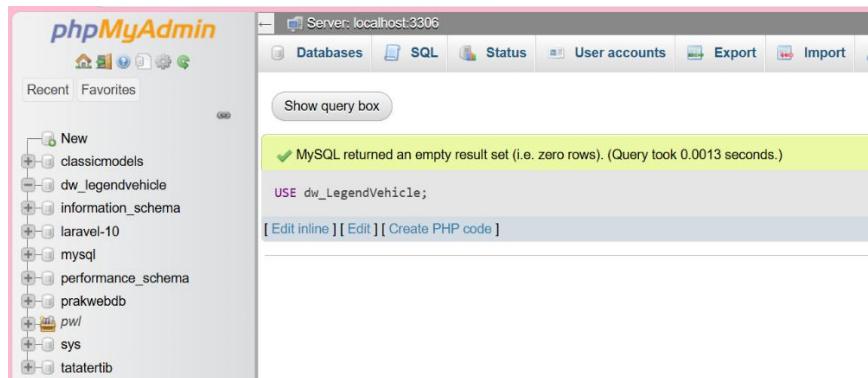


### Jobsheet 3: Database Analytical

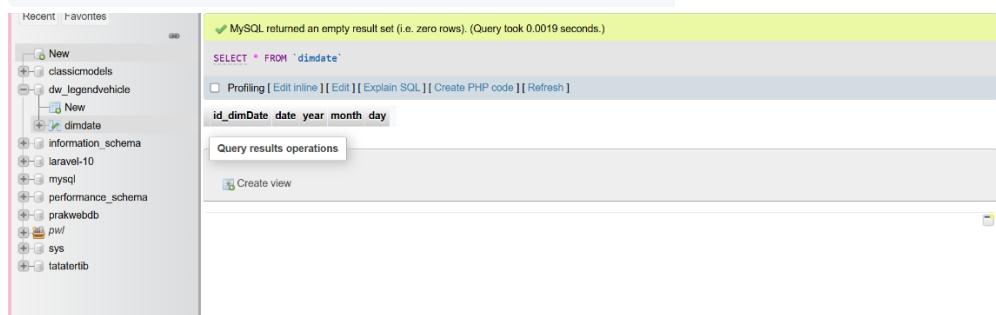
- Buatlah sebuah database yang digunakan sebagai **OLAP** dengan nama **dw\_LegendVehicle**.

```
CREATE DATABASE dw_LegendVehicle;
USE dw_LegendVehicle;
```



- Buatlah table untuk menyimpan data master waktu atau yang disebut dengan **tabel dimensi**. Beri nama table tersebut dengan nama **dimDate**.

```
CREATE TABLE dimDate(
    id_dimDate int not null AUTO_INCREMENT PRIMARY KEY
    date date
    year int
    month int
    day int
);
```

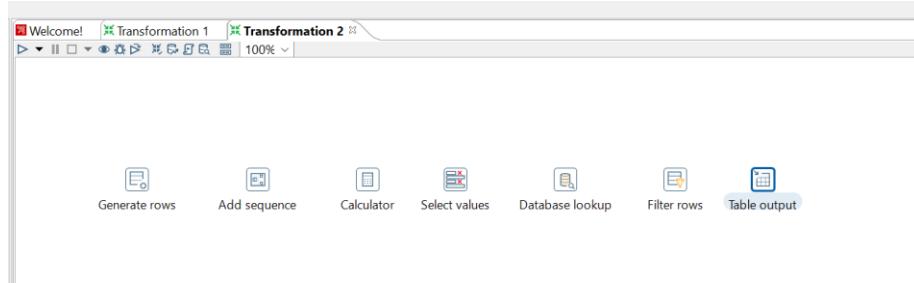


Pada tahapan selanjutnya, untuk membuat tabel dimensi dimDate , maka diperlukan generate data tanggal. Data tanggal yang disiapkan pada tabel dimDate menyesuaikan dengan proses bisnis yang berjalan.

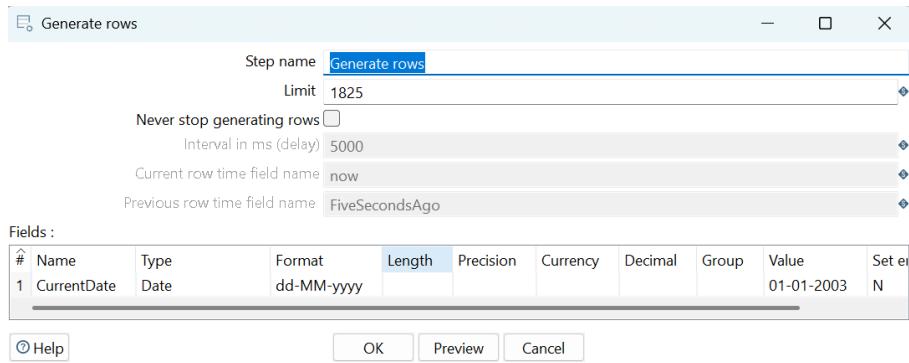
Proses bisnis pada LegendVehicle adalah 5 tahun. Sehingga data pada tabel dimdate yang harus tersedia adalah tanggal selama 5 tahun. Mulai dari 1 Januari 2023

- Buka PDI Spoon. Buka Transformation baru -> **File - New - Transformation**.
- Drag and Drop beberapa objek yaitu:
  - Generate Rows:** digunakan untuk membuat baris data baru.
  - Add Sequence:** digunakan untuk membuat sequence, dalam hal ini membuat data di setiap harinya.
  - Calculator:** digunakan untuk menjumlahkan hari dan mengambil data tahun, bulan dan hari.
  - Select Values:** digunakan untuk memilih field yang digunakan.

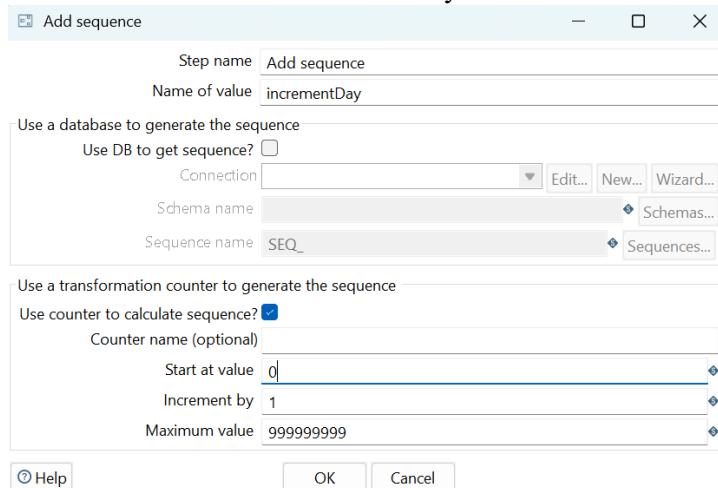
- **Database Lookup:** digunakan untuk melihat dan memastikan bahwa data yang akan dimasukkan kedalam tabel dimDate tidak kembar atau sama dengan data yang ada pada tabel dimDate itu sendiri.
- **Filter Rows:** digunakan untuk mengambil data yang belum ada pada table dimDate setelah dicek sebelumnya.
- **Table Output:** digunakan untuk menyimpan data pada tabel tujuan (dimDate).



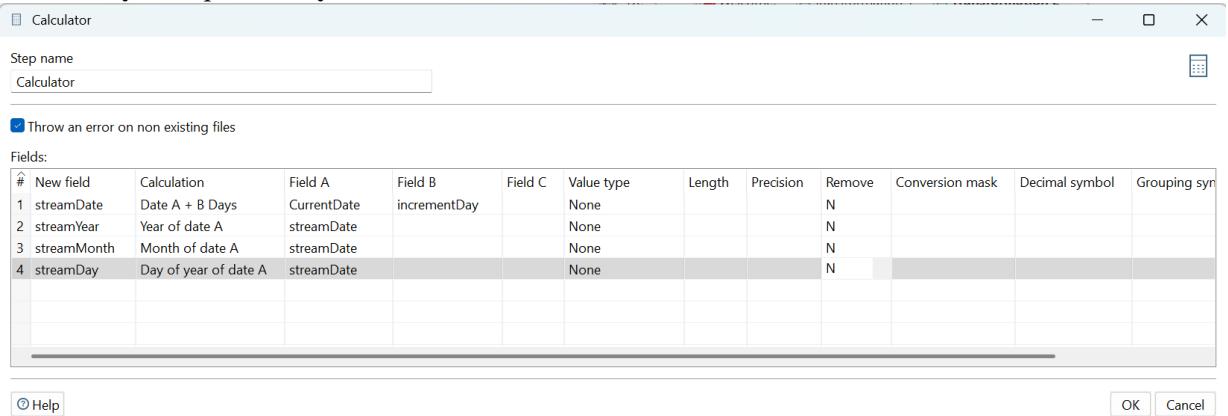
3. Konfigurasi pada Generate Rows adalah merubah limit menjadi 1825 dimana memiliki arti bahwa data yang akan dibuat sebanyak 1825 data. 1825 merupakan jumlah hari dalam 5 tahun ( 365 hari x 5 tahun ).
4. Membuat fields baru bernama CurrentDate dengan type data Date dan format dd-MM-yyyy serta value awal 01-01-2003.



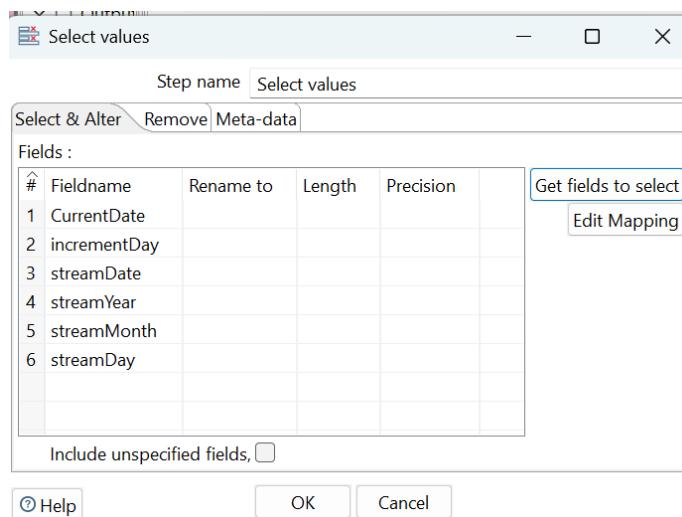
5. Hubungkan output dari Generate Rows menuju Add Sequence.
6. Konfigurasi pada Add Sequences adalah merubah Name of value menjadi incrementDay dengan start value bernilai 0 dan increment by bernilai 1



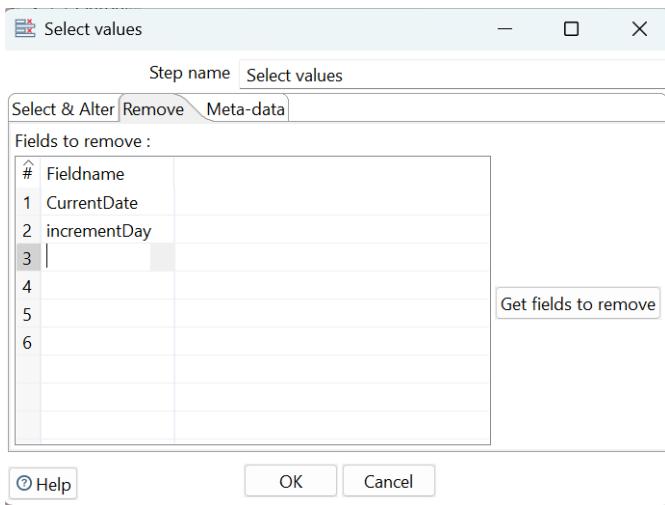
7. Hubungkan output dari **add sequences** menuju **calculator**.
8. Konfigurasi pada calculator dengan membuat fields baru sebagai berikut:
  - **streamDate** merupakan kalkulasi dari **CurrentDate + incrementDay**
  - **streamYear** merupakan **Year** dari **streamDate**
  - **streamMonth** merupakan **Month** dari **streamDate**
  - **streamDay** merupakan **Day of month** dari **streamDate**



9. Hubungkan output dari calculator menuju Select values
10. Konfigurasi pada select values adalah dengan menekan tombol Get fields to select pada tab Select & Alter. Secara otomatis semua fields dari data input akan muncul.
11. Dikarenakan tidak semua fields digunakan, maka pada tab Remove diisikan fields CurrentDate dan incrementDay dikarenakan kedua fields tersebut tidak digunakan.

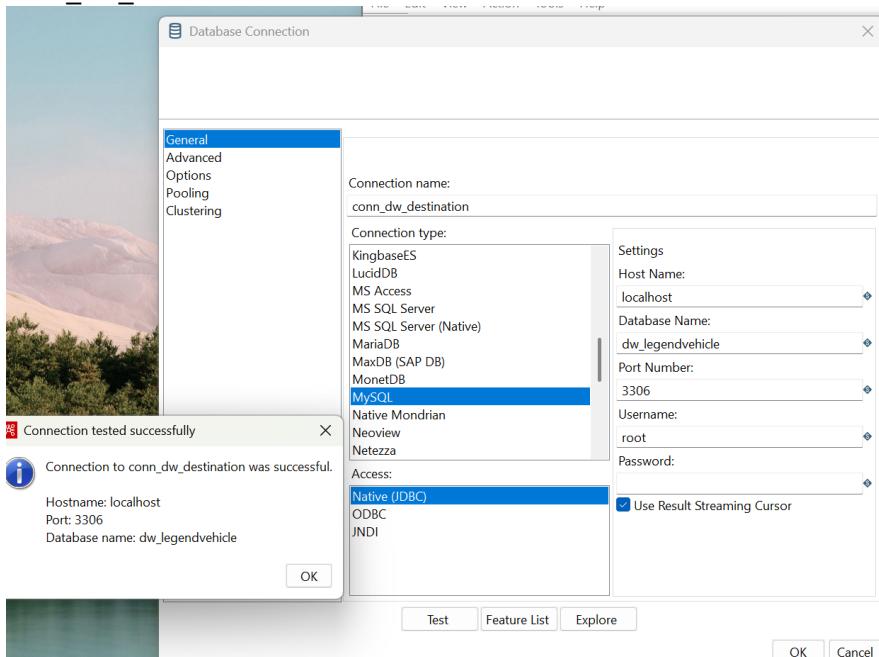


Gambar konfigurasi tab select & alter pada select values



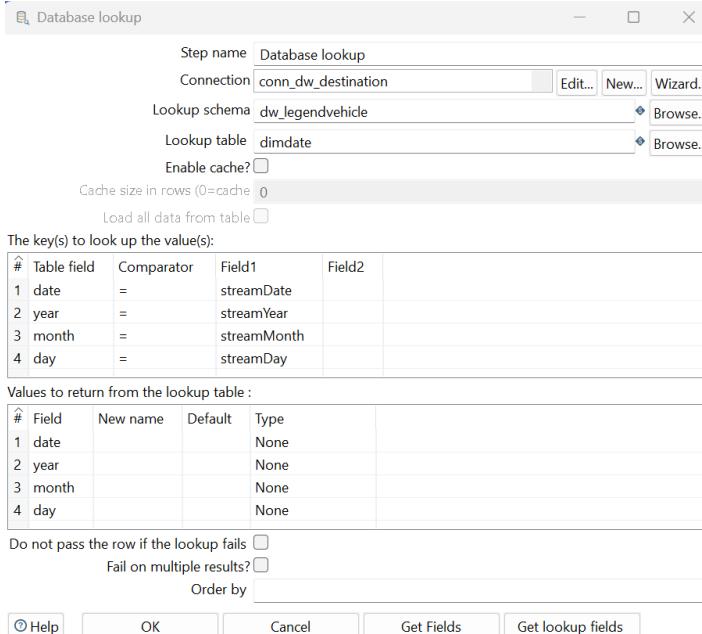
Gambar konfigurasi tab remove pada select values

12. Hubungkan output select values menuju database lookup.
13. Sebelum melakukan konfigurasi pada **database lookup**, buatlah koneksi terlebih dahulu pada database melalui **File - New - Database Connection**. Gunakan **Connection type MySQL** dengan **host name** , **database name**, **port number**, **username** dan **password** sesuai konfigurasi MySQL pada device masing-masing. beri nama **connection name** tersebut dengan nama **conn\_dw\_destination**.



