK1_f5_Q5_Col195_multi_lv_208,
b14LINK1_f5_Q5_Col187_multi_lv_209,
b14LINK1_f5_Q5_Col173_multi_lv_210,
b14LINK1_f5_Q5_Col159_multi_lv_211,
b14LINK1_f5_Q5_Col156_multi_lv_212,
```

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b14LINK1_f5_Q5_Col179_multi_lv_213,
b14LINK1_f5_Q5_Col190_multi_lv_214,
b14LINK1_f5_Q5_Col162_multi_lv_215,
b14LINK1_f5_Q5_Col188_multi_lv_216,
b14LINK1_f5_Q5_Col166_multi_lv_217,
b14LINK1_f5_Q5_Col167_multi_lv_218,
b14LINK1_f5_Q5_Col185_multi_lv_219,
b14LINK1_f5_Q5_Col165_multi_lv_220,
b14LINK1_f5_Q5_Col174_multi_lv_221,
b14LINK1_f5_Q5_Col176_multi_lv_222,
b14LINK1_f5_Q5_Col175_multi_lv_223,
b14LINK1_f5_Q5_Col182_multi_lv_224,
b14LINK1_f5_Q5_Col199_multi_lv_225,
b14LINK1_f5_Q5_Col200_multi_lv_226,
b14LINK1_f5_Q5_Col168_multi_lv_227,
b14LINK1_f5_Q5_Col171_multi_lv_228,
b14LINK1_f5_Q5_Col197_multi_lv_229,
b14LINK1_f5_Q5_Col160_multi_lv_230,
b14LINK1_f5_Q5_Col184_multi_lv_231,
b14LINK1_f5_Q5_Col198_multi_lv_232,
b14LINK1_f5_Q5_Col169_multi_lv_233,
b14LINK1_f5_Q5_Col183_multi_lv_234,
b14LINK1_f5_Q5_Col164_multi_lv_235,
b14LINK1_f5_Q5_Col157_multi_lv_236,
b14LINK1_f5_Q5_Col196_multi_lv_237,
b14LINK1_f5_Q5_Col194_multi_lv_238,
b14LINK1_f5_Q5_Col33_multi_lv_239,
b14LINK1_f5_Q5_Col42_multi_lv_240,
b14LINK1_f5_Q5_Col44_multi_lv_241,
b14LINK1_f5_Q5_Col45_multi_lv_242,
b14LINK1_f5_Q5_Col46_multi_lv_243,
b14LINK1_f5_Q5_Col47_multi_lv_244,
b14LINK1_f5_Q5_Col48_multi_lv_245,
b14LINK1_f5_Q5_Col49_multi_lv_246,
b14LINK1_f5_Q5_Col51_multi_lv_247,
b14LINK1_f5_Q5_Col52_multi_lv_248,
b14LINK1_f5_Q5_Col53_multi_lv_249,
b14LINK1_f5_Q5_Col54_multi_lv_250,
b14LINK1_f5_Q5_Col55_multi_lv_251,
b14LINK1_f5_Q5_Col56_multi_lv_252,
b14LINK1_f5_Q5_Col59_multi_lv_253,
b14LINK1_f5_Q5_Col61_multi_lv_254,
b14LINK1_f5_Q5_Col62_multi_lv_255,
b14LINK1_f5_Q5_Col63_multi_lv_256,
b14LINK1_f5_Q5_Col64_multi_lv_257,
b14LINK1_f5_Q5_Col65_multi_lv_258,
b14LINK1_f5_Q5_Col66_multi_lv_259,
b14LINK1_f5_Q5_Col67_multi_lv_260,
b14LINK1_f5_Q5_Col68_multi_lv_261,
b14LINK1_f5_Q5_Col69_multi_lv_262,
b14LINK1_f5_Q5_Col70_multi_lv_263,
b14LINK1_f5_Q5_Col36_multi_lv_264,
b14LINK1_f5_Q5_Col74_multi_lv_265,
b14LINK1_f5_Q5_Col75_multi_lv_266,
b14LINK1_f5_Q5_Col76_multi_lv_267,
b14LINK1_f5_Q5_Col77_multi_lv_268,
b14LINK1_f5_Q5_Col78_multi_lv_269,
b14LINK1_f5_Q5_Col79_multi_lv_270,
b14LINK1_f5_Q5_Col80_multi_lv_271,
b14LINK1_f5_Q5_Col81_multi_lv_272,
b14LINK1_f5_Q5_Col37_multi_lv_273,
```

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b14LINK1_f5_Q5_Col82_multi_lv_274,
b14LINK1_f5_Q5_Col39_multi_lv_275,
b14LINK1_f5_Q5_Col40_multi_lv_276,
b14LINK1_f5_Q5_Col201_multi_lv_277,
b14LINK1_f5_Q5_Col202_multi_lv_278,
b3AUM_f4_Q5_Col104_multi_lv_279,
b3AUM_f4_Q5_Col114_multi_lv_280,
b3AUM_f4_Q5_Col119_multi_lv_281,
b3AUM_f4_Q5_Col121_multi_lv_282,
b3AUM_f4_Q5_Col120_multi_lv_283,
b3AUM_f4_Q5_Col113_multi_lv_284,
b3AUM_f4_Q5_Col118_multi_lv_285,
b3AUM_f4_Q5_Col122_multi_lv_286,
b3AUM_f4_Q5_Col117_multi_lv_287,
b3AUM_f4_Q5_Col115_multi_lv_288,
b3AUM_f4_Q5_Col143_multi_lv_289,
b3AUM_f4_Q5_Col144_multi_lv_290,
b3AUM_f4_Q5_Col124_multi_lv_291,
b3AUM_f4_Q5_Col129_multi_lv_292,
b3AUM_f4_Q5_Col131_multi_lv_293,
b3AUM_f4_Q5_Col123_multi_lv_294,
b3AUM_f4_Q5_Col128_multi_lv_295,
b3AUM_f4_Q5_Col132_multi_lv_296,
b3AUM_f4_Q5_Col30_multi_lv_297,
b3AUM_f4_Q5_Col109_multi_lv_298,
b3AUM_f4_Q5_Col111_multi_lv_299,
b3AUM_f4_Q5_Col110_multi_lv_300,
b3AUM_f4_Q5_Col139_multi_lv_301,
b3AUM_f4_Q5_Col146_multi_lv_302,
b3AUM_f4_Q5_Col141_multi_lv_303,
b3AUM_f4_Q5_Col133_multi_lv_304,
b3AUM_f4_Q5_Col138_multi_lv_305,
b3AUM_f4_Q5_Col136_multi_lv_306,
b3AUM_f4_Q5_Col142_multi_lv_307,
b3AUM_f4_Q5_Col137_multi_lv_308,
b3AUM_f4_Q5_Col135_multi_lv_309,
b3AUM_f4_Q5_Col108_multi_lv_310,
b3AUM_f4_Q5_Col106_multi_lv_311,
b3AUM_f4_Q5_Col112_multi_lv_312,
b3AUM_f4_Q5_Col107_multi_lv_313,
b3AUM_f4_Q5_Col33_multi_lv_314,
b3AUM_f4_Q5_Col42_multi_lv_315,
b3AUM_f4_Q5_Col43_multi_lv_316,
b3AUM_f4_Q5_Col44_multi_lv_317,
b3AUM_f4_Q5_Col45_multi_lv_318,
b3AUM_f4_Q5_Col46_multi_lv_319,
b3AUM_f4_Q5_Col47_multi_lv_320,
b3AUM_f4_Q5_Col49_multi_lv_321,
b3AUM_f4_Q5_Col50_multi_lv_322,
b3AUM_f4_Q5_Col51_multi_lv_323,
b3AUM_f4_Q5_Col34_multi_lv_324,
b3AUM_f4_Q5_Col52_multi_lv_325,
b3AUM_f4_Q5_Col53_multi_lv_326,
b3AUM_f4_Q5_Col54_multi_lv_327,
b3AUM_f4_Q5_Col55_multi_lv_328,
b3AUM_f4_Q5_Col56_multi_lv_329,
b3AUM_f4_Q5_Col60_multi_lv_330,
b3AUM_f4_Q5_Col61_multi_lv_331,
b3AUM_f4_Q5_Col63_multi_lv_332,
b3AUM_f4_Q5_Col64_multi_lv_333,
b3AUM_f4_Q5_Col65_multi_lv_334,
```