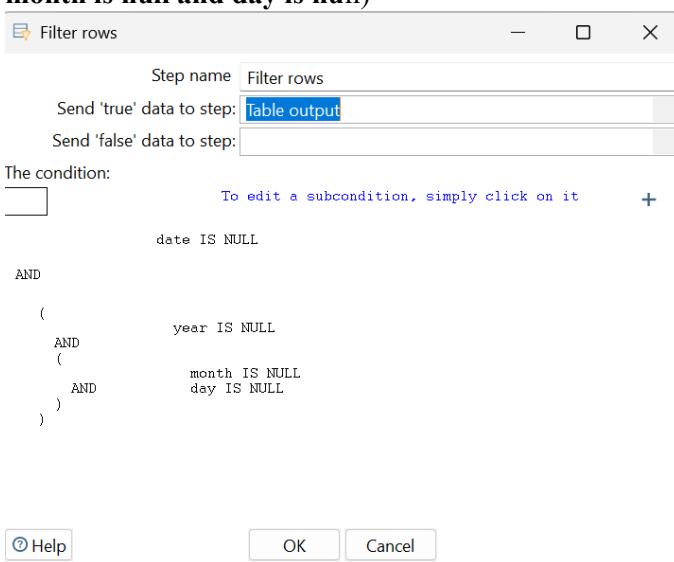
14. Konfigurasi pada **database lookup** adalah dengan memberikan **connection** dengan koneksi yang sudah dibuat pada step sebelumnya. dengan **schema** nama database yang digunakan dan **tabel dimdate** yang telah dibuat pada langkah pertama.
15. Field yang akan dicek untuk melihat kesamaan isi datanya agar tidak kembar adalah:

- field **date** pada table **dimdate** dengan field **streamDate**
  - field **year** pada table **dimdate** dengan field **streamYear**
  - field **month** pada table **dimdate** dengan field **streamMonth**
  - field **day** pada table **dimdate** dengan field **streamDay**
16. Field yang akan di **retrieve** adalah field yang ada pada table **dimDate** yaitu **date, year, month, dan day**.

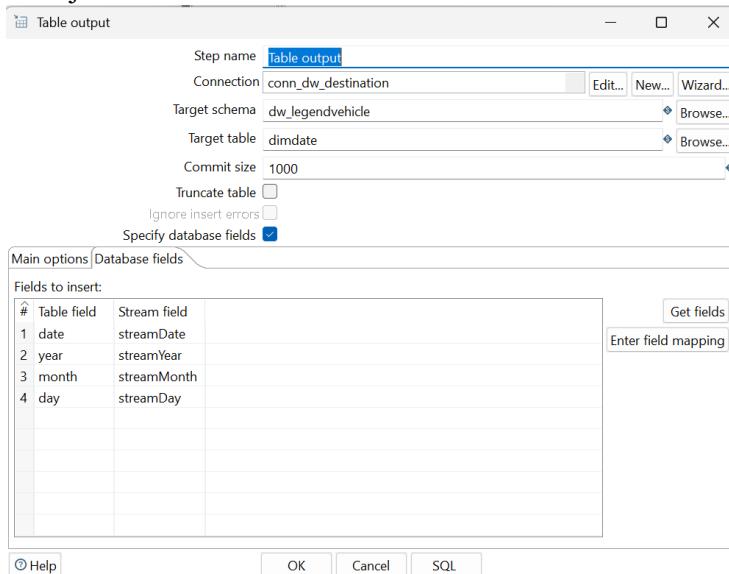


## 17. Hubungkan output dari **database lookup** dengan **filter rows**

18. Konfigurasi pada **filter rows** adalah dengan melakukan konfigurasi **output true data** pada **table output**. Pada bagian ini data yang tidak memiliki kesamaan pada tahapan sebelumnya akan dicek dimana jika **fields Stream** tidak memiliki kesamaan dengan **field dimDate**, maka **field dimDate** tersebut akan bernilai **null**. Pada pernyataan kondisi tuliskan (**date is null and year is null and month is null and day is null**)



19. Hubungkan output dari **filter rows** menuju **table output**.
20. Konfigurasi pada **table output** adalah memberikan koneksi pada **conn\_dw\_destination** dengan **schema dw\_legendvehicle** dan table **dimdate**.
21. Aktifkan **specify database fields**.
22. Pada tab **Database fields**, mapping data input **streamDate**, **streamYear**, **streamMonth** dan **streamDay** dengan fields yang ada pada **dimDate**. Pada tahapan ini akan dilakukan insert data menuju tabel **dimDate**.



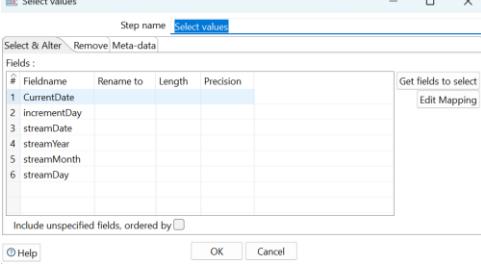
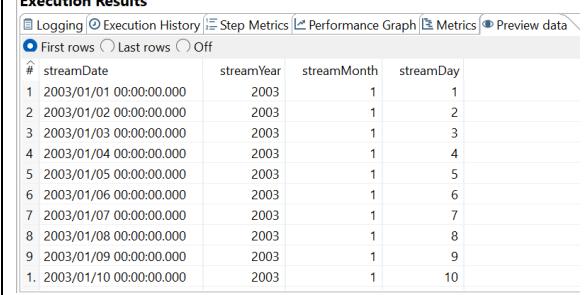
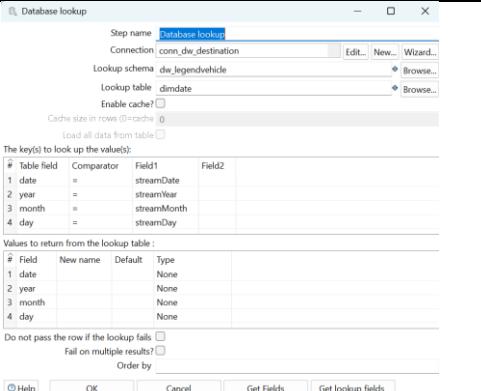
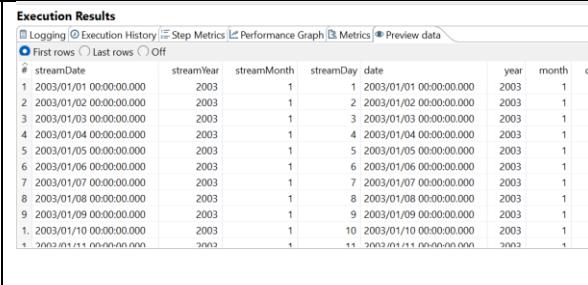
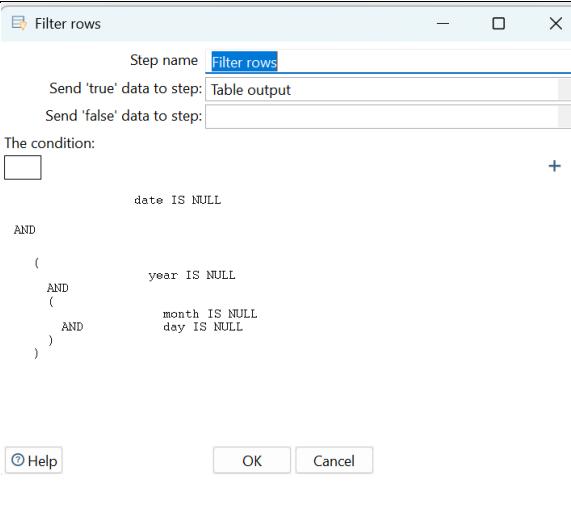
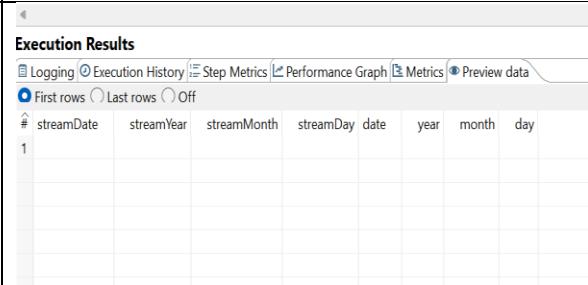
23. cek isi table dimdate pada database. Jika sukses maka pada table dimdate akan terisi 1825 data.

			<b>id_dimDate</b>	<b>date</b>	<b>year</b>	<b>month</b>	<b>day</b>	
<input type="checkbox"/>				4	2003-01-01	2003	1	1
<input type="checkbox"/>				5	2003-01-02	2003	1	2
<input type="checkbox"/>				6	2003-01-03	2003	1	3
<input type="checkbox"/>				7	2003-01-04	2003	1	4
<input type="checkbox"/>				8	2003-01-05	2003	1	5
<input type="checkbox"/>				9	2003-01-06	2003	1	6
<input type="checkbox"/>				10	2003-01-07	2003	1	7
<input type="checkbox"/>				11	2003-01-08	2003	1	8
<input type="checkbox"/>				12	2003-01-09	2003	1	9
<input type="checkbox"/>				13	2003-01-10	2003	1	10

## TUGAS 1

- Buka preview tab pada execution result area di setiap proses object. amati input dan output data yang ada. bandingkan di setiap prosesnya. jelaskan perbedaan disetiap prosesnya.

Proses Objek	Data Input	Data Output	Keterangan																																																																																				
Generate Rows	<p>Step name: Generate rows Limit: 1825 Current row time field name: now Previous row time field name: FiveSecondsAgo</p> <table border="1"> <thead> <tr> <th>#</th> <th>Name</th> <th>Type</th> <th>Format</th> <th>Length</th> <th>Precision</th> <th>Currency</th> <th>Decimal</th> <th>Group</th> <th>Value</th> <th>Set em</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CurrentDate</td> <td>Date</td> <td>dd-MM-yyyy</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>01-01-2003</td> <td>N</td> </tr> </tbody> </table>	#	Name	Type	Format	Length	Precision	Currency	Decimal	Group	Value	Set em	1	CurrentDate	Date	dd-MM-yyyy						01-01-2003	N	<p>Execution Results</p> <table border="1"> <thead> <tr> <th>#</th> <th>CurrentDate</th> <th>incrementDay</th> </tr> </thead> <tbody> <tr><td>1</td><td>01-01-2003</td><td>0</td></tr> <tr><td>2</td><td>01-01-2003</td><td>1</td></tr> <tr><td>3</td><td>01-01-2003</td><td>2</td></tr> <tr><td>4</td><td>01-01-2003</td><td>3</td></tr> <tr><td>5</td><td>01-01-2003</td><td>4</td></tr> <tr><td>6</td><td>01-01-2003</td><td>5</td></tr> <tr><td>7</td><td>01-01-2003</td><td>6</td></tr> <tr><td>8</td><td>01-01-2003</td><td>7</td></tr> <tr><td>9</td><td>01-01-2003</td><td>8</td></tr> <tr><td>10</td><td>01-01-2003</td><td>9</td></tr> </tbody> </table>	#	CurrentDate	incrementDay	1	01-01-2003	0	2	01-01-2003	1	3	01-01-2003	2	4	01-01-2003	3	5	01-01-2003	4	6	01-01-2003	5	7	01-01-2003	6	8	01-01-2003	7	9	01-01-2003	8	10	01-01-2003	9	<b>Input:</b> Membuat data dummy dengan jumlah baris tertentu. <b>Output:</b> Menampilkan data hasil generate sesuai jumlah yang ditentukan. <b>Membuat data sementara secara otomatis.</b>																													
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10	01-01-2003	9																																																																																					
Add Sequences	<p>Step name: Add sequence Name of value: incrementDay Use a database to generate the sequence Use DB to get sequence? Connection: conn_dw_destination Schema name: SEQ_ Sequence name: SEQ_</p> <p>Use a transformation counter to generate the sequence Use counter to calculate sequence? Counter name (optional): Start at value: 0 Increment by: 1 Maximum value: 999999999</p>	<p>Execution Results</p> <table border="1"> <thead> <tr> <th>#</th> <th>CurrentDate</th> <th>incrementDay</th> </tr> </thead> <tbody> <tr><td>1</td><td>01-01-2003</td><td>0</td></tr> <tr><td>2</td><td>01-01-2003</td><td>1</td></tr> <tr><td>3</td><td>01-01-2003</td><td>2</td></tr> <tr><td>4</td><td>01-01-2003</td><td>3</td></tr> <tr><td>5</td><td>01-01-2003</td><td>4</td></tr> <tr><td>6</td><td>01-01-2003</td><td>5</td></tr> <tr><td>7</td><td>01-01-2003</td><td>6</td></tr> <tr><td>8</td><td>01-01-2003</td><td>7</td></tr> <tr><td>9</td><td>01-01-2003</td><td>8</td></tr> <tr><td>10</td><td>01-01-2003</td><td>9</td></tr> </tbody> </table>	#	CurrentDate	incrementDay	1	01-01-2003	0	2	01-01-2003	1	3	01-01-2003	2	4	01-01-2003	3	5	01-01-2003	4	6	01-01-2003	5	7	01-01-2003	6	8	01-01-2003	7	9	01-01-2003	8	10	01-01-2003	9	<b>Input:</b> Menambahkan nomor urut ke setiap baris data. <b>Output:</b> Data dengan kolom tambahan berisi angka berurutan <b>Memberikan ID unik ke setiap baris..</b>																																																			
#	CurrentDate	incrementDay																																																																																					
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10	01-01-2003	9																																																																																					
Calculator	<p>Step name: Calculator Fields: 1 streamDate Date A + B Days Field A Field B Field C Value type Length Precision Remove N 2 streamYear Year of date A streamDate incrementDay None N N N 3 streamMonth Month of date A streamDate streamDate None N N N 4 streamDay Day of year of date A streamDate</p>	<p>Execution Results</p> <table border="1"> <thead> <tr> <th>#</th> <th>CurrentDate</th> <th>incrementDay</th> <th>streamDate</th> <th>streamYear</th> <th>streamMonth</th> <th>streamDay</th> </tr> </thead> <tbody> <tr><td>1</td><td>01-01-2003</td><td>0</td><td>2003/01/01 00:00:00.000</td><td>2003</td><td>1</td><td>1</td></tr> <tr><td>2</td><td>01-01-2003</td><td>1</td><td>2003/01/02 00:00:00.000</td><td>2003</td><td>1</td><td>2</td></tr> <tr><td>3</td><td>01-01-2003</td><td>2</td><td>2003/01/03 00:00:00.000</td><td>2003</td><td>1</td><td>3</td></tr> <tr><td>4</td><td>01-01-2003</td><td>3</td><td>2003/01/04 00:00:00.000</td><td>2003</td><td>1</td><td>4</td></tr> <tr><td>5</td><td>01-01-2003</td><td>4</td><td>2003/01/05 00:00:00.000</td><td>2003</td><td>1</td><td>5</td></tr> <tr><td>6</td><td>01-01-2003</td><td>5</td><td>2003/01/06 00:00:00.000</td><td>2003</td><td>1</td><td>6</td></tr> <tr><td>7</td><td>01-01-2003</td><td>6</td><td>2003/01/07 00:00:00.000</td><td>2003</td><td>1</td><td>7</td></tr> <tr><td>8</td><td>01-01-2003</td><td>7</td><td>2003/01/08 00:00:00.000</td><td>2003</td><td>1</td><td>8</td></tr> <tr><td>9</td><td>01-01-2003</td><td>8</td><td>2003/01/09 00:00:00.000</td><td>2003</td><td>1</td><td>9</td></tr> <tr><td>10</td><td>01-01-2003</td><td>9</td><td>2003/01/10 00:00:00.000</td><td>2003</td><td>1</td><td>10</td></tr> <tr><td>11</td><td>01-01-2003</td><td>10</td><td>2003/01/11 00:00:00.000</td><td>2003</td><td>1</td><td>11</td></tr> </tbody> </table>	#	CurrentDate	incrementDay	streamDate	streamYear	streamMonth	streamDay	1	01-01-2003	0	2003/01/01 00:00:00.000	2003	1	1	2	01-01-2003	1	2003/01/02 00:00:00.000	2003	1	2	3	01-01-2003	2	2003/01/03 00:00:00.000	2003	1	3	4	01-01-2003	3	2003/01/04 00:00:00.000	2003	1	4	5	01-01-2003	4	2003/01/05 00:00:00.000	2003	1	5	6	01-01-2003	5	2003/01/06 00:00:00.000	2003	1	6	7	01-01-2003	6	2003/01/07 00:00:00.000	2003	1	7	8	01-01-2003	7	2003/01/08 00:00:00.000	2003	1	8	9	01-01-2003	8	2003/01/09 00:00:00.000	2003	1	9	10	01-01-2003	9	2003/01/10 00:00:00.000	2003	1	10	11	01-01-2003	10	2003/01/11 00:00:00.000	2003	1	11	<b>Input:</b> Melakukan perhitungan pada data. <b>Output:</b> Data dengan kolom tambahan berisi hasil perhitungan. <b>Mengolah data dengan operasi matematika.</b>
#	CurrentDate	incrementDay	streamDate	streamYear	streamMonth	streamDay																																																																																	
1	01-01-2003	0	2003/01/01 00:00:00.000	2003	1	1																																																																																	
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Select Values		<b>Execution Results</b>  <table border="1"> <thead> <tr> <th>#</th> <th>streamDate</th> <th>streamYear</th> <th>streamMonth</th> <th>streamDay</th> </tr> </thead> <tbody> <tr><td>1</td><td>2003/01/01 00:00:00.000</td><td>2003</td><td>1</td><td>1</td></tr> <tr><td>2</td><td>2003/01/02 00:00:00.000</td><td>2003</td><td>1</td><td>2</td></tr> <tr><td>3</td><td>2003/01/03 00:00:00.000</td><td>2003</td><td>1</td><td>3</td></tr> <tr><td>4</td><td>2003/01/04 00:00:00.000</td><td>2003</td><td>1</td><td>4</td></tr> <tr><td>5</td><td>2003/01/05 00:00:00.000</td><td>2003</td><td>1</td><td>5</td></tr> <tr><td>6</td><td>2003/01/06 00:00:00.000</td><td>2003</td><td>1</td><td>6</td></tr> <tr><td>7</td><td>2003/01/07 00:00:00.000</td><td>2003</td><td>1</td><td>7</td></tr> <tr><td>8</td><td>2003/01/08 00:00:00.000</td><td>2003</td><td>1</td><td>8</td></tr> <tr><td>9</td><td>2003/01/09 00:00:00.000</td><td>2003</td><td>1</td><td>9</td></tr> <tr><td>10</td><td>2003/01/10 00:00:00.000</td><td>2003</td><td>1</td><td>10</td></tr> </tbody> </table>	#	streamDate	streamYear	streamMonth	streamDay	1	2003/01/01 00:00:00.000	2003	1	1	2	2003/01/02 00:00:00.000	2003	1	2	3	2003/01/03 00:00:00.000	2003	1	3	4	2003/01/04 00:00:00.000	2003	1	4	5	2003/01/05 00:00:00.000	2003	1	5	6	2003/01/06 00:00:00.000	2003	1	6	7	2003/01/07 00:00:00.000	2003	1	7	8	2003/01/08 00:00:00.000	2003	1	8	9	2003/01/09 00:00:00.000	2003	1	9	10	2003/01/10 00:00:00.000	2003	1	10	<b>Input:</b> Memilih atau mengubah nama kolom tertentu dalam dataset. <b>Output:</b> Data dengan kolom yang sudah difilter atau diubah namanya. <b>Menyaring atau mengganti nama kolom dalam dataset</b>																																																					
#	streamDate	streamYear	streamMonth	streamDay																																																																																																											
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#	streamDate	streamYear	streamMonth	streamDay	date	year	month	day																																																																																																							
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#	streamDate	streamYear	streamMonth	streamDay	date	year	month	day																																																																																																							
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## Tabel Output

The screenshot shows the Tableau Data Flow interface. On the left, a 'Table output' step is configured with the following settings:

- Step name: **Table output**
- Connection: **conn\_dw\_destination**
- Target schema: **dw.legendvehicle**
- Target table: **dimdate**
- Commit size: **1000**
- Truncate table:
- Ignore insert errors:
- Specify database fields:

The 'Fields to insert' section lists four mappings:

Table field	Stream field
1 date	streamDate
2 year	streamYear
3 month	streamMonth
4 day	streamDay

On the right, the 'Execution Results' pane shows the data being inserted into the 'dimdate' table. The first row is displayed with the following values:

#	streamDate	streamYear	streamMonth	streamDay	date	year	month	day
1								

**Input:**  
Menyimpan hasil proses ke dalam tabel database.

**Output:** Data yang diproses tersimpan di tabel tujuan.

**Menyimpan hasil akhir ke dalam database**

## B. Dimensi Pegawai

1. Buatlah tabel **dimPegawai** pada **dw\_legendVehicle**.

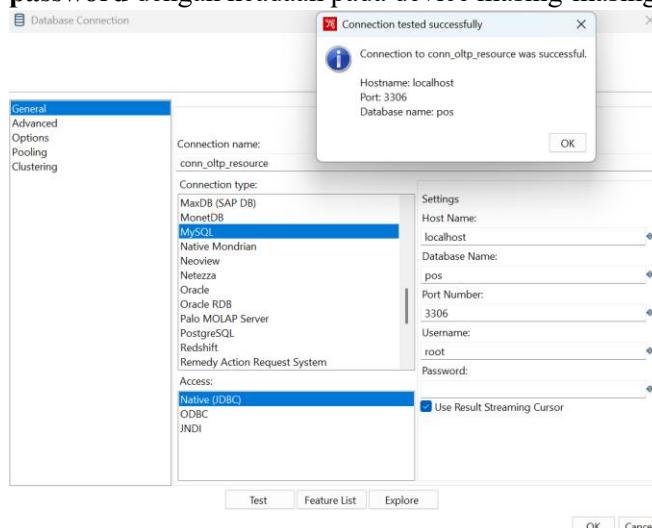
MySQL returned an empty result set (i.e. zero rows). (Query took 0.0255 seconds.)

```
CREATE TABLE dimEmployees( id_dimEmployees int not null auto_increment primary key, employeeNumber int(11), firstname varchar(50), lastname varchar(50), jobtitle varchar(50), boss_firstname varchar(50), boss_lastname varchar(50), updated date DEFAULT (CURRENT_DATE) );
```

[Edit inline] [Edit] [Create PHP code]

Table	Action	Rows	Type	Collation	Size	Overhead
dimdate	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	11,897	InnoDB	utf8mb4_0900_ai_ci	496.0 KiB	-
dimemployees	<a href="#">Browse</a> <a href="#">Structure</a> <a href="#">Search</a> <a href="#">Insert</a> <a href="#">Empty</a> <a href="#">Drop</a>	0	InnoDB	utf8mb4_0900_ai_ci	16.0 KiB	-
2 tables	<a href="#">Sum</a>	11,897	InnoDB	utf8mb4_0900_ai_ci	512.0 KiB	0 B

2. Pada PDI Spoon buatlah koneksi baru dengan nama **conn.oltp\_resources** yang menghubungkan dengan database oltp. sesuaikan **hostname**, **database name**, **port number**, **username** dan **password** dengan keadaan pada device masing-masing.

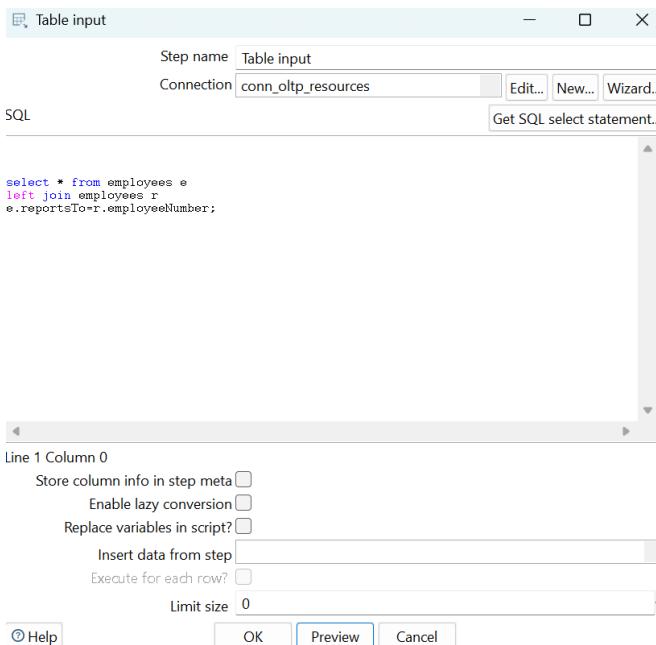


3. Drag and drop beberapa objek sebagai berikut:
  - **Table input:** digunakan mengambil data dari database OLTP.
  - **Select values:** memilih field yang digunakan untuk proses Transform dan Load.
  - **Database lookup:** digunakan untuk melihat data pada tabel dimEmployees untuk memastikan data tidak kembar
  - **Filter rows:** digunakan untuk memilih data stream yang masih belum ada pada tabel dimEmployees.
  - **Table output:** Memasukkan data ke dalam tavle dimEmployees

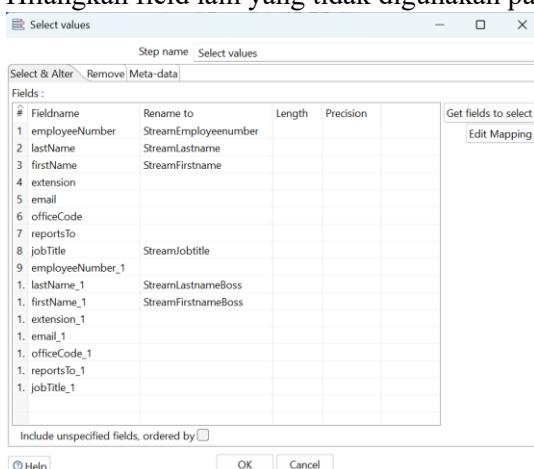


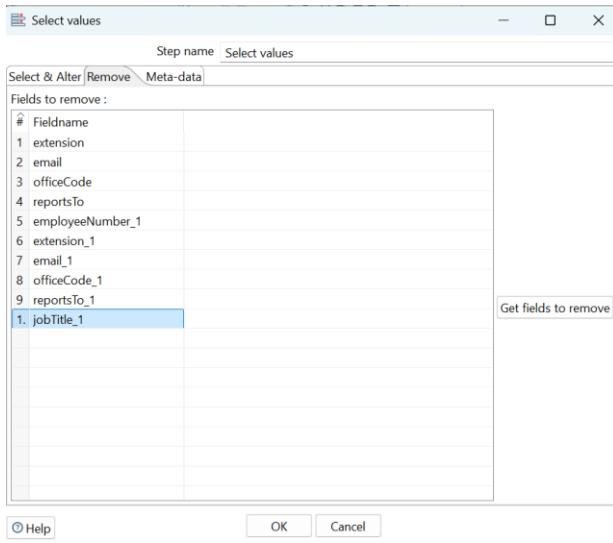
4. Konfigurasi pada table input dengan menghubungkan **Connection** pada konesi **conn\_oltp\_resources**. Untuk mengambil data sumber menggunakan query dibawah ini.

```
select * from employees e
left join employees r
e.reportsTo=r.employeeNumber;
```

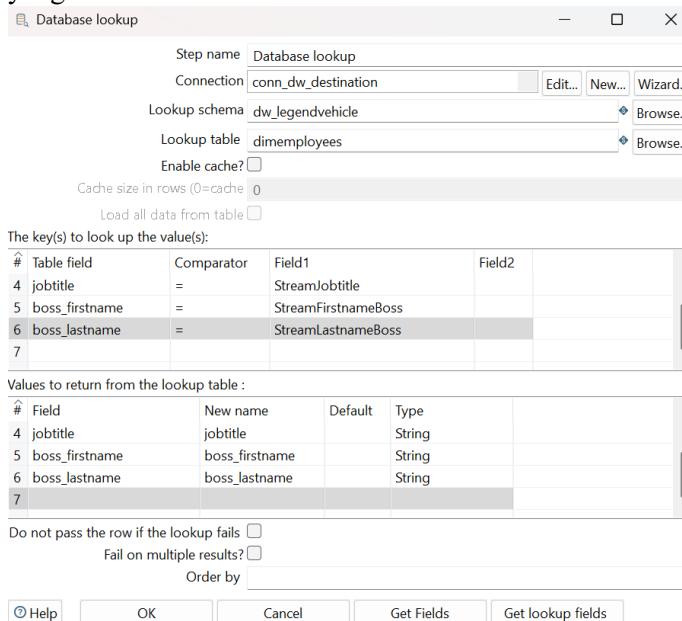


5. Hubungkan output **table input** pada **select values**.  
 6. Konfigurasi pada **Select values** yaitu mengambil data dari field **employeeNumber**, **lastname**, **firstname**, **jobTitle**, **lastname\_1** dan **firstname\_1** sebagai **data stream** yang digunakan pada proses ETL pada tab **select & alter**.  
 7. Hilangkan field lain yang tidak digunakan pada tab **remove**.