```
b3AUM_f4_Q5_Col67_multi_lv_335,
b3AUM_f4_Q5_Col68_multi_lv_336,
b3AUM_f4_Q5_Col69_multi_lv_337,
b3AUM_f4_Q5_Col70_multi_lv_338,
b3AUM_f4_Q5_Col71_multi_lv_339,
b3AUM_f4_Q5_Col36_multi_lv_340,
b3AUM_f4_Q5_Col73_multi_lv_341,
b3AUM_f4_Q5_Col74_multi_lv_342,
b3AUM_f4_Q5_Col75_multi_lv_343,
b3AUM_f4_Q5_Col76_multi_lv_344,
b3AUM_f4_Q5_Col77_multi_lv_345,
b3AUM_f4_Q5_Col79_multi_lv_346,
b3AUM_f4_Q5_Col80_multi_lv_347,
b3AUM_f4_Q5_Col81_multi_lv_348,
b3AUM_f4_Q5_Col82_multi_lv_349,
b3AUM_f4_Q5_Col83_multi_lv_350,
b3AUM_f4_Q5_Col85_multi_lv_351,
b3AUM_f4_Q5_Col38_multi_lv_352,
b3AUM_f4_Q5_Col39_multi_lv_353,
b3AUM_f4_Q5_Col40_multi_lv_354,
b3AUM_f4_Q5_Col41_multi_lv_355,
b15debit3_f3_Q5_Col7_multi_lv_356,
b15debit3_f3_Q5_Col6_multi_lv_357,
b15debit3_f3_Q5_Col3_multi_lv_358,
b4debit3_f3_Q5_Col2_multi_lv_359,
concat(b4debit3_f3_Q5_Col2_multi_lv_359,b2sag_efs_tbp_F_b_Q5_Col251_multi_lv_101),
concat(b4debit3_f3_Q5_Col2_multi_lv_359,b2sag_efs_tbp_F_b_Q5_Col247_multi_lv_49),
concat(b4debit3_f3_Q5_Col2_multi_lv_359,b2sag_efs_tbp_F_b_invest_ft_multi_lv_40),
concat(b4debit3_f3_Q5_Col2_multi_lv_359,b2sag_efs_tbp_F_b_Q5_Col274_multi_lv_69),
b15debit3_f3_Q5_Col21_multi_lv_360,
b15debit3_f3_Q5_Col24_multi_lv_361,
b15debit3_f3_Q5_Col9_multi_lv_362,
b15debit3_f3_Q5_Col12_multi_lv_363,
b15debit3_f3_Q5_Col8_multi_lv_364,
b15debit3_f3_Q5_Col14_multi_lv_365,
b15debit3_f3_Q5_Col27_multi_lv_366,
b15debit3_f3_Q5_Col16_multi_lv_367,
b15debit3_f3_Q5_Col5_multi_lv_368,
b15debit3_f3_Q5_Col28_multi_lv_369,
b15debit3_f3_Q5_Col30_multi_lv_370,
b15debit3_f3_Q5_Col17_multi_lv_371,
b15debit3_f3_Q5_Col20_multi_lv_372,
b15debit3_f3_Q5_Col23_multi_lv_373,
b15debit3_f3_Q5_Col13_multi_lv_374,
b15debit3_f3_Q5_Col22_multi_lv_375,
b15debit3_f3_Q5_Col25_multi_lv_376,
b15debit3_f3_Q5_Col10_multi_lv_377,
b15debit3_f3_Q5_Col4_multi_lv_378,
b15debit3_f3_Q5_Col15_multi_lv_379,
b15debit3_f3_Q5_Col18_multi_lv_380,
b15debit3_f3_Q5_Col19_multi_lv_381,
b15debit3_f3_Q5_Col11_multi_lv_382,
b15debit3_f3_Q5_Col26_multi_lv_383,
b15debit3_f3_Q5_Col32_multi_lv_384,
b15debit3_f3_Q5_Col29_multi_lv_385,
b15debit3_f3_Q5_Col33_multi_lv_386,
b15debit3_f3_Q5_Col42_multi_lv_387,
b15debit3_f3_Q5_Col43_multi_lv_388,
b15debit3_f3_Q5_Col44_multi_lv_389,
b15debit3_f3_Q5_Col45_multi_lv_390,
b15debit3_f3_Q5_Col46_multi_lv_391,
```

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b15debit3_f3_Q5_Col47_multi_lv_392,
b15debit3_f3_Q5_Col48_multi_lv_393,
b15debit3_f3_Q5_Col49_multi_lv_394,
b15debit3_f3_Q5_Col50_multi_lv_395,
b15debit3_f3_Q5_Col51_multi_lv_396,
b15debit3_f3_Q5_Col34_multi_lv_397,
b15debit3_f3_Q5_Col52_multi_lv_398,
b15debit3_f3_Q5_Col53_multi_lv_399,
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b15debit3_f3_Q5_Col55_multi_lv_401,
b15debit3_f3_Q5_Col56_multi_lv_402,
b15debit3_f3_Q5_Col57_multi_lv_403,
b15debit3_f3_Q5_Col58_multi_lv_404,
b15debit3_f3_Q5_Col59_multi_lv_405,
b15debit3_f3_Q5_Col60_multi_lv_406,
b15debit3_f3_Q5_Col61_multi_lv_407,
b15debit3_f3_Q5_Col35_multi_lv_408,
b15debit3_f3_Q5_Col62_multi_lv_409,
b15debit3_f3_Q5_Col63_multi_lv_410,
b15debit3_f3_Q5_Col65_multi_lv_411,
b15debit3_f3_Q5_Col66_multi_lv_412,
b15debit3_f3_Q5_Col67_multi_lv_413,
b15debit3_f3_Q5_Col68_multi_lv_414,
b15debit3_f3_Q5_Col69_multi_lv_415,
b15debit3_f3_Q5_Col70_multi_lv_416,
b15debit3_f3_Q5_Col71_multi_lv_417,
b15debit3_f3_Q5_Col36_multi_lv_418,
b15debit3_f3_Q5_Col72_multi_lv_419,
b15debit3_f3_Q5_Col73_multi_lv_420,
b15debit3_f3_Q5_Col74_multi_lv_421,
b15debit3_f3_Q5_Col75_multi_lv_422,
b15debit3_f3_Q5_Col76_multi_lv_423,
b15debit3_f3_Q5_Col77_multi_lv_424,
b15debit3_f3_Q5_Col78_multi_lv_425,
b15debit3_f3_Q5_Col79_multi_lv_426,
b15debit3_f3_Q5_Col80_multi_lv_427,
b15debit3_f3_Q5_Col81_multi_lv_428,
b15debit3_f3_Q5_Col37_multi_lv_429,
b15debit3_f3_Q5_Col82_multi_lv_430,
b15debit3_f3_Q5_Col83_multi_lv_431,
b15debit3_f3_Q5_Col84_multi_lv_432,
b15debit3_f3_Q5_Col85_multi_lv_433,
b15debit3_f3_Q5_Col86_multi_lv_434,
b15debit3_f3_Q5_Col87_multi_lv_435,
b15debit3_f3_Q5_Col88_multi_lv_436,
b15debit3_f3_Q5_Col89_multi_lv_437,
b15debit3_f3_Q5_Col90_multi_lv_438,
b15debit3_f3_Q5_Col91_multi_lv_439,
b15debit3_f3_Q5_Col38_multi_lv_440,
b15debit3_f3_Q5_Col92_multi_lv_441,
b15debit3_f3_Q5_Col93_multi_lv_442,
b15debit3_f3_Q5_Col94_multi_lv_443,
b15debit3_f3_Q5_Col95_multi_lv_444,
b15debit3_f3_Q5_Col96_multi_lv_445,
b15debit3_f3_Q5_Col97_multi_lv_446,
b15debit3_f3_Q5_Col98_multi_lv_447,
b15debit3_f3_Q5_Col99_multi_lv_448,
b15debit3_f3_Q5_Col39_multi_lv_449,
b15debit3_f3_Q5_Col40_multi_lv_450,
b15debit3_f3_Q5_Col41_multi_lv_451,
b5debit2_f2_Q5_Col7_multi_lv_452,
```

```
b6debit2_f2_Q5_Col6_multi_lv_453,
concat(b6debit2_f2_Q5_Col6_multi_lv_453,b1CUST_f7_Q5_Col149_multi_direct_9),
b5debit2_f2_Q5_Col3_multi_lv_454,
b6debit2_f2_Q5_Col2_multi_lv_455,
concat(b6debit2_f2_Q5_Col2_multi_lv_455,b2sag_efs_tbp_F_b_Q5_Col251_multi_lv_101),
concat(b6debit2_f2_Q5_Col2_multi_lv_455,b2sag_efs_tbp_F_b_Q5_Col247_multi_lv_49),
concat(b6debit2_f2_Q5_Col2_multi_lv_455,b2sag_efs_tbp_F_b_invest_ft_multi_lv_40),
concat(b6debit2_f2_Q5_Col2_multi_lv_455,b2sag_efs_tbp_F_b_Q5_Col274_multi_lv_69),
b5debit2_f2_Q5_Col21_multi_lv_456,
b5debit2_f2_Q5_Col24_multi_lv_457,
b5debit2_f2_Q5_Col9_multi_lv_458,
b5debit2_f2_Q5_Col12_multi_lv_459,
b5debit2_f2_Q5_Col8_multi_lv_460,
b5debit2_f2_Q5_Col14_multi_lv_461,
b5debit2_f2_Q5_Col27_multi_lv_462,
b5debit2_f2_Q5_Col16_multi_lv_463,
b6debit2_f2_Q5_Col5_multi_lv_464,
concat(b6debit2_f2_Q5_Col5_multi_lv_464,b2sag_efs_tbp_F_b_invest_ft_multi_lv_40),
b5debit2_f2_Q5_Col28_multi_lv_465,
b5debit2_f2_Q5_Col30_multi_lv_466,
b5debit2_f2_Q5_Col17_multi_lv_467,
b5debit2_f2_Q5_Col20_multi_lv_468,
b5debit2_f2_Q5_Col23_multi_lv_469,
b5debit2_f2_Q5_Col13_multi_lv_470,
b5debit2_f2_Q5_Col22_multi_lv_471,
b5debit2_f2_Q5_Col25_multi_lv_472,
b5debit2_f2_Q5_Col10_multi_lv_473,
b5debit2_f2_Q5_Col4_multi_lv_474,
b5debit2_f2_Q5_Col15_multi_lv_475,
b5debit2_f2_Q5_Col18_multi_lv_476,
b5debit2_f2_Q5_Col19_multi_lv_477,
b5debit2_f2_Q5_Col11_multi_lv_478,
b5debit2_f2_Q5_Col26_multi_lv_479,
b5debit2_f2_Q5_Col32_multi_lv_480,
b5debit2_f2_Q5_Col29_multi_lv_481,
b5debit2_f2_Q5_Col33_multi_lv_482,
b5debit2_f2_Q5_Col42_multi_lv_483,
b5debit2_f2_Q5_Col43_multi_lv_484,
b5debit2_f2_Q5_Col44_multi_lv_485,
b5debit2_f2_Q5_Col45_multi_lv_486,
b5debit2_f2_Q5_Col46_multi_lv_487,
b5debit2_f2_Q5_Col47_multi_lv_488,
b5debit2_f2_Q5_Col48_multi_lv_489,
b5debit2_f2_Q5_Col49_multi_lv_490,
b5debit2_f2_Q5_Col50_multi_lv_491,
b5debit2_f2_Q5_Col51_multi_lv_492,
b5debit2_f2_Q5_Col34_multi_lv_493,
b5debit2_f2_Q5_Col52_multi_lv_494,
b5debit2_f2_Q5_Col53_multi_lv_495,
b5debit2_f2_Q5_Col54_multi_lv_496,
b5debit2_f2_Q5_Col55_multi_lv_497,
b5debit2_f2_Q5_Col56_multi_lv_498,
b5debit2_f2_Q5_Col57_multi_lv_499,
b5debit2_f2_Q5_Col58_multi_lv_500,
b5debit2_f2_Q5_Col59_multi_lv_501,
b5debit2_f2_Q5_Col60_multi_lv_502,
b5debit2_f2_Q5_Col61_multi_lv_503,
b5debit2_f2_Q5_Col35_multi_lv_504,
b5debit2_f2_Q5_Col62_multi_lv_505,
b5debit2_f2_Q5_Col63_multi_lv_506,
b5debit2_f2_Q5_Col65_multi_lv_507,
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b5debit2_f2_Q5_Col66_multi_lv_508,
b5debit2_f2_Q5_Col67_multi_lv_509,
b5debit2_f2_Q5_Col68_multi_lv_510,
b5debit2_f2_Q5_Col69_multi_lv_511,
b5debit2_f2_Q5_Col70_multi_lv_512,
b5debit2_f2_Q5_Col71_multi_lv_513,
b5debit2_f2_Q5_Col36_multi_lv_514,
b5debit2_f2_Q5_Col72_multi_lv_515,
b5debit2_f2_Q5_Col73_multi_lv_516,
b5debit2_f2_Q5_Col74_multi_lv_517,
b5debit2_f2_Q5_Col75_multi_lv_518,
b5debit2_f2_Q5_Col76_multi_lv_519,
b5debit2_f2_Q5_Col77_multi_lv_520,
b5debit2_f2_Q5_Col78_multi_lv_521,
b5debit2_f2_Q5_Col79_multi_lv_522,
b5debit2_f2_Q5_Col80_multi_lv_523,
b5debit2_f2_Q5_Col81_multi_lv_524,
b5debit2_f2_Q5_Col37_multi_lv_525,
b5debit2_f2_Q5_Col82_multi_lv_526,
b5debit2_f2_Q5_Col83_multi_lv_527,
b5debit2_f2_Q5_Col84_multi_lv_528,
b5debit2_f2_Q5_Col85_multi_lv_529,
b5debit2_f2_Q5_Col86_multi_lv_530,
b5debit2_f2_Q5_Col87_multi_lv_531,
b5debit2_f2_Q5_Col88_multi_lv_532,
b5debit2_f2_Q5_Col89_multi_lv_533,
b5debit2_f2_Q5_Col90_multi_lv_534,
b5debit2_f2_Q5_Col91_multi_lv_535,
b5debit2_f2_Q5_Col38_multi_lv_536,
b5debit2_f2_Q5_Col92_multi_lv_537,
b5debit2_f2_Q5_Col93_multi_lv_538,
b5debit2_f2_Q5_Col94_multi_lv_539,
b5debit2_f2_Q5_Col95_multi_lv_540,
b5debit2_f2_Q5_Col96_multi_lv_541,
b5debit2_f2_Q5_Col97_multi_lv_542,
b5debit2_f2_Q5_Col98_multi_lv_543,
b5debit2_f2_Q5_Col99_multi_lv_544,
b5debit2_f2_Q5_Col39_multi_lv_545,
b5debit2_f2_Q5_Col40_multi_lv_546,
b5debit2_f2_Q5_Col41_multi_lv_547,
b7debit1_f1_Q5_Col7_multi_lv_548,
b8debit1_f1_Q5_Col6_multi_lv_549,
b7debit1_f1_Q5_Col31_multi_lv_550,
b7debit1_f1_Q5_Col3_multi_lv_551,
b8debit1_f1_Q5_Col2_multi_lv_552,
concat(b8debit1_f1_Q5_Col2_multi_lv_552,b2sag_efs_tbp_F_b_Q5_Col251_multi_lv_101),
concat(b8debit1_f1_Q5_Col2_multi_lv_552,b2sag_efs_tbp_F_b_Q5_Col247_multi_lv_49),
concat(b8debit1_f1_Q5_Col2_multi_lv_552,b2sag_efs_tbp_F_b_Q5_Col274_multi_lv_69),
concat(b8debit1_f1_Q5_Col2_multi_lv_552,b8debit1_f1_Q5_Col6_multi_lv_549),
b7debit1_f1_Q5_Col24_multi_lv_553,
b7debit1_f1_Q5_Col9_multi_lv_554,
b7debit1_f1_Q5_Col12_multi_lv_555,
b7debit1_f1_Q5_Col8_multi_lv_556,
b7debit1_f1_Q5_Col14_multi_lv_557,
b7debit1_f1_Q5_Col27_multi_lv_558,
b7debit1_f1_Q5_Col16_multi_lv_559,
b7debit1_f1_Q5_Col5_multi_lv_560,
b7debit1_f1_Q5_Col28_multi_lv_561,
b7debit1_f1_Q5_Col30_multi_lv_562,
b7debit1_f1_Q5_Col17_multi_lv_563,
b7debit1_f1_Q5_Col20_multi_lv_564,
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b7debit1_f1_Q5_Col23_multi_lv_565,
b7debit1_f1_Q5_Col13_multi_lv_566,
b7debit1_f1_Q5_Col22_multi_lv_567,
b7debit1_f1_Q5_Col25_multi_lv_568,
b7debit1_f1_Q5_Col10_multi_lv_569,
b7debit1_f1_Q5_Col4_multi_lv_570,
b7debit1_f1_Q5_Col18_multi_lv_571,
b7debit1_f1_Q5_Col19_multi_lv_572,
b7debit1_f1_Q5_Col11_multi_lv_573,
b7debit1_f1_Q5_Col26_multi_lv_574,
b7debit1_f1_Q5_Col32_multi_lv_575,
b7debit1_f1_Q5_Col29_multi_lv_576,
b7debit1_f1_Q5_Col33_multi_lv_577,
b7debit1_f1_Q5_Col42_multi_lv_578,
b7debit1_f1_Q5_Col43_multi_lv_579,
b7debit1_f1_Q5_Col44_multi_lv_580,
b7debit1_f1_Q5_Col45_multi_lv_581,
b7debit1_f1_Q5_Col46_multi_lv_582,
b7debit1_f1_Q5_Col47_multi_lv_583,
b7debit1_f1_Q5_Col49_multi_lv_584,
b7debit1_f1_Q5_Col50_multi_lv_585,
b7debit1_f1_Q5_Col51_multi_lv_586,
b7debit1_f1_Q5_Col34_multi_lv_587,
b7debit1_f1_Q5_Col52_multi_lv_588,
b7debit1_f1_Q5_Col53_multi_lv_589,
b7debit1_f1_Q5_Col55_multi_lv_590,
b7debit1_f1_Q5_Col56_multi_lv_591,
b7debit1_f1_Q5_Col57_multi_lv_592,
b7debit1_f1_Q5_Col58_multi_lv_593,
b7debit1_f1_Q5_Col59_multi_lv_594,
b7debit1_f1_Q5_Col60_multi_lv_595,
b7debit1_f1_Q5_Col61_multi_lv_596,
b7debit1_f1_Q5_Col35_multi_lv_597,
b7debit1_f1_Q5_Col62_multi_lv_598,
b7debit1_f1_Q5_Col63_multi_lv_599,
b7debit1_f1_Q5_Col64_multi_lv_600,
b7debit1_f1_Q5_Col65_multi_lv_601,
b7debit1_f1_Q5_Col66_multi_lv_602,
b7debit1_f1_Q5_Col67_multi_lv_603,
b7debit1_f1_Q5_Col68_multi_lv_604,
b7debit1_f1_Q5_Col69_multi_lv_605,
b7debit1_f1_Q5_Col70_multi_lv_606,
b7debit1_f1_Q5_Col71_multi_lv_607,
b7debit1_f1_Q5_Col36_multi_lv_608,
b7debit1_f1_Q5_Col72_multi_lv_609,
b7debit1_f1_Q5_Col73_multi_lv_610,
b7debit1_f1_Q5_Col74_multi_lv_611,
b7debit1_f1_Q5_Col75_multi_lv_612,
b7debit1_f1_Q5_Col76_multi_lv_613,
b7debit1_f1_Q5_Col77_multi_lv_614,
b7debit1_f1_Q5_Col78_multi_lv_615,
b7debit1_f1_Q5_Col79_multi_lv_616,
b7debit1_f1_Q5_Col81_multi_lv_617,
b7debit1_f1_Q5_Col37_multi_lv_618,
b7debit1_f1_Q5_Col82_multi_lv_619,
b7debit1_f1_Q5_Col83_multi_lv_620,
b7debit1_f1_Q5_Col84_multi_lv_621,
b7debit1_f1_Q5_Col85_multi_lv_622,
b7debit1_f1_Q5_Col87_multi_lv_623,
b7debit1_f1_Q5_Col88_multi_lv_624,
b7debit1_f1_Q5_Col89_multi_lv_625,
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b7debit1_f1_Q5_Col90_multi_lv_626,
b7debit1_f1_Q5_Col91_multi_lv_627,
b7debit1_f1_Q5_Col38_multi_lv_628,
b7debit1_f1_Q5_Col92_multi_lv_629,
b7debit1_f1_Q5_Col93_multi_lv_630,
b7debit1_f1_Q5_Col95_multi_lv_631,
b7debit1_f1_Q5_Col96_multi_lv_632,
b7debit1_f1_Q5_Col97_multi_lv_633,
b7debit1_f1_Q5_Col98_multi_lv_634,
b7debit1_f1_Q5_Col99_multi_lv_635,
b7debit1_f1_Q5_Col39_multi_lv_636,
b7debit1_f1_Q5_Col40_multi_lv_637,
b7debit1_f1_Q5_Col41_multi_lv_638
from
(
select
`Q5_Col100` as Q5_Col100_1,
`Q5_Col101` as flatten_request_eT_original_0,
`Q5_Col100` as flatten_request_Q5_Col100_original_1,
`Q5_Col0` as flatten_request_Q5_Col0_original_639,
`Q5_Col102` as flatten_request_Q5_Col102_original_640
from
`train`
)
as out0
last join
(
select
`train`.`Q5_Col100` as Q5_Col100_3,
`b9feedback_Q5_Col100`.`Q5_Col203` as feedback_Q5_Col203_multi_direct_2,
`b9feedback_Q5_Col100`.`Q5_Col101` as feedback_eT_multi_direct_3,
`b9feedback_Q5_Col100`.`Q5_Col1` as feedback_Q5_Col1_multi_direct_4,
`b1CUST_f7_Q5_Col0`.`Q5_Col147` as b16CUST_f7_Q5_Col147_multi_direct_5,
`b1CUST_f7_Q5_Col0`.`Q5_Col154` as b1CUST_f7_Q5_Col154_multi_direct_6,
`b1CUST_f7_Q5_Col0`.`Q5_Col153` as b16CUST_f7_Q5_Col153_multi_direct_7,
`b1CUST_f7_Q5_Col0`.`Q5_Col150` as b16CUST_f7_Q5_Col150_multi_direct_8,
`b1CUST_f7_Q5_Col0`.`Q5_Col149` as b1CUST_f7_Q5_Col149_multi_direct_9,
`b1CUST_f7_Q5_Col0`.`Q5_Col1` as b16CUST_f7_Q5_Col1_multi_direct_10,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col267` as sag_efs_tbproduct_F_b_Q5_Col267_multi_lv_11,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col353` as sag_efs_tbproduct_F_b_Q5_Col353_multi_lv_12,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col355` as sag_efs_tbproduct_F_b_Q5_Col355_multi_lv_13,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col232` as sag_efs_tbproduct_F_b_Q5_Col232_multi_lv_14,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col278` as sag_efs_tbproduct_F_b_Q5_Col278_multi_lv_15,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col233` as sag_efs_tbproduct_F_b_Q5_Col233_multi_lv_16,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col297` as sag_efs_tbproduct_F_b_Q5_Col297_multi_lv_17,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col250` as sag_efs_tbproduct_F_b_Q5_Col250_multi_lv_18,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col349` as sag_efs_tbproduct_F_b_Q5_Col349_multi_lv_19,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col352` as sag_efs_tbproduct_F_b_Q5_Col352_multi_lv_20,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col285` as sag_efs_tbproduct_F_b_Q5_Col285_multi_lv_21,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col317` as sag_efs_tbproduct_F_b_Q5_Col317_multi_lv_22,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col219` as sag_efs_tbproduct_F_b_Q5_Col219_multi_lv_23,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col280` as sag_efs_tbproduct_F_b_Q5_Col280_multi_lv_24,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col235` as sag_efs_tbproduct_F_b_Q5_Col235_multi_lv_25,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col282` as sag_efs_tbproduct_F_b_Q5_Col282_multi_lv_26,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col237` as sag_efs_tbproduct_F_b_Q5_Col237_multi_lv_27,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col243` as sag_efs_tbproduct_F_b_Q5_Col243_multi_lv_28,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col225` as sag_efs_tbproduct_F_b_Q5_Col225_multi_lv_29,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col223` as sag_efs_tbproduct_F_b_Q5_Col223_multi_lv_30,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col310` as sag_efs_tbproduct_F_b_Q5_Col310_multi_lv_31,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col238` as sag_efs_tbproduct_F_b_Q5_Col238_multi_lv_32,
`b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645`.`Q5_Col201` as sag_efs_tbproduct_F_b_Q5_Col201_multi_lv_33,
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‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col299‘ as sag_efs_tbproduct_F_b_Q5_Col299_multi_lv_34,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col265‘ as sag_efs_tbproduct_F_b_Q5_Col265_multi_lv_35,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col224‘ as sag_efs_tbproduct_F_b_Q5_Col224_multi_lv_36,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col227‘ as sag_efs_tbproduct_F_b_Q5_Col227_multi_lv_37,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col303‘ as sag_efs_tbproduct_F_b_Q5_Col303_multi_lv_38,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col226‘ as sag_efs_tbproduct_F_b_Q5_Col226_multi_lv_39,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col283‘ as b2sag_efs_tbp_F_b_invest_ft_multi_lv_40,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col221‘ as sag_efs_tbproduct_F_b_Q5_Col221_multi_lv_41,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col276‘ as sag_efs_tbproduct_F_b_Q5_Col276_multi_lv_42,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col311‘ as sag_efs_tbproduct_F_b_Q5_Col311_multi_lv_43,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col318‘ as sag_efs_tbproduct_F_b_Q5_Col318_multi_lv_44,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col228‘ as sag_efs_tbproduct_F_b_Q5_Col228_multi_lv_45,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col343‘ as sag_efs_tbproduct_F_b_Q5_Col343_multi_lv_46,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col344‘ as sag_efs_tbproduct_F_b_Q5_Col344_multi_lv_47,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col246‘ as sag_efs_tbproduct_F_b_Q5_Col246_multi_lv_48,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col247‘ as b2sag_efs_tbp_F_b_Q5_Col247_multi_lv_49,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col248‘ as sag_efs_tbproduct_F_b_Q5_Col248_multi_lv_50,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col350‘ as sag_efs_tbproduct_F_b_Q5_Col350_multi_lv_51,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col240‘ as sag_efs_tbproduct_F_b_Q5_Col240_multi_lv_52,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col309‘ as sag_efs_tbproduct_F_b_Q5_Col309_multi_lv_53,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col212‘ as sag_efs_tbproduct_F_b_Q5_Col212_multi_lv_54,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col333‘ as sag_efs_tbproduct_F_b_Q5_Col333_multi_lv_55,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col332‘ as sag_efs_tbproduct_F_b_Q5_Col332_multi_lv_56,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col342‘ as sag_efs_tbproduct_F_b_Q5_Col342_multi_lv_57,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col341‘ as sag_efs_tbproduct_F_b_Q5_Col341_multi_lv_58,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col337‘ as sag_efs_tbproduct_F_b_Q5_Col337_multi_lv_59,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col339‘ as sag_efs_tbproduct_F_b_Q5_Col339_multi_lv_60,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col335‘ as sag_efs_tbproduct_F_b_Q5_Col335_multi_lv_61,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col334‘ as sag_efs_tbproduct_F_b_Q5_Col334_multi_lv_62,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col336‘ as sag_efs_tbproduct_F_b_Q5_Col336_multi_lv_63,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col340‘ as sag_efs_tbproduct_F_b_Q5_Col340_multi_lv_64,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col239‘ as sag_efs_tbproduct_F_b_Q5_Col239_multi_lv_65,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col293‘ as sag_efs_tbproduct_F_b_Q5_Col293_multi_lv_66,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col231‘ as sag_efs_tbproduct_F_b_Q5_Col231_multi_lv_67,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col338‘ as sag_efs_tbproduct_F_b_Q5_Col338_multi_lv_68,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col274‘ as b2sag_efs_tbp_F_b_Q5_Col274_multi_lv_69,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col270‘ as sag_efs_tbproduct_F_b_Q5_Col270_multi_lv_70,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col322‘ as sag_efs_tbproduct_F_b_Q5_Col322_multi_lv_71,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col321‘ as sag_efs_tbproduct_F_b_Q5_Col321_multi_lv_72,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col330‘ as sag_efs_tbproduct_F_b_Q5_Col330_multi_lv_73,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col326‘ as sag_efs_tbproduct_F_b_Q5_Col326_multi_lv_74,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col328‘ as sag_efs_tbproduct_F_b_Q5_Col328_multi_lv_75,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col324‘ as sag_efs_tbproduct_F_b_Q5_Col324_multi_lv_76,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col323‘ as sag_efs_tbproduct_F_b_Q5_Col323_multi_lv_77,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col325‘ as sag_efs_tbproduct_F_b_Q5_Col325_multi_lv_78,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col329‘ as sag_efs_tbproduct_F_b_Q5_Col329_multi_lv_79,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col316‘ as sag_efs_tbproduct_F_b_Q5_Col316_multi_lv_80,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col313‘ as sag_efs_tbproduct_F_b_Q5_Col313_multi_lv_81,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col315‘ as sag_efs_tbproduct_F_b_Q5_Col315_multi_lv_82,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col312‘ as sag_efs_tbproduct_F_b_Q5_Col312_multi_lv_83,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col314‘ as sag_efs_tbproduct_F_b_Q5_Col314_multi_lv_84,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col319‘ as sag_efs_tbproduct_F_b_Q5_Col319_multi_lv_85,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col327‘ as sag_efs_tbproduct_F_b_Q5_Col327_multi_lv_86,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col273‘ as sag_efs_tbproduct_F_b_Q5_Col273_multi_lv_87,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col230‘ as sag_efs_tbproduct_F_b_Q5_Col230_multi_lv_88,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col345‘ as sag_efs_tbproduct_F_b_Q5_Col345_multi_lv_89,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col347‘ as sag_efs_tbproduct_F_b_Q5_Col347_multi_lv_90,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col346‘ as sag_efs_tbproduct_F_b_Q5_Col346_multi_lv_91,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col236‘ as sag_efs_tbproduct_F_b_Q5_Col236_multi_lv_92,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col289‘ as sag_efs_tbproduct_F_b_Q5_Col289_multi_lv_93,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col348‘ as sag_efs_tbproduct_F_b_Q5_Col348_multi_lv_94,
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‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col291‘ as sag_efs_tbproduct_F_b_Q5_Col291_multi_lv_95,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col304‘ as sag_efs_tbproduct_F_b_Q5_Col304_multi_lv_96,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col305‘ as sag_efs_tbproduct_F_b_Q5_Col305_multi_lv_97,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col306‘ as sag_efs_tbproduct_F_b_Q5_Col306_multi_lv_98,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col259‘ as sag_efs_tbproduct_F_b_Q5_Col259_multi_lv_99,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col254‘ as sag_efs_tbproduct_F_b_Q5_Col254_multi_lv_100,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col251‘ as b2sag_efs_tbp_F_b_Q5_Col251_multi_lv_101,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col298‘ as sag_efs_tbproduct_F_b_Q5_Col298_multi_lv_102,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col275‘ as sag_efs_tbproduct_F_b_Q5_Col275_multi_lv_103,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col320‘ as sag_efs_tbproduct_F_b_Q5_Col320_multi_lv_104,
‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col351‘ as sag_efs_tbproduct_F_b_Q5_Col351_multi_lv_105,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col172‘ as b13LINK2_f6_Q5_Col172_multi_lv_106,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col189‘ as b13LINK2_f6_Q5_Col189_multi_lv_107,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col163‘ as b13LINK2_f6_Q5_Col163_multi_lv_108,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col186‘ as b13LINK2_f6_Q5_Col186_multi_lv_109,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col181‘ as b13LINK2_f6_Q5_Col181_multi_lv_110,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col195‘ as b13LINK2_f6_Q5_Col195_multi_lv_111,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col187‘ as b13LINK2_f6_Q5_Col187_multi_lv_112,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col173‘ as b13LINK2_f6_Q5_Col173_multi_lv_113,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col170‘ as b13LINK2_f6_Q5_Col170_multi_lv_114,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col159‘ as b13LINK2_f6_Q5_Col159_multi_lv_115,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col156‘ as b13LINK2_f6_Q5_Col156_multi_lv_116,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col179‘ as b13LINK2_f6_Q5_Col179_multi_lv_117,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col190‘ as b13LINK2_f6_Q5_Col190_multi_lv_118,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col162‘ as b13LINK2_f6_Q5_Col162_multi_lv_119,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col161‘ as b13LINK2_f6_Q5_Col161_multi_lv_120,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col188‘ as b13LINK2_f6_Q5_Col188_multi_lv_121,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col166‘ as b13LINK2_f6_Q5_Col166_multi_lv_122,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col193‘ as b13LINK2_f6_Q5_Col193_multi_lv_123,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col167‘ as b13LINK2_f6_Q5_Col167_multi_lv_124,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col180‘ as b13LINK2_f6_Q5_Col180_multi_lv_125,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col185‘ as b13LINK2_f6_Q5_Col185_multi_lv_126,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col165‘ as b13LINK2_f6_Q5_Col165_multi_lv_127,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col174‘ as b13LINK2_f6_Q5_Col174_multi_lv_128,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col176‘ as b13LINK2_f6_Q5_Col176_multi_lv_129,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col175‘ as b13LINK2_f6_Q5_Col175_multi_lv_130,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col177‘ as b13LINK2_f6_Q5_Col177_multi_lv_131,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col182‘ as b13LINK2_f6_Q5_Col182_multi_lv_132,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col191‘ as b13LINK2_f6_Q5_Col191_multi_lv_133,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col199‘ as b13LINK2_f6_Q5_Col199_multi_lv_134,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col200‘ as b13LINK2_f6_Q5_Col200_multi_lv_135,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col155‘ as b13LINK2_f6_Q5_Col155_multi_lv_136,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col168‘ as b13LINK2_f6_Q5_Col168_multi_lv_137,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col171‘ as b13LINK2_f6_Q5_Col171_multi_lv_138,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col178‘ as b13LINK2_f6_Q5_Col178_multi_lv_139,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col192‘ as b13LINK2_f6_Q5_Col192_multi_lv_140,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col158‘ as b13LINK2_f6_Q5_Col158_multi_lv_141,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col197‘ as b13LINK2_f6_Q5_Col197_multi_lv_142,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col160‘ as b13LINK2_f6_Q5_Col160_multi_lv_143,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col184‘ as b13LINK2_f6_Q5_Col184_multi_lv_144,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col198‘ as b13LINK2_f6_Q5_Col198_multi_lv_145,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col169‘ as b13LINK2_f6_Q5_Col169_multi_lv_146,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col183‘ as b13LINK2_f6_Q5_Col183_multi_lv_147,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col164‘ as b13LINK2_f6_Q5_Col164_multi_lv_148,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col157‘ as b13LINK2_f6_Q5_Col157_multi_lv_149,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col196‘ as b13LINK2_f6_Q5_Col196_multi_lv_150,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col194‘ as b13LINK2_f6_Q5_Col194_multi_lv_151,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col33‘ as b13LINK2_f6_Q5_Col33_multi_lv_152,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col42‘ as b13LINK2_f6_Q5_Col42_multi_lv_153,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col43‘ as b13LINK2_f6_Q5_Col43_multi_lv_154,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col44‘ as b13LINK2_f6_Q5_Col44_multi_lv_155,
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‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col45‘ as b13LINK2_f6_Q5_Col45_multi_lv_156,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col46‘ as b13LINK2_f6_Q5_Col46_multi_lv_157,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col47‘ as b13LINK2_f6_Q5_Col47_multi_lv_158,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col48‘ as b13LINK2_f6_Q5_Col48_multi_lv_159,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col49‘ as b13LINK2_f6_Q5_Col49_multi_lv_160,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col50‘ as b13LINK2_f6_Q5_Col50_multi_lv_161,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col51‘ as b13LINK2_f6_Q5_Col51_multi_lv_162,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col34‘ as b13LINK2_f6_Q5_Col34_multi_lv_163,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col52‘ as b13LINK2_f6_Q5_Col52_multi_lv_164,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col53‘ as b13LINK2_f6_Q5_Col53_multi_lv_165,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col54‘ as b13LINK2_f6_Q5_Col54_multi_lv_166,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col55‘ as b13LINK2_f6_Q5_Col55_multi_lv_167,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col56‘ as b13LINK2_f6_Q5_Col56_multi_lv_168,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col57‘ as b13LINK2_f6_Q5_Col57_multi_lv_169,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col58‘ as b13LINK2_f6_Q5_Col58_multi_lv_170,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col59‘ as b13LINK2_f6_Q5_Col59_multi_lv_171,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col60‘ as b13LINK2_f6_Q5_Col60_multi_lv_172,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col61‘ as b13LINK2_f6_Q5_Col61_multi_lv_173,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col35‘ as b13LINK2_f6_Q5_Col35_multi_lv_174,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col62‘ as b13LINK2_f6_Q5_Col62_multi_lv_175,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col63‘ as b13LINK2_f6_Q5_Col63_multi_lv_176,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col64‘ as b13LINK2_f6_Q5_Col64_multi_lv_177,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col65‘ as b13LINK2_f6_Q5_Col65_multi_lv_178,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col66‘ as b13LINK2_f6_Q5_Col66_multi_lv_179,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col67‘ as b13LINK2_f6_Q5_Col67_multi_lv_180,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col68‘ as b13LINK2_f6_Q5_Col68_multi_lv_181,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col69‘ as b13LINK2_f6_Q5_Col69_multi_lv_182,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col70‘ as b13LINK2_f6_Q5_Col70_multi_lv_183,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col71‘ as b13LINK2_f6_Q5_Col71_multi_lv_184,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col36‘ as b13LINK2_f6_Q5_Col36_multi_lv_185,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col72‘ as b13LINK2_f6_Q5_Col72_multi_lv_186,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col73‘ as b13LINK2_f6_Q5_Col73_multi_lv_187,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col74‘ as b13LINK2_f6_Q5_Col74_multi_lv_188,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col75‘ as b13LINK2_f6_Q5_Col75_multi_lv_189,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col76‘ as b13LINK2_f6_Q5_Col76_multi_lv_190,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col77‘ as b13LINK2_f6_Q5_Col77_multi_lv_191,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col78‘ as b13LINK2_f6_Q5_Col78_multi_lv_192,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col79‘ as b13LINK2_f6_Q5_Col79_multi_lv_193,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col80‘ as b13LINK2_f6_Q5_Col80_multi_lv_194,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col81‘ as b13LINK2_f6_Q5_Col81_multi_lv_195,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col37‘ as b13LINK2_f6_Q5_Col37_multi_lv_196,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col82‘ as b13LINK2_f6_Q5_Col82_multi_lv_197,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col38‘ as b13LINK2_f6_Q5_Col38_multi_lv_198,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col39‘ as b13LINK2_f6_Q5_Col39_multi_lv_199,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col40‘ as b13LINK2_f6_Q5_Col40_multi_lv_200,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col41‘ as b13LINK2_f6_Q5_Col41_multi_lv_201,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col201‘ as b13LINK2_f6_Q5_Col201_multi_lv_202,
‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col202‘ as b13LINK2_f6_Q5_Col202_multi_lv_203,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col172‘ as b14LINK1_f5_Q5_Col172_multi_lv_204,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col189‘ as b14LINK1_f5_Q5_Col189_multi_lv_205,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col186‘ as b14LINK1_f5_Q5_Col186_multi_lv_206,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col181‘ as b14LINK1_f5_Q5_Col181_multi_lv_207,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col195‘ as b14LINK1_f5_Q5_Col195_multi_lv_208,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col187‘ as b14LINK1_f5_Q5_Col187_multi_lv_209,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col173‘ as b14LINK1_f5_Q5_Col173_multi_lv_210,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col159‘ as b14LINK1_f5_Q5_Col159_multi_lv_211,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col156‘ as b14LINK1_f5_Q5_Col156_multi_lv_212,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col179‘ as b14LINK1_f5_Q5_Col179_multi_lv_213,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col190‘ as b14LINK1_f5_Q5_Col190_multi_lv_214,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col162‘ as b14LINK1_f5_Q5_Col162_multi_lv_215,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col188‘ as b14LINK1_f5_Q5_Col188_multi_lv_216,
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‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col166‘ as b14LINK1_f5_Q5_Col166_multi_lv_217,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col167‘ as b14LINK1_f5_Q5_Col167_multi_lv_218,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col185‘ as b14LINK1_f5_Q5_Col185_multi_lv_219,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col165‘ as b14LINK1_f5_Q5_Col165_multi_lv_220,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col174‘ as b14LINK1_f5_Q5_Col174_multi_lv_221,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col176‘ as b14LINK1_f5_Q5_Col176_multi_lv_222,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col175‘ as b14LINK1_f5_Q5_Col175_multi_lv_223,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col182‘ as b14LINK1_f5_Q5_Col182_multi_lv_224,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col199‘ as b14LINK1_f5_Q5_Col199_multi_lv_225,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col200‘ as b14LINK1_f5_Q5_Col200_multi_lv_226,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col168‘ as b14LINK1_f5_Q5_Col168_multi_lv_227,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col171‘ as b14LINK1_f5_Q5_Col171_multi_lv_228,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col197‘ as b14LINK1_f5_Q5_Col197_multi_lv_229,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col160‘ as b14LINK1_f5_Q5_Col160_multi_lv_230,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col184‘ as b14LINK1_f5_Q5_Col184_multi_lv_231,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col198‘ as b14LINK1_f5_Q5_Col198_multi_lv_232,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col169‘ as b14LINK1_f5_Q5_Col169_multi_lv_233,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col183‘ as b14LINK1_f5_Q5_Col183_multi_lv_234,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col164‘ as b14LINK1_f5_Q5_Col164_multi_lv_235,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col157‘ as b14LINK1_f5_Q5_Col157_multi_lv_236,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col196‘ as b14LINK1_f5_Q5_Col196_multi_lv_237,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col194‘ as b14LINK1_f5_Q5_Col194_multi_lv_238,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col33‘ as b14LINK1_f5_Q5_Col33_multi_lv_239,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col42‘ as b14LINK1_f5_Q5_Col42_multi_lv_240,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col44‘ as b14LINK1_f5_Q5_Col44_multi_lv_241,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col45‘ as b14LINK1_f5_Q5_Col45_multi_lv_242,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col46‘ as b14LINK1_f5_Q5_Col46_multi_lv_243,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col47‘ as b14LINK1_f5_Q5_Col47_multi_lv_244,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col48‘ as b14LINK1_f5_Q5_Col48_multi_lv_245,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col49‘ as b14LINK1_f5_Q5_Col49_multi_lv_246,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col51‘ as b14LINK1_f5_Q5_Col51_multi_lv_247,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col52‘ as b14LINK1_f5_Q5_Col52_multi_lv_248,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col53‘ as b14LINK1_f5_Q5_Col53_multi_lv_249,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col54‘ as b14LINK1_f5_Q5_Col54_multi_lv_250,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col55‘ as b14LINK1_f5_Q5_Col55_multi_lv_251,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col56‘ as b14LINK1_f5_Q5_Col56_multi_lv_252,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col59‘ as b14LINK1_f5_Q5_Col59_multi_lv_253,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col61‘ as b14LINK1_f5_Q5_Col61_multi_lv_254,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col62‘ as b14LINK1_f5_Q5_Col62_multi_lv_255,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col63‘ as b14LINK1_f5_Q5_Col63_multi_lv_256,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col64‘ as b14LINK1_f5_Q5_Col64_multi_lv_257,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col65‘ as b14LINK1_f5_Q5_Col65_multi_lv_258,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col66‘ as b14LINK1_f5_Q5_Col66_multi_lv_259,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col67‘ as b14LINK1_f5_Q5_Col67_multi_lv_260,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col68‘ as b14LINK1_f5_Q5_Col68_multi_lv_261,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col69‘ as b14LINK1_f5_Q5_Col69_multi_lv_262,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col70‘ as b14LINK1_f5_Q5_Col70_multi_lv_263,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col36‘ as b14LINK1_f5_Q5_Col36_multi_lv_264,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col74‘ as b14LINK1_f5_Q5_Col74_multi_lv_265,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col75‘ as b14LINK1_f5_Q5_Col75_multi_lv_266,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col76‘ as b14LINK1_f5_Q5_Col76_multi_lv_267,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col77‘ as b14LINK1_f5_Q5_Col77_multi_lv_268,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col78‘ as b14LINK1_f5_Q5_Col78_multi_lv_269,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col79‘ as b14LINK1_f5_Q5_Col79_multi_lv_270,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col80‘ as b14LINK1_f5_Q5_Col80_multi_lv_271,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col81‘ as b14LINK1_f5_Q5_Col81_multi_lv_272,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col37‘ as b14LINK1_f5_Q5_Col37_multi_lv_273,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col82‘ as b14LINK1_f5_Q5_Col82_multi_lv_274,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col39‘ as b14LINK1_f5_Q5_Col39_multi_lv_275,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col40‘ as b14LINK1_f5_Q5_Col40_multi_lv_276,
‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col201‘ as b14LINK1_f5_Q5_Col201_multi_lv_277,
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955 `b11LINK1_f5_Q5_Col0_eT_0_2147483645`.`Q5_Col202` as b14LINK1_f5_Q5_Col202_multi_lv_278,
956 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col104` as b3AUM_f4_Q5_Col104_multi_lv_279,
957 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col114` as b3AUM_f4_Q5_Col114_multi_lv_280,
958 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col119` as b3AUM_f4_Q5_Col119_multi_lv_281,
959 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col121` as b3AUM_f4_Q5_Col121_multi_lv_282,
960 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col120` as b3AUM_f4_Q5_Col120_multi_lv_283,
961 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col113` as b3AUM_f4_Q5_Col113_multi_lv_284,
962 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col118` as b3AUM_f4_Q5_Col118_multi_lv_285,
963 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col122` as b3AUM_f4_Q5_Col122_multi_lv_286,
964 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col117` as b3AUM_f4_Q5_Col117_multi_lv_287,
965 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col115` as b3AUM_f4_Q5_Col115_multi_lv_288,
966 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col143` as b3AUM_f4_Q5_Col143_multi_lv_289,
967 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col144` as b3AUM_f4_Q5_Col144_multi_lv_290,
968 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col124` as b3AUM_f4_Q5_Col124_multi_lv_291,
969 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col129` as b3AUM_f4_Q5_Col129_multi_lv_292,
970 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col131` as b3AUM_f4_Q5_Col131_multi_lv_293,
971 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col123` as b3AUM_f4_Q5_Col123_multi_lv_294,
972 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col128` as b3AUM_f4_Q5_Col128_multi_lv_295,
973 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col132` as b3AUM_f4_Q5_Col132_multi_lv_296,
974 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col30` as b3AUM_f4_Q5_Col30_multi_lv_297,
975 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col109` as b3AUM_f4_Q5_Col109_multi_lv_298,
976 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col111` as b3AUM_f4_Q5_Col111_multi_lv_299,
977 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col110` as b3AUM_f4_Q5_Col110_multi_lv_300,
978 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col139` as b3AUM_f4_Q5_Col139_multi_lv_301,
979 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col146` as b3AUM_f4_Q5_Col146_multi_lv_302,
980 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col141` as b3AUM_f4_Q5_Col141_multi_lv_303,
981 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col133` as b3AUM_f4_Q5_Col133_multi_lv_304,
982 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col138` as b3AUM_f4_Q5_Col138_multi_lv_305,
983 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col136` as b3AUM_f4_Q5_Col136_multi_lv_306,
984 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col142` as b3AUM_f4_Q5_Col142_multi_lv_307,
985 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col137` as b3AUM_f4_Q5_Col137_multi_lv_308,
986 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col135` as b3AUM_f4_Q5_Col135_multi_lv_309,
987 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col108` as b3AUM_f4_Q5_Col108_multi_lv_310,
988 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col106` as b3AUM_f4_Q5_Col106_multi_lv_311,
989 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col112` as b3AUM_f4_Q5_Col112_multi_lv_312,
990 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col107` as b3AUM_f4_Q5_Col107_multi_lv_313,
991 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col33` as b3AUM_f4_Q5_Col33_multi_lv_314,
992 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col42` as b3AUM_f4_Q5_Col42_multi_lv_315,
993 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col43` as b3AUM_f4_Q5_Col43_multi_lv_316,
994 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col44` as b3AUM_f4_Q5_Col44_multi_lv_317,
995 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col45` as b3AUM_f4_Q5_Col45_multi_lv_318,
996 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col46` as b3AUM_f4_Q5_Col46_multi_lv_319,
997 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col47` as b3AUM_f4_Q5_Col47_multi_lv_320,
998 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col49` as b3AUM_f4_Q5_Col49_multi_lv_321,
999 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col50` as b3AUM_f4_Q5_Col50_multi_lv_322,
1000 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col51` as b3AUM_f4_Q5_Col51_multi_lv_323,
1001 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col34` as b3AUM_f4_Q5_Col34_multi_lv_324,
1002 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col52` as b3AUM_f4_Q5_Col52_multi_lv_325,
1003 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col53` as b3AUM_f4_Q5_Col53_multi_lv_326,
1004 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col54` as b3AUM_f4_Q5_Col54_multi_lv_327,
1005 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col55` as b3AUM_f4_Q5_Col55_multi_lv_328,
1006 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col56` as b3AUM_f4_Q5_Col56_multi_lv_329,
1007 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col60` as b3AUM_f4_Q5_Col60_multi_lv_330,
1008 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col61` as b3AUM_f4_Q5_Col61_multi_lv_331,
1009 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col63` as b3AUM_f4_Q5_Col63_multi_lv_332,
1010 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col64` as b3AUM_f4_Q5_Col64_multi_lv_333,
1011 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col65` as b3AUM_f4_Q5_Col65_multi_lv_334,
1012 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col67` as b3AUM_f4_Q5_Col67_multi_lv_335,
1013 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col68` as b3AUM_f4_Q5_Col68_multi_lv_336,
1014 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col69` as b3AUM_f4_Q5_Col69_multi_lv_337,
1015 `b12AUM_f4_Q5_Col0_eT_0_2147483645`.`Q5_Col70` as b3AUM_f4_Q5_Col70_multi_lv_338,
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‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col71‘ as b3AUM_f4_Q5_Col71_multi_lv_339,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col36‘ as b3AUM_f4_Q5_Col36_multi_lv_340,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col73‘ as b3AUM_f4_Q5_Col73_multi_lv_341,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col74‘ as b3AUM_f4_Q5_Col74_multi_lv_342,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col75‘ as b3AUM_f4_Q5_Col75_multi_lv_343,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col76‘ as b3AUM_f4_Q5_Col76_multi_lv_344,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col77‘ as b3AUM_f4_Q5_Col77_multi_lv_345,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col79‘ as b3AUM_f4_Q5_Col79_multi_lv_346,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col80‘ as b3AUM_f4_Q5_Col80_multi_lv_347,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col81‘ as b3AUM_f4_Q5_Col81_multi_lv_348,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col82‘ as b3AUM_f4_Q5_Col82_multi_lv_349,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col83‘ as b3AUM_f4_Q5_Col83_multi_lv_350,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col85‘ as b3AUM_f4_Q5_Col85_multi_lv_351,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col38‘ as b3AUM_f4_Q5_Col38_multi_lv_352,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col39‘ as b3AUM_f4_Q5_Col39_multi_lv_353,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col40‘ as b3AUM_f4_Q5_Col40_multi_lv_354,
‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col41‘ as b3AUM_f4_Q5_Col41_multi_lv_355,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col7‘ as b15debit3_f3_Q5_Col7_multi_lv_356,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col6‘ as b15debit3_f3_Q5_Col6_multi_lv_357,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col3‘ as b15debit3_f3_Q5_Col3_multi_lv_358,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col2‘ as b4debit3_f3_Q5_Col2_multi_lv_359,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col21‘ as b15debit3_f3_Q5_Col21_multi_lv_360,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col24‘ as b15debit3_f3_Q5_Col24_multi_lv_361,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col9‘ as b15debit3_f3_Q5_Col9_multi_lv_362,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col12‘ as b15debit3_f3_Q5_Col12_multi_lv_363,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col8‘ as b15debit3_f3_Q5_Col8_multi_lv_364,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col14‘ as b15debit3_f3_Q5_Col14_multi_lv_365,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col27‘ as b15debit3_f3_Q5_Col27_multi_lv_366,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col16‘ as b15debit3_f3_Q5_Col16_multi_lv_367,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col5‘ as b15debit3_f3_Q5_Col5_multi_lv_368,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col28‘ as b15debit3_f3_Q5_Col28_multi_lv_369,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col30‘ as b15debit3_f3_Q5_Col30_multi_lv_370,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col17‘ as b15debit3_f3_Q5_Col17_multi_lv_371,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col20‘ as b15debit3_f3_Q5_Col20_multi_lv_372,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col23‘ as b15debit3_f3_Q5_Col23_multi_lv_373,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col13‘ as b15debit3_f3_Q5_Col13_multi_lv_374,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col22‘ as b15debit3_f3_Q5_Col22_multi_lv_375,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col25‘ as b15debit3_f3_Q5_Col25_multi_lv_376,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col10‘ as b15debit3_f3_Q5_Col10_multi_lv_377,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col4‘ as b15debit3_f3_Q5_Col4_multi_lv_378,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col15‘ as b15debit3_f3_Q5_Col15_multi_lv_379,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col18‘ as b15debit3_f3_Q5_Col18_multi_lv_380,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col19‘ as b15debit3_f3_Q5_Col19_multi_lv_381,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col11‘ as b15debit3_f3_Q5_Col11_multi_lv_382,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col26‘ as b15debit3_f3_Q5_Col26_multi_lv_383,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col32‘ as b15debit3_f3_Q5_Col32_multi_lv_384,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col29‘ as b15debit3_f3_Q5_Col29_multi_lv_385,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col33‘ as b15debit3_f3_Q5_Col33_multi_lv_386,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col42‘ as b15debit3_f3_Q5_Col42_multi_lv_387,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col43‘ as b15debit3_f3_Q5_Col43_multi_lv_388,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col44‘ as b15debit3_f3_Q5_Col44_multi_lv_389,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col45‘ as b15debit3_f3_Q5_Col45_multi_lv_390,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col46‘ as b15debit3_f3_Q5_Col46_multi_lv_391,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col47‘ as b15debit3_f3_Q5_Col47_multi_lv_392,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col48‘ as b15debit3_f3_Q5_Col48_multi_lv_393,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col49‘ as b15debit3_f3_Q5_Col49_multi_lv_394,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col50‘ as b15debit3_f3_Q5_Col50_multi_lv_395,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col51‘ as b15debit3_f3_Q5_Col51_multi_lv_396,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col34‘ as b15debit3_f3_Q5_Col34_multi_lv_397,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col52‘ as b15debit3_f3_Q5_Col52_multi_lv_398,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col53‘ as b15debit3_f3_Q5_Col53_multi_lv_399,
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‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col54‘ as b15debit3_f3_Q5_Col54_multi_lv_400,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col55‘ as b15debit3_f3_Q5_Col55_multi_lv_401,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col56‘ as b15debit3_f3_Q5_Col56_multi_lv_402,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col57‘ as b15debit3_f3_Q5_Col57_multi_lv_403,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col58‘ as b15debit3_f3_Q5_Col58_multi_lv_404,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col59‘ as b15debit3_f3_Q5_Col59_multi_lv_405,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col60‘ as b15debit3_f3_Q5_Col60_multi_lv_406,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col61‘ as b15debit3_f3_Q5_Col61_multi_lv_407,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col35‘ as b15debit3_f3_Q5_Col35_multi_lv_408,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col62‘ as b15debit3_f3_Q5_Col62_multi_lv_409,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col63‘ as b15debit3_f3_Q5_Col63_multi_lv_410,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col65‘ as b15debit3_f3_Q5_Col65_multi_lv_411,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col66‘ as b15debit3_f3_Q5_Col66_multi_lv_412,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col67‘ as b15debit3_f3_Q5_Col67_multi_lv_413,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col68‘ as b15debit3_f3_Q5_Col68_multi_lv_414,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col69‘ as b15debit3_f3_Q5_Col69_multi_lv_415,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col70‘ as b15debit3_f3_Q5_Col70_multi_lv_416,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col71‘ as b15debit3_f3_Q5_Col71_multi_lv_417,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col36‘ as b15debit3_f3_Q5_Col36_multi_lv_418,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col72‘ as b15debit3_f3_Q5_Col72_multi_lv_419,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col73‘ as b15debit3_f3_Q5_Col73_multi_lv_420,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col74‘ as b15debit3_f3_Q5_Col74_multi_lv_421,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col75‘ as b15debit3_f3_Q5_Col75_multi_lv_422,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col76‘ as b15debit3_f3_Q5_Col76_multi_lv_423,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col77‘ as b15debit3_f3_Q5_Col77_multi_lv_424,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col78‘ as b15debit3_f3_Q5_Col78_multi_lv_425,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col79‘ as b15debit3_f3_Q5_Col79_multi_lv_426,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col80‘ as b15debit3_f3_Q5_Col80_multi_lv_427,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col81‘ as b15debit3_f3_Q5_Col81_multi_lv_428,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col37‘ as b15debit3_f3_Q5_Col37_multi_lv_429,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col82‘ as b15debit3_f3_Q5_Col82_multi_lv_430,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col83‘ as b15debit3_f3_Q5_Col83_multi_lv_431,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col84‘ as b15debit3_f3_Q5_Col84_multi_lv_432,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col85‘ as b15debit3_f3_Q5_Col85_multi_lv_433,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col86‘ as b15debit3_f3_Q5_Col86_multi_lv_434,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col87‘ as b15debit3_f3_Q5_Col87_multi_lv_435,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col88‘ as b15debit3_f3_Q5_Col88_multi_lv_436,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col89‘ as b15debit3_f3_Q5_Col89_multi_lv_437,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col90‘ as b15debit3_f3_Q5_Col90_multi_lv_438,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col91‘ as b15debit3_f3_Q5_Col91_multi_lv_439,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col38‘ as b15debit3_f3_Q5_Col38_multi_lv_440,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col92‘ as b15debit3_f3_Q5_Col92_multi_lv_441,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col93‘ as b15debit3_f3_Q5_Col93_multi_lv_442,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col94‘ as b15debit3_f3_Q5_Col94_multi_lv_443,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col95‘ as b15debit3_f3_Q5_Col95_multi_lv_444,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col96‘ as b15debit3_f3_Q5_Col96_multi_lv_445,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col97‘ as b15debit3_f3_Q5_Col97_multi_lv_446,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col98‘ as b15debit3_f3_Q5_Col98_multi_lv_447,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col99‘ as b15debit3_f3_Q5_Col99_multi_lv_448,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col39‘ as b15debit3_f3_Q5_Col39_multi_lv_449,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col40‘ as b15debit3_f3_Q5_Col40_multi_lv_450,
‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col41‘ as b15debit3_f3_Q5_Col41_multi_lv_451,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col7‘ as b5debit2_f2_Q5_Col7_multi_lv_452,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col6‘ as b6debit2_f2_Q5_Col6_multi_lv_453,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col3‘ as b5debit2_f2_Q5_Col3_multi_lv_454,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col2‘ as b6debit2_f2_Q5_Col2_multi_lv_455,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col21‘ as b5debit2_f2_Q5_Col21_multi_lv_456,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col24‘ as b5debit2_f2_Q5_Col24_multi_lv_457,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col9‘ as b5debit2_f2_Q5_Col9_multi_lv_458,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col12‘ as b5debit2_f2_Q5_Col12_multi_lv_459,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col8‘ as b5debit2_f2_Q5_Col8_multi_lv_460,
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‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col14‘ as b5debit2_f2_Q5_Col14_multi_lv_461,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col27‘ as b5debit2_f2_Q5_Col27_multi_lv_462,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col16‘ as b5debit2_f2_Q5_Col16_multi_lv_463,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col5‘ as b6debit2_f2_Q5_Col5_multi_lv_464,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col28‘ as b5debit2_f2_Q5_Col28_multi_lv_465,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col30‘ as b5debit2_f2_Q5_Col30_multi_lv_466,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col17‘ as b5debit2_f2_Q5_Col17_multi_lv_467,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col20‘ as b5debit2_f2_Q5_Col20_multi_lv_468,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col23‘ as b5debit2_f2_Q5_Col23_multi_lv_469,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col13‘ as b5debit2_f2_Q5_Col13_multi_lv_470,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col22‘ as b5debit2_f2_Q5_Col22_multi_lv_471,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col25‘ as b5debit2_f2_Q5_Col25_multi_lv_472,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col10‘ as b5debit2_f2_Q5_Col10_multi_lv_473,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col4‘ as b5debit2_f2_Q5_Col4_multi_lv_474,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col15‘ as b5debit2_f2_Q5_Col15_multi_lv_475,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col18‘ as b5debit2_f2_Q5_Col18_multi_lv_476,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col19‘ as b5debit2_f2_Q5_Col19_multi_lv_477,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col11‘ as b5debit2_f2_Q5_Col11_multi_lv_478,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col26‘ as b5debit2_f2_Q5_Col26_multi_lv_479,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col32‘ as b5debit2_f2_Q5_Col32_multi_lv_480,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col29‘ as b5debit2_f2_Q5_Col29_multi_lv_481,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col33‘ as b5debit2_f2_Q5_Col33_multi_lv_482,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col42‘ as b5debit2_f2_Q5_Col42_multi_lv_483,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col43‘ as b5debit2_f2_Q5_Col43_multi_lv_484,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col44‘ as b5debit2_f2_Q5_Col44_multi_lv_485,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col45‘ as b5debit2_f2_Q5_Col45_multi_lv_486,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col46‘ as b5debit2_f2_Q5_Col46_multi_lv_487,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col47‘ as b5debit2_f2_Q5_Col47_multi_lv_488,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col48‘ as b5debit2_f2_Q5_Col48_multi_lv_489,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col49‘ as b5debit2_f2_Q5_Col49_multi_lv_490,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col50‘ as b5debit2_f2_Q5_Col50_multi_lv_491,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col51‘ as b5debit2_f2_Q5_Col51_multi_lv_492,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col34‘ as b5debit2_f2_Q5_Col34_multi_lv_493,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col52‘ as b5debit2_f2_Q5_Col52_multi_lv_494,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col53‘ as b5debit2_f2_Q5_Col53_multi_lv_495,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col54‘ as b5debit2_f2_Q5_Col54_multi_lv_496,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col55‘ as b5debit2_f2_Q5_Col55_multi_lv_497,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col56‘ as b5debit2_f2_Q5_Col56_multi_lv_498,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col57‘ as b5debit2_f2_Q5_Col57_multi_lv_499,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col58‘ as b5debit2_f2_Q5_Col58_multi_lv_500,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col59‘ as b5debit2_f2_Q5_Col59_multi_lv_501,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col60‘ as b5debit2_f2_Q5_Col60_multi_lv_502,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col61‘ as b5debit2_f2_Q5_Col61_multi_lv_503,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col35‘ as b5debit2_f2_Q5_Col35_multi_lv_504,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col62‘ as b5debit2_f2_Q5_Col62_multi_lv_505,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col63‘ as b5debit2_f2_Q5_Col63_multi_lv_506,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col65‘ as b5debit2_f2_Q5_Col65_multi_lv_507,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col66‘ as b5debit2_f2_Q5_Col66_multi_lv_508,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col67‘ as b5debit2_f2_Q5_Col67_multi_lv_509,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col68‘ as b5debit2_f2_Q5_Col68_multi_lv_510,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col69‘ as b5debit2_f2_Q5_Col69_multi_lv_511,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col70‘ as b5debit2_f2_Q5_Col70_multi_lv_512,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col71‘ as b5debit2_f2_Q5_Col71_multi_lv_513,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col36‘ as b5debit2_f2_Q5_Col36_multi_lv_514,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col72‘ as b5debit2_f2_Q5_Col72_multi_lv_515,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col73‘ as b5debit2_f2_Q5_Col73_multi_lv_516,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col74‘ as b5debit2_f2_Q5_Col74_multi_lv_517,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col75‘ as b5debit2_f2_Q5_Col75_multi_lv_518,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col76‘ as b5debit2_f2_Q5_Col76_multi_lv_519,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col77‘ as b5debit2_f2_Q5_Col77_multi_lv_520,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col78‘ as b5debit2_f2_Q5_Col78_multi_lv_521,
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‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col79‘ as b5debit2_f2_Q5_Col79_multi_lv_522,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col80‘ as b5debit2_f2_Q5_Col80_multi_lv_523,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col81‘ as b5debit2_f2_Q5_Col81_multi_lv_524,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col37‘ as b5debit2_f2_Q5_Col37_multi_lv_525,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col82‘ as b5debit2_f2_Q5_Col82_multi_lv_526,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col83‘ as b5debit2_f2_Q5_Col83_multi_lv_527,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col84‘ as b5debit2_f2_Q5_Col84_multi_lv_528,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col85‘ as b5debit2_f2_Q5_Col85_multi_lv_529,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col86‘ as b5debit2_f2_Q5_Col86_multi_lv_530,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col87‘ as b5debit2_f2_Q5_Col87_multi_lv_531,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col88‘ as b5debit2_f2_Q5_Col88_multi_lv_532,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col89‘ as b5debit2_f2_Q5_Col89_multi_lv_533,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col90‘ as b5debit2_f2_Q5_Col90_multi_lv_534,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col91‘ as b5debit2_f2_Q5_Col91_multi_lv_535,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col38‘ as b5debit2_f2_Q5_Col38_multi_lv_536,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col92‘ as b5debit2_f2_Q5_Col92_multi_lv_537,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col93‘ as b5debit2_f2_Q5_Col93_multi_lv_538,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col94‘ as b5debit2_f2_Q5_Col94_multi_lv_539,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col95‘ as b5debit2_f2_Q5_Col95_multi_lv_540,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col96‘ as b5debit2_f2_Q5_Col96_multi_lv_541,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col97‘ as b5debit2_f2_Q5_Col97_multi_lv_542,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col98‘ as b5debit2_f2_Q5_Col98_multi_lv_543,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col99‘ as b5debit2_f2_Q5_Col99_multi_lv_544,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col39‘ as b5debit2_f2_Q5_Col39_multi_lv_545,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col40‘ as b5debit2_f2_Q5_Col40_multi_lv_546,
‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col41‘ as b5debit2_f2_Q5_Col41_multi_lv_547,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col7‘ as b7debit1_f1_Q5_Col7_multi_lv_548,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col6‘ as b8debit1_f1_Q5_Col6_multi_lv_549,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col31‘ as b7debit1_f1_Q5_Col31_multi_lv_550,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col3‘ as b7debit1_f1_Q5_Col3_multi_lv_551,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col2‘ as b8debit1_f1_Q5_Col2_multi_lv_552,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col24‘ as b7debit1_f1_Q5_Col24_multi_lv_553,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col9‘ as b7debit1_f1_Q5_Col9_multi_lv_554,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col12‘ as b7debit1_f1_Q5_Col12_multi_lv_555,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col8‘ as b7debit1_f1_Q5_Col8_multi_lv_556,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col14‘ as b7debit1_f1_Q5_Col14_multi_lv_557,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col27‘ as b7debit1_f1_Q5_Col27_multi_lv_558,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col16‘ as b7debit1_f1_Q5_Col16_multi_lv_559,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col5‘ as b7debit1_f1_Q5_Col5_multi_lv_560,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col28‘ as b7debit1_f1_Q5_Col28_multi_lv_561,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col30‘ as b7debit1_f1_Q5_Col30_multi_lv_562,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col17‘ as b7debit1_f1_Q5_Col17_multi_lv_563,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col20‘ as b7debit1_f1_Q5_Col20_multi_lv_564,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col23‘ as b7debit1_f1_Q5_Col23_multi_lv_565,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col13‘ as b7debit1_f1_Q5_Col13_multi_lv_566,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col22‘ as b7debit1_f1_Q5_Col22_multi_lv_567,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col25‘ as b7debit1_f1_Q5_Col25_multi_lv_568,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col10‘ as b7debit1_f1_Q5_Col10_multi_lv_569,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col4‘ as b7debit1_f1_Q5_Col4_multi_lv_570,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col18‘ as b7debit1_f1_Q5_Col18_multi_lv_571,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col19‘ as b7debit1_f1_Q5_Col19_multi_lv_572,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col11‘ as b7debit1_f1_Q5_Col11_multi_lv_573,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col26‘ as b7debit1_f1_Q5_Col26_multi_lv_574,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col32‘ as b7debit1_f1_Q5_Col32_multi_lv_575,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col29‘ as b7debit1_f1_Q5_Col29_multi_lv_576,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col33‘ as b7debit1_f1_Q5_Col33_multi_lv_577,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col42‘ as b7debit1_f1_Q5_Col42_multi_lv_578,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col43‘ as b7debit1_f1_Q5_Col43_multi_lv_579,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col44‘ as b7debit1_f1_Q5_Col44_multi_lv_580,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col45‘ as b7debit1_f1_Q5_Col45_multi_lv_581,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col46‘ as b7debit1_f1_Q5_Col46_multi_lv_582,
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‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col47‘ as b7debit1_f1_Q5_Col47_multi_lv_583,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col49‘ as b7debit1_f1_Q5_Col49_multi_lv_584,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col50‘ as b7debit1_f1_Q5_Col50_multi_lv_585,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col51‘ as b7debit1_f1_Q5_Col51_multi_lv_586,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col34‘ as b7debit1_f1_Q5_Col34_multi_lv_587,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col52‘ as b7debit1_f1_Q5_Col52_multi_lv_588,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col53‘ as b7debit1_f1_Q5_Col53_multi_lv_589,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col55‘ as b7debit1_f1_Q5_Col55_multi_lv_590,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col56‘ as b7debit1_f1_Q5_Col56_multi_lv_591,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col57‘ as b7debit1_f1_Q5_Col57_multi_lv_592,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col58‘ as b7debit1_f1_Q5_Col58_multi_lv_593,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col59‘ as b7debit1_f1_Q5_Col59_multi_lv_594,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col60‘ as b7debit1_f1_Q5_Col60_multi_lv_595,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col61‘ as b7debit1_f1_Q5_Col61_multi_lv_596,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col35‘ as b7debit1_f1_Q5_Col35_multi_lv_597,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col62‘ as b7debit1_f1_Q5_Col62_multi_lv_598,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col63‘ as b7debit1_f1_Q5_Col63_multi_lv_599,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col64‘ as b7debit1_f1_Q5_Col64_multi_lv_600,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col65‘ as b7debit1_f1_Q5_Col65_multi_lv_601,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col66‘ as b7debit1_f1_Q5_Col66_multi_lv_602,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col67‘ as b7debit1_f1_Q5_Col67_multi_lv_603,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col68‘ as b7debit1_f1_Q5_Col68_multi_lv_604,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col69‘ as b7debit1_f1_Q5_Col69_multi_lv_605,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col70‘ as b7debit1_f1_Q5_Col70_multi_lv_606,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col71‘ as b7debit1_f1_Q5_Col71_multi_lv_607,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col36‘ as b7debit1_f1_Q5_Col36_multi_lv_608,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col72‘ as b7debit1_f1_Q5_Col72_multi_lv_609,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col73‘ as b7debit1_f1_Q5_Col73_multi_lv_610,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col74‘ as b7debit1_f1_Q5_Col74_multi_lv_611,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col75‘ as b7debit1_f1_Q5_Col75_multi_lv_612,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col76‘ as b7debit1_f1_Q5_Col76_multi_lv_613,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col77‘ as b7debit1_f1_Q5_Col77_multi_lv_614,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col78‘ as b7debit1_f1_Q5_Col78_multi_lv_615,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col79‘ as b7debit1_f1_Q5_Col79_multi_lv_616,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col81‘ as b7debit1_f1_Q5_Col81_multi_lv_617,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col37‘ as b7debit1_f1_Q5_Col37_multi_lv_618,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col82‘ as b7debit1_f1_Q5_Col82_multi_lv_619,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col83‘ as b7debit1_f1_Q5_Col83_multi_lv_620,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col84‘ as b7debit1_f1_Q5_Col84_multi_lv_621,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col85‘ as b7debit1_f1_Q5_Col85_multi_lv_622,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col87‘ as b7debit1_f1_Q5_Col87_multi_lv_623,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col88‘ as b7debit1_f1_Q5_Col88_multi_lv_624,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col89‘ as b7debit1_f1_Q5_Col89_multi_lv_625,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col90‘ as b7debit1_f1_Q5_Col90_multi_lv_626,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col91‘ as b7debit1_f1_Q5_Col91_multi_lv_627,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col38‘ as b7debit1_f1_Q5_Col38_multi_lv_628,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col92‘ as b7debit1_f1_Q5_Col92_multi_lv_629,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col93‘ as b7debit1_f1_Q5_Col93_multi_lv_630,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col95‘ as b7debit1_f1_Q5_Col95_multi_lv_631,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col96‘ as b7debit1_f1_Q5_Col96_multi_lv_632,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col97‘ as b7debit1_f1_Q5_Col97_multi_lv_633,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col98‘ as b7debit1_f1_Q5_Col98_multi_lv_634,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col99‘ as b7debit1_f1_Q5_Col99_multi_lv_635,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col39‘ as b7debit1_f1_Q5_Col39_multi_lv_636,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col40‘ as b7debit1_f1_Q5_Col40_multi_lv_637,
‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col41‘ as b7debit1_f1_Q5_Col41_multi_lv_638
from
‘train‘
last join ‘feedback‘ as ‘b9feedback_Q5_Col100‘ on ‘train‘.‘Q5_Col100‘ = ‘b9feedback_Q5_Col100‘.‘Q5_Col100‘
last join ‘CUST_f7‘ as ‘b1CUST_f7_Q5_Col0‘ on ‘train‘.‘Q5_Col0‘ = ‘b1CUST_f7_Q5_Col0‘.‘Q5_Col0‘
```

```
last join ‘sag_efs_tbproduct_F_b‘ as ‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘ order by
    b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col102‘ =
    ‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col102‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b2sag_efs_tbp_F_b_Q5_Col102_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘LINK2_f6‘ as ‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘ order by
    b10LINK2_f6_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b10LINK2_f6_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘LINK1_f5‘ as ‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘ order by
    b11LINK1_f5_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b11LINK1_f5_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘AUM_f4‘ as ‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘ order by
    b12AUM_f4_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b12AUM_f4_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘debit3_f3‘ as ‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘ order by
    b4debit3_f3_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b4debit3_f3_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘debit2_f2‘ as ‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘ order by
    b6debit2_f2_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b6debit2_f2_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘
last join ‘debit1_f1‘ as ‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘ order by
    b8debit1_f1_Q5_Col0_eT_0_2147483645.‘Q5_Col1‘ on ‘train‘.‘Q5_Col0‘ =
    ‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
    ‘b8debit1_f1_Q5_Col0_eT_0_2147483645‘.‘Q5_Col1‘)
as out1
on out0.Q5_Col100_1 = out1.Q5_Col100_3
;
```

Appendix E

Query For Flink

E.1 Ride Duration Prediction (Q0)

```
with t2 as (select 1 id, sum(pickup_latitude) train_pickup_latitude_window_sum_23, sum(dropoff_latitude)
    train_dropoff_latitude_window_sum_25 from train window win as (partition by vendor_id order by
    pickup_datetime range between interval '1' hour preceding and current row)), t3 as (select 1 id,
    sum(pickup_latitude) train_pickup_latitude_window_sum_24, sum(dropoff_latitude)
    train_dropoff_latitude_window_sum_27 from train window win2 as (partition by vendor_id order by
    pickup_datetime range between interval '2' hour preceding and current row)), t1 as (select 1 id,
    pickup_datetime, trip_duration, dropoff_datetime, dropoff_latitude, dropoff_longitude,
    passenger_count, pickup_latitude, pickup_longitude, store_and_fwd_flag, vendor_id from train limit 1)
select t1.id,
t1.pickup_datetime as train_pickup_datetime_original_0,
t1.id as train_id_original_1,
t1.trip_duration as train_trip_duration_original_2,
t1.dropoff_latitude as train_dropoff_latitude_original_4,
t1.dropoff_longitude as train_dropoff_longitude_original_5,
t1.passenger_count as train_passenger_count_original_6,
t1.pickup_latitude as train_pickup_latitude_original_7,
t1.pickup_longitude as train_pickup_longitude_original_8,
t1.store_and_fwd_flag as train_store_and_fwd_flag_original_9,
t1.vendor_id as train_vendor_id_original_10,
t1.dropoff_longitude as train_dropoff_longitude_divide_11,
t1.pickup_longitude as train_pickup_longitude_divide_11,
t1.pickup_longitude as train_pickup_longitude_divide_12,
t1.dropoff_longitude as train_dropoff_longitude_divide_12,
t1.pickup_latitude as train_pickup_latitude_divide_13,
t1.dropoff_latitude as train_dropoff_latitude_divide_13,
t1.dropoff_latitude as train_dropoff_latitude_divide_14,
t1.pickup_latitude as train_pickup_latitude_divide_14,
t1.pickup_longitude as train_pickup_longitude_multiply_15,
t1.dropoff_latitude as train_dropoff_latitude_multiply_15,
t1.dropoff_longitude as train_dropoff_longitude_multiply_15,
t1.pickup_longitude as train_pickup_longitude_multiply_16,
t1.dropoff_latitude as train_dropoff_latitude_multiply_16,
t1.pickup_longitude as train_pickup_longitude_multiply_17,
t1.pickup_latitude as train_pickup_latitude_multiply_17,
t1.dropoff_longitude as train_dropoff_longitude_multiply_17,
t1.pickup_longitude as train_pickup_longitude_multiply_18,
t1.dropoff_longitude as train_dropoff_longitude_multiply_18,
t1.pickup_latitude as train_pickup_latitude_multiply_19,
t1.dropoff_longitude as train_dropoff_longitude_multiply_19,
t2.train_pickup_latitude_window_sum_23 as train_pickup_latitude_window_sum_23,
```

```
t3.train_pickup_latitude_window_sum_24 as train_pickup_latitude_window_sum_24,
t2.train_dropoff_latitude_window_sum_25 as train_dropoff_latitude_window_sum_25,
t3.train_dropoff_latitude_window_sum_27 as train_dropoff_latitude_window_sum_27,
t1.dropoff_longitude / t1.pickup_longitude,
t1.pickup_longitude / t1.dropoff_longitude,
t1.pickup_latitude / t1.dropoff_latitude,
t1.dropoff_latitude / t1.pickup_latitude,
t1.pickup_longitude * t1.dropoff_latitude * t1.dropoff_longitude,
t1.pickup_longitude * t1.dropoff_latitude,
t1.pickup_longitude * t1.pickup_latitude * t1.dropoff_longitude,
t1.pickup_longitude * t1.dropoff_longitude,
t1.pickup_latitude * t1.dropoff_longitude
from t1,t2,t3 where t1.id=t2.id and t2.id=t3.id
```

E.2 Flu Forecast (Q1)

```
WITH
train_Province_State_Date_0s_2d_200 AS (
    SELECT 1 Id,
    min(Fatalities) as train_Fatalities_window_min_7,
    avg(Fatalities) as train_Fatalities_window_avg_12
    FROM train
    window train_Province_State_Date_0s_2d_200 as (partition by Province_State order by DateDate range
        between interval '2' day preceding and current row)
),
train_Province_State_Date_0s_7d_200 AS (
    SELECT 1 Id,
    min(Fatalities) as train_Fatalities_window_min_8
    FROM train
    window train_Province_State_Date_0s_7d_200 as (partition by Province_State order by DateDate range
        between interval '7' day preceding and current row)
),
train_Country_Region_Date_0s_2d_100 AS (
    SELECT 1 Id,
    min(Fatalities) as train_Fatalities_window_min_10,
    avg(Fatalities) as train_Fatalities_window_avg_15
    FROM train
    window train_Country_Region_Date_0s_2d_100 as (partition by Country_Region order by DateDate range
        between interval '2' day preceding and current row)
),
train_Country_Region_Date_0s_5d_200 AS (
    SELECT 1 Id,
    min(Fatalities) as train_Fatalities_window_min_11,
    max(Fatalities) as train_Fatalities_window_max_16
    FROM train
    window train_Country_Region_Date_0s_5d_200 as (partition by Country_Region order by DateDate range
        between interval '5' day preceding and current row)
),
train_Province_State_Date_0s_5d_200 AS (
    SELECT 1 Id,
    avg(Fatalities) as train_Fatalities_window_avg_13
    FROM train
    window train_Province_State_Date_0s_5d_200 as (partition by Province_State order by DateDate range
        between interval '5' day preceding and current row)
),
train_Province_State_Date_0s_7d_100 AS (
    SELECT 1 Id,
    sum(Fatalities) as train_Fatalities_window_sum_14
```

```
    FROM train
    window train_Province_State_Date_0s_7d_100 as (partition by Province_State order by DateDate range
        between interval '7' day preceding and current row)
),
train_Country_Region_Date_0s_14d_200 AS (
    SELECT 1 Id,
    max(Fatalities) as train_Fatalities_window_max_17
    FROM train
    window train_Country_Region_Date_0s_14d_200 as (partition by Country_Region order by DateDate range
        between interval '14' day preceding and current row)
),
train_Country_Region_Date_0_10_ AS (
    SELECT 1 Id,
    avg(Fatalities) as train_Fatalities_window_avg_18
    FROM train
    window train_Country_Region_Date_0_10_ as (partition by Country_Region order by DateDate rows between
        10 preceding and current row)
),
train_Province_State_Date_0s_14d_100 AS (
    SELECT 1 Id
    FROM train
    window train_Province_State_Date_0s_14d_100 as (partition by Province_State order by DateDate range
        between interval '14' day preceding and current row)
),
train_Province_State_Date_0s_64d_100 AS (
    SELECT 1 Id
    FROM train
    window train_Province_State_Date_0s_64d_100 as (partition by Province_State order by DateDate range
        between interval '64' day preceding and current row)
)
SELECT train_Date_original_0
FROM
(
SELECT 1 Id,
    train.DateDate as train_Date_original_0,
    train.Id as train_Id_original_1,
    train.ConfirmedCases as train_ConfirmedCases_original_2,
    train.Country_Region as train_Country_Region_original_3,
    train.Fatalities as train_Fatalities_original_4,
    train.Province_State as train_Province_State_original_5,
    log(train.Fatalities) as train_Fatalities_log_6,
    train_Province_State_Date_0s_2d_200.train_Fatalities_window_min_7 as train_Fatalities_window_min_7,
    train_Province_State_Date_0s_7d_200.train_Fatalities_window_min_8 as train_Fatalities_window_min_8,
    concat(train.Province_State, train.Country_Region) as train_Province_State_Country_Region_9,
    train_Country_Region_Date_0s_2d_100.train_Fatalities_window_min_10 as train_Fatalities_window_min_10,
    train_Country_Region_Date_0s_5d_200.train_Fatalities_window_min_11 as train_Fatalities_window_min_11,
    train_Province_State_Date_0s_2d_200.train_Fatalities_window_avg_12 as train_Fatalities_window_avg_12,
    train_Province_State_Date_0s_5d_200.train_Fatalities_window_avg_13 as train_Fatalities_window_avg_13,
    train_Province_State_Date_0s_7d_100.train_Fatalities_window_sum_14 as train_Fatalities_window_sum_14,
    train_Country_Region_Date_0s_2d_100.train_Fatalities_window_avg_15 as train_Fatalities_window_avg_15,
    train_Country_Region_Date_0s_5d_200.train_Fatalities_window_max_16 as train_Fatalities_window_max_16,
    train_Country_Region_Date_0s_14d_200.train_Fatalities_window_max_17 as train_Fatalities_window_max_17,
    train_Country_Region_Date_0_10_.train_Fatalities_window_avg_18 as train_Fatalities_window_avg_18
FROM train, train_Province_State_Date_0s_2d_200
    ,train_Province_State_Date_0s_7d_200
    ,train_Country_Region_Date_0s_2d_100
    ,train_Country_Region_Date_0s_5d_200
    ,train_Province_State_Date_0s_5d_200
    ,train_Province_State_Date_0s_7d_100
    ,train_Country_Region_Date_0s_14d_200
    ,train_Country_Region_Date_0_10_
```

```
    ,train_Province_State_Date_0s_14d_100
    ,train_Province_State_Date_0s_64d_100
WHERE train.Id=train_Province_State_Date_0s_2d_200.Id
    and train_Province_State_Date_0s_2d_200.Id=train_Province_State_Date_0s_7d_200.Id
    and train_Province_State_Date_0s_7d_200.Id=train_Country_Region_Date_0s_2d_100.Id
    and train_Country_Region_Date_0s_2d_100.Id=train_Country_Region_Date_0s_5d_200.Id
    and train_Country_Region_Date_0s_5d_200.Id=train_Province_State_Date_0s_5d_200.Id
    and train_Province_State_Date_0s_5d_200.Id=train_Province_State_Date_0s_7d_100.Id
    and train_Province_State_Date_0s_7d_100.Id=train_Country_Region_Date_0s_14d_200.Id
    and train_Country_Region_Date_0s_14d_200.Id=train_Country_Region_Date_0_10_.Id
    and train_Country_Region_Date_0_10_.Id=train_Province_State_Date_0s_14d_100.Id
    and train_Province_State_Date_0s_14d_100.Id=train_Province_State_Date_0s_64d_100.Id
) tmpTable
```

E.3 Wind Energy Forecasting (Q2)

```
select * from
(
select
    ‘datedate‘ as date_1,
    ‘datedate‘ as train_date_original_0,
    ‘wp7‘ as train_wp7_original_2,
    ‘wp1‘ as train_wp1_original_32,
    ‘wp2‘ as train_wp2_original_33,
    ‘wp3‘ as train_wp3_original_34,
    ‘wp4‘ as train_wp4_original_35,
    ‘wp5‘ as train_wp5_original_36,
    ‘wp6‘ as train_wp6_original_37,
    log(‘wp6‘) as train_wp6_log_38,
    log(‘wp3‘) as train_wp3_log_39,
    dayofweek(CAST(‘datedate‘ AS TIMESTAMP)) as train_date_dayofweek_40,
    hour(CAST(‘datedate‘ AS TIMESTAMP)) as train_date_hourofday_41,
    case when 1 < dayofweek(CAST(‘datedate‘ AS TIMESTAMP)) and dayofweek(CAST(‘datedate‘ AS TIMESTAMP)) <
        7 then 1 else 0 end as train_date_isweekday_42,
    log(‘wp2‘) as train_wp2_log_43
from
    ‘train‘
    )
as out0
join
(
select
    ‘train‘.‘datedate‘ as date_3,
    ‘windforecasts_wf1_date‘.‘hors‘ as windforecasts_wf1_hors_multi_direct_3,
    ‘windforecasts_wf1_date‘.‘u‘ as windforecasts_wf1_u_multi_direct_4,
    ‘windforecasts_wf1_date‘.‘v‘ as windforecasts_wf1_v_multi_direct_5,
    ‘windforecasts_wf1_date‘.‘wd‘ as windforecasts_wf1_wd_multi_direct_6,
    ‘windforecasts_wf1_date‘.‘ws‘ as windforecasts_wf1_ws_multi_direct_7,
    ‘windforecasts_wf2_date‘.‘u‘ as windforecasts_wf2_u_multi_direct_8,
    ‘windforecasts_wf2_date‘.‘v‘ as windforecasts_wf2_v_multi_direct_9,
    ‘windforecasts_wf2_date‘.‘wd‘ as windforecasts_wf2_wd_multi_direct_10,
    ‘windforecasts_wf2_date‘.‘ws‘ as windforecasts_wf2_ws_multi_direct_11,
    ‘windforecasts_wf3_date‘.‘u‘ as windforecasts_wf3_u_multi_direct_12,
    ‘windforecasts_wf3_date‘.‘v‘ as windforecasts_wf3_v_multi_direct_13,
    ‘windforecasts_wf3_date‘.‘wd‘ as windforecasts_wf3_wd_multi_direct_14,
    ‘windforecasts_wf3_date‘.‘ws‘ as windforecasts_wf3_ws_multi_direct_15,
    ‘windforecasts_wf4_date‘.‘u‘ as windforecasts_wf4_u_multi_direct_16,
    ‘windforecasts_wf4_date‘.‘v‘ as windforecasts_wf4_v_multi_direct_17,
```

```
    `windforecasts_wf4_date`.`wd` as windforecasts_wf4_wd_multi_direct_18,
    `windforecasts_wf4_date`.`ws` as windforecasts_wf4_ws_multi_direct_19,
    `windforecasts_wf5_date`.`u` as windforecasts_wf5_u_multi_direct_20,
    `windforecasts_wf5_date`.`v` as windforecasts_wf5_v_multi_direct_21,
    `windforecasts_wf5_date`.`wd` as windforecasts_wf5_wd_multi_direct_22,
    `windforecasts_wf5_date`.`ws` as windforecasts_wf5_ws_multi_direct_23,
    `windforecasts_wf6_date`.`u` as windforecasts_wf6_u_multi_direct_24,
    `windforecasts_wf6_date`.`v` as windforecasts_wf6_v_multi_direct_25,
    `windforecasts_wf6_date`.`wd` as windforecasts_wf6_wd_multi_direct_26,
    `windforecasts_wf6_date`.`ws` as windforecasts_wf6_ws_multi_direct_27,
    `windforecasts_wf7_date`.`u` as windforecasts_wf7_u_multi_direct_28,
    `windforecasts_wf7_date`.`v` as windforecasts_wf7_v_multi_direct_29,
    `windforecasts_wf7_date`.`wd` as windforecasts_wf7_wd_multi_direct_30,
    `windforecasts_wf7_date`.`ws` as windforecasts_wf7_ws_multi_direct_31
from
    `train`
    join `windforecasts_wf1` as `windforecasts_wf1_date` on `train`.`datedate` =
        `windforecasts_wf1_date`.`datedate`
    join `windforecasts_wf2` as `windforecasts_wf2_date` on `train`.`datedate` =
        `windforecasts_wf2_date`.`datedate`
    join `windforecasts_wf3` as `windforecasts_wf3_date` on `train`.`datedate` =
        `windforecasts_wf3_date`.`datedate`
    join `windforecasts_wf4` as `windforecasts_wf4_date` on `train`.`datedate` =
        `windforecasts_wf4_date`.`datedate`
    join `windforecasts_wf5` as `windforecasts_wf5_date` on `train`.`datedate` =
        `windforecasts_wf5_date`.`datedate`
    join `windforecasts_wf6` as `windforecasts_wf6_date` on `train`.`datedate` =
        `windforecasts_wf6_date`.`datedate`
    join `windforecasts_wf7` as `windforecasts_wf7_date` on `train`.`datedate` =
        `windforecasts_wf7_date`.`datedate`)
as out1
on out0.date_1 = out1.date_3
```