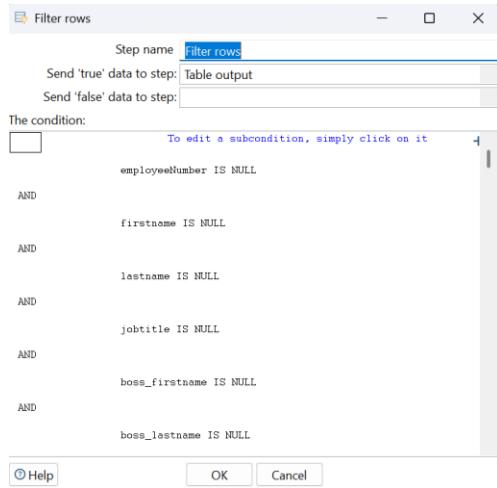




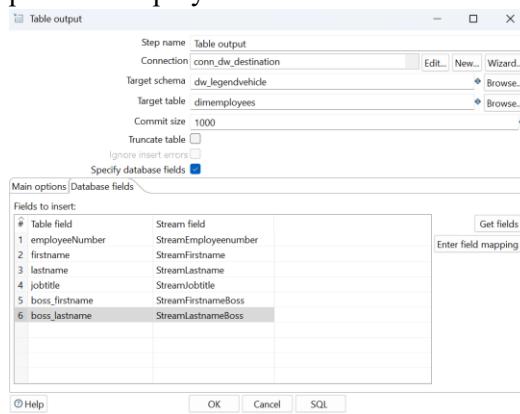
8. Hubungkan output select values pada database lookup
9. Konfigurasi pada database lookup adalah dengan menghubungkan koneksi pada conn\_dw\_destination dengan table lookup dimEmployees yang telah dibuat pada tahap pertama.
10. Field yang di lookup adalah field pada tabel dimEmployees dengan field stream input dari OLTP. sedangkan field yang di retrieve adalah field dari dimEmployees itu sendiri. Jika tidak ada data yang sama maka akan muncul null.



11. Hubungkan output database lookup dengan filter rows.
12. Pada filter rows berikan kondisi field yang null pada field dimemployees untuk dimasukkan pada proses selanjutnya. Hal itu menandakan bahwa data stream belum memiliki kesamaan pada data di dimemployees.



13. Hubungkan output dari filter rows dengan table output.
14. Pada table output, gunakan connection conn\_dw\_destination untuk memasukkan data pada tabel dimemployees.
15. Aktifkan specify database fields, dan mapping data stream input dari oltp terhadap field yang ada pada dimemployees.

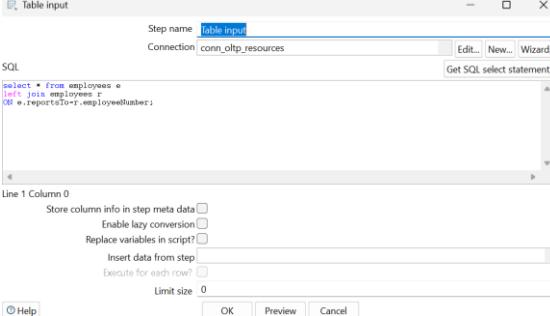


16. jika proses keseluruhan berhasil maka tabel **dimemployees** akan terisi data pegawai dari database OLTP.

Table: dimemployees						
		id_dimEmployees	employeeNumber	firstname	lastname	jobtitle
<input type="checkbox"/>	<input type="checkbox"/> Edit	1	1002	Diane	Murphy	President
<input type="checkbox"/>	<input type="checkbox"/> Edit	2	1056	Mary	Patterson	VP Sales
<input type="checkbox"/>	<input type="checkbox"/> Edit	3	1076	Jeff	Firelli	VP Marketing
<input type="checkbox"/>	<input type="checkbox"/> Edit	4	1088	William	Patterson	Sales Manager (APAC)
<input type="checkbox"/>	<input type="checkbox"/> Edit	5	1102	Gerard	Bondur	Sale Manager (EMEA)
<input type="checkbox"/>	<input type="checkbox"/> Edit	6	1143	Anthony	Bow	Sales Manager (NA)
<input type="checkbox"/>	<input type="checkbox"/> Edit	7	1165	Leslie	Jennings	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	8	1166	Leslie	Thompson	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	9	1188	Julie	Firelli	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	10	1216	Steve	Patterson	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	11	1295	Foon Yue	Tseng	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	12	1323	George	Vanauf	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	13	1337	Lou	Bondur	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	14	1370	Gerard	Hernandez	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	15	1401	Pamela	Castillo	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	16	1501	Larry	Bott	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	17	1504	Barry	Jones	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	18	1611	Andy	Fixter	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	19	1612	Peter	Marsh	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	20	1619	Tom	King	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	21	1621	Mami	Nishi	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	22	1625	Yoshimi	Kato	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	23	1702	Marlin	Gerard	Sales Rep
<input type="checkbox"/>	<input type="checkbox"/> Edit	24	1002	Diane	Murphy	President

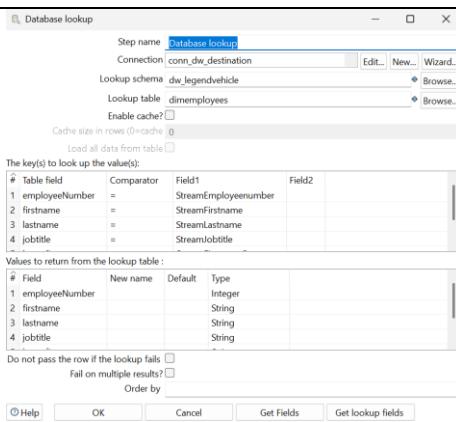
**TUGAS 2**

1. Buka preview tab pada execution result area di setiap proses object. amati input dan output data yang ada. bandingkan di setiap prosesnya. jelaskan perbedaan disetiap prosesnya.

Proses Objek	SS Data Input	SS Data Output	Keterangan																																																																																				
Tabel Input	 <p>Step name: Table input Connection: conn_oltp_resources SQL: select * from employees e left join employees r ON e.reportsTo=r.employeeNumber; Line 1 Column 0 Store column info in step meta data Enable lazy conversion Replace variables in script? Insert data from step Execute for each row? Limit size: 0 OK Preview Cancel</p>	<p>□ <b>Input:</b> Data hasil dari <b>Tabel Input</b>.</p> <p>□ <b>Output:</b> Data dengan kolom yang dipilih dan mungkin mengalami perubahan nama/tipe data.</p>	<b>Input:</b> Koneksi ke database dan query yang dijalankan. <b>Output:</b> Data mentah yang diambil dari database. <b>Mengambil data dari database menggunakan query SQL.</b>																																																																																				
Select Values	 <p>Select &amp; Alter Select values Step name: Select values Select &amp; Alter Remove Meta-data Fields: # Fieldname Rename to StreamEmployeeNumber Length Precision Get fields to select Edit Mapping 1. employeeNumber StreamEmployeeNumber 2. lastName StreamLastName 3. firstName StreamFirstName 4. extension 5. email 6. officeCode 7. reportsTo 8. jobTitle StreamJobTitle 9. employeeNumber_1 StreamEmployeeNumber_1 1. lastName_1 StreamLastNameBoss 1. firstName_1 StreamFirstNameBoss 1. extension_1 1. email_1 1. officeCode_1 1. reportsTo_1 1. jobTitle_1 Include unspecified fields, ordered by OK Cancel</p> <p>Remove Select values Step name: Select values Select &amp; Alter Remove Meta-data Fields to remove: # Fieldname 1. extension 2. email 3. officeCode 4. reportsTo 5. employeeNumber_1 6. extension_1 7. email_1 8. officeCode_1 9. reportsTo_1 1. jobTitle_1 Get fields to remove</p>	<p><b>Execution Results</b></p> <table border="1"> <thead> <tr> <th>#</th> <th>StreamEmployeeNumber</th> <th>StreamLastName</th> <th>StreamFirstName</th> <th>StreamJobTitle</th> <th>StreamLastnameBoss</th> <th>StreamfirstnameBoss</th> </tr> </thead> <tbody> <tr><td>1</td><td>1002</td><td>Murphy</td><td>Diane</td><td>President</td><td>&lt;null&gt;</td><td>&lt;null&gt;</td></tr> <tr><td>2</td><td>1056</td><td>Patterson</td><td>Mary</td><td>VP Sales</td><td>Murphy</td><td>Diane</td></tr> <tr><td>3</td><td>1076</td><td>Firelli</td><td>Jeff</td><td>VP Marketing</td><td>Murphy</td><td>Diane</td></tr> <tr><td>4</td><td>1088</td><td>Patterson</td><td>William</td><td>Sales Manager (APAC)</td><td>Patterson</td><td>Mary</td></tr> <tr><td>5</td><td>1102</td><td>Bondur</td><td>Gerard</td><td>Sale Manager (EMEA)</td><td>Patterson</td><td>Mary</td></tr> <tr><td>6</td><td>1143</td><td>Bow</td><td>Anthony</td><td>Sales Manager (NA)</td><td>Patterson</td><td>Mary</td></tr> <tr><td>7</td><td>1165</td><td>Jennings</td><td>Leslie</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td></tr> <tr><td>8</td><td>1166</td><td>Thompson</td><td>Leslie</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td></tr> <tr><td>9</td><td>1188</td><td>Firelli</td><td>Julie</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td></tr> <tr><td>1.</td><td>1216</td><td>Patterson</td><td>Steve</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td></tr> <tr><td>1.</td><td>1286</td><td>Tseng</td><td>Foon Yue</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td></tr> </tbody> </table>	#	StreamEmployeeNumber	StreamLastName	StreamFirstName	StreamJobTitle	StreamLastnameBoss	StreamfirstnameBoss	1	1002	Murphy	Diane	President	<null>	<null>	2	1056	Patterson	Mary	VP Sales	Murphy	Diane	3	1076	Firelli	Jeff	VP Marketing	Murphy	Diane	4	1088	Patterson	William	Sales Manager (APAC)	Patterson	Mary	5	1102	Bondur	Gerard	Sale Manager (EMEA)	Patterson	Mary	6	1143	Bow	Anthony	Sales Manager (NA)	Patterson	Mary	7	1165	Jennings	Leslie	Sales Rep	Bow	Anthony	8	1166	Thompson	Leslie	Sales Rep	Bow	Anthony	9	1188	Firelli	Julie	Sales Rep	Bow	Anthony	1.	1216	Patterson	Steve	Sales Rep	Bow	Anthony	1.	1286	Tseng	Foon Yue	Sales Rep	Bow	Anthony	<b>-Select &amp; Alter</b> <b>Input:</b> Data hasil dari <b>Tabel Input</b> . <b>Output:</b> Data dengan kolom yang dipilih dan mungkin mengalami perubahan nama/tipe data. <b>Memilih kolom tertentu dan mengubah nama atau tipe datanya.</b>  <b>-Remove</b> <b>Input:</b> Data hasil dari <b>Select &amp; Alter</b> . <b>Output:</b> Data yang sudah disederhanakan dengan menghilangkan kolom yang tidak dibutuhkan. <b>Menghapus kolom yang tidak</b>
#	StreamEmployeeNumber	StreamLastName	StreamFirstName	StreamJobTitle	StreamLastnameBoss	StreamfirstnameBoss																																																																																	
1	1002	Murphy	Diane	President	<null>	<null>																																																																																	
2	1056	Patterson	Mary	VP Sales	Murphy	Diane																																																																																	
3	1076	Firelli	Jeff	VP Marketing	Murphy	Diane																																																																																	
4	1088	Patterson	William	Sales Manager (APAC)	Patterson	Mary																																																																																	
5	1102	Bondur	Gerard	Sale Manager (EMEA)	Patterson	Mary																																																																																	
6	1143	Bow	Anthony	Sales Manager (NA)	Patterson	Mary																																																																																	
7	1165	Jennings	Leslie	Sales Rep	Bow	Anthony																																																																																	
8	1166	Thompson	Leslie	Sales Rep	Bow	Anthony																																																																																	
9	1188	Firelli	Julie	Sales Rep	Bow	Anthony																																																																																	
1.	1216	Patterson	Steve	Sales Rep	Bow	Anthony																																																																																	
1.	1286	Tseng	Foon Yue	Sales Rep	Bow	Anthony																																																																																	

diperlukan dari dataset.