E.4 Sales Prediction (Q3)

```
select '1' as Q3_Col31_1,
    flatten_request_Q3_Col32_original_0,
    flatten_request_Q3_Col31_original_1,
    flatten_request_Q3_Col34_original_92,
    flatten_request_Q3_Col3_original_93,
    flatten_request_Q3_Col33_original_94,
    flatten_request_Q3_Col3_95,
    flatten_request_Q3_Col3_96,
    flatten_request_Q3_Col3_97,
    Q3_Col31_3,
    feedback_Q3_Col58_multi_direct_2,
    product_Q3_Col3_Q3_Col60_multi_direct_15,
    product_Q3_Col3_Q3_Col61_multi_direct_16,
    product_Q3_Col3_Q3_Col0_multi_direct_17,
    product_Q3_Col3_Q3_Col59_multi_direct_18,
    product_Q3_Col3_Q3_Col64_multi_direct_19,
    product_Q3_Col3_Q3_Col65_multi_direct_20,
    product_Q3_Col3_Q3_Col62_multi_direct_21,
    product_Q3_Col3_Q3_Col63_multi_direct_22,
    product_item_Q3_Col12_multi_last_value_23,
    product_item_Q3_Col16_multi_last_value_24,
    product_item_Q3_Col26_multi_last_value_25,
    product_item_Q3_Col27_multi_last_value_26,
```

```
    product_item_Q3_Col9_multi_last_value_27,
    product_item_Q3_Col11_multi_last_value_28,
    product_item_Q3_Col8_multi_last_value_29,
    product_item_Q3_Col7_multi_last_value_30,
    product_item_Q3_Col18_multi_last_value_31,
    product_item_Q3_Col20_multi_last_value_32,
    product_item_Q3_Col21_multi_last_value_33,
    product_item_Q3_Col22_multi_last_value_34,
    product_item_Q3_Col23_multi_last_value_35,
    product_item_Q3_Col24_multi_last_value_36,
    product_item_Q3_Col25_multi_last_value_37,
    product_item_Q3_Col19_multi_last_value_38,
    product_item_Q3_Col14_multi_last_value_39,
    product_item_Q3_Col15_multi_last_value_40,
    shipping_Q3_Col3_Q3_Col54_multi_last_value_41,
    shipping_Q3_Col3_rfc_price_end_dt_multi_last_value_42,
    shipping_Q3_Col3_rfc_price_start_dt_multi_last_value_43,
    shipping_Q3_Col3_shipping_dt_multi_last_value_44,
    Q3_Col31_4,
    order_cancel_return_Q3_Col4_multi_avg_3,
    Q3_Col31_5,
    order_sales_Q3_Col48_multi_avg_4,
    order_sales_Q3_Col48_multi_avg_4 / order_sales_Q3_Col55_multi_avg_12,
    order_sales_Q3_Col48_multi_avg_5,
    order_sales_Q3_Col48_multi_avg_5 / shipping_Q3_Col3_Q3_Col54_multi_last_value_41,
    order_sales_Q3_Col48_multi_avg_5 / order_sales_Q3_Col54_multi_min_49,
    order_sales_Q3_Col47_multi_avg_6,
    order_sales_Q3_Col47_multi_avg_6 / order_sales_Q3_Col40_multi_unique_count_82,
    order_sales_Q3_Col47_multi_avg_6 / order_sales_Q3_Col55_multi_avg_12,
    order_sales_Q3_Col47_multi_avg_6 / order_sales_Q3_Col55_multi_avg_12,
    order_sales_Q3_Col47_multi_avg_7,
    order_sales_Q3_Col47_multi_avg_7 / order_sales_Q3_Col40_multi_unique_count_81,
    order_sales_Q3_Col47_multi_avg_7 / shipping_Q3_Col3_Q3_Col54_multi_last_value_41,
    order_sales_Q3_Col54_multi_avg_8,
    order_sales_Q3_Col54_multi_avg_9,
    order_sales_Q3_Col56_multi_avg_10,
    order_sales_Q3_Col53_multi_avg_11,
    order_sales_Q3_Col53_multi_avg_11 / order_sales_Q3_Col47_multi_avg_7,
    order_sales_Q3_Col55_multi_avg_12,
    order_sales_Q3_Col4_multi_avg_13,
    order_sales_Q3_Col4_multi_avg_14,
    order_sales_Q3_Col4_multi_avg_14 / order_sales_Q3_Col55_multi_avg_12,
    order_sales_Q3_Col56_multi_max_45,
    order_sales_Q3_Col4_multi_max_46,
    order_sales_Q3_Col48_multi_min_47,
    order_sales_Q3_Col47_multi_min_48,
    order_sales_Q3_Col54_multi_min_49,
    order_sales_Q3_Col54_multi_min_49 / order_sales_Q3_Col48_multi_avg_5,
    order_sales_Q3_Col56_multi_min_50,
    order_sales_Q3_Col43_multi_unique_count_78,
    order_sales_Q3_Col43_multi_unique_count_78 / order_sales_Q3_Col55_multi_avg_12,
    order_sales_Q3_Col44_multi_unique_count_79,
    order_sales_Q3_Col44_multi_unique_count_80,
    order_sales_Q3_Col40_multi_unique_count_81,
    order_sales_Q3_Col40_multi_unique_count_82,
    order_sales_Q3_Col40_multi_unique_count_82 / order_sales_Q3_Col47_multi_avg_6,
    order_sales_Q3_Col41_multi_unique_count_83,
    order_sales_Q3_Col41_multi_unique_count_84,
    order_sales_Q3_Col39_multi_unique_count_85,
    order_sales_Q3_Col38_multi_unique_count_86,
    order_sales_Q3_Col2_multi_unique_count_87,
```

```
    order_sales_Q3_Col2_multi_unique_count_87 / order_sales_Q3_Col55_multi_avg_12,
    order_sales_Q3_Col45_multi_unique_count_88,
    order_sales_Q3_Col35_multi_unique_count_89,
    order_sales_Q3_Col36_multi_unique_count_90,
    order_sales_Q3_Col36_multi_unique_count_91
from
(
select
    `Q3_Col31` as Q3_Col31_1,
    `Q3_Col32` as flatten_request_Q3_Col32_original_0,
    `Q3_Col31` as flatten_request_Q3_Col31_original_1,
    `Q3_Col34` as flatten_request_Q3_Col34_original_92,
    `Q3_Col3` as flatten_request_Q3_Col3_original_93,
    `Q3_Col33` as flatten_request_Q3_Col33_original_94,
    `Q3_Col3` as flatten_request_Q3_Col3_95,
    `Q3_Col3` as flatten_request_Q3_Col3_96,
    `Q3_Col3` as flatten_request_Q3_Col3_97
from
    `train`
    window flatten_request_Q3_Col3_Q3_Col32_0s_7d_100 as (partition by `Q3_Col3` order by `Q3_Col32`
        range between interval '7' day preceding and current row)
) as out0
join
(
select
    '1' as Q3_Col31_3,
    `feedback_Q3_Col31`.`Q3_Col58` as feedback_Q3_Col58_multi_direct_2,
    `product_Q3_Col3_Q3_Col3`.`Q3_Col60` as product_Q3_Col3_Q3_Col60_multi_direct_15,
    `product_Q3_Col3_Q3_Col3`.`Q3_Col61` as product_Q3_Col3_Q3_Col61_multi_direct_16,
    `product_Q3_Col3_Q3_Col3`.`Q3_Col0` as product_Q3_Col3_Q3_Col0_multi_direct_17,
    `product_Q3_Col3_Q3_Col3`.`Q3_Col59` as product_Q3_Col3_Q3_Col59_multi_direct_18,
    `product_Q3_Col3_Q3_Col3`.`Q3_Col64Q3_Col64` as product_Q3_Col3_Q3_Col64_multi_direct_19,
    `product_Q3_Col3_Q3_Col3`.`Q3_Col65` as product_Q3_Col3_Q3_Col65_multi_direct_20,
    `product_Q3_Col3_Q3_Col3`.`Q3_Col62Q3_Col62` as product_Q3_Col3_Q3_Col62_multi_direct_21,
    `product_Q3_Col3_Q3_Col3`.`Q3_Col63` as product_Q3_Col3_Q3_Col63_multi_direct_22,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col12` as product_item_Q3_Col12_multi_last_value_23,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col16` as product_item_Q3_Col16_multi_last_value_24,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col26` as product_item_Q3_Col26_multi_last_value_25,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col27` as product_item_Q3_Col27_multi_last_value_26,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col9` as product_item_Q3_Col9_multi_last_value_27,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col11` as product_item_Q3_Col11_multi_last_value_28,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col8` as product_item_Q3_Col8_multi_last_value_29,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col7` as product_item_Q3_Col7_multi_last_value_30,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col18` as product_item_Q3_Col18_multi_last_value_31,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col20` as product_item_Q3_Col20_multi_last_value_32,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col21` as product_item_Q3_Col21_multi_last_value_33,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col22` as product_item_Q3_Col22_multi_last_value_34,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col23` as product_item_Q3_Col23_multi_last_value_35,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col24` as product_item_Q3_Col24_multi_last_value_36,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col25` as product_item_Q3_Col25_multi_last_value_37,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col19` as product_item_Q3_Col19_multi_last_value_38,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col14` as product_item_Q3_Col14_multi_last_value_39,
    `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col15` as product_item_Q3_Col15_multi_last_value_40,
    `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`Q3_Col54` as
        shipping_Q3_Col3_Q3_Col54_multi_last_value_41,
    `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`rfc_price_end_dt` as
        shipping_Q3_Col3_rfc_price_end_dt_multi_last_value_42,
    `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`rfc_price_start_dt` as
        shipping_Q3_Col3_rfc_price_start_dt_multi_last_value_43,
    `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`shipping_dt` as
        shipping_Q3_Col3_shipping_dt_multi_last_value_44
```

```
141 from
142     `train`
143     join `feedback` as `feedback_Q3_Col31` on `train`.`Q3_Col31` = `feedback_Q3_Col31`.`Q3_Col31`
144     join `product_Q3_Col3` as `product_Q3_Col3_Q3_Col3` on `train`.`Q3_Col3` =
            `product_Q3_Col3_Q3_Col3`.`Q3_Col3`
145     join `product_item` as `product_item_Q3_Col6__Q3_Col32_0s_1d` on `train`.`Q3_Col6` =
            `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col6` and
            `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col0` < `train`.`Q3_Col32` - CAST(0 as interval
            second) and `product_item_Q3_Col6__Q3_Col32_0s_1d`.`Q3_Col0` > `train`.`Q3_Col32` - CAST(86400000
            as interval second)
146     join `shipping_Q3_Col3` as `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d` on `train`.`Q3_Col3` =
            `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`Q3_Col3` and
            `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`Q3_Col0` < `train`.`Q3_Col32` - CAST(0 as interval
            second) and `shipping_Q3_Col3_Q3_Col3__Q3_Col32_0s_1d`.`Q3_Col0` > `train`.`Q3_Col32` -
            CAST(86400000 as interval second)
147 ) as out1 on out0.Q3_Col31_1 = out1.Q3_Col31_3
148 join
149 (
150 select
151     '1' as Q3_Col31_4,
152     avg(`Q3_Col4`) as order_cancel_return_Q3_Col4_multi_avg_3
153 from
154     ((select `Q3_Col32` as `Q3_Col0`, CAST('2019-07-18 09:20:20' as timestamp) as `Q3_Col1`, '' as
            `Q3_Col2`, `Q3_Col3` as `Q3_Col3`, CAST(0 as int) as `Q3_Col4`, '' as `Q3_Col5`, Q3_Col31 from
            `train`)
155     UNION (select `Q3_Col0`, `Q3_Col1`, `Q3_Col2`, `Q3_Col3`, `Q3_Col4`, `Q3_Col5`, '' as Q3_Col31 from
            `order_cancel_return`))
156     window order_cancel_return_Q3_Col3_Q3_Col0_0s_64d_100 as (partition by `Q3_Col3` order by `Q3_Col0`
            range between interval '64' day preceding and current row)
157 ) as out2 on out0.Q3_Col31_1 = out2.Q3_Col31_4
158 join
159 (
160 select
161     '1' as Q3_Col31_5,
162     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col48_multi_avg_4 as
            order_sales_Q3_Col48_multi_avg_4,
163     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col47_multi_avg_6 as
            order_sales_Q3_Col47_multi_avg_6,
164     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col53_multi_avg_11 as
            order_sales_Q3_Col53_multi_avg_11,
165     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col4_multi_avg_13 as
            order_sales_Q3_Col4_multi_avg_13,
166     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col4_multi_max_46 as
            order_sales_Q3_Col4_multi_max_46,
167     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col43_multi_unique_count_78 as
            order_sales_Q3_Col43_multi_unique_count_78,
168     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col44_multi_unique_count_79 as
            order_sales_Q3_Col44_multi_unique_count_79,
169     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col40_multi_unique_count_81 as
            order_sales_Q3_Col40_multi_unique_count_81,
170     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col41_multi_unique_count_83 as
            order_sales_Q3_Col41_multi_unique_count_83,
171     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col39_multi_unique_count_85 as
            order_sales_Q3_Col39_multi_unique_count_85,
172     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col38_multi_unique_count_86 as
            order_sales_Q3_Col38_multi_unique_count_86,
173     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col2_multi_unique_count_87 as
            order_sales_Q3_Col2_multi_unique_count_87,
174     order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col45_multi_unique_count_88 as
            order_sales_Q3_Col45_multi_unique_count_88,
```

```
    order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col35_multi_unique_count_89 as
        order_sales_Q3_Col35_multi_unique_count_89,
    order_sales_Q3_Col3_Q3_Col0_0s_10h_100.order_sales_Q3_Col36_multi_unique_count_90 as
        order_sales_Q3_Col36_multi_unique_count_90,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col48_multi_avg_5 as
        order_sales_Q3_Col48_multi_avg_5,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col47_multi_avg_7 as
        order_sales_Q3_Col47_multi_avg_7,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col54_multi_avg_9 as
        order_sales_Q3_Col54_multi_avg_9,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col4_multi_avg_14 as
        order_sales_Q3_Col4_multi_avg_14,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col48_multi_min_47 as
        order_sales_Q3_Col48_multi_min_47,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col47_multi_min_48 as
        order_sales_Q3_Col47_multi_min_48,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col54_multi_min_49 as
        order_sales_Q3_Col54_multi_min_49,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col44_multi_unique_count_80 as
        order_sales_Q3_Col44_multi_unique_count_80,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col40_multi_unique_count_82 as
        order_sales_Q3_Col40_multi_unique_count_82,
    order_sales_Q3_Col3_Q3_Col0_0s_2d_100.order_sales_Q3_Col36_multi_unique_count_91 as
        order_sales_Q3_Col36_multi_unique_count_91,
    order_sales_Q3_Col3_Q3_Col0_0s_14d_100.order_sales_Q3_Col54_multi_avg_8 as
        order_sales_Q3_Col54_multi_avg_8,
    order_sales_Q3_Col3_Q3_Col0_0s_14d_100.order_sales_Q3_Col56_multi_max_45 as
        order_sales_Q3_Col56_multi_max_45,
    order_sales_Q3_Col3_Q3_Col0_0s_5d_100.order_sales_Q3_Col56_multi_avg_10 as
        order_sales_Q3_Col56_multi_avg_10,
    order_sales_Q3_Col3_Q3_Col0_0s_5d_100.order_sales_Q3_Col55_multi_avg_12 as
        order_sales_Q3_Col55_multi_avg_12,
    order_sales_Q3_Col3_Q3_Col0_0s_64d_100.order_sales_Q3_Col56_multi_min_50 as
        order_sales_Q3_Col56_multi_min_50,
    order_sales_Q3_Col3_Q3_Col0_0s_64d_100.order_sales_Q3_Col41_multi_unique_count_84 as
        order_sales_Q3_Col41_multi_unique_count_84
from
    (select 1, '' as `Q3_Col35`, '' as `Q3_Col36`, '' as `Q3_Col37Q3_Col37`, '' as `Q3_Col38`, '' as
        `Q3_Col39`, '' as `Q3_Col40`, '' as `Q3_Col41`, '' as `Q3_Col42`, '' as `Q3_Col2`, '' as
        `Q3_Col43`, '' as `Q3_Col44`, '' as `Q3_Col45`, CAST('2019-07-18 09:20:20' as timestamp) as
        `Q3_Col46`, CAST(0 as bigint) as `Q3_Col4`, CAST(0 as double) as `Q3_Col47`, CAST(0 as double) as
        `Q3_Col48`, `Q3_Col3` as `Q3_Col3`, '' as `Q3_Col49`, '' as `Q3_Col50Q3_Col50`, '' as `Q3_Col6`,
        '' as `Q3_Col51`, '' as `Q3_Col52`, CAST(0 as double) as `Q3_Col53`, CAST(0 as double) as
        `Q3_Col54`, CAST(0 as double) as `Q3_Col55`, CAST(0 as double) as `Q3_Col56`, '' as `Q3_Col57`,
        Q3_Col31 from `train`) as __main__
    natural join
    (
      select 1,
      avg(`Q3_Col48`) as order_sales_Q3_Col48_multi_avg_4,
      avg(`Q3_Col47`) as order_sales_Q3_Col47_multi_avg_6,
      avg(`Q3_Col53`) as order_sales_Q3_Col53_multi_avg_11,
      avg(`Q3_Col4`) as order_sales_Q3_Col4_multi_avg_13,
      max(`Q3_Col4`) as order_sales_Q3_Col4_multi_max_46,
      count(distinct `Q3_Col43`) as order_sales_Q3_Col43_multi_unique_count_78,
      count(distinct `Q3_Col44`) as order_sales_Q3_Col44_multi_unique_count_79,
      count(distinct `Q3_Col40`) as order_sales_Q3_Col40_multi_unique_count_81,
      count(distinct `Q3_Col41`) as order_sales_Q3_Col41_multi_unique_count_83,
      count(distinct `Q3_Col39`) as order_sales_Q3_Col39_multi_unique_count_85,
      count(distinct `Q3_Col38`) as order_sales_Q3_Col38_multi_unique_count_86,
      count(distinct `Q3_Col2`) as order_sales_Q3_Col2_multi_unique_count_87,
      count(distinct `Q3_Col45`) as order_sales_Q3_Col45_multi_unique_count_88,
```

```
211       count(distinct ‘Q3_Col35‘) as order_sales_Q3_Col35_multi_unique_count_89,
212       count(distinct ‘Q3_Col36‘) as order_sales_Q3_Col36_multi_unique_count_90
213       from ((select ‘Q3_Col32‘ as ‘Q3_Col0‘, ’’ as ‘Q3_Col35‘, ’’ as ‘Q3_Col36‘, ’’ as
              ‘Q3_Col37Q3_Col37‘, ’’ as ‘Q3_Col38‘, ’’ as ‘Q3_Col39‘, ’’ as ‘Q3_Col40‘, ’’ as ‘Q3_Col41‘, ’’
              as ‘Q3_Col42‘, ’’ as ‘Q3_Col2‘, ’’ as ‘Q3_Col43‘, ’’ as ‘Q3_Col44‘, ’’ as ‘Q3_Col45‘,
              CAST(’2019-07-18 09:20:20’ as timestamp) as ‘Q3_Col46‘, CAST(0 as bigint) as ‘Q3_Col4‘, CAST(0
              as double) as ‘Q3_Col47‘, CAST(0 as double) as ‘Q3_Col48‘, ‘Q3_Col3‘ as ‘Q3_Col3‘, ’’ as
              ‘Q3_Col49‘, ’’ as ‘Q3_Col50Q3_Col50‘, ’’ as ‘Q3_Col6‘, ’’ as ‘Q3_Col51‘, ’’ as ‘Q3_Col52‘,
              CAST(0 as double) as ‘Q3_Col53‘, CAST(0 as double) as ‘Q3_Col54‘, CAST(0 as double) as
              ‘Q3_Col55‘, CAST(0 as double) as ‘Q3_Col56‘, ’’ as ‘Q3_Col57‘, Q3_Col31 from ‘train‘)
214       UNION (select ‘Q3_Col0‘, ‘Q3_Col35‘, ‘Q3_Col36‘, ‘Q3_Col37Q3_Col37‘, ‘Q3_Col38‘, ‘Q3_Col39‘,
              ‘Q3_Col40‘, ‘Q3_Col41‘, ‘Q3_Col42‘, ‘Q3_Col2‘, ‘Q3_Col43‘, ‘Q3_Col44‘, ‘Q3_Col45‘, ‘Q3_Col46‘,
              ‘Q3_Col4‘, ‘Q3_Col47‘, ‘Q3_Col48‘, ‘Q3_Col3‘, ‘Q3_Col49‘, ‘Q3_Col50Q3_Col50‘, ‘Q3_Col6‘,
              ‘Q3_Col51‘, ‘Q3_Col52‘, ‘Q3_Col53‘, ‘Q3_Col54‘, ‘Q3_Col55‘, ‘Q3_Col56‘, ‘Q3_Col57‘, ’’ as
              Q3_Col31 from ‘order_sales‘))
215       window order_sales_Q3_Col3_Q3_Col0_0s_10h_100 as (partition by ‘Q3_Col3‘ order by ‘Q3_Col0‘ range
              between interval ’10’ hour preceding and current row)
216     ) as order_sales_Q3_Col3_Q3_Col0_0s_10h_100
217     natural join
218     (
219       select 1,
220       avg(‘Q3_Col48‘) as order_sales_Q3_Col48_multi_avg_5,
221       avg(‘Q3_Col47‘) as order_sales_Q3_Col47_multi_avg_7,
222       avg(‘Q3_Col54‘) as order_sales_Q3_Col54_multi_avg_9,
223       avg(‘Q3_Col4‘) as order_sales_Q3_Col4_multi_avg_14,
224       min(‘Q3_Col48‘) as order_sales_Q3_Col48_multi_min_47,
225       min(‘Q3_Col47‘) as order_sales_Q3_Col47_multi_min_48,
226       min(‘Q3_Col54‘) as order_sales_Q3_Col54_multi_min_49,
227       count(distinct ‘Q3_Col44‘) as order_sales_Q3_Col44_multi_unique_count_80,
228       count(distinct ‘Q3_Col40‘) as order_sales_Q3_Col40_multi_unique_count_82,
229       count(distinct ‘Q3_Col36‘) as order_sales_Q3_Col36_multi_unique_count_91
230       from ((select ‘Q3_Col32‘ as ‘Q3_Col0‘, ’’ as ‘Q3_Col35‘, ’’ as ‘Q3_Col36‘, ’’ as
              ‘Q3_Col37Q3_Col37‘, ’’ as ‘Q3_Col38‘, ’’ as ‘Q3_Col39‘, ’’ as ‘Q3_Col40‘, ’’ as ‘Q3_Col41‘, ’’
              as ‘Q3_Col42‘, ’’ as ‘Q3_Col2‘, ’’ as ‘Q3_Col43‘, ’’ as ‘Q3_Col44‘, ’’ as ‘Q3_Col45‘,
              CAST(’2019-07-18 09:20:20’ as timestamp) as ‘Q3_Col46‘, CAST(0 as bigint) as ‘Q3_Col4‘, CAST(0
              as double) as ‘Q3_Col47‘, CAST(0 as double) as ‘Q3_Col48‘, ‘Q3_Col3‘ as ‘Q3_Col3‘, ’’ as
              ‘Q3_Col49‘, ’’ as ‘Q3_Col50Q3_Col50‘, ’’ as ‘Q3_Col6‘, ’’ as ‘Q3_Col51‘, ’’ as ‘Q3_Col52‘,
              CAST(0 as double) as ‘Q3_Col53‘, CAST(0 as double) as ‘Q3_Col54‘, CAST(0 as double) as
              ‘Q3_Col55‘, CAST(0 as double) as ‘Q3_Col56‘, ’’ as ‘Q3_Col57‘, Q3_Col31 from ‘train‘)
231       UNION (select ‘Q3_Col0‘, ‘Q3_Col35‘, ‘Q3_Col36‘, ‘Q3_Col37Q3_Col37‘, ‘Q3_Col38‘, ‘Q3_Col39‘,
              ‘Q3_Col40‘, ‘Q3_Col41‘, ‘Q3_Col42‘, ‘Q3_Col2‘, ‘Q3_Col43‘, ‘Q3_Col44‘, ‘Q3_Col45‘, ‘Q3_Col46‘,
              ‘Q3_Col4‘, ‘Q3_Col47‘, ‘Q3_Col48‘, ‘Q3_Col3‘, ‘Q3_Col49‘, ‘Q3_Col50Q3_Col50‘, ‘Q3_Col6‘,
              ‘Q3_Col51‘, ‘Q3_Col52‘, ‘Q3_Col53‘, ‘Q3_Col54‘, ‘Q3_Col55‘, ‘Q3_Col56‘, ‘Q3_Col57‘, ’’ as
              Q3_Col31 from ‘order_sales‘))
232       window order_sales_Q3_Col3_Q3_Col0_0s_2d_100 as (partition by ‘Q3_Col3‘ order by ‘Q3_Col0‘ range
              between interval ’2’ day preceding and current row)
233     ) as order_sales_Q3_Col3_Q3_Col0_0s_2d_100
234     natural join
235     (
236       select 1,
237       avg(‘Q3_Col54‘) as order_sales_Q3_Col54_multi_avg_8,
238       max(‘Q3_Col56‘) as order_sales_Q3_Col56_multi_max_45
239       from ((select ‘Q3_Col32‘ as ‘Q3_Col0‘, ’’ as ‘Q3_Col35‘, ’’ as ‘Q3_Col36‘, ’’ as
              ‘Q3_Col37Q3_Col37‘, ’’ as ‘Q3_Col38‘, ’’ as ‘Q3_Col39‘, ’’ as ‘Q3_Col40‘, ’’ as ‘Q3_Col41‘, ’’
              as ‘Q3_Col42‘, ’’ as ‘Q3_Col2‘, ’’ as ‘Q3_Col43‘, ’’ as ‘Q3_Col44‘, ’’ as ‘Q3_Col45‘,
              CAST(’2019-07-18 09:20:20’ as timestamp) as ‘Q3_Col46‘, CAST(0 as bigint) as ‘Q3_Col4‘, CAST(0
              as double) as ‘Q3_Col47‘, CAST(0 as double) as ‘Q3_Col48‘, ‘Q3_Col3‘ as ‘Q3_Col3‘, ’’ as
              ‘Q3_Col49‘, ’’ as ‘Q3_Col50Q3_Col50‘, ’’ as ‘Q3_Col6‘, ’’ as ‘Q3_Col51‘, ’’ as ‘Q3_Col52‘,
              CAST(0 as double) as ‘Q3_Col53‘, CAST(0 as double) as ‘Q3_Col54‘, CAST(0 as double) as
              ‘Q3_Col55‘, CAST(0 as double) as ‘Q3_Col56‘, ’’ as ‘Q3_Col57‘, Q3_Col31 from ‘train‘)
```

```
240       UNION (select ‘Q3_Col0‘, ‘Q3_Col35‘, ‘Q3_Col36‘, ‘Q3_Col37Q3_Col37‘, ‘Q3_Col38‘, ‘Q3_Col39‘,
              ‘Q3_Col40‘, ‘Q3_Col41‘, ‘Q3_Col42‘, ‘Q3_Col2‘, ‘Q3_Col43‘, ‘Q3_Col44‘, ‘Q3_Col45‘, ‘Q3_Col46‘,
              ‘Q3_Col4‘, ‘Q3_Col47‘, ‘Q3_Col48‘, ‘Q3_Col3‘, ‘Q3_Col49‘, ‘Q3_Col50Q3_Col50‘, ‘Q3_Col6‘,
              ‘Q3_Col51‘, ‘Q3_Col52‘, ‘Q3_Col53‘, ‘Q3_Col54‘, ‘Q3_Col55‘, ‘Q3_Col56‘, ‘Q3_Col57‘, ’’ as
              Q3_Col31 from ‘order_sales‘))
241       window order_sales_Q3_Col3_Q3_Col0_0s_14d_100 as (partition by ‘Q3_Col3‘ order by ‘Q3_Col0‘ range
              between interval ’14’ day preceding and current row)
242     ) as order_sales_Q3_Col3_Q3_Col0_0s_14d_100
243     natural join
244     (
245       select 1,
246       avg(‘Q3_Col56‘) as order_sales_Q3_Col56_multi_avg_10,
247       avg(‘Q3_Col55‘) as order_sales_Q3_Col55_multi_avg_12
248       from ((select ‘Q3_Col32‘ as ‘Q3_Col0‘, ’’ as ‘Q3_Col35‘, ’’ as ‘Q3_Col36‘, ’’ as
              ‘Q3_Col37Q3_Col37‘, ’’ as ‘Q3_Col38‘, ’’ as ‘Q3_Col39‘, ’’ as ‘Q3_Col40‘, ’’ as ‘Q3_Col41‘, ’’
              as ‘Q3_Col42‘, ’’ as ‘Q3_Col2‘, ’’ as ‘Q3_Col43‘, ’’ as ‘Q3_Col44‘, ’’ as ‘Q3_Col45‘,
              CAST(’2019-07-18 09:20:20’ as timestamp) as ‘Q3_Col46‘, CAST(0 as bigint) as ‘Q3_Col4‘, CAST(0
              as double) as ‘Q3_Col47‘, CAST(0 as double) as ‘Q3_Col48‘, ‘Q3_Col3‘ as ‘Q3_Col3‘, ’’ as
              ‘Q3_Col49‘, ’’ as ‘Q3_Col50Q3_Col50‘, ’’ as ‘Q3_Col6‘, ’’ as ‘Q3_Col51‘, ’’ as ‘Q3_Col52‘,
              CAST(0 as double) as ‘Q3_Col53‘, CAST(0 as double) as ‘Q3_Col54‘, CAST(0 as double) as
              ‘Q3_Col55‘, CAST(0 as double) as ‘Q3_Col56‘, ’’ as ‘Q3_Col57‘, Q3_Col31 from ‘train‘)
249       UNION (select ‘Q3_Col0‘, ‘Q3_Col35‘, ‘Q3_Col36‘, ‘Q3_Col37Q3_Col37‘, ‘Q3_Col38‘, ‘Q3_Col39‘,
              ‘Q3_Col40‘, ‘Q3_Col41‘, ‘Q3_Col42‘, ‘Q3_Col2‘, ‘Q3_Col43‘, ‘Q3_Col44‘, ‘Q3_Col45‘, ‘Q3_Col46‘,
              ‘Q3_Col4‘, ‘Q3_Col47‘, ‘Q3_Col48‘, ‘Q3_Col3‘, ‘Q3_Col49‘, ‘Q3_Col50Q3_Col50‘, ‘Q3_Col6‘,
              ‘Q3_Col51‘, ‘Q3_Col52‘, ‘Q3_Col53‘, ‘Q3_Col54‘, ‘Q3_Col55‘, ‘Q3_Col56‘, ‘Q3_Col57‘, ’’ as
              Q3_Col31 from ‘order_sales‘))
250       window order_sales_Q3_Col3_Q3_Col0_0s_5d_100 as (partition by ‘Q3_Col3‘ order by ‘Q3_Col0‘ range
              between interval ’5’ day preceding and current row)
251     ) as order_sales_Q3_Col3_Q3_Col0_0s_5d_100
252     natural join
253     (
254       select 1,
255       min(‘Q3_Col56‘) as order_sales_Q3_Col56_multi_min_50,
256       count(distinct ‘Q3_Col41‘) as order_sales_Q3_Col41_multi_unique_count_84
257       from ((select ‘Q3_Col32‘ as ‘Q3_Col0‘, ’’ as ‘Q3_Col35‘, ’’ as ‘Q3_Col36‘, ’’ as
              ‘Q3_Col37Q3_Col37‘, ’’ as ‘Q3_Col38‘, ’’ as ‘Q3_Col39‘, ’’ as ‘Q3_Col40‘, ’’ as ‘Q3_Col41‘, ’’
              as ‘Q3_Col42‘, ’’ as ‘Q3_Col2‘, ’’ as ‘Q3_Col43‘, ’’ as ‘Q3_Col44‘, ’’ as ‘Q3_Col45‘,
              CAST(’2019-07-18 09:20:20’ as timestamp) as ‘Q3_Col46‘, CAST(0 as bigint) as ‘Q3_Col4‘, CAST(0
              as double) as ‘Q3_Col47‘, CAST(0 as double) as ‘Q3_Col48‘, ‘Q3_Col3‘ as ‘Q3_Col3‘, ’’ as
              ‘Q3_Col49‘, ’’ as ‘Q3_Col50Q3_Col50‘, ’’ as ‘Q3_Col6‘, ’’ as ‘Q3_Col51‘, ’’ as ‘Q3_Col52‘,
              CAST(0 as double) as ‘Q3_Col53‘, CAST(0 as double) as ‘Q3_Col54‘, CAST(0 as double) as
              ‘Q3_Col55‘, CAST(0 as double) as ‘Q3_Col56‘, ’’ as ‘Q3_Col57‘, Q3_Col31 from ‘train‘)
258       UNION (select ‘Q3_Col0‘, ‘Q3_Col35‘, ‘Q3_Col36‘, ‘Q3_Col37Q3_Col37‘, ‘Q3_Col38‘, ‘Q3_Col39‘,
              ‘Q3_Col40‘, ‘Q3_Col41‘, ‘Q3_Col42‘, ‘Q3_Col2‘, ‘Q3_Col43‘, ‘Q3_Col44‘, ‘Q3_Col45‘, ‘Q3_Col46‘,
              ‘Q3_Col4‘, ‘Q3_Col47‘, ‘Q3_Col48‘, ‘Q3_Col3‘, ‘Q3_Col49‘, ‘Q3_Col50Q3_Col50‘, ‘Q3_Col6‘,
              ‘Q3_Col51‘, ‘Q3_Col52‘, ‘Q3_Col53‘, ‘Q3_Col54‘, ‘Q3_Col55‘, ‘Q3_Col56‘, ‘Q3_Col57‘, ’’ as
              Q3_Col31 from ‘order_sales‘))
259       window order_sales_Q3_Col3_Q3_Col0_0s_64d_100 as (partition by ‘Q3_Col3‘ order by ‘Q3_Col0‘ range
              between interval ’64’ day preceding and current row)
260     ) as order_sales_Q3_Col3_Q3_Col0_0s_64d_100
261     natural join
262     (
263       select 1
264       from ((select ‘Q3_Col32‘ as ‘Q3_Col0‘, ’’ as ‘Q3_Col35‘, ’’ as ‘Q3_Col36‘, ’’ as
              ‘Q3_Col37Q3_Col37‘, ’’ as ‘Q3_Col38‘, ’’ as ‘Q3_Col39‘, ’’ as ‘Q3_Col40‘, ’’ as ‘Q3_Col41‘, ’’
              as ‘Q3_Col42‘, ’’ as ‘Q3_Col2‘, ’’ as ‘Q3_Col43‘, ’’ as ‘Q3_Col44‘, ’’ as ‘Q3_Col45‘,
              CAST(’2019-07-18 09:20:20’ as timestamp) as ‘Q3_Col46‘, CAST(0 as bigint) as ‘Q3_Col4‘, CAST(0
              as double) as ‘Q3_Col47‘, CAST(0 as double) as ‘Q3_Col48‘, ‘Q3_Col3‘ as ‘Q3_Col3‘, ’’ as
              ‘Q3_Col49‘, ’’ as ‘Q3_Col50Q3_Col50‘, ’’ as ‘Q3_Col6‘, ’’ as ‘Q3_Col51‘, ’’ as ‘Q3_Col52‘,
              CAST(0 as double) as ‘Q3_Col53‘, CAST(0 as double) as ‘Q3_Col54‘, CAST(0 as double) as
              ‘Q3_Col55‘, CAST(0 as double) as ‘Q3_Col56‘, ’’ as ‘Q3_Col57‘, Q3_Col31 from ‘train‘)
```

```
265      UNION (select ‘Q3_Col0‘, ‘Q3_Col35‘, ‘Q3_Col36‘, ‘Q3_Col37Q3_Col37‘, ‘Q3_Col38‘, ‘Q3_Col39‘,
             ‘Q3_Col40‘, ‘Q3_Col41‘, ‘Q3_Col42‘, ‘Q3_Col2‘, ‘Q3_Col43‘, ‘Q3_Col44‘, ‘Q3_Col45‘, ‘Q3_Col46‘,
             ‘Q3_Col4‘, ‘Q3_Col47‘, ‘Q3_Col48‘, ‘Q3_Col3‘, ‘Q3_Col49‘, ‘Q3_Col50Q3_Col50‘, ‘Q3_Col6‘,
             ‘Q3_Col51‘, ‘Q3_Col52‘, ‘Q3_Col53‘, ‘Q3_Col54‘, ‘Q3_Col55‘, ‘Q3_Col56‘, ‘Q3_Col57‘, ’’ as
             Q3_Col31 from ‘order_sales‘))
266      window order_sales_Q3_Col3_Q3_Col0_0s_7d_100 as (partition by ‘Q3_Col3‘ order by ‘Q3_Col0‘ range
             between interval ’7’ day preceding and current row)
267    ) as order_sales_Q3_Col3_Q3_Col0_0s_7d_100
268 ) as out3 on out0.Q3_Col31_1 = out3.Q3_Col31_5
```

E.5 Loan Evaluation (Q4)

```
1  select
2     CAST(’1’ as varchar) as Q4_Col40_1,
3     flattenRequest_Q4_Col41_original_0,
4     flattenRequest_Q4_Col40_original_1,
5     flattenRequest_Q4_Col39_original_107,
6     flattenRequest_Q4_Col45_original_108,
7     flattenRequest_Q4_Col47_original_109,
8     flattenRequest_Q4_Col187_original_110,
9     flattenRequest_Q4_Col186_original_111,
10    flattenRequest_Q4_Col189_original_112,
11    flattenRequest_Q4_Col190_original_113,
12    flattenRequest_Q4_Col188_original_114,
13    flattenRequest_Q4_Col191_original_115,
14    flattenRequest_Q4_Col114_original_116,
15    flattenRequest_Q4_Col142_original_117,
16    flattenRequest_Q4_Col128_original_118,
17    flattenRequest_Q4_Col115_original_119,
18    flattenRequest_Q4_Col143_original_120,
19    flattenRequest_Q4_Col129_original_121,
20    flattenRequest_Q4_Col90_original_122,
21    flattenRequest_Q4_Col105_original_123,
22    flattenRequest_Q4_Col80_original_124,
23    flattenRequest_Q4_Col118_original_125,
24    flattenRequest_Q4_Col146_original_126,
25    flattenRequest_Q4_Col132_original_127,
26    flattenRequest_Q4_Col81_original_128,
27    flattenRequest_Q4_Col97_original_129,
28    flattenRequest_Q4_Col165_original_130,
29    flattenRequest_Q4_Col96_original_131,
30    flattenRequest_Q4_Col162_original_132,
31    flattenRequest_Q4_Col164_original_133,
32    flattenRequest_Q4_Col119_original_134,
33    flattenRequest_Q4_Col147_original_135,
34    flattenRequest_Q4_Col133_original_136,
35    flattenRequest_Q4_Col160_original_137,
36    flattenRequest_Q4_Col120_original_138,
37    flattenRequest_Q4_Col148_original_139,
38    flattenRequest_Q4_Col134_original_140,
39    flattenRequest_Q4_Col82_original_141,
40    flattenRequest_Q4_Col83_original_142,
41    flattenRequest_Q4_Col84_original_143,
42    flattenRequest_Q4_Col102_original_144,
43    flattenRequest_Q4_Col177_original_145,
44    flattenRequest_Q4_Col178_original_146,
45    flattenRequest_Q4_Col180_original_147,
46    flattenRequest_Q4_Col182_original_148,
```

```
    flattenRequest_Q4_Col183_original_149,
    flattenRequest_Q4_Col166_original_150,
    flattenRequest_Q4_Col184_original_151,
    flattenRequest_Q4_Col185_original_152,
    flattenRequest_Q4_Col167_original_153,
    flattenRequest_Q4_Col169_original_154,
    flattenRequest_Q4_Col170_original_155,
    flattenRequest_Q4_Col172_original_156,
    flattenRequest_Q4_Col104_original_157,
    flattenRequest_Q4_Col100_original_158,
    flattenRequest_Q4_Col88_original_159,
    flattenRequest_Q4_Col89_original_160,
    flattenRequest_Q4_Col103_original_161,
    flattenRequest_Q4_Col101_original_162,
    flattenRequest_Q4_Col121_original_163,
    flattenRequest_Q4_Col149_original_164,
    flattenRequest_Q4_Col135_original_165,
    flattenRequest_Q4_Col122_original_166,
    flattenRequest_Q4_Col150_original_167,
    flattenRequest_Q4_Col136_original_168,
    flattenRequest_Q4_Col156_original_169,
    flattenRequest_Q4_Col49_original_170,
    flattenRequest_Q4_Col157_original_171,
    flattenRequest_Q4_Col123_original_172,
    flattenRequest_Q4_Col151_original_173,
    flattenRequest_Q4_Col137_original_174,
    flattenRequest_Q4_Col113_original_175,
    flattenRequest_Q4_Col124_original_176,
    flattenRequest_Q4_Col152_original_177,
    flattenRequest_Q4_Col138_original_178,
    flattenRequest_Q4_Col125_original_179,
    flattenRequest_Q4_Col153_original_180,
    flattenRequest_Q4_Col139_original_181,
    flattenRequest_Q4_Col43_original_182,
    flattenRequest_Q4_Col78_original_183,
    flattenRequest_Q4_Col92_original_184,
    flattenRequest_Q4_Col93_original_185,
    flattenRequest_Q4_Col91_original_186,
    flattenRequest_Q4_Col59_original_187,
    flattenRequest_Q4_Col126_original_188,
    flattenRequest_Q4_Col154_original_189,
    flattenRequest_Q4_Col140_original_190,
    flattenRequest_Q4_Col127_original_191,
    flattenRequest_Q4_Col155_original_192,
    flattenRequest_Q4_Col141_original_193,
    flattenRequest_Q4_Col161_original_194,
    flattenRequest_Q4_Col163_original_195,
    flattenRequest_Q4_Col79_original_196,
    flattenRequest_Q4_Col77_original_197,
    flattenRequest_Q4_Col98_original_198,
    flattenRequest_Q4_Col94_original_199,
    flattenRequest_Q4_Col106_original_200,
    flattenRequest_Q4_Col107_original_201,
    flattenRequest_Q4_Col111_original_202,
    flattenRequest_Q4_Col112_original_203,
    flattenRequest_Q4_Col108_original_204,
    flattenRequest_Q4_Col109_original_205,
    flattenRequest_Q4_Col158_original_206,
    flattenRequest_Q4_Col159_original_207,
    flattenRequest_Q4_Col48_original_208,
    flattenRequest_Q4_Col116_original_209,
```

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    flattenRequest_Q4_Col144_original_210,
    flattenRequest_Q4_Col130_original_211,
    flattenRequest_Q4_Col117_original_212,
    flattenRequest_Q4_Col145_original_213,
    flattenRequest_Q4_Col131_original_214,
    flattenRequest_Q4_Col45_divide_215,
    flattenRequest_Q4_Col45_divide_215 / flattenRequest_Q4_Col39_divide_215,
    flattenRequest_Q4_Col39_divide_215,
    flattenRequest_Q4_Col39_divide_216,
    flattenRequest_Q4_Col39_divide_216 / flattenRequest_Q4_Col45_divide_216,
    flattenRequest_Q4_Col45_divide_216,
    flattenRequest_Q4_Col47_divide_217,
    flattenRequest_Q4_Col47_divide_217 / flattenRequest_Q4_Col39_divide_217,
    flattenRequest_Q4_Col39_divide_217,
    flattenRequest_Q4_Col39_divide_218,
    flattenRequest_Q4_Col39_divide_218 / flattenRequest_Q4_Col47_divide_218,
    flattenRequest_Q4_Col47_divide_218,
    flattenRequest_Q4_Col83_multiply_219,
    flattenRequest_Q4_Col83_multiply_219 / flattenRequest_Q4_Col84_multiply_219,
    flattenRequest_Q4_Col84_multiply_219,
    flattenRequest_Q4_Col47_divide_220,
    flattenRequest_Q4_Col47_divide_220 / bo_previous_applicatio_Q4_Col58_multi_unique_count_94,
    flattenRequest_Q4_Col47_divide_221,
    flattenRequest_Q4_Col45_divide_221,
    flattenRequest_Q4_Col80_combine_222,
    flattenRequest_Q4_Col92_combine_222,
    flattenRequest_Q4_Col45_divide_223,
    flattenRequest_Q4_Col45_divide_223 / flattenRequest_Q4_Col47_divide_223,
    flattenRequest_Q4_Col47_divide_223,
    flattenRequest_Q4_Col159_combine_224,
    flattenRequest_Q4_Col160_combine_225,
    flattenRequest_Q4_Col83_divide_227,
    flattenRequest_Q4_Col157_combine_228,
    flattenRequest_Q4_Col92_combine_229,
    flattenRequest_Q4_Col180_combine_231,
    CAST('1' as varchar) as Q4_Col40_4,
    bo_POS_CASH_balance_Q4_Col199_multi_avg_3,
    bo_POS_CASH_balance_Q4_Col199_multi_avg_4,
    bo_POS_CASH_balance_Q4_Col200_multi_avg_5,
    bo_POS_CASH_balance_Q4_Col199_multi_max_27,
    bo_POS_CASH_balance_Q4_Col200_multi_max_28,
    bo_POS_CASH_balance_Q4_Col200_multi_min_47,
    bo_POS_CASH_balance_Q4_Col3_multi_unique_count_75,
    bo_POS_CASH_balance_Q4_Col3_multi_unique_count_76,
    bo_POS_CASH_balance_Q4_Col1_multi_unique_count_77,
    CAST('1' as varchar) as Q4_Col40_7,
    bo_bureau_Q4_Col33_multi_avg_6,
    bo_bureau_Q4_Col35_multi_avg_7,
    bo_bureau_Q4_Col29_multi_avg_8,
    bo_bureau_Q4_Col30_multi_avg_9,
    bo_bureau_Q4_Col34_multi_max_29,
    bo_bureau_Q4_Col36_multi_max_30,
    bo_bureau_Q4_Col29_multi_max_31,
    bo_bureau_Q4_Col30_multi_max_32,
    bo_bureau_Q4_Col30_multi_max_32 / bo_bureau_Q4_Col30_multi_avg_9,
    bo_bureau_Q4_Col31_multi_min_48,
    bo_bureau_Q4_Col29_multi_min_49,
    bo_bureau_Q4_Col30_multi_min_50,
    bo_bureau_Q4_Col32_multi_unique_count_78,
    bo_bureau_Q4_Col25_multi_unique_count_79,
    bo_bureau_Q4_Col26_multi_unique_count_80,
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    bo_bureau_Q4_Col28_multi_unique_count_81,
    bo_bureau_Q4_Col37_multi_unique_count_82,
    bo_bureau_Q4_Col27_multi_unique_count_83,
    bo_bureau_Q4_Col38_multi_unique_count_84,
    CAST('1' as varchar) as Q4_Col40_11,
    bo_installment_payment_Q4_Col198_multi_avg_10,
    bo_installment_payment_Q4_Col195_multi_avg_11,
    bo_installment_payment_Q4_Col193_multi_avg_12,
    bo_installment_payment_Q4_Col197_multi_max_33,
    bo_installment_payment_Q4_Col197_multi_max_34,
    bo_installment_payment_Q4_Col198_multi_max_35,
    bo_installment_payment_Q4_Col198_multi_max_36,
    bo_installment_payment_Q4_Col193_multi_max_37,
    bo_installment_payment_Q4_Col196_multi_min_51,
    bo_installment_payment_Q4_Col195_multi_min_52,
    bo_installment_payment_Q4_Col194_multi_unique_count_91,
    bo_installment_payment_Q4_Col1_multi_unique_count_92,
    CAST('1' as varchar) as Q4_Col40_14,
    bo_part_Q4_Col47_multi_avg_13,
    bo_part_Q4_Col86_multi_avg_14,
    bo_part_Q4_Col83_multi_avg_15,
    bo_part_Q4_Col87_multi_avg_16,
    bo_part_Q4_Col45_multi_max_38,
    bo_part_Q4_Col82_multi_max_39,
    bo_part_Q4_Col84_multi_min_53,
    CAST('1' as varchar) as Q4_Col40_18,
    bo_previous_applicatio_Q4_Col44_multi_avg_17,
    bo_previous_applicatio_Q4_Col45_multi_avg_18,
    bo_previous_applicatio_Q4_Col47_multi_avg_19,
    bo_previous_applicatio_Q4_Col67_multi_avg_20,
    bo_previous_applicatio_Q4_Col70_multi_avg_21,
    bo_previous_applicatio_Q4_Col71_multi_avg_22,
    bo_previous_applicatio_Q4_Col73_multi_avg_23,
    bo_previous_applicatio_Q4_Col74_multi_avg_24,
    bo_previous_applicatio_Q4_Col75_multi_avg_25,
    bo_previous_applicatio_Q4_Col52_multi_avg_26,
    bo_previous_applicatio_Q4_Col39_multi_max_40,
    bo_previous_applicatio_Q4_Col44_multi_max_41,
    bo_previous_applicatio_Q4_Col45_multi_max_42,
    bo_previous_applicatio_Q4_Col46_multi_max_43,
    bo_previous_applicatio_Q4_Col47_multi_max_44,
    bo_previous_applicatio_Q4_Col72_multi_max_45,
    bo_previous_applicatio_Q4_Col52_multi_max_46,
    bo_previous_applicatio_Q4_Col45_multi_min_54,
    bo_previous_applicatio_Q4_Col47_multi_min_55,
    bo_previous_applicatio_Q4_Col67_multi_min_56,
    bo_previous_applicatio_Q4_Col74_multi_min_57,
    bo_previous_applicatio_Q4_Col52_multi_min_58,
    bo_previous_applicatio_Q4_Col64_multi_unique_count_93,
    bo_previous_applicatio_Q4_Col58_multi_unique_count_94,
    bo_previous_applicatio_Q4_Col56_multi_unique_count_95,
    bo_previous_applicatio_Q4_Col50_multi_unique_count_96,
    bo_previous_applicatio_Q4_Col49_multi_unique_count_97,
    bo_previous_applicatio_Q4_Col55_multi_unique_count_98,
    bo_previous_applicatio_Q4_Col21_multi_unique_count_99,
    bo_previous_applicatio_Q4_Col61_multi_unique_count_100,
    bo_previous_applicatio_Q4_Col57_multi_unique_count_101,
    bo_previous_applicatio_Q4_Col66_multi_unique_count_102,
    bo_previous_applicatio_Q4_Col68_multi_unique_count_103,
    bo_previous_applicatio_Q4_Col51_multi_unique_count_104,
    bo_previous_applicatio_Q4_Col69_multi_unique_count_105,
```

```
    bo_previous_applicatio_Q4_Col1_multi_unique_count_106,
    CAST('1' as varchar) as Q4_Col40_67,
    CAST('1' as varchar) as Q4_Col40_86,
    bo_credit_card_balance_Q4_Col5_multi_unique_count_85,
    bo_credit_card_balance_Q4_Col17_multi_unique_count_86,
    bo_credit_card_balance_Q4_Col17_multi_unique_count_87,
    bo_credit_card_balance_Q4_Col3_multi_unique_count_88,
    bo_credit_card_balance_Q4_Col21_multi_unique_count_89,
    bo_credit_card_balance_Q4_Col1_multi_unique_count_90
from
(
select
    CAST('1' as varchar) as Q4_Col40_1,
    `Q4_Col41` as flattenRequest_Q4_Col41_original_0,
    `Q4_Col40` as flattenRequest_Q4_Col40_original_1,
    `Q4_Col39` as flattenRequest_Q4_Col39_original_107,
    `Q4_Col45` as flattenRequest_Q4_Col45_original_108,
    `Q4_Col47` as flattenRequest_Q4_Col47_original_109,
    `Q4_Col187` as flattenRequest_Q4_Col187_original_110,
    `Q4_Col186` as flattenRequest_Q4_Col186_original_111,
    `Q4_Col189` as flattenRequest_Q4_Col189_original_112,
    `Q4_Col190` as flattenRequest_Q4_Col190_original_113,
    `Q4_Col188` as flattenRequest_Q4_Col188_original_114,
    `Q4_Col191` as flattenRequest_Q4_Col191_original_115,
    `Q4_Col114` as flattenRequest_Q4_Col114_original_116,
    `Q4_Col142` as flattenRequest_Q4_Col142_original_117,
    `Q4_Col128` as flattenRequest_Q4_Col128_original_118,
    `Q4_Col115` as flattenRequest_Q4_Col115_original_119,
    `Q4_Col143` as flattenRequest_Q4_Col143_original_120,
    `Q4_Col129` as flattenRequest_Q4_Col129_original_121,
    `Q4_Col90` as flattenRequest_Q4_Col90_original_122,
    `Q4_Col105` as flattenRequest_Q4_Col105_original_123,
    `Q4_Col80` as flattenRequest_Q4_Col80_original_124,
    `Q4_Col118` as flattenRequest_Q4_Col118_original_125,
    `Q4_Col146` as flattenRequest_Q4_Col146_original_126,
    `Q4_Col132` as flattenRequest_Q4_Col132_original_127,
    `Q4_Col81` as flattenRequest_Q4_Col81_original_128,
    `Q4_Col97` as flattenRequest_Q4_Col97_original_129,
    `Q4_Col165` as flattenRequest_Q4_Col165_original_130,
    `Q4_Col96` as flattenRequest_Q4_Col96_original_131,
    `Q4_Col162` as flattenRequest_Q4_Col162_original_132,
    `Q4_Col164` as flattenRequest_Q4_Col164_original_133,
    `Q4_Col119` as flattenRequest_Q4_Col119_original_134,
    `Q4_Col147` as flattenRequest_Q4_Col147_original_135,
    `Q4_Col133` as flattenRequest_Q4_Col133_original_136,
    `Q4_Col160` as flattenRequest_Q4_Col160_original_137,
    `Q4_Col120` as flattenRequest_Q4_Col120_original_138,
    `Q4_Col148` as flattenRequest_Q4_Col148_original_139,
    `Q4_Col134` as flattenRequest_Q4_Col134_original_140,
    `Q4_Col82` as flattenRequest_Q4_Col82_original_141,
    `Q4_Col83` as flattenRequest_Q4_Col83_original_142,
    `Q4_Col84` as flattenRequest_Q4_Col84_original_143,
    `Q4_Col102` as flattenRequest_Q4_Col102_original_144,
    `Q4_Col177` as flattenRequest_Q4_Col177_original_145,
    `Q4_Col178` as flattenRequest_Q4_Col178_original_146,
    `Q4_Col180` as flattenRequest_Q4_Col180_original_147,
    `Q4_Col182` as flattenRequest_Q4_Col182_original_148,
    `Q4_Col183` as flattenRequest_Q4_Col183_original_149,
    `Q4_Col166` as flattenRequest_Q4_Col166_original_150,
    `Q4_Col184` as flattenRequest_Q4_Col184_original_151,
    `Q4_Col185` as flattenRequest_Q4_Col185_original_152,
```

```
    `Q4_Col167` as flattenRequest_Q4_Col167_original_153,
    `Q4_Col169` as flattenRequest_Q4_Col169_original_154,
    `Q4_Col170` as flattenRequest_Q4_Col170_original_155,
    `Q4_Col172` as flattenRequest_Q4_Col172_original_156,
    `Q4_Col104` as flattenRequest_Q4_Col104_original_157,
    `Q4_Col100` as flattenRequest_Q4_Col100_original_158,
    `Q4_Col88` as flattenRequest_Q4_Col88_original_159,
    `Q4_Col89` as flattenRequest_Q4_Col89_original_160,
    `Q4_Col103` as flattenRequest_Q4_Col103_original_161,
    `Q4_Col101` as flattenRequest_Q4_Col101_original_162,
    `Q4_Col121` as flattenRequest_Q4_Col121_original_163,
    `Q4_Col149` as flattenRequest_Q4_Col149_original_164,
    `Q4_Col135` as flattenRequest_Q4_Col135_original_165,
    `Q4_Col122` as flattenRequest_Q4_Col122_original_166,
    `Q4_Col150` as flattenRequest_Q4_Col150_original_167,
    `Q4_Col136` as flattenRequest_Q4_Col136_original_168,
    `Q4_Col156` as flattenRequest_Q4_Col156_original_169,
    `Q4_Col49` as flattenRequest_Q4_Col49_original_170,
    `Q4_Col157` as flattenRequest_Q4_Col157_original_171,
    `Q4_Col123` as flattenRequest_Q4_Col123_original_172,
    `Q4_Col151` as flattenRequest_Q4_Col151_original_173,
    `Q4_Col137` as flattenRequest_Q4_Col137_original_174,
    `Q4_Col113` as flattenRequest_Q4_Col113_original_175,
    `Q4_Col124` as flattenRequest_Q4_Col124_original_176,
    `Q4_Col152` as flattenRequest_Q4_Col152_original_177,
    `Q4_Col138` as flattenRequest_Q4_Col138_original_178,
    `Q4_Col125` as flattenRequest_Q4_Col125_original_179,
    `Q4_Col153` as flattenRequest_Q4_Col153_original_180,
    `Q4_Col139` as flattenRequest_Q4_Col139_original_181,
    `Q4_Col43` as flattenRequest_Q4_Col43_original_182,
    `Q4_Col78` as flattenRequest_Q4_Col78_original_183,
    `Q4_Col92` as flattenRequest_Q4_Col92_original_184,
    `Q4_Col93` as flattenRequest_Q4_Col93_original_185,
    `Q4_Col91` as flattenRequest_Q4_Col91_original_186,
    `Q4_Col59` as flattenRequest_Q4_Col59_original_187,
    `Q4_Col126` as flattenRequest_Q4_Col126_original_188,
    `Q4_Col154` as flattenRequest_Q4_Col154_original_189,
    `Q4_Col140` as flattenRequest_Q4_Col140_original_190,
    `Q4_Col127` as flattenRequest_Q4_Col127_original_191,
    `Q4_Col155` as flattenRequest_Q4_Col155_original_192,
    `Q4_Col141` as flattenRequest_Q4_Col141_original_193,
    `Q4_Col161` as flattenRequest_Q4_Col161_original_194,
    `Q4_Col163` as flattenRequest_Q4_Col163_original_195,
    `Q4_Col79` as flattenRequest_Q4_Col79_original_196,
    `Q4_Col77` as flattenRequest_Q4_Col77_original_197,
    `Q4_Col98` as flattenRequest_Q4_Col98_original_198,
    `Q4_Col94` as flattenRequest_Q4_Col94_original_199,
    `Q4_Col106` as flattenRequest_Q4_Col106_original_200,
    `Q4_Col107` as flattenRequest_Q4_Col107_original_201,
    `Q4_Col111` as flattenRequest_Q4_Col111_original_202,
    `Q4_Col112` as flattenRequest_Q4_Col112_original_203,
    `Q4_Col108` as flattenRequest_Q4_Col108_original_204,
    `Q4_Col109` as flattenRequest_Q4_Col109_original_205,
    `Q4_Col158` as flattenRequest_Q4_Col158_original_206,
    `Q4_Col159` as flattenRequest_Q4_Col159_original_207,
    `Q4_Col48` as flattenRequest_Q4_Col48_original_208,
    `Q4_Col116` as flattenRequest_Q4_Col116_original_209,
    `Q4_Col144` as flattenRequest_Q4_Col144_original_210,
    `Q4_Col130` as flattenRequest_Q4_Col130_original_211,
    `Q4_Col117` as flattenRequest_Q4_Col117_original_212,
    `Q4_Col145` as flattenRequest_Q4_Col145_original_213,
```

```
    `Q4_Col131` as flattenRequest_Q4_Col131_original_214,
    `Q4_Col45` as flattenRequest_Q4_Col45_divide_215,
    `Q4_Col39` as flattenRequest_Q4_Col39_divide_215,
    `Q4_Col39` as flattenRequest_Q4_Col39_divide_216,
    `Q4_Col45` as flattenRequest_Q4_Col45_divide_216,
    `Q4_Col47` as flattenRequest_Q4_Col47_divide_217,
    `Q4_Col39` as flattenRequest_Q4_Col39_divide_217,
    `Q4_Col39` as flattenRequest_Q4_Col39_divide_218,
    `Q4_Col47` as flattenRequest_Q4_Col47_divide_218,
    `Q4_Col83` as flattenRequest_Q4_Col83_multiply_219,
    `Q4_Col84` as flattenRequest_Q4_Col84_multiply_219,
    `Q4_Col47` as flattenRequest_Q4_Col47_divide_220,
    `Q4_Col47` as flattenRequest_Q4_Col47_divide_221,
    `Q4_Col45` as flattenRequest_Q4_Col45_divide_221,
    `Q4_Col80` as flattenRequest_Q4_Col80_combine_222,
    `Q4_Col92` as flattenRequest_Q4_Col92_combine_222,
    `Q4_Col45` as flattenRequest_Q4_Col45_divide_223,
    `Q4_Col47` as flattenRequest_Q4_Col47_divide_223,
    `Q4_Col159` as flattenRequest_Q4_Col159_combine_224,
    `Q4_Col160` as flattenRequest_Q4_Col160_combine_225,
    `Q4_Col83` as flattenRequest_Q4_Col83_divide_227,
    `Q4_Col157` as flattenRequest_Q4_Col157_combine_228,
    `Q4_Col92` as flattenRequest_Q4_Col92_combine_229,
    `Q4_Col180` as flattenRequest_Q4_Col180_combine_231
from
    `train`
    window flattenRequest_Q4_Col78_Q4_Col41_0s_10h_100 as (partition by `Q4_Col78` order by `Q4_Col41`
        range between interval '10' hour preceding and current row)
) as out0
join
(
select
    CAST('1' as varchar) as Q4_Col40_3,
    `action_Q4_Col40`.`Q4_Col42` as action_Q4_Col42_multi_direct_2
from
    `train`
    join `action` as `action_Q4_Col40` on `train`.`Q4_Col40` = `action_Q4_Col40`.`Q4_Col40`
) as out1 on out0.Q4_Col40_1 = out1.Q4_Col40_3
join
(
with
    __main__ as (select `Q4_Col41` as `Q4_Col0`, CAST(0 as bigint) as `Q4_Col1`, `Q4_Col40` as `Q4_Col2`,
        CAST(0 as bigint) as `Q4_Col3`, CAST(0 as double) as `Q4_Col199`, CAST(0 as double) as
        `Q4_Col200`, '' as `Q4_Col21`, CAST(0 as bigint) as `Q4_Col22`, CAST(0 as bigint) as `Q4_Col23`
        from `train`),
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as (
        select CAST('1' as varchar) as Q4_Col2,
        avg(`Q4_Col199`) as bo_POS_CASH_balance_Q4_Col199_multi_avg_3,
        max(`Q4_Col199`) as bo_POS_CASH_balance_Q4_Col199_multi_max_27,
        max(`Q4_Col200`) as bo_POS_CASH_balance_Q4_Col200_multi_max_28,
        count(distinct `Q4_Col3`) as bo_POS_CASH_balance_Q4_Col3_multi_unique_count_75,
        count(distinct `Q4_Col1`) as bo_POS_CASH_balance_Q4_Col1_multi_unique_count_77
        from ((select * from __main__) UNION (select * from `bo_POS_CASH_balance`))
        window bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_ as (partition by `Q4_Col2` order by `Q4_Col0`
            rows between 100 preceding and current row)
    ),
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_ as (
        select CAST('1' as varchar) as Q4_Col2,
        avg(`Q4_Col199`) as bo_POS_CASH_balance_Q4_Col199_multi_avg_4,
        avg(`Q4_Col200`) as bo_POS_CASH_balance_Q4_Col200_multi_avg_5,
        min(`Q4_Col200`) as bo_POS_CASH_balance_Q4_Col200_multi_min_47,
```

```
        count(distinct ‘Q4_Col3‘) as bo_POS_CASH_balance_Q4_Col3_multi_unique_count_76
        from ((select * from __main__) UNION (select * from ‘bo_POS_CASH_balance‘))
        window bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_ as (partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘
            rows between 10 preceding and current row)
    )
select
    CAST('1' as varchar) as Q4_Col40_4,
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_.bo_POS_CASH_balance_Q4_Col199_multi_avg_4 as
        bo_POS_CASH_balance_Q4_Col199_multi_avg_4,
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_.bo_POS_CASH_balance_Q4_Col200_multi_avg_5 as
        bo_POS_CASH_balance_Q4_Col200_multi_avg_5,
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_.bo_POS_CASH_balance_Q4_Col200_multi_min_47 as
        bo_POS_CASH_balance_Q4_Col200_multi_min_47,
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_.bo_POS_CASH_balance_Q4_Col3_multi_unique_count_76 as
        bo_POS_CASH_balance_Q4_Col3_multi_unique_count_76,
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_.bo_POS_CASH_balance_Q4_Col199_multi_avg_3 as
        bo_POS_CASH_balance_Q4_Col199_multi_avg_3,
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_.bo_POS_CASH_balance_Q4_Col199_multi_max_27 as
        bo_POS_CASH_balance_Q4_Col199_multi_max_27,
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_.bo_POS_CASH_balance_Q4_Col200_multi_max_28 as
        bo_POS_CASH_balance_Q4_Col200_multi_max_28,
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_.bo_POS_CASH_balance_Q4_Col3_multi_unique_count_75 as
        bo_POS_CASH_balance_Q4_Col3_multi_unique_count_75,
    bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_.bo_POS_CASH_balance_Q4_Col1_multi_unique_count_77 as
        bo_POS_CASH_balance_Q4_Col1_multi_unique_count_77
from
    __main__
    natural join bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_100_
    natural join bo_POS_CASH_balance_Q4_Col2_Q4_Col0_0_10_
) as out2 on out0.Q4_Col40_1 = out2.Q4_Col40_4
join
(
with
    __main__ as (select ‘Q4_Col41‘ as ‘Q4_Col0‘, ‘Q4_Col40‘ as ‘Q4_Col2‘, CAST(0 as bigint) as
        ‘Q4_Col24‘, '' as ‘Q4_Col25‘, '' as ‘Q4_Col26‘, CAST(0 as bigint) as ‘Q4_Col27‘, CAST(0 as
        bigint) as ‘Q4_Col28‘, CAST(0 as double) as ‘Q4_Col29‘, CAST(0 as double) as ‘Q4_Col30‘, CAST(0
        as double) as ‘Q4_Col31‘, CAST(0 as bigint) as ‘Q4_Col32‘, CAST(0 as double) as ‘Q4_Col33‘,
        CAST(0 as double) as ‘Q4_Col34‘, CAST(0 as double) as ‘Q4_Col35‘, CAST(0 as double) as
        ‘Q4_Col36‘, '' as ‘Q4_Col37‘, CAST(0 as bigint) as ‘Q4_Col38‘, CAST(0 as double) as ‘Q4_Col39‘
        from ‘train‘),
    bo_bureau_Q4_Col2_Q4_Col0_0_100_ as (
        select CAST('1' as varchar) as Q4_Col2,
        avg(‘Q4_Col33‘) as bo_bureau_Q4_Col33_multi_avg_6,
        avg(‘Q4_Col35‘) as bo_bureau_Q4_Col35_multi_avg_7,
        max(‘Q4_Col34‘) as bo_bureau_Q4_Col34_multi_max_29,
        max(‘Q4_Col36‘) as bo_bureau_Q4_Col36_multi_max_30,
        count(distinct ‘Q4_Col32‘) as bo_bureau_Q4_Col32_multi_unique_count_78,
        count(distinct ‘Q4_Col25‘) as bo_bureau_Q4_Col25_multi_unique_count_79,
        count(distinct ‘Q4_Col26‘) as bo_bureau_Q4_Col26_multi_unique_count_80,
        count(distinct ‘Q4_Col28‘) as bo_bureau_Q4_Col28_multi_unique_count_81,
        count(distinct ‘Q4_Col38‘) as bo_bureau_Q4_Col38_multi_unique_count_84
        from (select * from __main__)
        window bo_bureau_Q4_Col2_Q4_Col0_0_100_ as (partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between
            100 preceding and current row)
    ),
    bo_bureau_Q4_Col2_Q4_Col0_0_10_ as (
        select CAST('1' as varchar) as Q4_Col2,
        avg(‘Q4_Col29‘) as bo_bureau_Q4_Col29_multi_avg_8,
        avg(‘Q4_Col30‘) as bo_bureau_Q4_Col30_multi_avg_9,
        max(‘Q4_Col29‘) as bo_bureau_Q4_Col29_multi_max_31,
        max(‘Q4_Col30‘) as bo_bureau_Q4_Col30_multi_max_32,
```

```
        min(‘Q4_Col31‘) as bo_bureau_Q4_Col31_multi_min_48,
        min(‘Q4_Col29‘) as bo_bureau_Q4_Col29_multi_min_49,
        min(‘Q4_Col30‘) as bo_bureau_Q4_Col30_multi_min_50,
        count(distinct ‘Q4_Col37‘) as bo_bureau_Q4_Col37_multi_unique_count_82,
        count(distinct ‘Q4_Col27‘) as bo_bureau_Q4_Col27_multi_unique_count_83
        from (select * from __main__)
        window bo_bureau_Q4_Col2_Q4_Col0_0_10_ as (partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows between
            10 preceding and current row)
    )
select
    CAST('1' as varchar) as Q4_Col40_7,
   bo_bureau_Q4_Col2_Q4_Col0_0_10_.bo_bureau_Q4_Col29_multi_avg_8 as bo_bureau_Q4_Col29_multi_avg_8,
   bo_bureau_Q4_Col2_Q4_Col0_0_10_.bo_bureau_Q4_Col30_multi_avg_9 as bo_bureau_Q4_Col30_multi_avg_9,
   bo_bureau_Q4_Col2_Q4_Col0_0_10_.bo_bureau_Q4_Col29_multi_max_31 as bo_bureau_Q4_Col29_multi_max_31,
   bo_bureau_Q4_Col2_Q4_Col0_0_10_.bo_bureau_Q4_Col30_multi_max_32 as bo_bureau_Q4_Col30_multi_max_32,
   bo_bureau_Q4_Col2_Q4_Col0_0_10_.bo_bureau_Q4_Col31_multi_min_48 as bo_bureau_Q4_Col31_multi_min_48,
   bo_bureau_Q4_Col2_Q4_Col0_0_10_.bo_bureau_Q4_Col29_multi_min_49 as bo_bureau_Q4_Col29_multi_min_49,
   bo_bureau_Q4_Col2_Q4_Col0_0_10_.bo_bureau_Q4_Col30_multi_min_50 as bo_bureau_Q4_Col30_multi_min_50,
   bo_bureau_Q4_Col2_Q4_Col0_0_10_.bo_bureau_Q4_Col37_multi_unique_count_82 as
       bo_bureau_Q4_Col37_multi_unique_count_82,
   bo_bureau_Q4_Col2_Q4_Col0_0_10_.bo_bureau_Q4_Col27_multi_unique_count_83 as
       bo_bureau_Q4_Col27_multi_unique_count_83,
   bo_bureau_Q4_Col2_Q4_Col0_0_100_.bo_bureau_Q4_Col33_multi_avg_6 as bo_bureau_Q4_Col33_multi_avg_6,
   bo_bureau_Q4_Col2_Q4_Col0_0_100_.bo_bureau_Q4_Col35_multi_avg_7 as bo_bureau_Q4_Col35_multi_avg_7,
   bo_bureau_Q4_Col2_Q4_Col0_0_100_.bo_bureau_Q4_Col34_multi_max_29 as bo_bureau_Q4_Col34_multi_max_29,
   bo_bureau_Q4_Col2_Q4_Col0_0_100_.bo_bureau_Q4_Col36_multi_max_30 as bo_bureau_Q4_Col36_multi_max_30,
   bo_bureau_Q4_Col2_Q4_Col0_0_100_.bo_bureau_Q4_Col32_multi_unique_count_78 as
       bo_bureau_Q4_Col32_multi_unique_count_78,
   bo_bureau_Q4_Col2_Q4_Col0_0_100_.bo_bureau_Q4_Col25_multi_unique_count_79 as
       bo_bureau_Q4_Col25_multi_unique_count_79,
   bo_bureau_Q4_Col2_Q4_Col0_0_100_.bo_bureau_Q4_Col26_multi_unique_count_80 as
       bo_bureau_Q4_Col26_multi_unique_count_80,
   bo_bureau_Q4_Col2_Q4_Col0_0_100_.bo_bureau_Q4_Col28_multi_unique_count_81 as
       bo_bureau_Q4_Col28_multi_unique_count_81,
   bo_bureau_Q4_Col2_Q4_Col0_0_100_.bo_bureau_Q4_Col38_multi_unique_count_84 as
       bo_bureau_Q4_Col38_multi_unique_count_84
from
    __main__
    natural join bo_bureau_Q4_Col2_Q4_Col0_0_100_
    natural join bo_bureau_Q4_Col2_Q4_Col0_0_10_
) as out3 on out0.Q4_Col40_1 = out3.Q4_Col40_7
join
(
with
    __main__ as (select ‘Q4_Col41‘ as ‘Q4_Col0‘, CAST(0 as bigint) as ‘Q4_Col1‘, ‘Q4_Col40‘ as ‘Q4_Col2‘,
         CAST(0 as double) as ‘Q4_Col193‘, CAST(0 as bigint) as ‘Q4_Col194‘, CAST(0 as double) as
         ‘Q4_Col195‘, CAST(0 as double) as ‘Q4_Col196‘, CAST(0 as double) as ‘Q4_Col197‘, CAST(0 as
         double) as ‘Q4_Col198‘ from ‘train‘),
    bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as (
        select CAST('1' as varchar) as Q4_Col2,
        avg(‘Q4_Col198‘) as bo_installment_payment_Q4_Col198_multi_avg_10,
        avg(‘Q4_Col193‘) as bo_installment_payment_Q4_Col193_multi_avg_12,
        max(‘Q4_Col197‘) as bo_installment_payment_Q4_Col197_multi_max_34,
        max(‘Q4_Col198‘) as bo_installment_payment_Q4_Col198_multi_max_36,
        max(‘Q4_Col193‘) as bo_installment_payment_Q4_Col193_multi_max_37,
        min(‘Q4_Col195‘) as bo_installment_payment_Q4_Col195_multi_min_52,
        count(distinct ‘Q4_Col1‘) as bo_installment_payment_Q4_Col1_multi_unique_count_92
        from ((select * from __main__) UNION (select * from ‘bo_installment_payment‘))
        window bo_installment_payment_Q4_Col2_Q4_Col0_0_10_ as (partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘
            rows between 10 preceding and current row)
    ),
```

```
    bo_installment_payment_Q4_Col2_Q4_Col0_0_100_ as (
        select CAST('1' as varchar) as Q4_Col2,
        avg(`Q4_Col195`) as bo_installment_payment_Q4_Col195_multi_avg_11,
        max(`Q4_Col197`) as bo_installment_payment_Q4_Col197_multi_max_33,
        max(`Q4_Col198`) as bo_installment_payment_Q4_Col198_multi_max_35,
        min(`Q4_Col196`) as bo_installment_payment_Q4_Col196_multi_min_51,
        count(distinct `Q4_Col194`) as bo_installment_payment_Q4_Col194_multi_unique_count_91
        from ((select * from __main__) UNION (select * from `bo_installment_payment`))
        window bo_installment_payment_Q4_Col2_Q4_Col0_0_100_ as (partition by `Q4_Col2` order by `Q4_Col0`
            rows between 100 preceding and current row)
    )
select
    CAST('1' as varchar) as Q4_Col40_11,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_100_.bo_installment_payment_Q4_Col195_multi_avg_11 as
        bo_installment_payment_Q4_Col195_multi_avg_11,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_100_.bo_installment_payment_Q4_Col197_multi_max_33 as
        bo_installment_payment_Q4_Col197_multi_max_33,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_100_.bo_installment_payment_Q4_Col198_multi_max_35 as
        bo_installment_payment_Q4_Col198_multi_max_35,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_100_.bo_installment_payment_Q4_Col196_multi_min_51 as
        bo_installment_payment_Q4_Col196_multi_min_51,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_100_.bo_installment_payment_Q4_Col194_multi_unique_count_91
        as bo_installment_payment_Q4_Col194_multi_unique_count_91,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_10_.bo_installment_payment_Q4_Col198_multi_avg_10 as
        bo_installment_payment_Q4_Col198_multi_avg_10,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_10_.bo_installment_payment_Q4_Col193_multi_avg_12 as
        bo_installment_payment_Q4_Col193_multi_avg_12,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_10_.bo_installment_payment_Q4_Col197_multi_max_34 as
        bo_installment_payment_Q4_Col197_multi_max_34,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_10_.bo_installment_payment_Q4_Col198_multi_max_36 as
        bo_installment_payment_Q4_Col198_multi_max_36,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_10_.bo_installment_payment_Q4_Col193_multi_max_37 as
        bo_installment_payment_Q4_Col193_multi_max_37,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_10_.bo_installment_payment_Q4_Col195_multi_min_52 as
        bo_installment_payment_Q4_Col195_multi_min_52,
   bo_installment_payment_Q4_Col2_Q4_Col0_0_10_.bo_installment_payment_Q4_Col1_multi_unique_count_92 as
        bo_installment_payment_Q4_Col1_multi_unique_count_92
from
    __main__
    natural join bo_installment_payment_Q4_Col2_Q4_Col0_0_10_
    natural join bo_installment_payment_Q4_Col2_Q4_Col0_0_100_
) as out4 on out0.Q4_Col40_1 = out4.Q4_Col40_11
join
(
select
    CAST('1' as varchar) as Q4_Col40_14,
    avg(`Q4_Col47`) as bo_part_Q4_Col47_multi_avg_13,
    avg(`Q4_Col86`) as bo_part_Q4_Col86_multi_avg_14,
    avg(`Q4_Col83`) as bo_part_Q4_Col83_multi_avg_15,
    avg(`Q4_Col87`) as bo_part_Q4_Col87_multi_avg_16,
    max(`Q4_Col45`) as bo_part_Q4_Col45_multi_max_38,
    max(`Q4_Col82`) as bo_part_Q4_Col82_multi_max_39,
    min(`Q4_Col84`) as bo_part_Q4_Col84_multi_min_53
from
    ((select `Q4_Col41` as `Q4_Col0`, `Q4_Col77` as `Q4_Col77`, `Q4_Col78` as `Q4_Col78`, `Q4_Col79` as
        `Q4_Col79`, `Q4_Col80` as `Q4_Col80`, `Q4_Col81` as `Q4_Col81`, CAST(0 as double) as `Q4_Col82`,
        CAST(0 as double) as `Q4_Col83`, CAST(0 as double) as `Q4_Col84`, CAST(0 as double) as
        `Q4_Col85`, CAST(0 as double) as `Q4_Col45`, CAST(0 as double) as `Q4_Col39`, CAST(0 as double)
        as `Q4_Col47`, CAST(0 as double) as `Q4_Col86`, CAST(0 as double) as `Q4_Col87`, Q4_Col40 from
        `train`)
```

```
    UNION (select ‘Q4_Col0‘, ‘Q4_Col77‘, ‘Q4_Col78‘, ‘Q4_Col79‘, ‘Q4_Col80‘, ‘Q4_Col81‘, ‘Q4_Col82‘,
        ‘Q4_Col83‘, ‘Q4_Col84‘, ‘Q4_Col85‘, ‘Q4_Col45‘, ‘Q4_Col39‘, ‘Q4_Col47‘, ‘Q4_Col86‘, ‘Q4_Col87‘,
        ’’ as Q4_Col40 from ‘bo_part‘))
    window bo_part_Q4_Col77_Q4_Col78_Q4_Col79_Q4_Col80_Q4_Col81_Q4_Col0_0_10_ as (partition by
        ‘Q4_Col77‘,‘Q4_Col78‘,‘Q4_Col79‘,‘Q4_Col80‘,‘Q4_Col81‘ order by ‘Q4_Col0‘ rows between 10
        preceding and 0 preceding)
) as out5 on out0.Q4_Col40_1 = out5.Q4_Col40_14
join
(
with
    __main__ as (select ‘Q4_Col41‘ as ‘Q4_Col0‘, CAST(0 as bigint) as ‘Q4_Col1‘, ‘Q4_Col40‘ as ‘Q4_Col2‘,
        ’’ as ‘Q4_Col43‘, CAST(0 as double) as ‘Q4_Col39‘, CAST(0 as double) as ‘Q4_Col44‘, CAST(0 as
        double) as ‘Q4_Col45‘, CAST(0 as double) as ‘Q4_Col46‘, CAST(0 as double) as ‘Q4_Col47‘, ’’ as
        ‘Q4_Col48‘, CAST(0 as bigint) as ‘Q4_Col49‘, ’’ as ‘Q4_Col50‘, CAST(0 as bigint) as ‘Q4_Col51‘,
        CAST(0 as double) as ‘Q4_Col52‘, CAST(0 as double) as ‘Q4_Col53‘, CAST(0 as double) as
        ‘Q4_Col54‘, ’’ as ‘Q4_Col55‘, ’’ as ‘Q4_Col21‘, CAST(0 as bigint) as ‘Q4_Col56‘, ’’ as
        ‘Q4_Col57‘, ’’ as ‘Q4_Col58‘, ’’ as ‘Q4_Col59‘, ’’ as ‘Q4_Col60‘, ’’ as ‘Q4_Col61‘, ’’ as
        ‘Q4_Col62‘, ’’ as ‘Q4_Col63‘, ’’ as ‘Q4_Col64‘, CAST(0 as bigint) as ‘Q4_Col65‘, ’’ as
        ‘Q4_Col66‘, CAST(0 as double) as ‘Q4_Col67‘, ’’ as ‘Q4_Col68‘, ’’ as ‘Q4_Col69‘, CAST(0 as
        double) as ‘Q4_Col70‘, CAST(0 as double) as ‘Q4_Col71‘, CAST(0 as double) as ‘Q4_Col72‘, CAST(0
        as double) as ‘Q4_Col73‘, CAST(0 as double) as ‘Q4_Col74‘, CAST(0 as double) as ‘Q4_Col75‘ from
        ‘train‘),
    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as (
        select CAST(’1’ as varchar) as Q4_Col2,
        avg(‘Q4_Col44‘) as bo_previous_applicatio_Q4_Col44_multi_avg_17,
        avg(‘Q4_Col45‘) as bo_previous_applicatio_Q4_Col45_multi_avg_18,
        avg(‘Q4_Col71‘) as bo_previous_applicatio_Q4_Col71_multi_avg_22,
        avg(‘Q4_Col73‘) as bo_previous_applicatio_Q4_Col73_multi_avg_23,
        avg(‘Q4_Col75‘) as bo_previous_applicatio_Q4_Col75_multi_avg_25,
        avg(‘Q4_Col52‘) as bo_previous_applicatio_Q4_Col52_multi_avg_26,
        max(‘Q4_Col52‘) as bo_previous_applicatio_Q4_Col52_multi_max_46,
        min(‘Q4_Col74‘) as bo_previous_applicatio_Q4_Col74_multi_min_57,
        min(‘Q4_Col52‘) as bo_previous_applicatio_Q4_Col52_multi_min_58,
        count(distinct ‘Q4_Col49‘) as bo_previous_applicatio_Q4_Col49_multi_unique_count_97,
        count(distinct ‘Q4_Col55‘) as bo_previous_applicatio_Q4_Col55_multi_unique_count_98,
        count(distinct ‘Q4_Col61‘) as bo_previous_applicatio_Q4_Col61_multi_unique_count_100,
        count(distinct ‘Q4_Col57‘) as bo_previous_applicatio_Q4_Col57_multi_unique_count_101,
        count(distinct ‘Q4_Col66‘) as bo_previous_applicatio_Q4_Col66_multi_unique_count_102,
        count(distinct ‘Q4_Col68‘) as bo_previous_applicatio_Q4_Col68_multi_unique_count_103,
        count(distinct ‘Q4_Col51‘) as bo_previous_applicatio_Q4_Col51_multi_unique_count_104
        from ((select * from __main__) UNION (select * from ‘bo_previous_applicatio‘))
        window bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_ as (partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘
            rows between 10 preceding and current row)
    ),
    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as (
        select CAST(’1’ as varchar) as Q4_Col2,
        avg(‘Q4_Col47‘) as bo_previous_applicatio_Q4_Col47_multi_avg_19,
        avg(‘Q4_Col67‘) as bo_previous_applicatio_Q4_Col67_multi_avg_20,
        avg(‘Q4_Col70‘) as bo_previous_applicatio_Q4_Col70_multi_avg_21,
        avg(‘Q4_Col74‘) as bo_previous_applicatio_Q4_Col74_multi_avg_24,
        max(‘Q4_Col39‘) as bo_previous_applicatio_Q4_Col39_multi_max_40,
        max(‘Q4_Col44‘) as bo_previous_applicatio_Q4_Col44_multi_max_41,
        max(‘Q4_Col45‘) as bo_previous_applicatio_Q4_Col45_multi_max_42,
        max(‘Q4_Col46‘) as bo_previous_applicatio_Q4_Col46_multi_max_43,
        max(‘Q4_Col47‘) as bo_previous_applicatio_Q4_Col47_multi_max_44,
        max(‘Q4_Col72‘) as bo_previous_applicatio_Q4_Col72_multi_max_45,
        min(‘Q4_Col45‘) as bo_previous_applicatio_Q4_Col45_multi_min_54,
        min(‘Q4_Col47‘) as bo_previous_applicatio_Q4_Col47_multi_min_55,
        min(‘Q4_Col67‘) as bo_previous_applicatio_Q4_Col67_multi_min_56,
        count(distinct ‘Q4_Col64‘) as bo_previous_applicatio_Q4_Col64_multi_unique_count_93,
        count(distinct ‘Q4_Col58‘) as bo_previous_applicatio_Q4_Col58_multi_unique_count_94,
```