### Database lookup



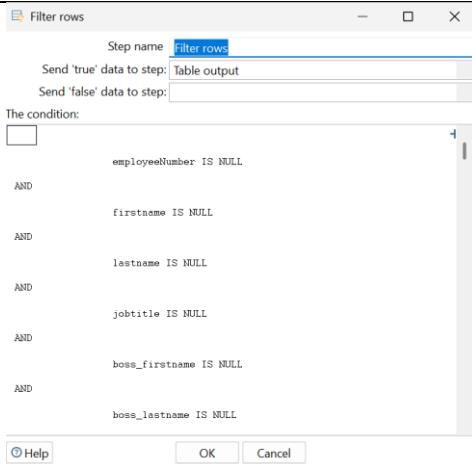
#	StreamEmployeeNumber	StreamLastname	StreamFirstname	StreamJobTitle	StreamLastnameBoss	StreamFirstnameBoss	employeeNumber	firstname	lastname	jobtitle
1	1001	Murphy	Diane	President	cools	cools	1001	Murphy	Diane	VP Sales
2	1056	Petterson	Mary	VP Sales	Murphy	Diane	1056	Petterson	Mary	VP Sales
3	1076	Firelli	Jeff	VP Marketing	Murphy	Diane	1076	Firelli	Jeff	VP Marketing
4	1088	Patterson	William	Sales Manager (APAC)	Patterson	Mary	1088	Patterson	William	Sales Manager (APAC)
5	1102	Bondar	Gerald	Sales Manager (NA)	Patterson	Mary	1102	Bondar	Gerald	Sales Manager (NA)
6	1143	Bow	Anthony	Sales Manager (NA)	Patterson	Mary	1143	Bow	Anthony	Sales Manager (NA)
7	1165	Jennings	Leslie	Sales Rep	Bow	Anthony	1165	Jennings	Leslie	Sales Rep
8	1166	Thompson	Leslie	Sales Rep	Bow	Anthony	1166	Thompson	Leslie	Sales Rep
9	1188	Firelli	Julie	Sales Rep	Bow	Anthony	1188	Firelli	Julie	Sales Rep
10	1216	Patterson	Steve	Sales Rep	Bow	Anthony	1216	Patterson	Steve	Sales Rep

**Input:** Data yang sudah difilter dari Remove, dengan referensi ke tabel lain untuk mendapatkan informasi tambahan.

**Output:** Data akhir yang sudah diperkaya dengan informasi tambahan dari database lookup.

**Mengambil data tambahan dari database berdasarkan nilai tertentu dari data input.**

### Filter rows



#	StreamEmployeeNumber	StreamLastname	StreamFirstname	StreamJobTitle	StreamLastnameBoss	StreamFirstnameBoss	employeeNumber	firstname	lastname	jobtitle
1	1001	Murphy	Diane	President	cools	cools	1001	Murphy	Diane	VP Sales
2	1056	Petterson	Mary	VP Sales	Murphy	Diane	1056	Petterson	Mary	VP Sales
3	1076	Firelli	Jeff	VP Marketing	Murphy	Diane	1076	Firelli	Jeff	VP Marketing
4	1088	Patterson	William	Sales Manager (APAC)	Patterson	Mary	1088	Patterson	William	Sales Manager (APAC)
5	1102	Bondar	Gerald	Sales Manager (NA)	Patterson	Mary	1102	Bondar	Gerald	Sales Manager (NA)
6	1143	Bow	Anthony	Sales Manager (NA)	Patterson	Mary	1143	Bow	Anthony	Sales Manager (NA)
7	1165	Jennings	Leslie	Sales Rep	Bow	Anthony	1165	Jennings	Leslie	Sales Rep
8	1166	Thompson	Leslie	Sales Rep	Bow	Anthony	1166	Thompson	Leslie	Sales Rep
9	1188	Firelli	Julie	Sales Rep	Bow	Anthony	1188	Firelli	Julie	Sales Rep
10	1216	Patterson	Steve	Sales Rep	Bow	Anthony	1216	Patterson	Steve	Sales Rep
11	1286	Tseng	Foon Yue	Sales Rep	Bow	Anthony	1286	Tseng	Foon Yue	Sales Rep

**Input:** Data mentah yang masih mengandung semua baris.

**Output:** Data yang telah difilter sesuai dengan kondisi yang ditentukan.

**Table output**

The screenshot shows the Tableau Data Extract interface. On the left, the 'Table output' step configuration window is open, showing details like Step name: 'table output', Connection: 'conn\_dw\_destination', Target schema: 'dw\_legendvehicle', Target table: 'dimemployees', Commit size: '1000', and Truncate table checked. On the right, the 'Execution Results' window displays a table of data with columns: StreamEmployeeNumber, StreamLastName, StreamFirstName, StreamJobTitle, StreamLastNameBoss, StreamFirstNameBoss, employeeNumber, firstName, lastName, and hireDate. The data includes rows for employees like Diane Murphy, Jeff Firelli, William Patterson, etc.

StreamEmployeeNumber	StreamLastName	StreamFirstName	StreamJobTitle	StreamLastNameBoss	StreamFirstNameBoss	employeeNumber	firstName	lastName	hireDate
1002	Murphy	Diane	President	<null>	<null>	<null>	<null>	<null>	<null>
1055	Patterson	Mary	VP Sales	Murphy	Diane	<null>	<null>	<null>	<null>
1076	Firelli	Jeff	VP Marketing	Murphy	Diane	<null>	<null>	<null>	<null>
1088	Patterson	William	Sales Manager (APAC)	Patterson	Mary	<null>	<null>	<null>	<null>
1102	Bondur	Gerard	Sales Manager (EMEA)	Patterson	Mary	<null>	<null>	<null>	<null>
1143	Bow	Anthony	Sales Manager (NA)	Patterson	Mary	<null>	<null>	<null>	<null>
1165	Jennings	Leslie	Sales Rep	Bow	Anthony	<null>	<null>	<null>	<null>
1166	Thompson	Leslie	Sales Rep	Bow	Anthony	<null>	<null>	<null>	<null>
1188	Firelli	Julie	Sales Rep	Bow	Anthony	<null>	<null>	<null>	<null>
1216	Patterson	Steve	Sales Rep	Bow	Anthony	<null>	<null>	<null>	<null>
1286	Tseng	Foon Yue	Sales Rep	Bow	Anthony	<null>	<null>	<null>	<null>

**Input:** Data hasil proses sebelumnya yang sudah difilter atau dimodifikasi.

**Output:** Data yang disimpan ke dalam tabel di database.

2. Jika proses itu di ulangi ( di run kembali ) apakah data akan redundant?

	<input type="checkbox"/> Edit	id_dimEmployees	employeeNumber	firstname	lastname	jobtitle	boss_firstname	boss_lastname	updated	
	<input type="checkbox"/>	1	1002	Diane	Murphy	President	NULL	NULL	2025-03-11	
	<input type="checkbox"/>	2	1056	Mary	Patterson	VP Sales	Diane	Murphy	2025-03-11	
	<input type="checkbox"/>	3	1076	Jeff	Firrelli	VP Marketing	Diane	Murphy	2025-03-11	
	<input type="checkbox"/>	4	1088	William	Patterson	Sales Manager (APAC)	Mary	Patterson	2025-03-11	
	<input type="checkbox"/>	5	1102	Gerard	Bondur	Sale Manager (EMEA)	Mary	Patterson	2025-03-11	
	<input type="checkbox"/>	6	1143	Anthony	Bow	Sales Manager (NA)	Mary	Patterson	2025-03-11	
	<input type="checkbox"/>	7	1165	Leslie	Jennings	Sales Rep	Anthony	Bow	2025-03-11	
	<input type="checkbox"/>	8	1166	Leslie	Thompson	Sales Rep	Anthony	Bow	2025-03-11	
	<input type="checkbox"/>	9	1188	Julie	Firrelli	Sales Rep	Anthony	Bow	2025-03-11	
	<input type="checkbox"/>	10	1216	Steve	Patterson	Sales Rep	Anthony	Bow	2025-03-11	
	<input type="checkbox"/>	11	1286	Foon	Yue	Tseng	Sales Rep	Anthony	Bow	2025-03-11
	<input type="checkbox"/>	12	1323	George	Vanauf	Sales Rep	Anthony	Bow	2025-03-11	
	<input type="checkbox"/>	13	1337	Loui	Bondur	Sales Rep	Gerard	Bondur	2025-03-11	
	<input type="checkbox"/>	14	1370	Gerard	Hernandez	Sales Rep	Gerard	Bondur	2025-03-11	
	<input type="checkbox"/>	15	1401	Pamela	Castillo	Sales Rep	Gerard	Bondur	2025-03-11	
	<input type="checkbox"/>	16	1501	Larry	Bott	Sales Rep	Gerard	Bondur	2025-03-11	
	<input type="checkbox"/>	17	1504	Barry	Jones	Sales Rep	Gerard	Bondur	2025-03-11	
	<input type="checkbox"/>	18	1611	Andy	Fixter	Sales Rep	William	Patterson	2025-03-11	
	<input type="checkbox"/>	19	1612	Peter	Marsh	Sales Rep	William	Patterson	2025-03-11	
	<input type="checkbox"/>	20	1619	Tom	King	Sales Rep	William	Patterson	2025-03-11	
	<input type="checkbox"/>	21	1621	Mami	Nishi	Sales Rep	Mary	Patterson	2025-03-11	
	<input type="checkbox"/>	22	1625	Yoshimi	Kato	Sales Rep	Mami	Nishi	2025-03-11	
	<input type="checkbox"/>	23	1702	Martin	Gerard	Sales Rep	Gerard	Bondur	2025-03-11	
	<input type="checkbox"/>	24	1002	Diane	Murphy	President	NULL	NULL	2025-03-11	
	<input type="checkbox"/>	25	1002	Diane	Murphy	President	NULL	NULL	2025-03-11	
	<input type="checkbox"/>	26	9999	Putri	Arimbi	Data Analyst	Diane	Murphy	2025-03-11	

Iya ada yang redundant yaitu tabel id 1 dan 24 yaitu 1002 Diane

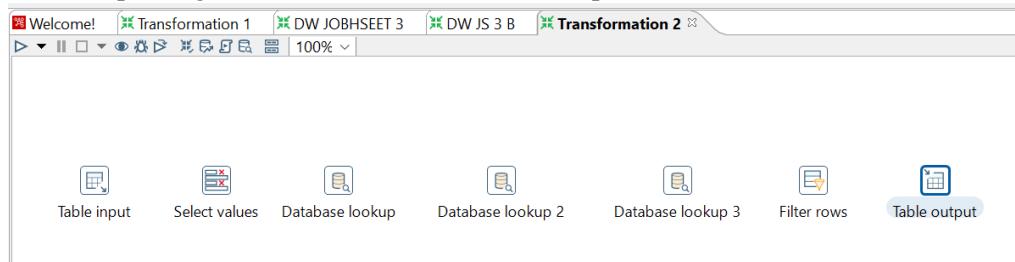
3. Tambahkan nama anda pada table employee di OLTP. jalankan kembali transformasi ini. Amati hasilnya, apa yang terjadi?

<input type="checkbox"/>	22	1625	Yoshimi	Kato	Sales Rep	Mami	Nishi	2025-03-11
<input type="checkbox"/>	23	1702	Martin	Gerard	Sales Rep	Gerard	Bondur	2025-03-11
<input type="checkbox"/>	24	1002	Diane	Murphy	President	NULL	NULL	2025-03-11
<input type="checkbox"/>	25	1002	Diane	Murphy	President	NULL	NULL	2025-03-11
<input type="checkbox"/>	26	9999	Putri	Arimbi	Data Analyst	Diane	Murphy	2025-03-11

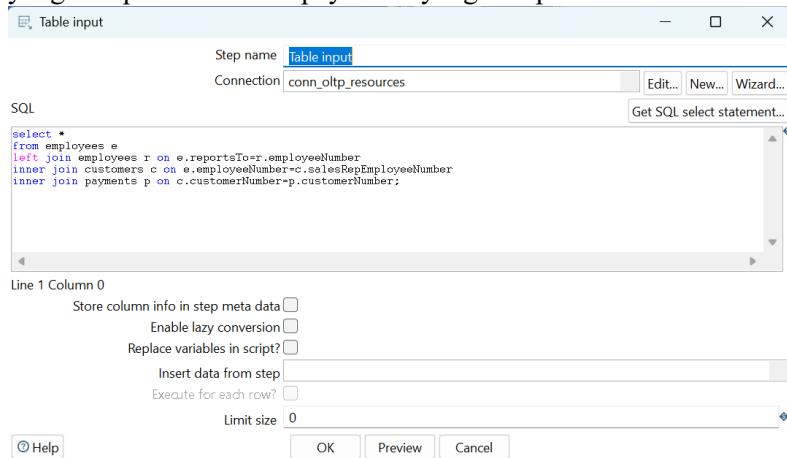
### C. Fakta Pembayaran

- Buatlah sebuah tabel pada database OLAP yang telah dibuat (database dw\_legendVehicle).
  - nama tabel: FactOmset
  - Field: id\_dimEmployees int FK tabel dimEmployee
  - Field: id\_dimDate int FK tabel dimDate
  - Field: amount decimal(10,2)
- Buat Transformation baru pada PDI Spoon. Gunakan objekt-object yang dihubungkan sebagai berikut:
  - Table Input: Dapatkan untuk mengambil data transaksi dari OLTP
  - Select values: digunakan untuk memilih field yang akan digunakan untuk OLAP
  - Database lookup (1) : digunakan untuk mencocokkan data pada tabel dimEmployee untuk mengambil id\_dimEmployee.
  - Database lookup (2) : digunakan untuk mencocokkan data pada tabel dimDate untuk mengambil id\_dimDate.

- Database lookup (3): digunakan untuk mencocokkan data pada tabel factomset untuk melihat data yang sama atau tidak.
- Filter rows: digunakan untuk memilih data yang sudah ada pada tabel factomset tidak dimasukkan lagi.
- Table output: digunakan untuk memasukkan data pada tabel factOmset



3. Konfigurasi pada Table input adalah untuk mendapatkan data dari OLTP sesuai dengan hasil dari query berikut. query tersebut akan menampilkan seluruh isi field dari employee hingga transaksi yang didapat dilihat dari payments yang didapat.



4. Konfigurasi pada Select Values adalah untuk menghapus semua field kecuali employeeNumber, lastname dari employee, firstname dari employee, jobTitle dari employee, lastname dari manager, firstname dari manager, payment date dan amount.