```
        count(distinct ‘Q4_Col56‘) as bo_previous_applicatio_Q4_Col56_multi_unique_count_95,
        count(distinct ‘Q4_Col50‘) as bo_previous_applicatio_Q4_Col50_multi_unique_count_96,
        count(distinct ‘Q4_Col21‘) as bo_previous_applicatio_Q4_Col21_multi_unique_count_99,
        count(distinct ‘Q4_Col69‘) as bo_previous_applicatio_Q4_Col69_multi_unique_count_105,
        count(distinct ‘Q4_Col1‘) as bo_previous_applicatio_Q4_Col1_multi_unique_count_106
        from ((select * from __main__) UNION (select * from ‘bo_previous_applicatio‘))
        window bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_ as (partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘
            rows between 100 preceding and current row)
    )
select
    CAST('1' as varchar) as Q4_Col40_18,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col44_multi_avg_17 as
        bo_previous_applicatio_Q4_Col44_multi_avg_17,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col45_multi_avg_18 as
        bo_previous_applicatio_Q4_Col45_multi_avg_18,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col71_multi_avg_22 as
        bo_previous_applicatio_Q4_Col71_multi_avg_22,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col73_multi_avg_23 as
        bo_previous_applicatio_Q4_Col73_multi_avg_23,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col75_multi_avg_25 as
        bo_previous_applicatio_Q4_Col75_multi_avg_25,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col52_multi_avg_26 as
        bo_previous_applicatio_Q4_Col52_multi_avg_26,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col52_multi_max_46 as
        bo_previous_applicatio_Q4_Col52_multi_max_46,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col74_multi_min_57 as
        bo_previous_applicatio_Q4_Col74_multi_min_57,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col52_multi_min_58 as
        bo_previous_applicatio_Q4_Col52_multi_min_58,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col49_multi_unique_count_97 as
        bo_previous_applicatio_Q4_Col49_multi_unique_count_97,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col55_multi_unique_count_98 as
        bo_previous_applicatio_Q4_Col55_multi_unique_count_98,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col61_multi_unique_count_100 as
        bo_previous_applicatio_Q4_Col61_multi_unique_count_100,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col57_multi_unique_count_101 as
        bo_previous_applicatio_Q4_Col57_multi_unique_count_101,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col66_multi_unique_count_102 as
        bo_previous_applicatio_Q4_Col66_multi_unique_count_102,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col68_multi_unique_count_103 as
        bo_previous_applicatio_Q4_Col68_multi_unique_count_103,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_.bo_previous_applicatio_Q4_Col51_multi_unique_count_104 as
        bo_previous_applicatio_Q4_Col51_multi_unique_count_104,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col47_multi_avg_19 as
        bo_previous_applicatio_Q4_Col47_multi_avg_19,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col67_multi_avg_20 as
        bo_previous_applicatio_Q4_Col67_multi_avg_20,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col70_multi_avg_21 as
        bo_previous_applicatio_Q4_Col70_multi_avg_21,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col74_multi_avg_24 as
        bo_previous_applicatio_Q4_Col74_multi_avg_24,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col39_multi_max_40 as
        bo_previous_applicatio_Q4_Col39_multi_max_40,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col44_multi_max_41 as
        bo_previous_applicatio_Q4_Col44_multi_max_41,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col45_multi_max_42 as
        bo_previous_applicatio_Q4_Col45_multi_max_42,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col46_multi_max_43 as
        bo_previous_applicatio_Q4_Col46_multi_max_43,
   bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col47_multi_max_44 as
        bo_previous_applicatio_Q4_Col47_multi_max_44,
```

```
623    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col72_multi_max_45 as
           bo_previous_applicatio_Q4_Col72_multi_max_45,
624    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col45_multi_min_54 as
           bo_previous_applicatio_Q4_Col45_multi_min_54,
625    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col47_multi_min_55 as
           bo_previous_applicatio_Q4_Col47_multi_min_55,
626    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col67_multi_min_56 as
           bo_previous_applicatio_Q4_Col67_multi_min_56,
627    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col64_multi_unique_count_93 as
           bo_previous_applicatio_Q4_Col64_multi_unique_count_93,
628    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col58_multi_unique_count_94 as
           bo_previous_applicatio_Q4_Col58_multi_unique_count_94,
629    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col56_multi_unique_count_95 as
           bo_previous_applicatio_Q4_Col56_multi_unique_count_95,
630    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col50_multi_unique_count_96 as
           bo_previous_applicatio_Q4_Col50_multi_unique_count_96,
631    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col21_multi_unique_count_99 as
           bo_previous_applicatio_Q4_Col21_multi_unique_count_99,
632    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col69_multi_unique_count_105
           as bo_previous_applicatio_Q4_Col69_multi_unique_count_105,
633    bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_.bo_previous_applicatio_Q4_Col1_multi_unique_count_106 as
           bo_previous_applicatio_Q4_Col1_multi_unique_count_106
634 from
635     __main__
636     natural join bo_previous_applicatio_Q4_Col2_Q4_Col0_0_10_
637     natural join bo_previous_applicatio_Q4_Col2_Q4_Col0_0_100_
638 ) as out6 on out0.Q4_Col40_1 = out6.Q4_Col40_18
639 join
640 (
641 select
642     CAST('1' as varchar) as Q4_Col40_67
643 from
644     ((select ‘Q4_Col41‘ as ‘Q4_Col0‘, CAST(0 as bigint) as ‘Q4_Col24‘, CAST(0 as bigint) as ‘Q4_Col3‘, ''
            as ‘Q4_Col76‘, ‘Q4_Col40‘ as ‘Q4_Col2‘ from ‘train‘)
645     UNION (select * from ‘bo_bureau_balance‘))
646     window bo_bureau_balance_Q4_Col2_Q4_Col0_0_10_ as (partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘ rows
            between 10 preceding and 0 preceding)
647 ) as out7 on out0.Q4_Col40_1 = out7.Q4_Col40_67
648 join
649 (
650 with
651     __main__ as (select ‘Q4_Col41‘ as ‘Q4_Col0‘, CAST(0 as bigint) as ‘Q4_Col1‘, ‘Q4_Col40‘ as ‘Q4_Col2‘,
            CAST(0 as bigint) as ‘Q4_Col3‘, CAST(0 as double) as ‘Q4_Col4‘, CAST(0 as bigint) as ‘Q4_Col5‘,
            CAST(0 as double) as ‘Q4_Col6‘, CAST(0 as double) as ‘Q4_Col7‘, CAST(0 as double) as ‘Q4_Col8‘,
            CAST(0 as double) as ‘Q4_Col9‘, CAST(0 as double) as ‘Q4_Col10‘, CAST(0 as double) as ‘Q4_Col11‘,
            CAST(0 as double) as ‘Q4_Col12‘, CAST(0 as double) as ‘Q4_Col13‘, CAST(0 as double) as
            ‘Q4_Col14‘, CAST(0 as double) as ‘Q4_Col15‘, CAST(0 as double) as ‘Q4_Col16‘, CAST(0 as bigint)
            as ‘Q4_Col17‘, CAST(0 as double) as ‘Q4_Col18‘, CAST(0 as double) as ‘Q4_Col19‘, CAST(0 as
            double) as ‘Q4_Col20‘, '' as ‘Q4_Col21‘, CAST(0 as bigint) as ‘Q4_Col22‘, CAST(0 as bigint) as
            ‘Q4_Col23‘ from ‘train‘),
652     bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_ as (
653         select CAST('1' as varchar) as Q4_Col2,
654         count(distinct ‘Q4_Col5‘) as bo_credit_card_balance_Q4_Col5_multi_unique_count_85,
655         count(distinct ‘Q4_Col17‘) as bo_credit_card_balance_Q4_Col17_multi_unique_count_87,
656         count(distinct ‘Q4_Col1‘) as bo_credit_card_balance_Q4_Col1_multi_unique_count_90
657         from ((select * from __main__) UNION (select * from ‘bo_credit_card_balance‘))
658         window bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_ as (partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘
                rows between 10 preceding and 0 preceding)
659     ),
660     bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_ as (
661         select CAST('1' as varchar) as Q4_Col2,
```

```
662         count(distinct ‘Q4_Col17‘) as bo_credit_card_balance_Q4_Col17_multi_unique_count_86,
663         count(distinct ‘Q4_Col3‘) as bo_credit_card_balance_Q4_Col3_multi_unique_count_88,
664         count(distinct ‘Q4_Col21‘) as bo_credit_card_balance_Q4_Col21_multi_unique_count_89
665         from ((select * from __main__) UNION (select * from ‘bo_credit_card_balance‘))
666         window bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_ as (partition by ‘Q4_Col2‘ order by ‘Q4_Col0‘
                rows between 100 preceding and 0 preceding)
667     )
668 select
669     CAST('1' as varchar) as Q4_Col40_86,
670    bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_.bo_credit_card_balance_Q4_Col17_multi_unique_count_86 as
           bo_credit_card_balance_Q4_Col17_multi_unique_count_86,
671    bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_.bo_credit_card_balance_Q4_Col3_multi_unique_count_88 as
           bo_credit_card_balance_Q4_Col3_multi_unique_count_88,
672    bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_.bo_credit_card_balance_Q4_Col21_multi_unique_count_89 as
           bo_credit_card_balance_Q4_Col21_multi_unique_count_89,
673    bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_.bo_credit_card_balance_Q4_Col5_multi_unique_count_85 as
           bo_credit_card_balance_Q4_Col5_multi_unique_count_85,
674    bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_.bo_credit_card_balance_Q4_Col17_multi_unique_count_87 as
           bo_credit_card_balance_Q4_Col17_multi_unique_count_87,
675    bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_.bo_credit_card_balance_Q4_Col1_multi_unique_count_90 as
           bo_credit_card_balance_Q4_Col1_multi_unique_count_90
676 from
677     __main__
678     natural join bo_credit_card_balance_Q4_Col2_Q4_Col0_0_10_
679     natural join bo_credit_card_balance_Q4_Col2_Q4_Col0_0_100_
680 ) as out8 on out0.Q4_Col40_1 = out8.Q4_Col40_86
```

E.6 Fraud Detection (Q5)

```
1  select
2      Q5_Col100_1,
3      flatten_request_Q5_Col101_original_0,
4      flatten_request_Q5_Col100_original_1,
5      flatten_request_Q5_Col0_original_639,
6      flatten_request_Q5_Col102_original_640,
7      Q5_Col100_3,
8      feedback_Q5_Col203_multi_direct_2,
9      feedback_Q5_Col101_multi_direct_3,
10     feedback_Q5_Col1_multi_direct_4,
11     CUST_f7_Q5_Col147_multi_direct_5,
12     CUST_f7_Q5_Col154_multi_direct_6,
13     concat(CUST_f7_Q5_Col154_multi_direct_6,sag_efs_tbproduct_F_b_Q5_Col251_multi_last_value_101),
14     concat(CUST_f7_Q5_Col154_multi_direct_6,sag_efs_tbproduct_F_b_Q5_Col247_multi_last_value_49),
15     concat(CUST_f7_Q5_Col154_multi_direct_6,sag_efs_tbproduct_F_b_Q5_Col283_multi_last_value_40),
16     concat(CUST_f7_Q5_Col154_multi_direct_6,sag_efs_tbproduct_F_b_Q5_Col274_multi_last_value_69),
17     CUST_f7_Q5_Col153_multi_direct_7,
18     CUST_f7_Q5_Col150_multi_direct_8,
19     CUST_f7_Q5_Col149_multi_direct_9,
20     CUST_f7_Q5_Col1_multi_direct_10,
21     sag_efs_tbproduct_F_b_Q5_Col267_multi_last_value_11,
22     sag_efs_tbproduct_F_b_Q5_Col353_multi_last_value_12,
23     sag_efs_tbproduct_F_b_Q5_Col355_multi_last_value_13,
24     sag_efs_tbproduct_F_b_Q5_Col232_multi_last_value_14,
25     sag_efs_tbproduct_F_b_Q5_Col278_multi_last_value_15,
26     sag_efs_tbproduct_F_b_Q5_Col233_multi_last_value_16,
27     sag_efs_tbproduct_F_b_Q5_Col297_multi_last_value_17,
28     sag_efs_tbproduct_F_b_Q5_Col250_multi_last_value_18,
29     sag_efs_tbproduct_F_b_Q5_Col349_multi_last_value_19,
```

```
    sag_efs_tbproduct_F_b_Q5_Col352_multi_last_value_20,
    sag_efs_tbproduct_F_b_Q5_Col285_multi_last_value_21,
    sag_efs_tbproduct_F_b_Q5_Col317_multi_last_value_22,
    sag_efs_tbproduct_F_b_Q5_Col219_multi_last_value_23,
    sag_efs_tbproduct_F_b_Q5_Col280_multi_last_value_24,
    sag_efs_tbproduct_F_b_Q5_Col235_multi_last_value_25,
    sag_efs_tbproduct_F_b_Q5_Col282_multi_last_value_26,
    sag_efs_tbproduct_F_b_Q5_Col237_multi_last_value_27,
    sag_efs_tbproduct_F_b_Q5_Col243_multi_last_value_28,
    sag_efs_tbproduct_F_b_Q5_Col225_multi_last_value_29,
    sag_efs_tbproduct_F_b_Q5_Col223_multi_last_value_30,
    sag_efs_tbproduct_F_b_Q5_Col310_multi_last_value_31,
    sag_efs_tbproduct_F_b_Q5_Col238_multi_last_value_32,
    sag_efs_tbproduct_F_b_Q5_Col201_multi_last_value_33,
    sag_efs_tbproduct_F_b_Q5_Col299_multi_last_value_34,
    sag_efs_tbproduct_F_b_Q5_Col265_multi_last_value_35,
    sag_efs_tbproduct_F_b_Q5_Col224_multi_last_value_36,
    sag_efs_tbproduct_F_b_Q5_Col227_multi_last_value_37,
    sag_efs_tbproduct_F_b_Q5_Col303_multi_last_value_38,
    sag_efs_tbproduct_F_b_Q5_Col226_multi_last_value_39,
    sag_efs_tbproduct_F_b_Q5_Col283_multi_last_value_40,
    sag_efs_tbproduct_F_b_Q5_Col221_multi_last_value_41,
    sag_efs_tbproduct_F_b_Q5_Col276_multi_last_value_42,
    sag_efs_tbproduct_F_b_Q5_Col311_multi_last_value_43,
    sag_efs_tbproduct_F_b_Q5_Col318_multi_last_value_44,
    sag_efs_tbproduct_F_b_Q5_Col228_multi_last_value_45,
    sag_efs_tbproduct_F_b_Q5_Col343_multi_last_value_46,
    sag_efs_tbproduct_F_b_Q5_Col344_multi_last_value_47,
    sag_efs_tbproduct_F_b_Q5_Col246_multi_last_value_48,
    sag_efs_tbproduct_F_b_Q5_Col247_multi_last_value_49,
    sag_efs_tbproduct_F_b_Q5_Col248_multi_last_value_50,
    sag_efs_tbproduct_F_b_Q5_Col350_multi_last_value_51,
    sag_efs_tbproduct_F_b_Q5_Col240_multi_last_value_52,
    sag_efs_tbproduct_F_b_Q5_Col309_multi_last_value_53,
    sag_efs_tbproduct_F_b_Q5_Col212_multi_last_value_54,
    sag_efs_tbproduct_F_b_Q5_Col333_multi_last_value_55,
    sag_efs_tbproduct_F_b_Q5_Col332_multi_last_value_56,
    sag_efs_tbproduct_F_b_Q5_Col342_multi_last_value_57,
    sag_efs_tbproduct_F_b_Q5_Col341_multi_last_value_58,
    sag_efs_tbproduct_F_b_Q5_Col337_multi_last_value_59,
    sag_efs_tbproduct_F_b_Q5_Col339_multi_last_value_60,
    sag_efs_tbproduct_F_b_Q5_Col335_multi_last_value_61,
    sag_efs_tbproduct_F_b_Q5_Col334_multi_last_value_62,
    sag_efs_tbproduct_F_b_Q5_Col336_multi_last_value_63,
    sag_efs_tbproduct_F_b_Q5_Col340_multi_last_value_64,
    sag_efs_tbproduct_F_b_Q5_Col239_multi_last_value_65,
    sag_efs_tbproduct_F_b_Q5_Col293_multi_last_value_66,
    sag_efs_tbproduct_F_b_Q5_Col231_multi_last_value_67,
    sag_efs_tbproduct_F_b_Q5_Col338_multi_last_value_68,
    sag_efs_tbproduct_F_b_Q5_Col274_multi_last_value_69,
    sag_efs_tbproduct_F_b_Q5_Col270_multi_last_value_70,
    sag_efs_tbproduct_F_b_Q5_Col322_multi_last_value_71,
    sag_efs_tbproduct_F_b_Q5_Col321_multi_last_value_72,
    sag_efs_tbproduct_F_b_Q5_Col330_multi_last_value_73,
    sag_efs_tbproduct_F_b_Q5_Col326_multi_last_value_74,
    sag_efs_tbproduct_F_b_Q5_Col328_multi_last_value_75,
    sag_efs_tbproduct_F_b_Q5_Col324_multi_last_value_76,
    sag_efs_tbproduct_F_b_Q5_Col323_multi_last_value_77,
    sag_efs_tbproduct_F_b_Q5_Col325_multi_last_value_78,
    sag_efs_tbproduct_F_b_Q5_Col329_multi_last_value_79,
    sag_efs_tbproduct_F_b_Q5_Col316_multi_last_value_80,
```

```
    sag_efs_tbproduct_F_b_Q5_Col313_multi_last_value_81,
    sag_efs_tbproduct_F_b_Q5_Col315_multi_last_value_82,
    sag_efs_tbproduct_F_b_Q5_Col312_multi_last_value_83,
    sag_efs_tbproduct_F_b_Q5_Col314_multi_last_value_84,
    sag_efs_tbproduct_F_b_Q5_Col319_multi_last_value_85,
    sag_efs_tbproduct_F_b_Q5_Col327_multi_last_value_86,
    sag_efs_tbproduct_F_b_Q5_Col273_multi_last_value_87,
    sag_efs_tbproduct_F_b_Q5_Col230_multi_last_value_88,
    sag_efs_tbproduct_F_b_Q5_Col345_multi_last_value_89,
    sag_efs_tbproduct_F_b_Q5_Col347_multi_last_value_90,
    sag_efs_tbproduct_F_b_Q5_Col346_multi_last_value_91,
    sag_efs_tbproduct_F_b_Q5_Col236_multi_last_value_92,
    sag_efs_tbproduct_F_b_Q5_Col289_multi_last_value_93,
    sag_efs_tbproduct_F_b_Q5_Col348_multi_last_value_94,
    sag_efs_tbproduct_F_b_Q5_Col291_multi_last_value_95,
    sag_efs_tbproduct_F_b_Q5_Col304_multi_last_value_96,
    sag_efs_tbproduct_F_b_Q5_Col305_multi_last_value_97,
    sag_efs_tbproduct_F_b_Q5_Col306_multi_last_value_98,
    sag_efs_tbproduct_F_b_Q5_Col259_multi_last_value_99,
    sag_efs_tbproduct_F_b_Q5_Col254_multi_last_value_100,
    sag_efs_tbproduct_F_b_Q5_Col251_multi_last_value_101,
    sag_efs_tbproduct_F_b_Q5_Col298_multi_last_value_102,
    sag_efs_tbproduct_F_b_Q5_Col275_multi_last_value_103,
    sag_efs_tbproduct_F_b_Q5_Col320_multi_last_value_104,
    sag_efs_tbproduct_F_b_Q5_Col351_multi_last_value_105,
    LINK2_f6_Q5_Col172_multi_last_value_106,
    LINK2_f6_Q5_Col189_multi_last_value_107,
    LINK2_f6_Q5_Col163_multi_last_value_108,
    LINK2_f6_Q5_Col186_multi_last_value_109,
    LINK2_f6_Q5_Col181_multi_last_value_110,
    LINK2_f6_Q5_Col195_multi_last_value_111,
    LINK2_f6_Q5_Col187_multi_last_value_112,
    LINK2_f6_Q5_Col173_multi_last_value_113,
    LINK2_f6_Q5_Col170_multi_last_value_114,
    LINK2_f6_Q5_Col159_multi_last_value_115,
    LINK2_f6_Q5_Col156_multi_last_value_116,
    LINK2_f6_Q5_Col179_multi_last_value_117,
    LINK2_f6_Q5_Col190_multi_last_value_118,
    LINK2_f6_Q5_Col162_multi_last_value_119,
    LINK2_f6_Q5_Col161_multi_last_value_120,
    LINK2_f6_Q5_Col188_multi_last_value_121,
    LINK2_f6_Q5_Col166_multi_last_value_122,
    LINK2_f6_Q5_Col193_multi_last_value_123,
    LINK2_f6_Q5_Col167_multi_last_value_124,
    LINK2_f6_Q5_Col180_multi_last_value_125,
    LINK2_f6_Q5_Col185_multi_last_value_126,
    LINK2_f6_Q5_Col165_multi_last_value_127,
    LINK2_f6_Q5_Col174_multi_last_value_128,
    LINK2_f6_Q5_Col176_multi_last_value_129,
    LINK2_f6_Q5_Col175_multi_last_value_130,
    LINK2_f6_Q5_Col177_multi_last_value_131,
    LINK2_f6_Q5_Col182_multi_last_value_132,
    LINK2_f6_Q5_Col191_multi_last_value_133,
    LINK2_f6_Q5_Col199_multi_last_value_134,
    LINK2_f6_Q5_Col200_multi_last_value_135,
    LINK2_f6_Q5_Col155_multi_last_value_136,
    LINK2_f6_Q5_Col168_multi_last_value_137,
    LINK2_f6_Q5_Col171_multi_last_value_138,
    LINK2_f6_Q5_Col178_multi_last_value_139,
    LINK2_f6_Q5_Col192_multi_last_value_140,
    LINK2_f6_Q5_Col158_multi_last_value_141,
```

```
    LINK2_f6_Q5_Col197_multi_last_value_142,
    LINK2_f6_Q5_Col160_multi_last_value_143,
    LINK2_f6_Q5_Col184_multi_last_value_144,
    LINK2_f6_Q5_Col198_multi_last_value_145,
    LINK2_f6_Q5_Col169_multi_last_value_146,
    LINK2_f6_Q5_Col183_multi_last_value_147,
    LINK2_f6_Q5_Col164_multi_last_value_148,
    LINK2_f6_Q5_Col157_multi_last_value_149,
    LINK2_f6_Q5_Col196_multi_last_value_150,
    LINK2_f6_Q5_Col194_multi_last_value_151,
    LINK2_f6_Q5_Col33_multi_last_value_152,
    LINK2_f6_Q5_Col42_multi_last_value_153,
    LINK2_f6_Q5_Col43_multi_last_value_154,
    LINK2_f6_Q5_Col44_multi_last_value_155,
    LINK2_f6_Q5_Col45_multi_last_value_156,
    LINK2_f6_Q5_Col46_multi_last_value_157,
    LINK2_f6_Q5_Col47_multi_last_value_158,
    LINK2_f6_Q5_Col48_multi_last_value_159,
    LINK2_f6_Q5_Col49_multi_last_value_160,
    LINK2_f6_Q5_Col50_multi_last_value_161,
    LINK2_f6_Q5_Col51_multi_last_value_162,
    LINK2_f6_Q5_Col34_multi_last_value_163,
    LINK2_f6_Q5_Col52_multi_last_value_164,
    LINK2_f6_Q5_Col53_multi_last_value_165,
    LINK2_f6_Q5_Col54_multi_last_value_166,
    LINK2_f6_Q5_Col55_multi_last_value_167,
    LINK2_f6_Q5_Col56_multi_last_value_168,
    LINK2_f6_Q5_Col57_multi_last_value_169,
    LINK2_f6_Q5_Col58_multi_last_value_170,
    LINK2_f6_Q5_Col59_multi_last_value_171,
    LINK2_f6_Q5_Col60_multi_last_value_172,
    LINK2_f6_Q5_Col61_multi_last_value_173,
    LINK2_f6_Q5_Col35_multi_last_value_174,
    LINK2_f6_Q5_Col62_multi_last_value_175,
    LINK2_f6_Q5_Col63_multi_last_value_176,
    LINK2_f6_Q5_Col64_multi_last_value_177,
    LINK2_f6_Q5_Col65_multi_last_value_178,
    LINK2_f6_Q5_Col66_multi_last_value_179,
    LINK2_f6_Q5_Col67_multi_last_value_180,
    LINK2_f6_Q5_Col68_multi_last_value_181,
    LINK2_f6_Q5_Col69_multi_last_value_182,
    LINK2_f6_Q5_Col70_multi_last_value_183,
    LINK2_f6_Q5_Col71_multi_last_value_184,
    LINK2_f6_Q5_Col36_multi_last_value_185,
    LINK2_f6_Q5_Col72_multi_last_value_186,
    LINK2_f6_Q5_Col73_multi_last_value_187,
    LINK2_f6_Q5_Col74_multi_last_value_188,
    LINK2_f6_Q5_Col75_multi_last_value_189,
    LINK2_f6_Q5_Col76_multi_last_value_190,
    LINK2_f6_Q5_Col77_multi_last_value_191,
    LINK2_f6_Q5_Col78_multi_last_value_192,
    LINK2_f6_Q5_Col79_multi_last_value_193,
    LINK2_f6_Q5_Col80_multi_last_value_194,
    LINK2_f6_Q5_Col81_multi_last_value_195,
    LINK2_f6_Q5_Col37_multi_last_value_196,
    LINK2_f6_Q5_Col82_multi_last_value_197,
    LINK2_f6_Q5_Col38_multi_last_value_198,
    LINK2_f6_Q5_Col39_multi_last_value_199,
    LINK2_f6_Q5_Col40_multi_last_value_200,
    LINK2_f6_Q5_Col41_multi_last_value_201,
    LINK2_f6_Q5_Col201_multi_last_value_202,
```

```
    LINK2_f6_Q5_Col202_multi_last_value_203,
    LINK1_f5_Q5_Col172_multi_last_value_204,
    LINK1_f5_Q5_Col189_multi_last_value_205,
    LINK1_f5_Q5_Col186_multi_last_value_206,
    LINK1_f5_Q5_Col181_multi_last_value_207,
    LINK1_f5_Q5_Col195_multi_last_value_208,
    LINK1_f5_Q5_Col187_multi_last_value_209,
    LINK1_f5_Q5_Col173_multi_last_value_210,
    LINK1_f5_Q5_Col159_multi_last_value_211,
    LINK1_f5_Q5_Col156_multi_last_value_212,
    LINK1_f5_Q5_Col179_multi_last_value_213,
    LINK1_f5_Q5_Col190_multi_last_value_214,
    LINK1_f5_Q5_Col162_multi_last_value_215,
    LINK1_f5_Q5_Col188_multi_last_value_216,
    LINK1_f5_Q5_Col166_multi_last_value_217,
    LINK1_f5_Q5_Col167_multi_last_value_218,
    LINK1_f5_Q5_Col185_multi_last_value_219,
    LINK1_f5_Q5_Col165_multi_last_value_220,
    LINK1_f5_Q5_Col174_multi_last_value_221,
    LINK1_f5_Q5_Col176_multi_last_value_222,
    LINK1_f5_Q5_Col175_multi_last_value_223,
    LINK1_f5_Q5_Col182_multi_last_value_224,
    LINK1_f5_Q5_Col199_multi_last_value_225,
    LINK1_f5_Q5_Col200_multi_last_value_226,
    LINK1_f5_Q5_Col168_multi_last_value_227,
    LINK1_f5_Q5_Col171_multi_last_value_228,
    LINK1_f5_Q5_Col197_multi_last_value_229,
    LINK1_f5_Q5_Col160_multi_last_value_230,
    LINK1_f5_Q5_Col184_multi_last_value_231,
    LINK1_f5_Q5_Col198_multi_last_value_232,
    LINK1_f5_Q5_Col169_multi_last_value_233,
    LINK1_f5_Q5_Col183_multi_last_value_234,
    LINK1_f5_Q5_Col164_multi_last_value_235,
    LINK1_f5_Q5_Col157_multi_last_value_236,
    LINK1_f5_Q5_Col196_multi_last_value_237,
    LINK1_f5_Q5_Col194_multi_last_value_238,
    LINK1_f5_Q5_Col33_multi_last_value_239,
    LINK1_f5_Q5_Col42_multi_last_value_240,
    LINK1_f5_Q5_Col44_multi_last_value_241,
    LINK1_f5_Q5_Col45_multi_last_value_242,
    LINK1_f5_Q5_Col46_multi_last_value_243,
    LINK1_f5_Q5_Col47_multi_last_value_244,
    LINK1_f5_Q5_Col48_multi_last_value_245,
    LINK1_f5_Q5_Col49_multi_last_value_246,
    LINK1_f5_Q5_Col51_multi_last_value_247,
    LINK1_f5_Q5_Col52_multi_last_value_248,
    LINK1_f5_Q5_Col53_multi_last_value_249,
    LINK1_f5_Q5_Col54_multi_last_value_250,
    LINK1_f5_Q5_Col55_multi_last_value_251,
    LINK1_f5_Q5_Col56_multi_last_value_252,
    LINK1_f5_Q5_Col59_multi_last_value_253,
    LINK1_f5_Q5_Col61_multi_last_value_254,
    LINK1_f5_Q5_Col62_multi_last_value_255,
    LINK1_f5_Q5_Col63_multi_last_value_256,
    LINK1_f5_Q5_Col64_multi_last_value_257,
    LINK1_f5_Q5_Col65_multi_last_value_258,
    LINK1_f5_Q5_Col66_multi_last_value_259,
    LINK1_f5_Q5_Col67_multi_last_value_260,
    LINK1_f5_Q5_Col68_multi_last_value_261,
    LINK1_f5_Q5_Col69_multi_last_value_262,
    LINK1_f5_Q5_Col70_multi_last_value_263,
```

```
    LINK1_f5_Q5_Col36_multi_last_value_264,
    LINK1_f5_Q5_Col74_multi_last_value_265,
    LINK1_f5_Q5_Col75_multi_last_value_266,
    LINK1_f5_Q5_Col76_multi_last_value_267,
    LINK1_f5_Q5_Col77_multi_last_value_268,
    LINK1_f5_Q5_Col78_multi_last_value_269,
    LINK1_f5_Q5_Col79_multi_last_value_270,
    LINK1_f5_Q5_Col80_multi_last_value_271,
    LINK1_f5_Q5_Col81_multi_last_value_272,
    LINK1_f5_Q5_Col37_multi_last_value_273,
    LINK1_f5_Q5_Col82_multi_last_value_274,
    LINK1_f5_Q5_Col39_multi_last_value_275,
    LINK1_f5_Q5_Col40_multi_last_value_276,
    LINK1_f5_Q5_Col201_multi_last_value_277,
    LINK1_f5_Q5_Col202_multi_last_value_278,
    AUM_f4_Q5_Col104_multi_last_value_279,
    AUM_f4_Q5_Col114_multi_last_value_280,
    AUM_f4_Q5_Col119_multi_last_value_281,
    AUM_f4_Q5_Col121_multi_last_value_282,
    AUM_f4_Q5_Col120_multi_last_value_283,
    AUM_f4_Q5_Col113_multi_last_value_284,
    AUM_f4_Q5_Col118_multi_last_value_285,
    AUM_f4_Q5_Col122_multi_last_value_286,
    AUM_f4_Q5_Col117_multi_last_value_287,
    AUM_f4_Q5_Col115_multi_last_value_288,
    AUM_f4_Q5_Col143_multi_last_value_289,
    AUM_f4_Q5_Col144_multi_last_value_290,
    AUM_f4_Q5_Col124_multi_last_value_291,
    AUM_f4_Q5_Col129_multi_last_value_292,
    AUM_f4_Q5_Col131_multi_last_value_293,
    AUM_f4_Q5_Col123_multi_last_value_294,
    AUM_f4_Q5_Col128_multi_last_value_295,
    AUM_f4_Q5_Col132_multi_last_value_296,
    AUM_f4_Q5_Col30_multi_last_value_297,
    AUM_f4_Q5_Col109_multi_last_value_298,
    AUM_f4_Q5_Col111_multi_last_value_299,
    AUM_f4_Q5_Col110_multi_last_value_300,
    AUM_f4_Q5_Col139_multi_last_value_301,
    AUM_f4_Q5_Col146_multi_last_value_302,
    AUM_f4_Q5_Col141_multi_last_value_303,
    AUM_f4_Q5_Col133_multi_last_value_304,
    AUM_f4_Q5_Col138_multi_last_value_305,
    AUM_f4_Q5_Col136_multi_last_value_306,
    AUM_f4_Q5_Col142_multi_last_value_307,
    AUM_f4_Q5_Col137_multi_last_value_308,
    AUM_f4_Q5_Col135_multi_last_value_309,
    AUM_f4_Q5_Col108_multi_last_value_310,
    AUM_f4_Q5_Col106_multi_last_value_311,
    AUM_f4_Q5_Col112_multi_last_value_312,
    AUM_f4_Q5_Col107_multi_last_value_313,
    AUM_f4_Q5_Col33_multi_last_value_314,
    AUM_f4_Q5_Col42_multi_last_value_315,
    AUM_f4_Q5_Col43_multi_last_value_316,
    AUM_f4_Q5_Col44_multi_last_value_317,
    AUM_f4_Q5_Col45_multi_last_value_318,
    AUM_f4_Q5_Col46_multi_last_value_319,
    AUM_f4_Q5_Col47_multi_last_value_320,
    AUM_f4_Q5_Col49_multi_last_value_321,
    AUM_f4_Q5_Col50_multi_last_value_322,
    AUM_f4_Q5_Col51_multi_last_value_323,
    AUM_f4_Q5_Col34_multi_last_value_324,
```

```
    AUM_f4_Q5_Col52_multi_last_value_325,
    AUM_f4_Q5_Col53_multi_last_value_326,
    AUM_f4_Q5_Col54_multi_last_value_327,
    AUM_f4_Q5_Col55_multi_last_value_328,
    AUM_f4_Q5_Col56_multi_last_value_329,
    AUM_f4_Q5_Col60_multi_last_value_330,
    AUM_f4_Q5_Col61_multi_last_value_331,
    AUM_f4_Q5_Col63_multi_last_value_332,
    AUM_f4_Q5_Col64_multi_last_value_333,
    AUM_f4_Q5_Col65_multi_last_value_334,
    AUM_f4_Q5_Col67_multi_last_value_335,
    AUM_f4_Q5_Col68_multi_last_value_336,
    AUM_f4_Q5_Col69_multi_last_value_337,
    AUM_f4_Q5_Col70_multi_last_value_338,
    AUM_f4_Q5_Col71_multi_last_value_339,
    AUM_f4_Q5_Col36_multi_last_value_340,
    AUM_f4_Q5_Col73_multi_last_value_341,
    AUM_f4_Q5_Col74_multi_last_value_342,
    AUM_f4_Q5_Col75_multi_last_value_343,
    AUM_f4_Q5_Col76_multi_last_value_344,
    AUM_f4_Q5_Col77_multi_last_value_345,
    AUM_f4_Q5_Col79_multi_last_value_346,
    AUM_f4_Q5_Col80_multi_last_value_347,
    AUM_f4_Q5_Col81_multi_last_value_348,
    AUM_f4_Q5_Col82_multi_last_value_349,
    AUM_f4_Q5_Col83_multi_last_value_350,
    AUM_f4_Q5_Col85_multi_last_value_351,
    AUM_f4_Q5_Col38_multi_last_value_352,
    AUM_f4_Q5_Col39_multi_last_value_353,
    AUM_f4_Q5_Col40_multi_last_value_354,
    AUM_f4_Q5_Col41_multi_last_value_355,
    debit3_f3_Q5_Col7_multi_last_value_356,
    debit3_f3_Q5_Col6_multi_last_value_357,
    debit3_f3_Q5_Col3_multi_last_value_358,
    debit3_f3_Q5_Col2_multi_last_value_359,
    --
        concat(w_feature_output.debit3_f3_Q5_Col2_multi_last_value_359,sag_efs_tbproduct_F_b_Q5_Col251_multi_last_value_
    --
        concat(w_feature_output.debit3_f3_Q5_Col2_multi_last_value_359,sag_efs_tbproduct_F_b_Q5_Col247_multi_last_value_
    --
        concat(w_feature_output.debit3_f3_Q5_Col2_multi_last_value_359,sag_efs_tbproduct_F_b_Q5_Col283_multi_last_value_
    --
        concat(w_feature_output.debit3_f3_Q5_Col2_multi_last_value_359,sag_efs_tbproduct_F_b_Q5_Col274_multi_last_value_
    debit3_f3_Q5_Col21_multi_last_value_360,
    debit3_f3_Q5_Col24_multi_last_value_361,
    debit3_f3_Q5_Col9_multi_last_value_362,
    debit3_f3_Q5_Col12_multi_last_value_363,
    debit3_f3_Q5_Col8_multi_last_value_364,
    debit3_f3_Q5_Col14_multi_last_value_365,
    debit3_f3_Q5_Col27_multi_last_value_366,
    debit3_f3_Q5_Col16_multi_last_value_367,
    debit3_f3_Q5_Col5_multi_last_value_368,
    debit3_f3_Q5_Col28_multi_last_value_369,
    debit3_f3_Q5_Col30_multi_last_value_370,
    debit3_f3_Q5_Col17_multi_last_value_371,
    debit3_f3_Q5_Col20_multi_last_value_372,
    debit3_f3_Q5_Col23_multi_last_value_373,
    debit3_f3_Q5_Col13_multi_last_value_374,
    debit3_f3_Q5_Col22_multi_last_value_375,
    debit3_f3_Q5_Col25_multi_last_value_376,
    debit3_f3_Q5_Col10_multi_last_value_377,
```

```
    debit3_f3_Q5_Col4_multi_last_value_378,
    debit3_f3_Q5_Col15_multi_last_value_379,
    debit3_f3_Q5_Col18_multi_last_value_380,
    debit3_f3_Q5_Col19_multi_last_value_381,
    debit3_f3_Q5_Col11_multi_last_value_382,
    debit3_f3_Q5_Col26_multi_last_value_383,
    debit3_f3_Q5_Col32_multi_last_value_384,
    debit3_f3_Q5_Col29_multi_last_value_385,
    debit3_f3_Q5_Col33_multi_last_value_386,
    debit3_f3_Q5_Col42_multi_last_value_387,
    debit3_f3_Q5_Col43_multi_last_value_388,
    debit3_f3_Q5_Col44_multi_last_value_389,
    debit3_f3_Q5_Col45_multi_last_value_390,
    debit3_f3_Q5_Col46_multi_last_value_391,
    debit3_f3_Q5_Col47_multi_last_value_392,
    debit3_f3_Q5_Col48_multi_last_value_393,
    debit3_f3_Q5_Col49_multi_last_value_394,
    debit3_f3_Q5_Col50_multi_last_value_395,
    debit3_f3_Q5_Col51_multi_last_value_396,
    debit3_f3_Q5_Col34_multi_last_value_397,
    debit3_f3_Q5_Col52_multi_last_value_398,
    debit3_f3_Q5_Col53_multi_last_value_399,
    debit3_f3_Q5_Col54_multi_last_value_400,
    debit3_f3_Q5_Col55_multi_last_value_401,
    debit3_f3_Q5_Col56_multi_last_value_402,
    debit3_f3_Q5_Col57_multi_last_value_403,
    debit3_f3_Q5_Col58_multi_last_value_404,
    debit3_f3_Q5_Col59_multi_last_value_405,
    debit3_f3_Q5_Col60_multi_last_value_406,
    debit3_f3_Q5_Col61_multi_last_value_407,
    debit3_f3_Q5_Col35_multi_last_value_408,
    debit3_f3_Q5_Col62_multi_last_value_409,
    debit3_f3_Q5_Col63_multi_last_value_410,
    debit3_f3_Q5_Col65_multi_last_value_411,
    debit3_f3_Q5_Col66_multi_last_value_412,
    debit3_f3_Q5_Col67_multi_last_value_413,
    debit3_f3_Q5_Col68_multi_last_value_414,
    debit3_f3_Q5_Col69_multi_last_value_415,
    debit3_f3_Q5_Col70_multi_last_value_416,
    debit3_f3_Q5_Col71_multi_last_value_417,
    debit3_f3_Q5_Col36_multi_last_value_418,
    debit3_f3_Q5_Col72_multi_last_value_419,
    debit3_f3_Q5_Col73_multi_last_value_420,
    debit3_f3_Q5_Col74_multi_last_value_421,
    debit3_f3_Q5_Col75_multi_last_value_422,
    debit3_f3_Q5_Col76_multi_last_value_423,
    debit3_f3_Q5_Col77_multi_last_value_424,
    debit3_f3_Q5_Col78_multi_last_value_425,
    debit3_f3_Q5_Col79_multi_last_value_426,
    debit3_f3_Q5_Col80_multi_last_value_427,
    debit3_f3_Q5_Col81_multi_last_value_428,
    debit3_f3_Q5_Col37_multi_last_value_429,
    debit3_f3_Q5_Col82_multi_last_value_430,
    debit3_f3_Q5_Col83_multi_last_value_431,
    debit3_f3_Q5_Col84_multi_last_value_432,
    debit3_f3_Q5_Col85_multi_last_value_433,
    debit3_f3_Q5_Col86_multi_last_value_434,
    debit3_f3_Q5_Col87_multi_last_value_435,
    debit3_f3_Q5_Col88_multi_last_value_436,
    debit3_f3_Q5_Col89_multi_last_value_437,
    debit3_f3_Q5_Col90_multi_last_value_438,
```

```
    debit3_f3_Q5_Col91_multi_last_value_439,
    debit3_f3_Q5_Col38_multi_last_value_440,
    debit3_f3_Q5_Col92_multi_last_value_441,
    debit3_f3_Q5_Col93_multi_last_value_442,
    debit3_f3_Q5_Col94_multi_last_value_443,
    debit3_f3_Q5_Col95_multi_last_value_444,
    debit3_f3_Q5_Col96_multi_last_value_445,
    debit3_f3_Q5_Col97_multi_last_value_446,
    debit3_f3_Q5_Col98_multi_last_value_447,
    debit3_f3_Q5_Col99_multi_last_value_448,
    debit3_f3_Q5_Col39_multi_last_value_449,
    debit3_f3_Q5_Col40_multi_last_value_450,
    debit3_f3_Q5_Col41_multi_last_value_451,
    debit2_f2_Q5_Col7_multi_last_value_452,
    debit2_f2_Q5_Col6_multi_last_value_453,
    concat(debit2_f2_Q5_Col6_multi_last_value_453,CUST_f7_Q5_Col149_multi_direct_9),
    debit2_f2_Q5_Col3_multi_last_value_454,
    debit2_f2_Q5_Col2_multi_last_value_455,
    concat(debit2_f2_Q5_Col2_multi_last_value_455,sag_efs_tbproduct_F_b_Q5_Col251_multi_last_value_101),
    concat(debit2_f2_Q5_Col2_multi_last_value_455,sag_efs_tbproduct_F_b_Q5_Col247_multi_last_value_49),
    concat(debit2_f2_Q5_Col2_multi_last_value_455,sag_efs_tbproduct_F_b_Q5_Col283_multi_last_value_40),
    concat(debit2_f2_Q5_Col2_multi_last_value_455,sag_efs_tbproduct_F_b_Q5_Col274_multi_last_value_69),
    debit2_f2_Q5_Col21_multi_last_value_456,
    debit2_f2_Q5_Col24_multi_last_value_457,
    debit2_f2_Q5_Col9_multi_last_value_458,
    debit2_f2_Q5_Col12_multi_last_value_459,
    debit2_f2_Q5_Col8_multi_last_value_460,
    debit2_f2_Q5_Col14_multi_last_value_461,
    debit2_f2_Q5_Col27_multi_last_value_462,
    debit2_f2_Q5_Col16_multi_last_value_463,
    debit2_f2_Q5_Col5_multi_last_value_464,
    concat(debit2_f2_Q5_Col5_multi_last_value_464,sag_efs_tbproduct_F_b_Q5_Col283_multi_last_value_40),
    debit2_f2_Q5_Col28_multi_last_value_465,
    debit2_f2_Q5_Col30_multi_last_value_466,
    debit2_f2_Q5_Col17_multi_last_value_467,
    debit2_f2_Q5_Col20_multi_last_value_468,
    debit2_f2_Q5_Col23_multi_last_value_469,
    debit2_f2_Q5_Col13_multi_last_value_470,
    debit2_f2_Q5_Col22_multi_last_value_471,
    debit2_f2_Q5_Col25_multi_last_value_472,
    debit2_f2_Q5_Col10_multi_last_value_473,
    debit2_f2_Q5_Col4_multi_last_value_474,
    debit2_f2_Q5_Col15_multi_last_value_475,
    debit2_f2_Q5_Col18_multi_last_value_476,
    debit2_f2_Q5_Col19_multi_last_value_477,
    debit2_f2_Q5_Col11_multi_last_value_478,
    debit2_f2_Q5_Col26_multi_last_value_479,
    debit2_f2_Q5_Col32_multi_last_value_480,
    debit2_f2_Q5_Col29_multi_last_value_481,
    debit2_f2_Q5_Col33_multi_last_value_482,
    debit2_f2_Q5_Col42_multi_last_value_483,
    debit2_f2_Q5_Col43_multi_last_value_484,
    debit2_f2_Q5_Col44_multi_last_value_485,
    debit2_f2_Q5_Col45_multi_last_value_486,
    debit2_f2_Q5_Col46_multi_last_value_487,
    debit2_f2_Q5_Col47_multi_last_value_488,
    debit2_f2_Q5_Col48_multi_last_value_489,
    debit2_f2_Q5_Col49_multi_last_value_490,
    debit2_f2_Q5_Col50_multi_last_value_491,
    debit2_f2_Q5_Col51_multi_last_value_492,
    debit2_f2_Q5_Col34_multi_last_value_493,
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```
    debit2_f2_Q5_Col52_multi_last_value_494,
    debit2_f2_Q5_Col53_multi_last_value_495,
    debit2_f2_Q5_Col54_multi_last_value_496,
    debit2_f2_Q5_Col55_multi_last_value_497,
    debit2_f2_Q5_Col56_multi_last_value_498,
    debit2_f2_Q5_Col57_multi_last_value_499,
    debit2_f2_Q5_Col58_multi_last_value_500,
    debit2_f2_Q5_Col59_multi_last_value_501,
    debit2_f2_Q5_Col60_multi_last_value_502,
    debit2_f2_Q5_Col61_multi_last_value_503,
    debit2_f2_Q5_Col35_multi_last_value_504,
    debit2_f2_Q5_Col62_multi_last_value_505,
    debit2_f2_Q5_Col63_multi_last_value_506,
    debit2_f2_Q5_Col65_multi_last_value_507,
    debit2_f2_Q5_Col66_multi_last_value_508,
    debit2_f2_Q5_Col67_multi_last_value_509,
    debit2_f2_Q5_Col68_multi_last_value_510,
    debit2_f2_Q5_Col69_multi_last_value_511,
    debit2_f2_Q5_Col70_multi_last_value_512,
    debit2_f2_Q5_Col71_multi_last_value_513,
    debit2_f2_Q5_Col36_multi_last_value_514,
    debit2_f2_Q5_Col72_multi_last_value_515,
    debit2_f2_Q5_Col73_multi_last_value_516,
    debit2_f2_Q5_Col74_multi_last_value_517,
    debit2_f2_Q5_Col75_multi_last_value_518,
    debit2_f2_Q5_Col76_multi_last_value_519,
    debit2_f2_Q5_Col77_multi_last_value_520,
    debit2_f2_Q5_Col78_multi_last_value_521,
    debit2_f2_Q5_Col79_multi_last_value_522,
    debit2_f2_Q5_Col80_multi_last_value_523,
    debit2_f2_Q5_Col81_multi_last_value_524,
    debit2_f2_Q5_Col37_multi_last_value_525,
    debit2_f2_Q5_Col82_multi_last_value_526,
    debit2_f2_Q5_Col83_multi_last_value_527,
    debit2_f2_Q5_Col84_multi_last_value_528,
    debit2_f2_Q5_Col85_multi_last_value_529,
    debit2_f2_Q5_Col86_multi_last_value_530,
    debit2_f2_Q5_Col87_multi_last_value_531,
    debit2_f2_Q5_Col88_multi_last_value_532,
    debit2_f2_Q5_Col89_multi_last_value_533,
    debit2_f2_Q5_Col90_multi_last_value_534,
    debit2_f2_Q5_Col91_multi_last_value_535,
    debit2_f2_Q5_Col38_multi_last_value_536,
    debit2_f2_Q5_Col92_multi_last_value_537,
    debit2_f2_Q5_Col93_multi_last_value_538,
    debit2_f2_Q5_Col94_multi_last_value_539,
    debit2_f2_Q5_Col95_multi_last_value_540,
    debit2_f2_Q5_Col96_multi_last_value_541,
    debit2_f2_Q5_Col97_multi_last_value_542,
    debit2_f2_Q5_Col98_multi_last_value_543,
    debit2_f2_Q5_Col99_multi_last_value_544,
    debit2_f2_Q5_Col39_multi_last_value_545,
    debit2_f2_Q5_Col40_multi_last_value_546,
    debit2_f2_Q5_Col41_multi_last_value_547,
    debit1_f1_Q5_Col7_multi_last_value_548,
    debit1_f1_Q5_Col6_multi_last_value_549,
    debit1_f1_Q5_Col31_multi_last_value_550,
    debit1_f1_Q5_Col3_multi_last_value_551,
    debit1_f1_Q5_Col2_multi_last_value_552,
    concat(debit1_f1_Q5_Col2_multi_last_value_552,sag_efs_tbproduct_F_b_Q5_Col251_multi_last_value_101),
    concat(debit1_f1_Q5_Col2_multi_last_value_552,sag_efs_tbproduct_F_b_Q5_Col247_multi_last_value_49),
```

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    concat(debit1_f1_Q5_Col2_multi_last_value_552,sag_efs_tbproduct_F_b_Q5_Col274_multi_last_value_69),
    concat(debit1_f1_Q5_Col2_multi_last_value_552,debit1_f1_Q5_Col6_multi_last_value_549),
    debit1_f1_Q5_Col24_multi_last_value_553,
    debit1_f1_Q5_Col9_multi_last_value_554,
    debit1_f1_Q5_Col12_multi_last_value_555,
    debit1_f1_Q5_Col8_multi_last_value_556,
    debit1_f1_Q5_Col14_multi_last_value_557,
    debit1_f1_Q5_Col27_multi_last_value_558,
    debit1_f1_Q5_Col16_multi_last_value_559,
    debit1_f1_Q5_Col5_multi_last_value_560,
    debit1_f1_Q5_Col28_multi_last_value_561,
    debit1_f1_Q5_Col30_multi_last_value_562,
    debit1_f1_Q5_Col17_multi_last_value_563,
    debit1_f1_Q5_Col20_multi_last_value_564,
    debit1_f1_Q5_Col23_multi_last_value_565,
    debit1_f1_Q5_Col13_multi_last_value_566,
    debit1_f1_Q5_Col22_multi_last_value_567,
    debit1_f1_Q5_Col25_multi_last_value_568,
    debit1_f1_Q5_Col10_multi_last_value_569,
    debit1_f1_Q5_Col4_multi_last_value_570,
    debit1_f1_Q5_Col18_multi_last_value_571,
    debit1_f1_Q5_Col19_multi_last_value_572,
    debit1_f1_Q5_Col11_multi_last_value_573,
    debit1_f1_Q5_Col26_multi_last_value_574,
    debit1_f1_Q5_Col32_multi_last_value_575,
    debit1_f1_Q5_Col29_multi_last_value_576,
    debit1_f1_Q5_Col33_multi_last_value_577,
    debit1_f1_Q5_Col42_multi_last_value_578,
    debit1_f1_Q5_Col43_multi_last_value_579,
    debit1_f1_Q5_Col44_multi_last_value_580,
    debit1_f1_Q5_Col45_multi_last_value_581,
    debit1_f1_Q5_Col46_multi_last_value_582,
    debit1_f1_Q5_Col47_multi_last_value_583,
    debit1_f1_Q5_Col49_multi_last_value_584,
    debit1_f1_Q5_Col50_multi_last_value_585,
    debit1_f1_Q5_Col51_multi_last_value_586,
    debit1_f1_Q5_Col34_multi_last_value_587,
    debit1_f1_Q5_Col52_multi_last_value_588,
    debit1_f1_Q5_Col53_multi_last_value_589,
    debit1_f1_Q5_Col55_multi_last_value_590,
    debit1_f1_Q5_Col56_multi_last_value_591,
    debit1_f1_Q5_Col57_multi_last_value_592,
    debit1_f1_Q5_Col58_multi_last_value_593,
    debit1_f1_Q5_Col59_multi_last_value_594,
    debit1_f1_Q5_Col60_multi_last_value_595,
    debit1_f1_Q5_Col61_multi_last_value_596,
    debit1_f1_Q5_Col35_multi_last_value_597,
    debit1_f1_Q5_Col62_multi_last_value_598,
    debit1_f1_Q5_Col63_multi_last_value_599,
    debit1_f1_Q5_Col64_multi_last_value_600,
    debit1_f1_Q5_Col65_multi_last_value_601,
    debit1_f1_Q5_Col66_multi_last_value_602,
    debit1_f1_Q5_Col67_multi_last_value_603,
    debit1_f1_Q5_Col68_multi_last_value_604,
    debit1_f1_Q5_Col69_multi_last_value_605,
    debit1_f1_Q5_Col70_multi_last_value_606,
    debit1_f1_Q5_Col71_multi_last_value_607,
    debit1_f1_Q5_Col36_multi_last_value_608,
    debit1_f1_Q5_Col72_multi_last_value_609,
    debit1_f1_Q5_Col73_multi_last_value_610,
    debit1_f1_Q5_Col74_multi_last_value_611,
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    debit1_f1_Q5_Col75_multi_last_value_612,
    debit1_f1_Q5_Col76_multi_last_value_613,
    debit1_f1_Q5_Col77_multi_last_value_614,
    debit1_f1_Q5_Col78_multi_last_value_615,
    debit1_f1_Q5_Col79_multi_last_value_616,
    debit1_f1_Q5_Col81_multi_last_value_617,
    debit1_f1_Q5_Col37_multi_last_value_618,
    debit1_f1_Q5_Col82_multi_last_value_619,
    debit1_f1_Q5_Col83_multi_last_value_620,
    debit1_f1_Q5_Col84_multi_last_value_621,
    debit1_f1_Q5_Col85_multi_last_value_622,
    debit1_f1_Q5_Col87_multi_last_value_623,
    debit1_f1_Q5_Col88_multi_last_value_624,
    debit1_f1_Q5_Col89_multi_last_value_625,
    debit1_f1_Q5_Col90_multi_last_value_626,
    debit1_f1_Q5_Col91_multi_last_value_627,
    debit1_f1_Q5_Col38_multi_last_value_628,
    debit1_f1_Q5_Col92_multi_last_value_629,
    debit1_f1_Q5_Col93_multi_last_value_630,
    debit1_f1_Q5_Col95_multi_last_value_631,
    debit1_f1_Q5_Col96_multi_last_value_632,
    debit1_f1_Q5_Col97_multi_last_value_633,
    debit1_f1_Q5_Col98_multi_last_value_634,
    debit1_f1_Q5_Col99_multi_last_value_635,
    debit1_f1_Q5_Col39_multi_last_value_636,
    debit1_f1_Q5_Col40_multi_last_value_637,
    debit1_f1_Q5_Col41_multi_last_value_638
from
(
select
    `Q5_Col100` as Q5_Col100_1,
    `Q5_Col101` as flatten_request_Q5_Col101_original_0,
    `Q5_Col100` as flatten_request_Q5_Col100_original_1,
    `Q5_Col0` as flatten_request_Q5_Col0_original_639,
    `Q5_Col102` as flatten_request_Q5_Col102_original_640
from
    `train`
)as out0
join
(
select
    `train`.`Q5_Col100` as Q5_Col100_3,
    `feedback_Q5_Col100`.`Q5_Col203` as feedback_Q5_Col203_multi_direct_2,
    `feedback_Q5_Col100`.`Q5_Col101` as feedback_Q5_Col101_multi_direct_3,
    `feedback_Q5_Col100`.`Q5_Col1` as feedback_Q5_Col1_multi_direct_4,
    `CUST_f7_Q5_Col0`.`Q5_Col147` as CUST_f7_Q5_Col147_multi_direct_5,
    `CUST_f7_Q5_Col0`.`Q5_Col154` as CUST_f7_Q5_Col154_multi_direct_6,
    `CUST_f7_Q5_Col0`.`Q5_Col153` as CUST_f7_Q5_Col153_multi_direct_7,
    `CUST_f7_Q5_Col0`.`Q5_Col150` as CUST_f7_Q5_Col150_multi_direct_8,
    `CUST_f7_Q5_Col0`.`Q5_Col149` as CUST_f7_Q5_Col149_multi_direct_9,
    `CUST_f7_Q5_Col0`.`Q5_Col1` as CUST_f7_Q5_Col1_multi_direct_10,
    `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col267` as
        sag_efs_tbproduct_F_b_Q5_Col267_multi_last_value_11,
    `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col353` as
        sag_efs_tbproduct_F_b_Q5_Col353_multi_last_value_12,
    `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col355` as
        sag_efs_tbproduct_F_b_Q5_Col355_multi_last_value_13,
    `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col232` as
        sag_efs_tbproduct_F_b_Q5_Col232_multi_last_value_14,
    `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col278` as
        sag_efs_tbproduct_F_b_Q5_Col278_multi_last_value_15,
```

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692     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col233` as
            sag_efs_tbproduct_F_b_Q5_Col233_multi_last_value_16,
693     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col297` as
            sag_efs_tbproduct_F_b_Q5_Col297_multi_last_value_17,
694     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col250` as
            sag_efs_tbproduct_F_b_Q5_Col250_multi_last_value_18,
695     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col349` as
            sag_efs_tbproduct_F_b_Q5_Col349_multi_last_value_19,
696     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col352` as
            sag_efs_tbproduct_F_b_Q5_Col352_multi_last_value_20,
697     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col285` as
            sag_efs_tbproduct_F_b_Q5_Col285_multi_last_value_21,
698     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col317` as
            sag_efs_tbproduct_F_b_Q5_Col317_multi_last_value_22,
699     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col219` as
            sag_efs_tbproduct_F_b_Q5_Col219_multi_last_value_23,
700     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col280` as
            sag_efs_tbproduct_F_b_Q5_Col280_multi_last_value_24,
701     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col235` as
            sag_efs_tbproduct_F_b_Q5_Col235_multi_last_value_25,
702     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col282` as
            sag_efs_tbproduct_F_b_Q5_Col282_multi_last_value_26,
703     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col237` as
            sag_efs_tbproduct_F_b_Q5_Col237_multi_last_value_27,
704     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col243` as
            sag_efs_tbproduct_F_b_Q5_Col243_multi_last_value_28,
705     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col225` as
            sag_efs_tbproduct_F_b_Q5_Col225_multi_last_value_29,
706     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col223` as
            sag_efs_tbproduct_F_b_Q5_Col223_multi_last_value_30,
707     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col310` as
            sag_efs_tbproduct_F_b_Q5_Col310_multi_last_value_31,
708     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col238` as
            sag_efs_tbproduct_F_b_Q5_Col238_multi_last_value_32,
709     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col201` as
            sag_efs_tbproduct_F_b_Q5_Col201_multi_last_value_33,
710     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col299` as
            sag_efs_tbproduct_F_b_Q5_Col299_multi_last_value_34,
711     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col265` as
            sag_efs_tbproduct_F_b_Q5_Col265_multi_last_value_35,
712     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col224` as
            sag_efs_tbproduct_F_b_Q5_Col224_multi_last_value_36,
713     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col227` as
            sag_efs_tbproduct_F_b_Q5_Col227_multi_last_value_37,
714     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col303` as
            sag_efs_tbproduct_F_b_Q5_Col303_multi_last_value_38,
715     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col226` as
            sag_efs_tbproduct_F_b_Q5_Col226_multi_last_value_39,
716     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col283` as
            sag_efs_tbproduct_F_b_Q5_Col283_multi_last_value_40,
717     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col221` as
            sag_efs_tbproduct_F_b_Q5_Col221_multi_last_value_41,
718     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col276` as
            sag_efs_tbproduct_F_b_Q5_Col276_multi_last_value_42,
719     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col311` as
            sag_efs_tbproduct_F_b_Q5_Col311_multi_last_value_43,
720     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col318` as
            sag_efs_tbproduct_F_b_Q5_Col318_multi_last_value_44,
721     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col228` as
            sag_efs_tbproduct_F_b_Q5_Col228_multi_last_value_45,
```

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722     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col343` as
            sag_efs_tbproduct_F_b_Q5_Col343_multi_last_value_46,
723     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col344` as
            sag_efs_tbproduct_F_b_Q5_Col344_multi_last_value_47,
724     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col246` as
            sag_efs_tbproduct_F_b_Q5_Col246_multi_last_value_48,
725     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col247` as
            sag_efs_tbproduct_F_b_Q5_Col247_multi_last_value_49,
726     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col248` as
            sag_efs_tbproduct_F_b_Q5_Col248_multi_last_value_50,
727     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col350` as
            sag_efs_tbproduct_F_b_Q5_Col350_multi_last_value_51,
728     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col240` as
            sag_efs_tbproduct_F_b_Q5_Col240_multi_last_value_52,
729     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col309` as
            sag_efs_tbproduct_F_b_Q5_Col309_multi_last_value_53,
730     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col212` as
            sag_efs_tbproduct_F_b_Q5_Col212_multi_last_value_54,
731     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col333` as
            sag_efs_tbproduct_F_b_Q5_Col333_multi_last_value_55,
732     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col332` as
            sag_efs_tbproduct_F_b_Q5_Col332_multi_last_value_56,
733     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col342` as
            sag_efs_tbproduct_F_b_Q5_Col342_multi_last_value_57,
734     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col341` as
            sag_efs_tbproduct_F_b_Q5_Col341_multi_last_value_58,
735     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col337` as
            sag_efs_tbproduct_F_b_Q5_Col337_multi_last_value_59,
736     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col339` as
            sag_efs_tbproduct_F_b_Q5_Col339_multi_last_value_60,
737     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col335` as
            sag_efs_tbproduct_F_b_Q5_Col335_multi_last_value_61,
738     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col334` as
            sag_efs_tbproduct_F_b_Q5_Col334_multi_last_value_62,
739     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col336` as
            sag_efs_tbproduct_F_b_Q5_Col336_multi_last_value_63,
740     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col340` as
            sag_efs_tbproduct_F_b_Q5_Col340_multi_last_value_64,
741     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col239` as
            sag_efs_tbproduct_F_b_Q5_Col239_multi_last_value_65,
742     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col293` as
            sag_efs_tbproduct_F_b_Q5_Col293_multi_last_value_66,
743     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col231` as
            sag_efs_tbproduct_F_b_Q5_Col231_multi_last_value_67,
744     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col338` as
            sag_efs_tbproduct_F_b_Q5_Col338_multi_last_value_68,
745     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col274` as
            sag_efs_tbproduct_F_b_Q5_Col274_multi_last_value_69,
746     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col270` as
            sag_efs_tbproduct_F_b_Q5_Col270_multi_last_value_70,
747     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col322` as
            sag_efs_tbproduct_F_b_Q5_Col322_multi_last_value_71,
748     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col321` as
            sag_efs_tbproduct_F_b_Q5_Col321_multi_last_value_72,
749     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col330` as
            sag_efs_tbproduct_F_b_Q5_Col330_multi_last_value_73,
750     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col326` as
            sag_efs_tbproduct_F_b_Q5_Col326_multi_last_value_74,
751     `sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645`.`Q5_Col328` as
            sag_efs_tbproduct_F_b_Q5_Col328_multi_last_value_75,
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752     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col324‘ as
            sag_efs_tbproduct_F_b_Q5_Col324_multi_last_value_76,
753     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col323‘ as
            sag_efs_tbproduct_F_b_Q5_Col323_multi_last_value_77,
754     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col325‘ as
            sag_efs_tbproduct_F_b_Q5_Col325_multi_last_value_78,
755     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col329‘ as
            sag_efs_tbproduct_F_b_Q5_Col329_multi_last_value_79,
756     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col316‘ as
            sag_efs_tbproduct_F_b_Q5_Col316_multi_last_value_80,
757     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col313‘ as
            sag_efs_tbproduct_F_b_Q5_Col313_multi_last_value_81,
758     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col315‘ as
            sag_efs_tbproduct_F_b_Q5_Col315_multi_last_value_82,
759     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col312‘ as
            sag_efs_tbproduct_F_b_Q5_Col312_multi_last_value_83,
760     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col314‘ as
            sag_efs_tbproduct_F_b_Q5_Col314_multi_last_value_84,
761     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col319‘ as
            sag_efs_tbproduct_F_b_Q5_Col319_multi_last_value_85,
762     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col327‘ as
            sag_efs_tbproduct_F_b_Q5_Col327_multi_last_value_86,
763     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col273‘ as
            sag_efs_tbproduct_F_b_Q5_Col273_multi_last_value_87,
764     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col230‘ as
            sag_efs_tbproduct_F_b_Q5_Col230_multi_last_value_88,
765     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col345‘ as
            sag_efs_tbproduct_F_b_Q5_Col345_multi_last_value_89,
766     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col347‘ as
            sag_efs_tbproduct_F_b_Q5_Col347_multi_last_value_90,
767     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col346‘ as
            sag_efs_tbproduct_F_b_Q5_Col346_multi_last_value_91,
768     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col236‘ as
            sag_efs_tbproduct_F_b_Q5_Col236_multi_last_value_92,
769     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col289‘ as
            sag_efs_tbproduct_F_b_Q5_Col289_multi_last_value_93,
770     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col348‘ as
            sag_efs_tbproduct_F_b_Q5_Col348_multi_last_value_94,
771     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col291‘ as
            sag_efs_tbproduct_F_b_Q5_Col291_multi_last_value_95,
772     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col304‘ as
            sag_efs_tbproduct_F_b_Q5_Col304_multi_last_value_96,
773     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col305‘ as
            sag_efs_tbproduct_F_b_Q5_Col305_multi_last_value_97,
774     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col306‘ as
            sag_efs_tbproduct_F_b_Q5_Col306_multi_last_value_98,
775     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col259‘ as
            sag_efs_tbproduct_F_b_Q5_Col259_multi_last_value_99,
776     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col254‘ as
            sag_efs_tbproduct_F_b_Q5_Col254_multi_last_value_100,
777     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col251‘ as
            sag_efs_tbproduct_F_b_Q5_Col251_multi_last_value_101,
778     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col298‘ as
            sag_efs_tbproduct_F_b_Q5_Col298_multi_last_value_102,
779     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col275‘ as
            sag_efs_tbproduct_F_b_Q5_Col275_multi_last_value_103,
780     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col320‘ as
            sag_efs_tbproduct_F_b_Q5_Col320_multi_last_value_104,
781     ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col351‘ as
            sag_efs_tbproduct_F_b_Q5_Col351_multi_last_value_105,
782     ‘LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col172‘ as LINK2_f6_Q5_Col172_multi_last_value_106,
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783     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col189` as LINK2_f6_Q5_Col189_multi_last_value_107,
784     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col163` as LINK2_f6_Q5_Col163_multi_last_value_108,
785     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col186` as LINK2_f6_Q5_Col186_multi_last_value_109,
786     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col181` as LINK2_f6_Q5_Col181_multi_last_value_110,
787     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col195` as LINK2_f6_Q5_Col195_multi_last_value_111,
788     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col187` as LINK2_f6_Q5_Col187_multi_last_value_112,
789     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col173` as LINK2_f6_Q5_Col173_multi_last_value_113,
790     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col170` as LINK2_f6_Q5_Col170_multi_last_value_114,
791     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col159` as LINK2_f6_Q5_Col159_multi_last_value_115,
792     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col156` as LINK2_f6_Q5_Col156_multi_last_value_116,
793     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col179` as LINK2_f6_Q5_Col179_multi_last_value_117,
794     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col190` as LINK2_f6_Q5_Col190_multi_last_value_118,
795     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col162` as LINK2_f6_Q5_Col162_multi_last_value_119,
796     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col161` as LINK2_f6_Q5_Col161_multi_last_value_120,
797     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col188` as LINK2_f6_Q5_Col188_multi_last_value_121,
798     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col166` as LINK2_f6_Q5_Col166_multi_last_value_122,
799     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col193` as LINK2_f6_Q5_Col193_multi_last_value_123,
800     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col167` as LINK2_f6_Q5_Col167_multi_last_value_124,
801     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col180` as LINK2_f6_Q5_Col180_multi_last_value_125,
802     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col185` as LINK2_f6_Q5_Col185_multi_last_value_126,
803     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col165` as LINK2_f6_Q5_Col165_multi_last_value_127,
804     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col174` as LINK2_f6_Q5_Col174_multi_last_value_128,
805     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col176` as LINK2_f6_Q5_Col176_multi_last_value_129,
806     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col175` as LINK2_f6_Q5_Col175_multi_last_value_130,
807     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col177` as LINK2_f6_Q5_Col177_multi_last_value_131,
808     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col182` as LINK2_f6_Q5_Col182_multi_last_value_132,
809     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col191` as LINK2_f6_Q5_Col191_multi_last_value_133,
810     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col199` as LINK2_f6_Q5_Col199_multi_last_value_134,
811     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col200` as LINK2_f6_Q5_Col200_multi_last_value_135,
812     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col155` as LINK2_f6_Q5_Col155_multi_last_value_136,
813     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col168` as LINK2_f6_Q5_Col168_multi_last_value_137,
814     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col171` as LINK2_f6_Q5_Col171_multi_last_value_138,
815     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col178` as LINK2_f6_Q5_Col178_multi_last_value_139,
816     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col192` as LINK2_f6_Q5_Col192_multi_last_value_140,
817     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col158` as LINK2_f6_Q5_Col158_multi_last_value_141,
818     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col197` as LINK2_f6_Q5_Col197_multi_last_value_142,
819     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col160` as LINK2_f6_Q5_Col160_multi_last_value_143,
820     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col184` as LINK2_f6_Q5_Col184_multi_last_value_144,
821     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col198` as LINK2_f6_Q5_Col198_multi_last_value_145,
822     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col169` as LINK2_f6_Q5_Col169_multi_last_value_146,
823     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col183` as LINK2_f6_Q5_Col183_multi_last_value_147,
824     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col164` as LINK2_f6_Q5_Col164_multi_last_value_148,
825     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col157` as LINK2_f6_Q5_Col157_multi_last_value_149,
826     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col196` as LINK2_f6_Q5_Col196_multi_last_value_150,
827     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col194` as LINK2_f6_Q5_Col194_multi_last_value_151,
828     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col33` as LINK2_f6_Q5_Col33_multi_last_value_152,
829     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col42` as LINK2_f6_Q5_Col42_multi_last_value_153,
830     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col43` as LINK2_f6_Q5_Col43_multi_last_value_154,
831     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col44` as LINK2_f6_Q5_Col44_multi_last_value_155,
832     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col45` as LINK2_f6_Q5_Col45_multi_last_value_156,
833     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col46` as LINK2_f6_Q5_Col46_multi_last_value_157,
834     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col47` as LINK2_f6_Q5_Col47_multi_last_value_158,
835     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col48` as LINK2_f6_Q5_Col48_multi_last_value_159,
836     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col49` as LINK2_f6_Q5_Col49_multi_last_value_160,
837     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col50` as LINK2_f6_Q5_Col50_multi_last_value_161,
838     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col51` as LINK2_f6_Q5_Col51_multi_last_value_162,
839     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col34` as LINK2_f6_Q5_Col34_multi_last_value_163,
840     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col52` as LINK2_f6_Q5_Col52_multi_last_value_164,
841     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col53` as LINK2_f6_Q5_Col53_multi_last_value_165,
842     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col54` as LINK2_f6_Q5_Col54_multi_last_value_166,
843     `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col55` as LINK2_f6_Q5_Col55_multi_last_value_167,
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    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col56` as LINK2_f6_Q5_Col56_multi_last_value_168,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col57` as LINK2_f6_Q5_Col57_multi_last_value_169,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col58` as LINK2_f6_Q5_Col58_multi_last_value_170,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col59` as LINK2_f6_Q5_Col59_multi_last_value_171,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col60` as LINK2_f6_Q5_Col60_multi_last_value_172,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col61` as LINK2_f6_Q5_Col61_multi_last_value_173,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col35` as LINK2_f6_Q5_Col35_multi_last_value_174,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col62` as LINK2_f6_Q5_Col62_multi_last_value_175,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col63` as LINK2_f6_Q5_Col63_multi_last_value_176,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col64` as LINK2_f6_Q5_Col64_multi_last_value_177,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col65` as LINK2_f6_Q5_Col65_multi_last_value_178,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col66` as LINK2_f6_Q5_Col66_multi_last_value_179,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col67` as LINK2_f6_Q5_Col67_multi_last_value_180,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col68` as LINK2_f6_Q5_Col68_multi_last_value_181,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col69` as LINK2_f6_Q5_Col69_multi_last_value_182,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col70` as LINK2_f6_Q5_Col70_multi_last_value_183,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col71` as LINK2_f6_Q5_Col71_multi_last_value_184,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col36` as LINK2_f6_Q5_Col36_multi_last_value_185,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col72` as LINK2_f6_Q5_Col72_multi_last_value_186,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col73` as LINK2_f6_Q5_Col73_multi_last_value_187,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col74` as LINK2_f6_Q5_Col74_multi_last_value_188,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col75` as LINK2_f6_Q5_Col75_multi_last_value_189,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col76` as LINK2_f6_Q5_Col76_multi_last_value_190,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col77` as LINK2_f6_Q5_Col77_multi_last_value_191,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col78` as LINK2_f6_Q5_Col78_multi_last_value_192,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col79` as LINK2_f6_Q5_Col79_multi_last_value_193,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col80` as LINK2_f6_Q5_Col80_multi_last_value_194,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col81` as LINK2_f6_Q5_Col81_multi_last_value_195,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col37` as LINK2_f6_Q5_Col37_multi_last_value_196,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col82` as LINK2_f6_Q5_Col82_multi_last_value_197,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col38` as LINK2_f6_Q5_Col38_multi_last_value_198,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col39` as LINK2_f6_Q5_Col39_multi_last_value_199,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col40` as LINK2_f6_Q5_Col40_multi_last_value_200,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col41` as LINK2_f6_Q5_Col41_multi_last_value_201,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col201` as LINK2_f6_Q5_Col201_multi_last_value_202,
    `LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col202` as LINK2_f6_Q5_Col202_multi_last_value_203,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col172` as LINK1_f5_Q5_Col172_multi_last_value_204,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col189` as LINK1_f5_Q5_Col189_multi_last_value_205,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col186` as LINK1_f5_Q5_Col186_multi_last_value_206,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col181` as LINK1_f5_Q5_Col181_multi_last_value_207,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col195` as LINK1_f5_Q5_Col195_multi_last_value_208,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col187` as LINK1_f5_Q5_Col187_multi_last_value_209,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col173` as LINK1_f5_Q5_Col173_multi_last_value_210,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col159` as LINK1_f5_Q5_Col159_multi_last_value_211,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col156` as LINK1_f5_Q5_Col156_multi_last_value_212,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col179` as LINK1_f5_Q5_Col179_multi_last_value_213,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col190` as LINK1_f5_Q5_Col190_multi_last_value_214,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col162` as LINK1_f5_Q5_Col162_multi_last_value_215,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col188` as LINK1_f5_Q5_Col188_multi_last_value_216,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col166` as LINK1_f5_Q5_Col166_multi_last_value_217,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col167` as LINK1_f5_Q5_Col167_multi_last_value_218,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col185` as LINK1_f5_Q5_Col185_multi_last_value_219,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col165` as LINK1_f5_Q5_Col165_multi_last_value_220,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col174` as LINK1_f5_Q5_Col174_multi_last_value_221,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col176` as LINK1_f5_Q5_Col176_multi_last_value_222,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col175` as LINK1_f5_Q5_Col175_multi_last_value_223,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col182` as LINK1_f5_Q5_Col182_multi_last_value_224,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col199` as LINK1_f5_Q5_Col199_multi_last_value_225,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col200` as LINK1_f5_Q5_Col200_multi_last_value_226,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col168` as LINK1_f5_Q5_Col168_multi_last_value_227,
    `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col171` as LINK1_f5_Q5_Col171_multi_last_value_228,
```