Select values

Step name Select values

Select & Alter Remove Meta-data

Fields :

#	Fieldname	Rename to	Length	Precision		
1	employeeNumber	streamEmployeeNumber				<a href="#">Get fields to select</a>
2	lastName	streamLastName				<a href="#">Edit Mapping</a>
3	firstName	streamFirstName				
4	extension					
5	email					
6	officeCode					
7	reportsTo					
8	jobTitle	streamJobTitle				
9	employeeNumber_1					
10	lastName_1	streamLastNameBoss				
11	firstName_1	streamFirstNameBoss				
12	extension_1					
13	email_1					
14	officeCode_1					
15	reportsTo_1					
16	jobTitle_1					
17	customerNumber					
18	customerName					
19	contactLastName					
20	contactFirstName					
21	phone					
22	addressLine1					
23	addressLine2					
24	city					
25	state					

Include unspecified fields, ordered by name

OK Cancel

Help

26 postalCode	
27 country	
28 salesRepEmployeeNumber	
29 creditLimit	
30 customerNumber_1	
31 checkNumber	
32 paymentDate	streamDate
33 amount	streamAmount

Include unspecified fields, ordered by name

OK Cancel

Help

Gambar kolom yang ditampilkan pada select & alter tab (1)

Select values

Step name Select values

Select & Alter Remove Meta-data

Fields to remove :

# ^	Fieldname				
1	extension				
2	email				
3	officeCode				
4	reportsTo				
5	employeeNumber_1				
6	extension_1				
7	email_1				
8	officeCode_1				
9	reportsTo_1				
10	jobTitle_1				
11	customerNumber				
12	customerName				
13	contactLastName				
14	contactFirstName				
15	phone				
16	addressLine1				
17	addressLine2				
18	city				
19	state				
20	postalCode				
21	country				
22	salesRepEmployeeNumber				
23	creditLimit				
24	customerNumber_1				
25	checkNumber				

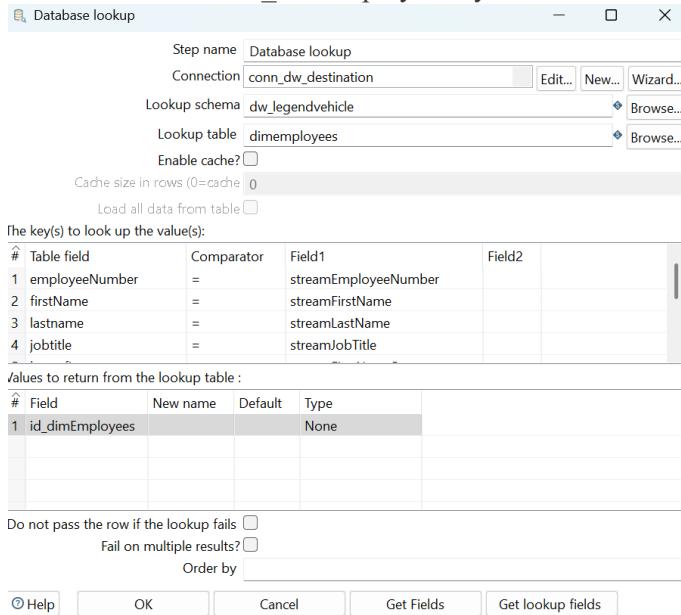
Get fields to remove

OK Cancel

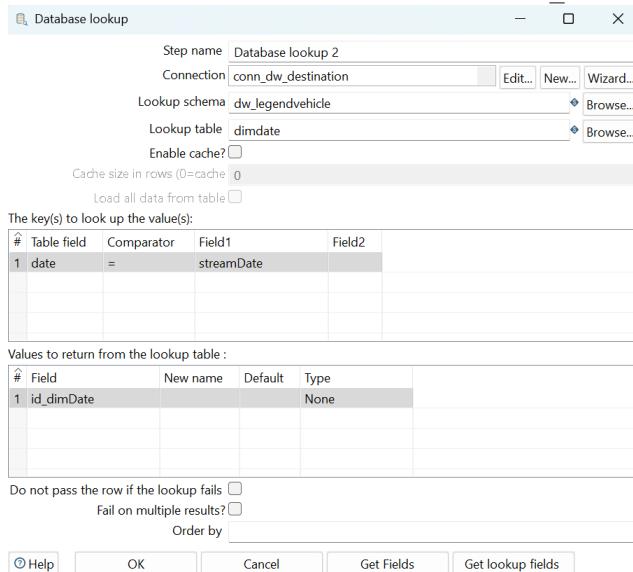
Help

Gambar kolom yang dihapus pada remove tab

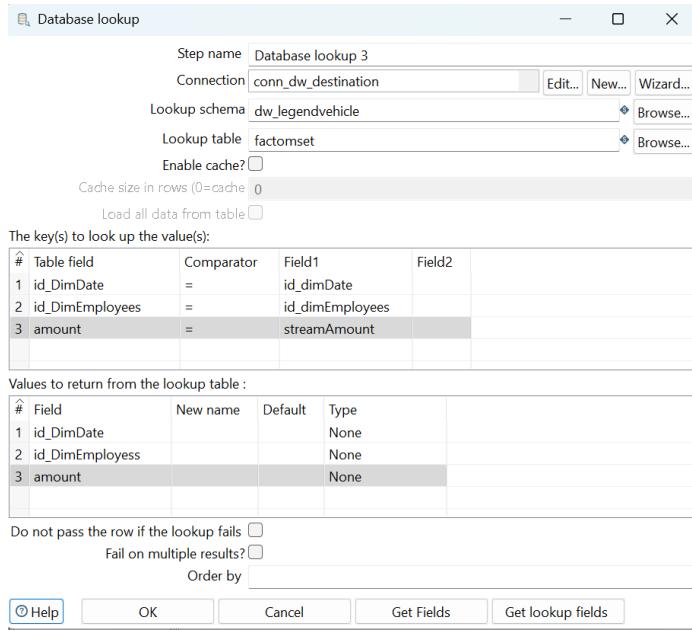
5. Konfigurasi pada tabel database lookup adalah dengan melakukan komparasi field stream (output dari proses sebelumnya) dengan field isi data pada tabel dimEmployees. Jika data tersebut cocok maka akan diambil id\_dimEmployees nya.



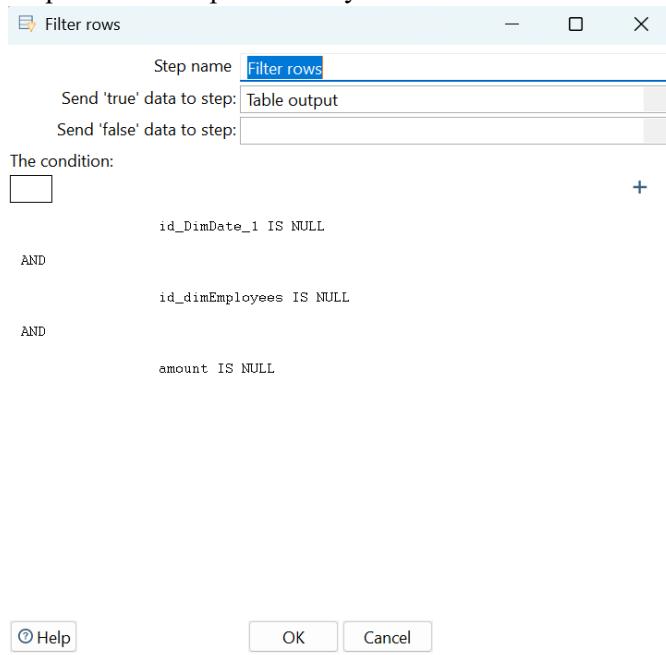
6. Konfigurasi pada tabel database lookup yang kedua adalah dengan melakukan komparasi field stream (output dari proses sebelumnya untuk field date) dengan field isi data pada tabel dimDate. Jika data tersebut cocok maka akan diambil id\_dimDate nya.



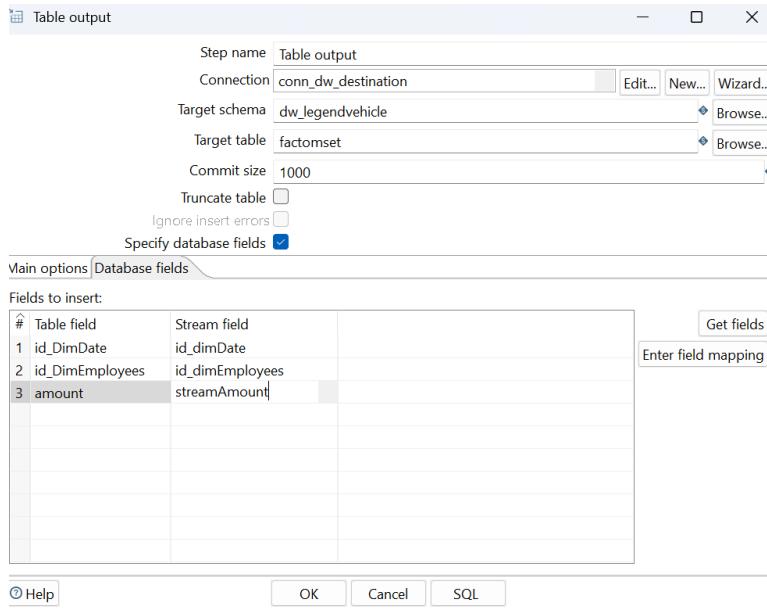
7. Konfigurasi pada tabel database lookup yang ketiga adalah dengan melakukan komparasi id\_dimDate dan id\_dimEmployees yang diambil dari proses lookup sebelumnya dengan field isi data pada tabel factOmset. Jika data tersebut cocok data tidak akan dimasukkan dalam tabel factOmset.



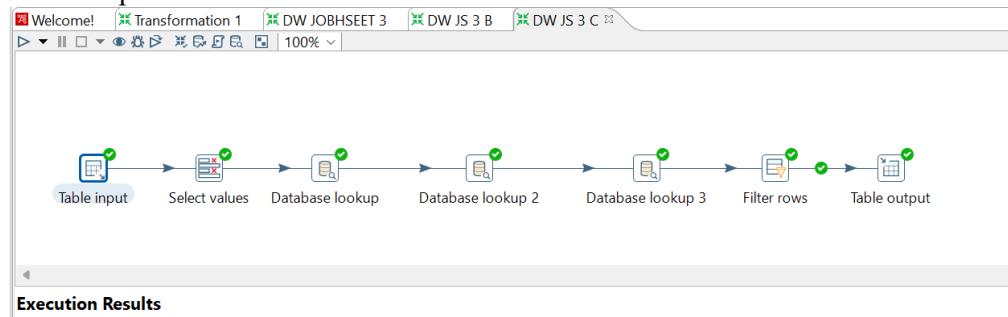
8. Pada bagian filter rows untuk melihat data belum ada pada tabel factOmset dengan melihat bahwa output dari lookup sebelumnya bernilai NULL.



9. Konfigurasi terakhir pada table output adalah dengan melakukan mapping data output dari proses sebelumnya kedalam field pada tabel factOmset.



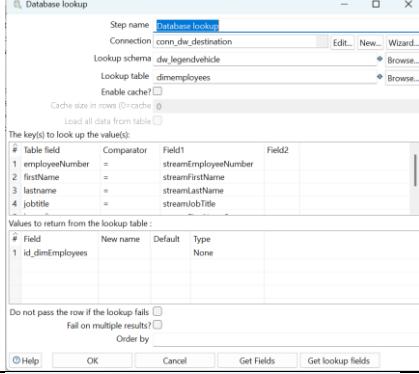
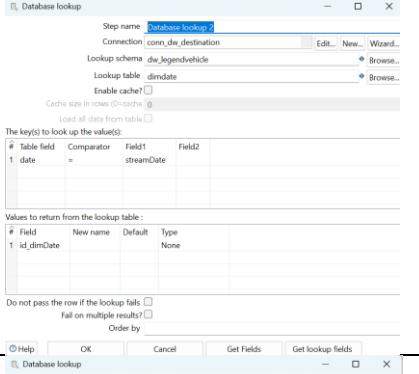
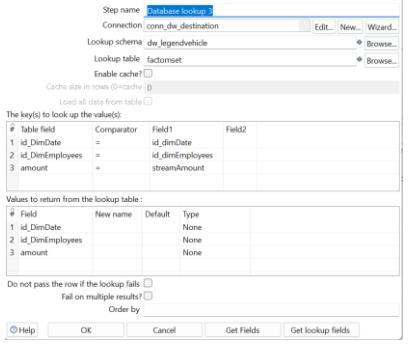
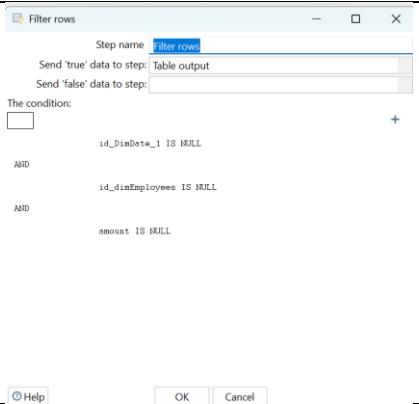
**10. Jalankan proses transformation tersebut.**

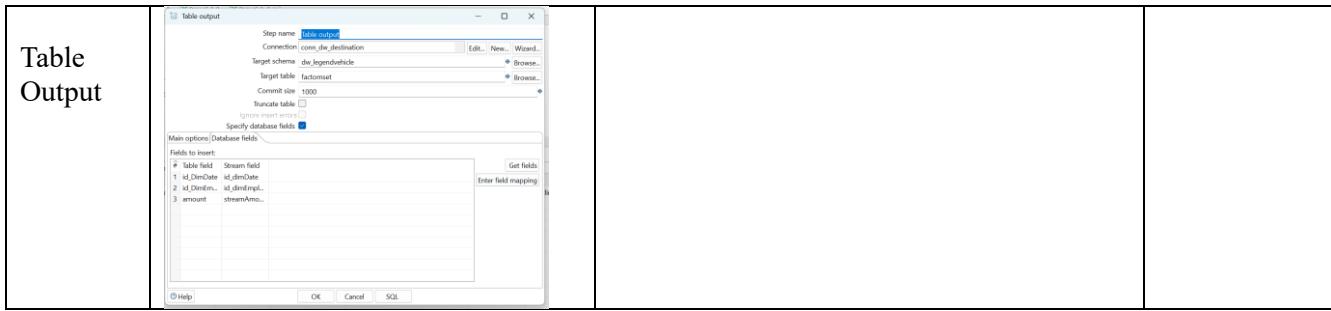


### TUGAS 3

- Buka preview tab pada execution result area di setiap proses object. amati input dan output data yang ada. bandingkan di setiap prosesnya. jelaskan perbedaan disetiap prosesnya.