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905     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col197` as LINK1_f5_Q5_Col197_multi_last_value_229,
906     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col160` as LINK1_f5_Q5_Col160_multi_last_value_230,
907     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col184` as LINK1_f5_Q5_Col184_multi_last_value_231,
908     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col198` as LINK1_f5_Q5_Col198_multi_last_value_232,
909     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col169` as LINK1_f5_Q5_Col169_multi_last_value_233,
910     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col183` as LINK1_f5_Q5_Col183_multi_last_value_234,
911     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col164` as LINK1_f5_Q5_Col164_multi_last_value_235,
912     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col157` as LINK1_f5_Q5_Col157_multi_last_value_236,
913     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col196` as LINK1_f5_Q5_Col196_multi_last_value_237,
914     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col194` as LINK1_f5_Q5_Col194_multi_last_value_238,
915     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col33` as LINK1_f5_Q5_Col33_multi_last_value_239,
916     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col42` as LINK1_f5_Q5_Col42_multi_last_value_240,
917     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col44` as LINK1_f5_Q5_Col44_multi_last_value_241,
918     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col45` as LINK1_f5_Q5_Col45_multi_last_value_242,
919     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col46` as LINK1_f5_Q5_Col46_multi_last_value_243,
920     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col47` as LINK1_f5_Q5_Col47_multi_last_value_244,
921     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col48` as LINK1_f5_Q5_Col48_multi_last_value_245,
922     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col49` as LINK1_f5_Q5_Col49_multi_last_value_246,
923     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col51` as LINK1_f5_Q5_Col51_multi_last_value_247,
924     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col52` as LINK1_f5_Q5_Col52_multi_last_value_248,
925     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col53` as LINK1_f5_Q5_Col53_multi_last_value_249,
926     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col54` as LINK1_f5_Q5_Col54_multi_last_value_250,
927     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col55` as LINK1_f5_Q5_Col55_multi_last_value_251,
928     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col56` as LINK1_f5_Q5_Col56_multi_last_value_252,
929     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col59` as LINK1_f5_Q5_Col59_multi_last_value_253,
930     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col61` as LINK1_f5_Q5_Col61_multi_last_value_254,
931     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col62` as LINK1_f5_Q5_Col62_multi_last_value_255,
932     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col63` as LINK1_f5_Q5_Col63_multi_last_value_256,
933     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col64` as LINK1_f5_Q5_Col64_multi_last_value_257,
934     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col65` as LINK1_f5_Q5_Col65_multi_last_value_258,
935     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col66` as LINK1_f5_Q5_Col66_multi_last_value_259,
936     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col67` as LINK1_f5_Q5_Col67_multi_last_value_260,
937     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col68` as LINK1_f5_Q5_Col68_multi_last_value_261,
938     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col69` as LINK1_f5_Q5_Col69_multi_last_value_262,
939     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col70` as LINK1_f5_Q5_Col70_multi_last_value_263,
940     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col36` as LINK1_f5_Q5_Col36_multi_last_value_264,
941     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col74` as LINK1_f5_Q5_Col74_multi_last_value_265,
942     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col75` as LINK1_f5_Q5_Col75_multi_last_value_266,
943     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col76` as LINK1_f5_Q5_Col76_multi_last_value_267,
944     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col77` as LINK1_f5_Q5_Col77_multi_last_value_268,
945     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col78` as LINK1_f5_Q5_Col78_multi_last_value_269,
946     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col79` as LINK1_f5_Q5_Col79_multi_last_value_270,
947     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col80` as LINK1_f5_Q5_Col80_multi_last_value_271,
948     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col81` as LINK1_f5_Q5_Col81_multi_last_value_272,
949     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col37` as LINK1_f5_Q5_Col37_multi_last_value_273,
950     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col82` as LINK1_f5_Q5_Col82_multi_last_value_274,
951     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col39` as LINK1_f5_Q5_Col39_multi_last_value_275,
952     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col40` as LINK1_f5_Q5_Col40_multi_last_value_276,
953     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col201` as LINK1_f5_Q5_Col201_multi_last_value_277,
954     `LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col202` as LINK1_f5_Q5_Col202_multi_last_value_278,
955     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col104` as AUM_f4_Q5_Col104_multi_last_value_279,
956     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col114` as AUM_f4_Q5_Col114_multi_last_value_280,
957     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col119` as AUM_f4_Q5_Col119_multi_last_value_281,
958     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col121` as AUM_f4_Q5_Col121_multi_last_value_282,
959     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col120` as AUM_f4_Q5_Col120_multi_last_value_283,
960     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col113` as AUM_f4_Q5_Col113_multi_last_value_284,
961     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col118` as AUM_f4_Q5_Col118_multi_last_value_285,
962     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col122` as AUM_f4_Q5_Col122_multi_last_value_286,
963     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col117` as AUM_f4_Q5_Col117_multi_last_value_287,
964     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col115` as AUM_f4_Q5_Col115_multi_last_value_288,
965     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col143` as AUM_f4_Q5_Col143_multi_last_value_289,
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966     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col144` as AUM_f4_Q5_Col144_multi_last_value_290,
967     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col124` as AUM_f4_Q5_Col124_multi_last_value_291,
968     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col129` as AUM_f4_Q5_Col129_multi_last_value_292,
969     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col131` as AUM_f4_Q5_Col131_multi_last_value_293,
970     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col123` as AUM_f4_Q5_Col123_multi_last_value_294,
971     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col128` as AUM_f4_Q5_Col128_multi_last_value_295,
972     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col132` as AUM_f4_Q5_Col132_multi_last_value_296,
973     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col30` as AUM_f4_Q5_Col30_multi_last_value_297,
974     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col109` as AUM_f4_Q5_Col109_multi_last_value_298,
975     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col111` as AUM_f4_Q5_Col111_multi_last_value_299,
976     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col110` as AUM_f4_Q5_Col110_multi_last_value_300,
977     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col139` as AUM_f4_Q5_Col139_multi_last_value_301,
978     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col146` as AUM_f4_Q5_Col146_multi_last_value_302,
979     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col141` as AUM_f4_Q5_Col141_multi_last_value_303,
980     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col133` as AUM_f4_Q5_Col133_multi_last_value_304,
981     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col138` as AUM_f4_Q5_Col138_multi_last_value_305,
982     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col136` as AUM_f4_Q5_Col136_multi_last_value_306,
983     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col142` as AUM_f4_Q5_Col142_multi_last_value_307,
984     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col137` as AUM_f4_Q5_Col137_multi_last_value_308,
985     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col135` as AUM_f4_Q5_Col135_multi_last_value_309,
986     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col108` as AUM_f4_Q5_Col108_multi_last_value_310,
987     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col106` as AUM_f4_Q5_Col106_multi_last_value_311,
988     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col112` as AUM_f4_Q5_Col112_multi_last_value_312,
989     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col107` as AUM_f4_Q5_Col107_multi_last_value_313,
990     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col33` as AUM_f4_Q5_Col33_multi_last_value_314,
991     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col42` as AUM_f4_Q5_Col42_multi_last_value_315,
992     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col43` as AUM_f4_Q5_Col43_multi_last_value_316,
993     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col44` as AUM_f4_Q5_Col44_multi_last_value_317,
994     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col45` as AUM_f4_Q5_Col45_multi_last_value_318,
995     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col46` as AUM_f4_Q5_Col46_multi_last_value_319,
996     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col47` as AUM_f4_Q5_Col47_multi_last_value_320,
997     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col49` as AUM_f4_Q5_Col49_multi_last_value_321,
998     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col50` as AUM_f4_Q5_Col50_multi_last_value_322,
999     `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col51` as AUM_f4_Q5_Col51_multi_last_value_323,
1000    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col34` as AUM_f4_Q5_Col34_multi_last_value_324,
1001    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col52` as AUM_f4_Q5_Col52_multi_last_value_325,
1002    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col53` as AUM_f4_Q5_Col53_multi_last_value_326,
1003    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col54` as AUM_f4_Q5_Col54_multi_last_value_327,
1004    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col55` as AUM_f4_Q5_Col55_multi_last_value_328,
1005    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col56` as AUM_f4_Q5_Col56_multi_last_value_329,
1006    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col60` as AUM_f4_Q5_Col60_multi_last_value_330,
1007    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col61` as AUM_f4_Q5_Col61_multi_last_value_331,
1008    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col63` as AUM_f4_Q5_Col63_multi_last_value_332,
1009    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col64` as AUM_f4_Q5_Col64_multi_last_value_333,
1010    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col65` as AUM_f4_Q5_Col65_multi_last_value_334,
1011    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col67` as AUM_f4_Q5_Col67_multi_last_value_335,
1012    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col68` as AUM_f4_Q5_Col68_multi_last_value_336,
1013    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col69` as AUM_f4_Q5_Col69_multi_last_value_337,
1014    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col70` as AUM_f4_Q5_Col70_multi_last_value_338,
1015    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col71` as AUM_f4_Q5_Col71_multi_last_value_339,
1016    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col36` as AUM_f4_Q5_Col36_multi_last_value_340,
1017    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col73` as AUM_f4_Q5_Col73_multi_last_value_341,
1018    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col74` as AUM_f4_Q5_Col74_multi_last_value_342,
1019    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col75` as AUM_f4_Q5_Col75_multi_last_value_343,
1020    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col76` as AUM_f4_Q5_Col76_multi_last_value_344,
1021    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col77` as AUM_f4_Q5_Col77_multi_last_value_345,
1022    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col79` as AUM_f4_Q5_Col79_multi_last_value_346,
1023    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col80` as AUM_f4_Q5_Col80_multi_last_value_347,
1024    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col81` as AUM_f4_Q5_Col81_multi_last_value_348,
1025    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col82` as AUM_f4_Q5_Col82_multi_last_value_349,
1026    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col83` as AUM_f4_Q5_Col83_multi_last_value_350,
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    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col85` as AUM_f4_Q5_Col85_multi_last_value_351,
    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col38` as AUM_f4_Q5_Col38_multi_last_value_352,
    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col39` as AUM_f4_Q5_Col39_multi_last_value_353,
    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col40` as AUM_f4_Q5_Col40_multi_last_value_354,
    `AUM_f4_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col41` as AUM_f4_Q5_Col41_multi_last_value_355,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col7` as debit3_f3_Q5_Col7_multi_last_value_356,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col6` as debit3_f3_Q5_Col6_multi_last_value_357,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col3` as debit3_f3_Q5_Col3_multi_last_value_358,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col2` as debit3_f3_Q5_Col2_multi_last_value_359,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col21` as debit3_f3_Q5_Col21_multi_last_value_360,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col24` as debit3_f3_Q5_Col24_multi_last_value_361,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col9` as debit3_f3_Q5_Col9_multi_last_value_362,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col12` as debit3_f3_Q5_Col12_multi_last_value_363,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col8` as debit3_f3_Q5_Col8_multi_last_value_364,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col14` as debit3_f3_Q5_Col14_multi_last_value_365,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col27` as debit3_f3_Q5_Col27_multi_last_value_366,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col16` as debit3_f3_Q5_Col16_multi_last_value_367,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col5` as debit3_f3_Q5_Col5_multi_last_value_368,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col28` as debit3_f3_Q5_Col28_multi_last_value_369,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col30` as debit3_f3_Q5_Col30_multi_last_value_370,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col17` as debit3_f3_Q5_Col17_multi_last_value_371,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col20` as debit3_f3_Q5_Col20_multi_last_value_372,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col23` as debit3_f3_Q5_Col23_multi_last_value_373,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col13` as debit3_f3_Q5_Col13_multi_last_value_374,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col22` as debit3_f3_Q5_Col22_multi_last_value_375,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col25` as debit3_f3_Q5_Col25_multi_last_value_376,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col10` as debit3_f3_Q5_Col10_multi_last_value_377,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col4` as debit3_f3_Q5_Col4_multi_last_value_378,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col15` as debit3_f3_Q5_Col15_multi_last_value_379,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col18` as debit3_f3_Q5_Col18_multi_last_value_380,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col19` as debit3_f3_Q5_Col19_multi_last_value_381,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col11` as debit3_f3_Q5_Col11_multi_last_value_382,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col26` as debit3_f3_Q5_Col26_multi_last_value_383,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col32` as debit3_f3_Q5_Col32_multi_last_value_384,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col29` as debit3_f3_Q5_Col29_multi_last_value_385,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col33` as debit3_f3_Q5_Col33_multi_last_value_386,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col42` as debit3_f3_Q5_Col42_multi_last_value_387,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col43` as debit3_f3_Q5_Col43_multi_last_value_388,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col44` as debit3_f3_Q5_Col44_multi_last_value_389,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col45` as debit3_f3_Q5_Col45_multi_last_value_390,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col46` as debit3_f3_Q5_Col46_multi_last_value_391,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col47` as debit3_f3_Q5_Col47_multi_last_value_392,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col48` as debit3_f3_Q5_Col48_multi_last_value_393,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col49` as debit3_f3_Q5_Col49_multi_last_value_394,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col50` as debit3_f3_Q5_Col50_multi_last_value_395,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col51` as debit3_f3_Q5_Col51_multi_last_value_396,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col34` as debit3_f3_Q5_Col34_multi_last_value_397,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col52` as debit3_f3_Q5_Col52_multi_last_value_398,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col53` as debit3_f3_Q5_Col53_multi_last_value_399,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col54` as debit3_f3_Q5_Col54_multi_last_value_400,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col55` as debit3_f3_Q5_Col55_multi_last_value_401,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col56` as debit3_f3_Q5_Col56_multi_last_value_402,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col57` as debit3_f3_Q5_Col57_multi_last_value_403,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col58` as debit3_f3_Q5_Col58_multi_last_value_404,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col59` as debit3_f3_Q5_Col59_multi_last_value_405,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col60` as debit3_f3_Q5_Col60_multi_last_value_406,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col61` as debit3_f3_Q5_Col61_multi_last_value_407,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col35` as debit3_f3_Q5_Col35_multi_last_value_408,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col62` as debit3_f3_Q5_Col62_multi_last_value_409,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col63` as debit3_f3_Q5_Col63_multi_last_value_410,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col65` as debit3_f3_Q5_Col65_multi_last_value_411,
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    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col66` as debit3_f3_Q5_Col66_multi_last_value_412,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col67` as debit3_f3_Q5_Col67_multi_last_value_413,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col68` as debit3_f3_Q5_Col68_multi_last_value_414,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col69` as debit3_f3_Q5_Col69_multi_last_value_415,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col70` as debit3_f3_Q5_Col70_multi_last_value_416,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col71` as debit3_f3_Q5_Col71_multi_last_value_417,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col36` as debit3_f3_Q5_Col36_multi_last_value_418,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col72` as debit3_f3_Q5_Col72_multi_last_value_419,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col73` as debit3_f3_Q5_Col73_multi_last_value_420,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col74` as debit3_f3_Q5_Col74_multi_last_value_421,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col75` as debit3_f3_Q5_Col75_multi_last_value_422,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col76` as debit3_f3_Q5_Col76_multi_last_value_423,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col77` as debit3_f3_Q5_Col77_multi_last_value_424,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col78` as debit3_f3_Q5_Col78_multi_last_value_425,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col79` as debit3_f3_Q5_Col79_multi_last_value_426,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col80` as debit3_f3_Q5_Col80_multi_last_value_427,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col81` as debit3_f3_Q5_Col81_multi_last_value_428,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col37` as debit3_f3_Q5_Col37_multi_last_value_429,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col82` as debit3_f3_Q5_Col82_multi_last_value_430,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col83` as debit3_f3_Q5_Col83_multi_last_value_431,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col84` as debit3_f3_Q5_Col84_multi_last_value_432,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col85` as debit3_f3_Q5_Col85_multi_last_value_433,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col86` as debit3_f3_Q5_Col86_multi_last_value_434,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col87` as debit3_f3_Q5_Col87_multi_last_value_435,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col88` as debit3_f3_Q5_Col88_multi_last_value_436,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col89` as debit3_f3_Q5_Col89_multi_last_value_437,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col90` as debit3_f3_Q5_Col90_multi_last_value_438,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col91` as debit3_f3_Q5_Col91_multi_last_value_439,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col38` as debit3_f3_Q5_Col38_multi_last_value_440,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col92` as debit3_f3_Q5_Col92_multi_last_value_441,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col93` as debit3_f3_Q5_Col93_multi_last_value_442,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col94` as debit3_f3_Q5_Col94_multi_last_value_443,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col95` as debit3_f3_Q5_Col95_multi_last_value_444,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col96` as debit3_f3_Q5_Col96_multi_last_value_445,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col97` as debit3_f3_Q5_Col97_multi_last_value_446,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col98` as debit3_f3_Q5_Col98_multi_last_value_447,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col99` as debit3_f3_Q5_Col99_multi_last_value_448,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col39` as debit3_f3_Q5_Col39_multi_last_value_449,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col40` as debit3_f3_Q5_Col40_multi_last_value_450,
    `debit3_f3_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col41` as debit3_f3_Q5_Col41_multi_last_value_451,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col7` as debit2_f2_Q5_Col7_multi_last_value_452,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col6` as debit2_f2_Q5_Col6_multi_last_value_453,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col3` as debit2_f2_Q5_Col3_multi_last_value_454,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col2` as debit2_f2_Q5_Col2_multi_last_value_455,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col21` as debit2_f2_Q5_Col21_multi_last_value_456,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col24` as debit2_f2_Q5_Col24_multi_last_value_457,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col9` as debit2_f2_Q5_Col9_multi_last_value_458,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col12` as debit2_f2_Q5_Col12_multi_last_value_459,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col8` as debit2_f2_Q5_Col8_multi_last_value_460,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col14` as debit2_f2_Q5_Col14_multi_last_value_461,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col27` as debit2_f2_Q5_Col27_multi_last_value_462,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col16` as debit2_f2_Q5_Col16_multi_last_value_463,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col5` as debit2_f2_Q5_Col5_multi_last_value_464,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col28` as debit2_f2_Q5_Col28_multi_last_value_465,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col30` as debit2_f2_Q5_Col30_multi_last_value_466,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col17` as debit2_f2_Q5_Col17_multi_last_value_467,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col20` as debit2_f2_Q5_Col20_multi_last_value_468,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col23` as debit2_f2_Q5_Col23_multi_last_value_469,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col13` as debit2_f2_Q5_Col13_multi_last_value_470,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col22` as debit2_f2_Q5_Col22_multi_last_value_471,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col25` as debit2_f2_Q5_Col25_multi_last_value_472,
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    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col10` as debit2_f2_Q5_Col10_multi_last_value_473,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col4` as debit2_f2_Q5_Col4_multi_last_value_474,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col15` as debit2_f2_Q5_Col15_multi_last_value_475,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col18` as debit2_f2_Q5_Col18_multi_last_value_476,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col19` as debit2_f2_Q5_Col19_multi_last_value_477,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col11` as debit2_f2_Q5_Col11_multi_last_value_478,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col26` as debit2_f2_Q5_Col26_multi_last_value_479,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col32` as debit2_f2_Q5_Col32_multi_last_value_480,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col29` as debit2_f2_Q5_Col29_multi_last_value_481,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col33` as debit2_f2_Q5_Col33_multi_last_value_482,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col42` as debit2_f2_Q5_Col42_multi_last_value_483,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col43` as debit2_f2_Q5_Col43_multi_last_value_484,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col44` as debit2_f2_Q5_Col44_multi_last_value_485,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col45` as debit2_f2_Q5_Col45_multi_last_value_486,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col46` as debit2_f2_Q5_Col46_multi_last_value_487,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col47` as debit2_f2_Q5_Col47_multi_last_value_488,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col48` as debit2_f2_Q5_Col48_multi_last_value_489,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col49` as debit2_f2_Q5_Col49_multi_last_value_490,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col50` as debit2_f2_Q5_Col50_multi_last_value_491,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col51` as debit2_f2_Q5_Col51_multi_last_value_492,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col34` as debit2_f2_Q5_Col34_multi_last_value_493,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col52` as debit2_f2_Q5_Col52_multi_last_value_494,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col53` as debit2_f2_Q5_Col53_multi_last_value_495,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col54` as debit2_f2_Q5_Col54_multi_last_value_496,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col55` as debit2_f2_Q5_Col55_multi_last_value_497,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col56` as debit2_f2_Q5_Col56_multi_last_value_498,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col57` as debit2_f2_Q5_Col57_multi_last_value_499,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col58` as debit2_f2_Q5_Col58_multi_last_value_500,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col59` as debit2_f2_Q5_Col59_multi_last_value_501,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col60` as debit2_f2_Q5_Col60_multi_last_value_502,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col61` as debit2_f2_Q5_Col61_multi_last_value_503,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col35` as debit2_f2_Q5_Col35_multi_last_value_504,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col62` as debit2_f2_Q5_Col62_multi_last_value_505,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col63` as debit2_f2_Q5_Col63_multi_last_value_506,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col65` as debit2_f2_Q5_Col65_multi_last_value_507,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col66` as debit2_f2_Q5_Col66_multi_last_value_508,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col67` as debit2_f2_Q5_Col67_multi_last_value_509,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col68` as debit2_f2_Q5_Col68_multi_last_value_510,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col69` as debit2_f2_Q5_Col69_multi_last_value_511,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col70` as debit2_f2_Q5_Col70_multi_last_value_512,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col71` as debit2_f2_Q5_Col71_multi_last_value_513,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col36` as debit2_f2_Q5_Col36_multi_last_value_514,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col72` as debit2_f2_Q5_Col72_multi_last_value_515,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col73` as debit2_f2_Q5_Col73_multi_last_value_516,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col74` as debit2_f2_Q5_Col74_multi_last_value_517,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col75` as debit2_f2_Q5_Col75_multi_last_value_518,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col76` as debit2_f2_Q5_Col76_multi_last_value_519,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col77` as debit2_f2_Q5_Col77_multi_last_value_520,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col78` as debit2_f2_Q5_Col78_multi_last_value_521,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col79` as debit2_f2_Q5_Col79_multi_last_value_522,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col80` as debit2_f2_Q5_Col80_multi_last_value_523,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col81` as debit2_f2_Q5_Col81_multi_last_value_524,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col37` as debit2_f2_Q5_Col37_multi_last_value_525,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col82` as debit2_f2_Q5_Col82_multi_last_value_526,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col83` as debit2_f2_Q5_Col83_multi_last_value_527,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col84` as debit2_f2_Q5_Col84_multi_last_value_528,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col85` as debit2_f2_Q5_Col85_multi_last_value_529,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col86` as debit2_f2_Q5_Col86_multi_last_value_530,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col87` as debit2_f2_Q5_Col87_multi_last_value_531,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col88` as debit2_f2_Q5_Col88_multi_last_value_532,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col89` as debit2_f2_Q5_Col89_multi_last_value_533,
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    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col90` as debit2_f2_Q5_Col90_multi_last_value_534,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col91` as debit2_f2_Q5_Col91_multi_last_value_535,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col38` as debit2_f2_Q5_Col38_multi_last_value_536,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col92` as debit2_f2_Q5_Col92_multi_last_value_537,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col93` as debit2_f2_Q5_Col93_multi_last_value_538,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col94` as debit2_f2_Q5_Col94_multi_last_value_539,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col95` as debit2_f2_Q5_Col95_multi_last_value_540,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col96` as debit2_f2_Q5_Col96_multi_last_value_541,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col97` as debit2_f2_Q5_Col97_multi_last_value_542,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col98` as debit2_f2_Q5_Col98_multi_last_value_543,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col99` as debit2_f2_Q5_Col99_multi_last_value_544,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col39` as debit2_f2_Q5_Col39_multi_last_value_545,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col40` as debit2_f2_Q5_Col40_multi_last_value_546,
    `debit2_f2_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col41` as debit2_f2_Q5_Col41_multi_last_value_547,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col7` as debit1_f1_Q5_Col7_multi_last_value_548,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col6` as debit1_f1_Q5_Col6_multi_last_value_549,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col31` as debit1_f1_Q5_Col31_multi_last_value_550,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col3` as debit1_f1_Q5_Col3_multi_last_value_551,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col2` as debit1_f1_Q5_Col2_multi_last_value_552,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col24` as debit1_f1_Q5_Col24_multi_last_value_553,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col9` as debit1_f1_Q5_Col9_multi_last_value_554,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col12` as debit1_f1_Q5_Col12_multi_last_value_555,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col8` as debit1_f1_Q5_Col8_multi_last_value_556,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col14` as debit1_f1_Q5_Col14_multi_last_value_557,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col27` as debit1_f1_Q5_Col27_multi_last_value_558,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col16` as debit1_f1_Q5_Col16_multi_last_value_559,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col5` as debit1_f1_Q5_Col5_multi_last_value_560,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col28` as debit1_f1_Q5_Col28_multi_last_value_561,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col30` as debit1_f1_Q5_Col30_multi_last_value_562,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col17` as debit1_f1_Q5_Col17_multi_last_value_563,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col20` as debit1_f1_Q5_Col20_multi_last_value_564,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col23` as debit1_f1_Q5_Col23_multi_last_value_565,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col13` as debit1_f1_Q5_Col13_multi_last_value_566,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col22` as debit1_f1_Q5_Col22_multi_last_value_567,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col25` as debit1_f1_Q5_Col25_multi_last_value_568,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col10` as debit1_f1_Q5_Col10_multi_last_value_569,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col4` as debit1_f1_Q5_Col4_multi_last_value_570,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col18` as debit1_f1_Q5_Col18_multi_last_value_571,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col19` as debit1_f1_Q5_Col19_multi_last_value_572,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col11` as debit1_f1_Q5_Col11_multi_last_value_573,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col26` as debit1_f1_Q5_Col26_multi_last_value_574,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col32` as debit1_f1_Q5_Col32_multi_last_value_575,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col29` as debit1_f1_Q5_Col29_multi_last_value_576,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col33` as debit1_f1_Q5_Col33_multi_last_value_577,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col42` as debit1_f1_Q5_Col42_multi_last_value_578,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col43` as debit1_f1_Q5_Col43_multi_last_value_579,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col44` as debit1_f1_Q5_Col44_multi_last_value_580,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col45` as debit1_f1_Q5_Col45_multi_last_value_581,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col46` as debit1_f1_Q5_Col46_multi_last_value_582,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col47` as debit1_f1_Q5_Col47_multi_last_value_583,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col49` as debit1_f1_Q5_Col49_multi_last_value_584,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col50` as debit1_f1_Q5_Col50_multi_last_value_585,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col51` as debit1_f1_Q5_Col51_multi_last_value_586,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col34` as debit1_f1_Q5_Col34_multi_last_value_587,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col52` as debit1_f1_Q5_Col52_multi_last_value_588,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col53` as debit1_f1_Q5_Col53_multi_last_value_589,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col55` as debit1_f1_Q5_Col55_multi_last_value_590,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col56` as debit1_f1_Q5_Col56_multi_last_value_591,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col57` as debit1_f1_Q5_Col57_multi_last_value_592,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col58` as debit1_f1_Q5_Col58_multi_last_value_593,
    `debit1_f1_Q5_Col0__Q5_Col101_0_2147483645`.`Q5_Col59` as debit1_f1_Q5_Col59_multi_last_value_594,
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    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col60‘ as debit1_f1_Q5_Col60_multi_last_value_595,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col61‘ as debit1_f1_Q5_Col61_multi_last_value_596,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col35‘ as debit1_f1_Q5_Col35_multi_last_value_597,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col62‘ as debit1_f1_Q5_Col62_multi_last_value_598,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col63‘ as debit1_f1_Q5_Col63_multi_last_value_599,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col64‘ as debit1_f1_Q5_Col64_multi_last_value_600,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col65‘ as debit1_f1_Q5_Col65_multi_last_value_601,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col66‘ as debit1_f1_Q5_Col66_multi_last_value_602,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col67‘ as debit1_f1_Q5_Col67_multi_last_value_603,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col68‘ as debit1_f1_Q5_Col68_multi_last_value_604,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col69‘ as debit1_f1_Q5_Col69_multi_last_value_605,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col70‘ as debit1_f1_Q5_Col70_multi_last_value_606,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col71‘ as debit1_f1_Q5_Col71_multi_last_value_607,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col36‘ as debit1_f1_Q5_Col36_multi_last_value_608,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col72‘ as debit1_f1_Q5_Col72_multi_last_value_609,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col73‘ as debit1_f1_Q5_Col73_multi_last_value_610,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col74‘ as debit1_f1_Q5_Col74_multi_last_value_611,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col75‘ as debit1_f1_Q5_Col75_multi_last_value_612,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col76‘ as debit1_f1_Q5_Col76_multi_last_value_613,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col77‘ as debit1_f1_Q5_Col77_multi_last_value_614,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col78‘ as debit1_f1_Q5_Col78_multi_last_value_615,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col79‘ as debit1_f1_Q5_Col79_multi_last_value_616,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col81‘ as debit1_f1_Q5_Col81_multi_last_value_617,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col37‘ as debit1_f1_Q5_Col37_multi_last_value_618,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col82‘ as debit1_f1_Q5_Col82_multi_last_value_619,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col83‘ as debit1_f1_Q5_Col83_multi_last_value_620,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col84‘ as debit1_f1_Q5_Col84_multi_last_value_621,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col85‘ as debit1_f1_Q5_Col85_multi_last_value_622,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col87‘ as debit1_f1_Q5_Col87_multi_last_value_623,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col88‘ as debit1_f1_Q5_Col88_multi_last_value_624,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col89‘ as debit1_f1_Q5_Col89_multi_last_value_625,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col90‘ as debit1_f1_Q5_Col90_multi_last_value_626,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col91‘ as debit1_f1_Q5_Col91_multi_last_value_627,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col38‘ as debit1_f1_Q5_Col38_multi_last_value_628,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col92‘ as debit1_f1_Q5_Col92_multi_last_value_629,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col93‘ as debit1_f1_Q5_Col93_multi_last_value_630,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col95‘ as debit1_f1_Q5_Col95_multi_last_value_631,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col96‘ as debit1_f1_Q5_Col96_multi_last_value_632,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col97‘ as debit1_f1_Q5_Col97_multi_last_value_633,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col98‘ as debit1_f1_Q5_Col98_multi_last_value_634,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col99‘ as debit1_f1_Q5_Col99_multi_last_value_635,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col39‘ as debit1_f1_Q5_Col39_multi_last_value_636,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col40‘ as debit1_f1_Q5_Col40_multi_last_value_637,
    ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col41‘ as debit1_f1_Q5_Col41_multi_last_value_638
from
    ‘train‘
    join ‘feedback‘ as ‘feedback_Q5_Col100‘ on ‘train‘.‘Q5_Col100‘ = ‘feedback_Q5_Col100‘.‘Q5_Col100‘
    join ‘CUST_f7‘ as ‘CUST_f7_Q5_Col0‘ on ‘train‘.‘Q5_Col0‘ = ‘CUST_f7_Q5_Col0‘.‘Q5_Col0‘
    join ‘sag_efs_tbproduct_F_b‘ as ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘ on
        ‘train‘.‘Q5_Col102‘ = ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col102‘ and
        ‘train‘.‘Q5_Col101‘ < ‘sag_efs_tbproduct_F_b_Q5_Col102__Q5_Col101_0_2147483645‘.‘Q5_Col1‘
    join ‘LINK2_f6‘ as ‘LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645‘ on ‘train‘.‘Q5_Col0‘ =
        ‘LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
        ‘LINK2_f6_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col1‘
    join ‘LINK1_f5‘ as ‘LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645‘ on ‘train‘.‘Q5_Col0‘ =
        ‘LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
        ‘LINK1_f5_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col1‘
    join ‘AUM_f4‘ as ‘AUM_f4_Q5_Col0__Q5_Col101_0_2147483645‘ on ‘train‘.‘Q5_Col0‘ =
        ‘AUM_f4_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
        ‘AUM_f4_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col1‘
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    join ‘debit3_f3‘ as ‘debit3_f3_Q5_Col0__Q5_Col101_0_2147483645‘ on ‘train‘.‘Q5_Col0‘ =
        ‘debit3_f3_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
        ‘debit3_f3_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col1‘
    join ‘debit2_f2‘ as ‘debit2_f2_Q5_Col0__Q5_Col101_0_2147483645‘ on ‘train‘.‘Q5_Col0‘ =
        ‘debit2_f2_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
        ‘debit2_f2_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col1‘
    join ‘debit1_f1‘ as ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘ on ‘train‘.‘Q5_Col0‘ =
        ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col0‘ and ‘train‘.‘Q5_Col101‘ <
        ‘debit1_f1_Q5_Col0__Q5_Col101_0_2147483645‘.‘Q5_Col1‘
) as out1 on out0.Q5_Col100_1 = out1.Q5_Col100_3
```