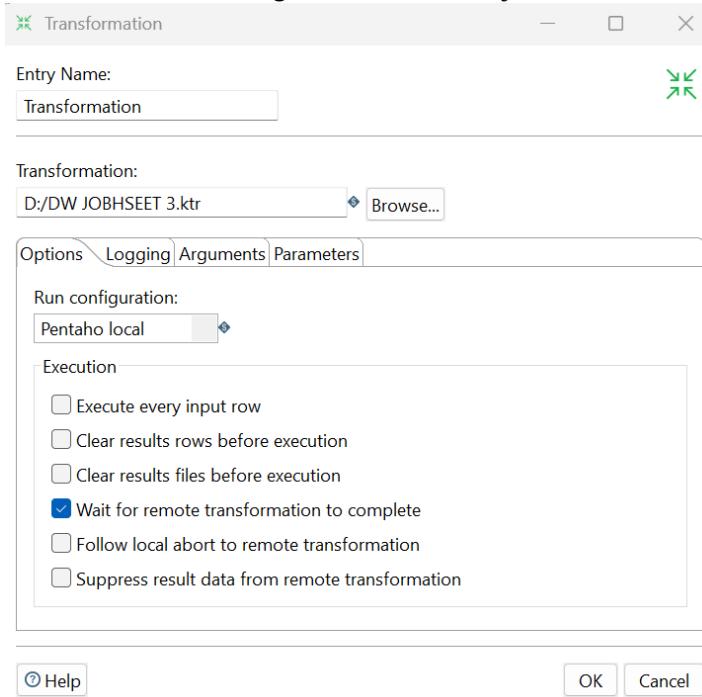
Proses Objek	SS data input	SS data output	Keterangan
Table Input			<b>Input:</b> Proses membaca data dari sumber database menggunakan query SQL. <b>Output:</b> Hasil eksekusi query yang menampilkan data dalam bentuk tabel.
Select values			<b>Select Values:</b> Memilih dan mengatur kolom yang akan digunakan dalam proses selanjutnya. <b>Remove:</b> Menghapus kolom yang tidak diperlukan dari dataset.
Remove			<b>Output:</b> Hasil akhir setelah proses pemilihan dan penghapusan kolom diterapkan. 40

<h3>Database lookup(1)</h3>	 <p>The screenshot shows the 'Database lookup' configuration window. Step name: 'Database lookup'. Connection: 'conn_dw_destination'. Lookup schema: 'dw_legendevehicle'. Lookup table: 'dimemployees'. Cache size in rows (0-cache). Load all data from table. The key(s) to look up the value(s): # Table field Comparator Field1 Field2 1 employeeNumber = streamEmployeeNumber 2 firstName = streamFirstName 3 lastName = streamLastName 4 jobtitle = streamJobTitle. Values to return from the lookup table: # Field New name Default Type 1 id_dimEmployees None. Do not pass the row if the lookup fails. Fall on multiple results? Order by.</p>	<h3>Execution Results</h3> <table border="1"> <thead> <tr> <th>#</th> <th>streamEmployeeNumber</th> <th>streamFirstName</th> <th>streamJobTitle</th> <th>streamLastName</th> <th>streamLastNameBis</th> <th>streamFirstNameBis</th> <th>streamDate</th> </tr> </thead> <tbody> <tr><td>1</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2004/10/19 00:00:00.000</td></tr> <tr><td>2</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2003/06/05 00:00:00.000</td></tr> <tr><td>3</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2004/12/18 00:00:00.000</td></tr> <tr><td>4</td><td>1166</td><td>Thompson</td><td>Leslie</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td><td>2000/06/01 00:00:00.000</td></tr> <tr><td>5</td><td>1166</td><td>Thompson</td><td>Leslie</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td><td>2000/06/01 00:00:00.000</td></tr> <tr><td>6</td><td>1166</td><td>Thompson</td><td>Leslie</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td><td>2004/08/02 00:00:00.000</td></tr> <tr><td>7</td><td>1611</td><td>Fitter</td><td>Andy</td><td>Sales Rep</td><td>Patterson</td><td>William</td><td>2003/05/20 00:00:00.000</td></tr> <tr><td>8</td><td>1611</td><td>Fitter</td><td>Andy</td><td>Sales Rep</td><td>Patterson</td><td>William</td><td>2000/12/11 00:00:00.000</td></tr> <tr><td>9</td><td>1611</td><td>Fitter</td><td>Andy</td><td>Sales Rep</td><td>Patterson</td><td>William</td><td>2000/12/11 00:00:00.000</td></tr> <tr><td>10</td><td>1611</td><td>Fitter</td><td>Andy</td><td>Sales Rep</td><td>Patterson</td><td>William</td><td>2004/03/10 00:00:00.000</td></tr> <tr><td>11</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2004/11/14 00:00:00.000</td></tr> <tr><td>12</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2004/08/08 00:00:00.000</td></tr> </tbody> </table>	#	streamEmployeeNumber	streamFirstName	streamJobTitle	streamLastName	streamLastNameBis	streamFirstNameBis	streamDate	1	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2004/10/19 00:00:00.000	2	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2003/06/05 00:00:00.000	3	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2004/12/18 00:00:00.000	4	1166	Thompson	Leslie	Sales Rep	Bow	Anthony	2000/06/01 00:00:00.000	5	1166	Thompson	Leslie	Sales Rep	Bow	Anthony	2000/06/01 00:00:00.000	6	1166	Thompson	Leslie	Sales Rep	Bow	Anthony	2004/08/02 00:00:00.000	7	1611	Fitter	Andy	Sales Rep	Patterson	William	2003/05/20 00:00:00.000	8	1611	Fitter	Andy	Sales Rep	Patterson	William	2000/12/11 00:00:00.000	9	1611	Fitter	Andy	Sales Rep	Patterson	William	2000/12/11 00:00:00.000	10	1611	Fitter	Andy	Sales Rep	Patterson	William	2004/03/10 00:00:00.000	11	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2004/11/14 00:00:00.000	12	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2004/08/08 00:00:00.000													
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<h3>Database lookup(3)</h3>	 <p>The screenshot shows the 'Database lookup' configuration window. Step name: 'Database lookup'. Connection: 'conn_dw_destination'. Lookup schema: 'dw_legendevehicle'. Lookup table: 'factset'. Cache size in rows (0-cache). Load all data from table. The key(s) to look up the value(s): # Table field Comparator Field1 Field2 1 id_DimDate = id_dimDate 2 id_dimEmployees = id_dimEmployees 3 amount = streamAmount. Values to return from the lookup table: # Field New name Default Type 1 id_DimDate None 2 id_dimEmployees None 3 amount None. Do not pass the row if the lookup fails. Fall on multiple results? Order by.</p>	<h3>Execution Results</h3> <table border="1"> <thead> <tr> <th>#</th> <th>streamLineNumber</th> <th>streamLastNames</th> <th>streamFirstNames</th> <th>streamJobTitle</th> <th>streamLastNameBis</th> <th>streamFirstNameBis</th> <th>streamDate</th> <th>streamAmount</th> </tr> </thead> <tbody> <tr><td>1</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2004/10/19 00:00:00.000</td><td>6066.70</td></tr> <tr><td>2</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2003/06/05 00:00:00.000</td><td>14371.44</td></tr> <tr><td>3</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2004/12/18 00:00:00.000</td><td>1676.14</td></tr> <tr><td>4</td><td>1166</td><td>Thompson</td><td>Leslie</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td><td>2004/12/17 00:00:00.000</td><td>14371.44</td></tr> <tr><td>5</td><td>1166</td><td>Thompson</td><td>Leslie</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td><td>2004/08/02 00:00:00.000</td><td>33347.88</td></tr> <tr><td>6</td><td>1166</td><td>Thompson</td><td>Leslie</td><td>Sales Rep</td><td>Bow</td><td>Anthony</td><td>2004/08/02 00:00:00.000</td><td>33347.88</td></tr> <tr><td>7</td><td>1611</td><td>Fitter</td><td>Andy</td><td>Sales Rep</td><td>Patterson</td><td>William</td><td>2003/05/20 00:00:00.000</td><td>45864.0</td></tr> <tr><td>8</td><td>1611</td><td>Fitter</td><td>Andy</td><td>Sales Rep</td><td>Patterson</td><td>William</td><td>2004/03/10 00:00:00.000</td><td>8289.72</td></tr> <tr><td>9</td><td>1611</td><td>Fitter</td><td>Andy</td><td>Sales Rep</td><td>Patterson</td><td>William</td><td>2003/05/21 00:00:00.000</td><td>10465.8</td></tr> <tr><td>10</td><td>1611</td><td>Fitter</td><td>Andy</td><td>Sales Rep</td><td>Patterson</td><td>William</td><td>2004/03/10 00:00:00.000</td><td>44864.74</td></tr> <tr><td>11</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2004/11/14 00:00:00.000</td><td>19916.42</td></tr> <tr><td>12</td><td>1370</td><td>Hernandez</td><td>Gerard</td><td>Sales Rep</td><td>Bondur</td><td>General</td><td>2004/08/08 00:00:00.000</td><td>47354.19</td></tr> </tbody> </table>	#	streamLineNumber	streamLastNames	streamFirstNames	streamJobTitle	streamLastNameBis	streamFirstNameBis	streamDate	streamAmount	1	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2004/10/19 00:00:00.000	6066.70	2	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2003/06/05 00:00:00.000	14371.44	3	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2004/12/18 00:00:00.000	1676.14	4	1166	Thompson	Leslie	Sales Rep	Bow	Anthony	2004/12/17 00:00:00.000	14371.44	5	1166	Thompson	Leslie	Sales Rep	Bow	Anthony	2004/08/02 00:00:00.000	33347.88	6	1166	Thompson	Leslie	Sales Rep	Bow	Anthony	2004/08/02 00:00:00.000	33347.88	7	1611	Fitter	Andy	Sales Rep	Patterson	William	2003/05/20 00:00:00.000	45864.0	8	1611	Fitter	Andy	Sales Rep	Patterson	William	2004/03/10 00:00:00.000	8289.72	9	1611	Fitter	Andy	Sales Rep	Patterson	William	2003/05/21 00:00:00.000	10465.8	10	1611	Fitter	Andy	Sales Rep	Patterson	William	2004/03/10 00:00:00.000	44864.74	11	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2004/11/14 00:00:00.000	19916.42	12	1370	Hernandez	Gerard	Sales Rep	Bondur	General	2004/08/08 00:00:00.000	47354.19
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<h3>Filter rows</h3>	 <p>The screenshot shows the 'Filter rows' configuration window. Step name: 'Filter rows'. Send 'true' data to step: 'Table output'. Send 'false' data to step: ''. The condition: # AND id_DimDate_1 IS NULL AND id_dimEmployees IS NULL AND amount IS NULL. OK Cancel.</p>																																																																																																																						

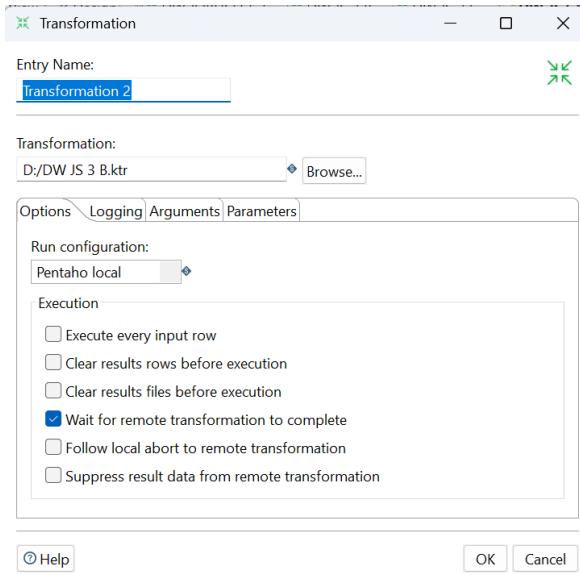


## D. Jobs

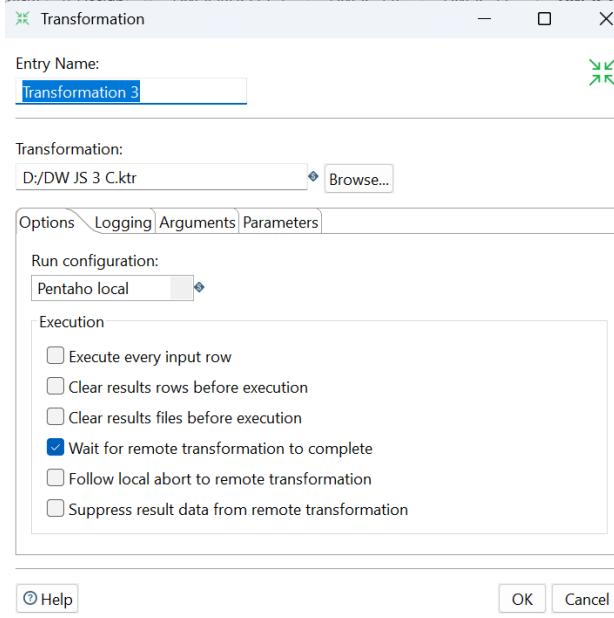
1. Buka Jobs pada **File - New - Jobs**
2. Gunakan 5 objects dan hubungkan sesuai urutan sebagai berikut:
  - **Start:** Objek untuk melakukan konfigurasi cron job dari proses ETL yang telah dibuat
  - **Transformation 1 :** digunakan untuk menjalankan transformation pembuatan dimDate.



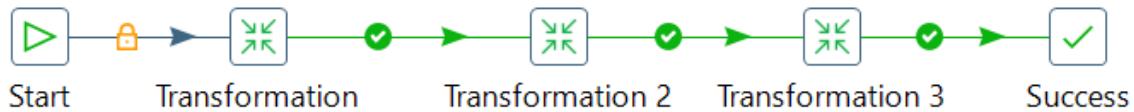
- **Transformation 2 :** digunakan untuk menjalankan transformation pembuatan dimEmployees.



- **Transformation 3 :** digunakan untuk menjalankan transformation pembuatan factOmset.



- **Success:** Objek untuk menandakan bahwa proses telah selesai



## TUGAS 4

1. Buka desain database dari dw\_legendvehicle pada DBMS, bandingkan design tersebut dengan desain db OLTP legendVehicle pada jobsheet 2. analisalah dan ceritakan perbedaannya.

OLTP legendVehicle	dw_legendvehicle
Memiliki banyak tabel dan relasi yang kompleks	Lebih sederhana dan fokus pada analisis
Mempunyai banyak tabel utama	Menggunakan star schema
Relasi antar tabel sangat kompleks	Relasi lebih simple
Cocok untuk operasional bisnis sehari-hari	Cocok untuk analisis bisnis

2. Buatlah report pertahun untuk KPI "Jumlah omset yang didapat" pada **Foon Yue Tseng** dan **Pamela Castillo**. Serta gambarkan grafiknya (grafik garis).

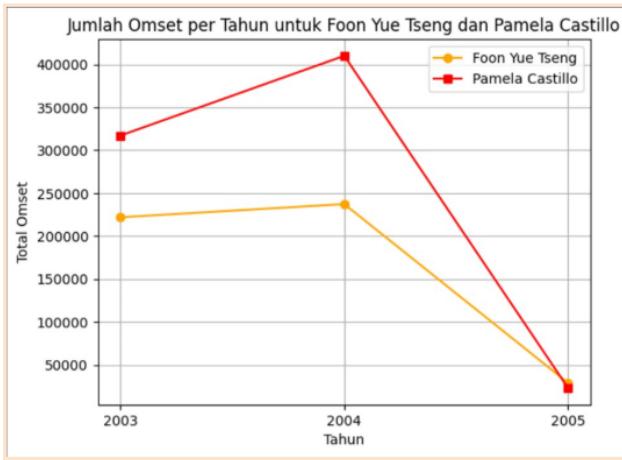
```

1 SELECT
2     d.year AS Tahun,
3     e.firstName,
4     e.lastName,
5     SUM(f.amount) AS Total_Omset
6 FROM dw_legendvehicle.factomset f
7 JOIN dw_legendvehicle.dimemployees e ON f.id_dimEmployees = e.id_dimEmployees
8 JOIN dw_legendvehicle.dimdate d ON f.id_dimDate = d.id_dimDate
9 WHERE (e.firstName = 'Foon Yue' AND e.lastName = 'Tseng')
10    OR (e.firstName = 'Pamela' AND e.lastName = 'Castillo')
11 GROUP BY d.year, e.firstName, e.lastName
12 ORDER BY d.year;

```

Tahun	firstName	lastName	Total_Omset
2003	Foon Yue	Tseng	221887.03
2003	Pamela	Castillo	317104.78
2004	Foon Yue	Tseng	237255.26
2004	Pamela	Castillo	409910.07
2005	Foon Yue	Tseng	29070.38
2005	Pamela	Castillo	23187.02

Name	2003	2004	2005
Foon Yue Tseng	221887.03	237255.26	29070.38
Pamela Castillo	317104.78	409910.07	23187.02



3. Jelaskan perbedaan query saat mendapatkan data pada nomor 2 dengan query pada saat Jobsheet 2!

**Jawab:** Nomor 2 : Menggunakan skema dimensional dengan tabel fakta (factomset) dan tabel dimensi (dimDate dan dimEmployees) sehingga hanya perlu menjumlahkan (amount).

Jobsheet 2 : Menggunakan skema tradisional dengan tabel transaksi (orders, orderdetails). Omset dihitung dari jumlah produk × harga satuan, yang lebih lambat karena data masih dalam bentuk transaksi mentah).

4. Simpulkan dengan bahasa sendiri, apa perbedaan OLTP dan OLAP?

**Jawab :** OLTP : Digunakan untuk transaksi harian dan memiliki tabel yang kompleks.

OLAP : Digunakan untuk analisis data dan dirancang dalam bentuk star skema (tabel fakta dan tabel dimensi).

## STUDI KASUS

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	<code>id_dimProduct</code> 📄	int			No	None		AUTO_INCREMENT	Change  Drop  More
2	<code>productCode</code> 🏷	varchar(50)	utf8mb4_0900_ai_ci		Yes	NULL			Change  Drop  More
3	<code>productName</code>	varchar(100)	utf8mb4_0900_ai_ci		Yes	NULL			Change  Drop  More
4	<code>productLine</code>	varchar(50)	utf8mb4_0900_ai_ci		Yes	NULL			Change  Drop  More
5	<code>buyPrice</code>	decimal(10,2)			Yes	NULL			Change  Drop  More
6	<code>MSRP</code>	decimal(10,2)			Yes	NULL			Change  Drop  More

Table input

Step name Table input  
Connection conn\_oltp\_resources Edit... New... Wizard...  
SQL Get SQL select statement...

```
SELECT productCode, productName, productLine, productScale,  
       productVendor, productDescription, buyPrice, MSRP  
FROM products;
```

Select values

Step name Select values

Select & Alter Remove Meta-data

Fields :

#	Fieldname	Rename to	Length	Precision	
1	productCode	streamProductCode			<a href="#">Get fields to select</a>
2	productName	streamProductName			<a href="#">Edit Mapping</a>
3	productLine	streamProductLine			
4	productScale				
5	productVendor				
6	productDescription				
7	buyPrice	streamBuyPrice			
8	MSRP	streamMSRP			

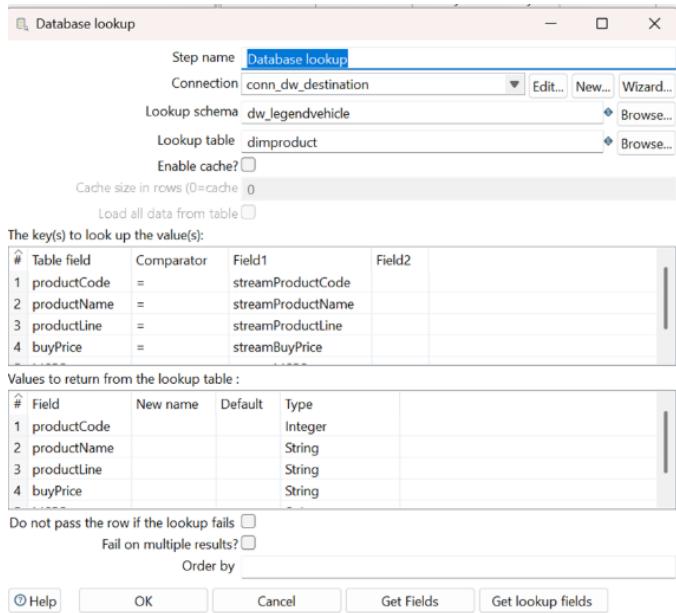
Select values

Step name Select values

Select & Alter Remove Meta-data

Fields to remove :

#	Fieldname
1	productScale
2	productVendor
3	productDescription



The condition:

`productCode IS NULL`

AND

`productName IS NULL`

AND

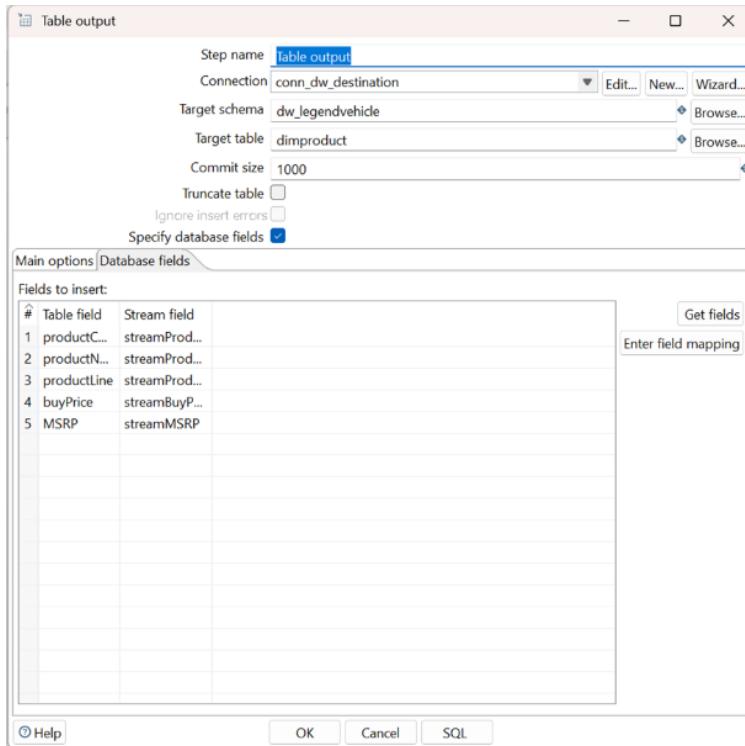
`productLine IS NULL`

AND

`buyPrice IS NULL`

AND

`MSRP IS NULL`



⇒ Tabel dimproducts data pegawai database OLTP

		id_dimProduct	productCode	productName	productLine	buyPrice	MSRP
<input type="checkbox"/>		1	S10_1678	1969 Harley Davidson Ultimate Chopper	Motorcycles	48.81	95.70
<input type="checkbox"/>		2	S10_1949	1952 Alpine Renault 1300	Classic Cars	98.58	214.30
<input type="checkbox"/>		3	S10_2016	1996 Moto Guzzi 1100i	Motorcycles	68.99	118.94
<input type="checkbox"/>		4	S10_4698	2003 Harley-Davidson Eagle Drag Bike	Motorcycles	91.02	193.66
<input type="checkbox"/>		5	S10_4757	1972 Alfa Romeo GTA	Classic Cars	85.68	136.00
<input type="checkbox"/>		6	S10_4962	1962 Lancia A Delta 16V	Classic Cars	103.42	147.74
<input type="checkbox"/>		7	S12_1099	1968 Ford Mustang	Classic Cars	95.34	194.57
<input type="checkbox"/>		8	S12_1108	2001 Ferrari Enzo	Classic Cars	95.59	207.80
<input type="checkbox"/>		9	S12_1666	1958 Setra Bus	Trucks and Buses	77.90	136.67
<input type="checkbox"/>		10	S12_2823	2002 Suzuki XREO	Motorcycles	66.27	150.62
<input type="checkbox"/>		11	S12_3148	1969 Corvair Monza	Classic Cars	89.14	151.08
<input type="checkbox"/>		12	S12_3380	1968 Dodge Charger	Classic Cars	75.16	117.44
<input type="checkbox"/>		13	S12_3891	1969 Ford Falcon	Classic Cars	83.05	173.02
<input type="checkbox"/>		14	S12_3990	1970 Plymouth Hemi Cuda	Classic Cars	31.92	79.80
<input type="checkbox"/>		15	S12_4473	1957 Chevy Pickup	Trucks and Buses	55.70	118.50
<input type="checkbox"/>		16	S12_4675	1969 Dodge Charger	Classic Cars	58.73	115.16
<input type="checkbox"/>		17	S18_1097	1940 Ford Pickup Truck	Trucks and Buses	58.33	116.67
<input type="checkbox"/>		18	S18_1129	1993 Mazda RX-7	Classic Cars	83.51	141.54
<input type="checkbox"/>		19	S18_1342	1937 Lincoln Berline	Vintage Cars	60.62	102.74
<input type="checkbox"/>		20	S18_1367	1936 Mercedes-Benz 500K Special Roadster	Vintage Cars	24.26	53.91

⇒ Tabel factSales database OLAP

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	id_factSales	int			No	None		AUTO_INCREMENT	Change  Drop  More
2	id_dimProduct	int			Yes	NULL			Change  Drop  More
3	id_dimEmployees	int			Yes	NULL			Change  Drop  More
4	id_dimDate	int			Yes	NULL			Change  Drop  More
5	quantityOrdered	int			Yes	NULL			Change  Drop  More
6	priceEach	decimal(10,2)			Yes	NULL			Change  Drop  More
7	totalAmount	decimal(10,2)			Yes	NULL			Change  Drop  More

Table input

Step name: Table input

Connection: conn.oltp\_resources

SQL:

```
SELECT
    o.orderDate,
    p.productCode,
    e.employeeNumber,
    od.quantityOrdered,
    od.priceEach
FROM orders o
JOIN orderdetails od ON o.orderNumber = od.orderNumber
JOIN products p ON od.productCode = p.productCode
JOIN customers c ON o.customerNumber = c.customerNumber
JOIN employees e ON c.salesRepEmployeeNumber = e.employeeNumber
```

Database lookup

Step name: Database lookup

Connection: conn.oltp\_resources

Lookup schema: dw.legendvehicle

Lookup table: dimdate

Enable cache:

Cache size in rows (0=cache 0)

Load all data from table:

The key(s) to look up the value(s):

#	Table field	Comparator	Field1	Field2
1	date	=	orderDate	
2				

Values to return from the lookup table:

#	Field	New name	Default	Type
1	id_dimDate			None

Do not pass the row if the lookup fails:

Fail on multiple results:

Order by:

Buttons: Help, OK, Cancel, Get Fields, Get lookup fields

**Database lookup**

Step name: Database lookup 2

Connection: conn\_dw\_destination

Lookup schema: dw\_legendvehicle

Lookup table: dimproduct

Enable cache?

Cache size in rows (0=cache 0)

Load all data from table

The key(s) to look up the value(s):

#	Table field	Comparator	Field1	Field2
1	productCode	=	productCode	

Values to return from the lookup table :

#	Field	New name	Default	Type
1	id_dimProduct			None

Do not pass the row if the lookup fails

Fail on multiple results?

Order by

**Database lookup**

Step name: Database lookup 3

Connection: conn\_dw\_destination

Lookup schema: dw\_legendvehicle

Lookup table: dimEmployees

Enable cache?

Cache size in rows (0=cache 0)

Load all data from table

The key(s) to look up the value(s):

#	Table field	Comparator	Field1	Field2
1	employeeNumber	=	employeeNumber	

Values to return from the lookup table :

#	Field	New name	Default	Type
1	id_dimEmployees			None

Do not pass the row if the lookup fails

Fail on multiple results?

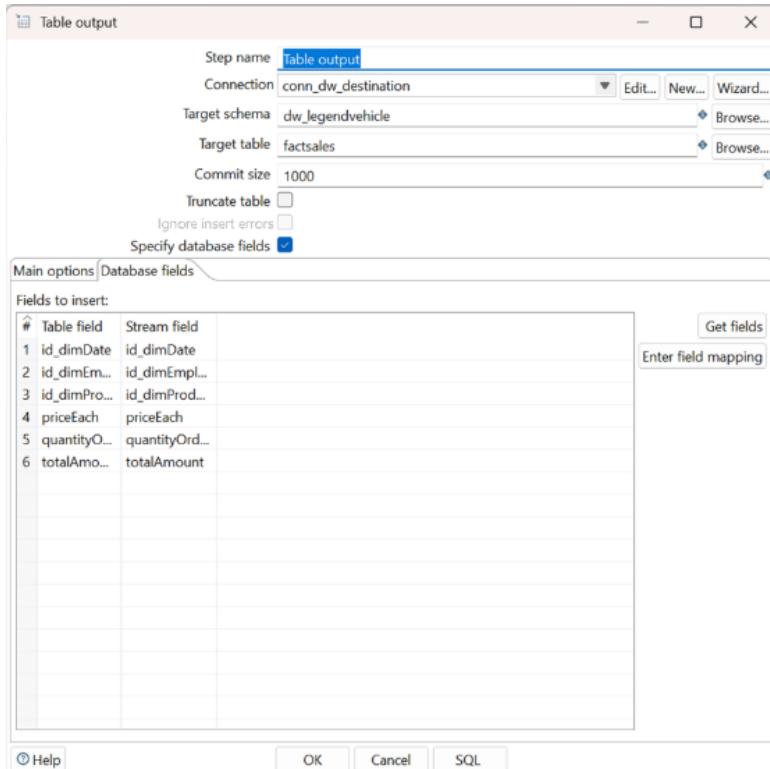
Order by

Select & Alter Remove Meta-data

Fields :

#	Fieldname	Rename to	Length	Precision
1	orderDate			
2	productCode			
3	employeeNumber			
4	quantityOrdered			
5	priceEach			
6	id_dimDate			
7	id_dimProduct			
8	id_dimEmployees			

Get fields to select  
Edit Mapping



⇒ Hasil Tabel factSales

		id_factSales	id_dimProduct	id_dimEmployees	id_dimDate	quantityOrdered	priceEach	totalAmount
<input type="checkbox"/>		1	23	10	6	30	136.00	4080.00
<input type="checkbox"/>		2	27	10	6	50	55.09	2754.50
<input type="checkbox"/>		3	50	10	6	22	75.46	1660.12
<input type="checkbox"/>		4	80	10	6	49	35.29	1729.21
<input type="checkbox"/>		5	29	17	9	25	108.06	2701.50
<input type="checkbox"/>		6	33	17	9	26	167.06	4343.56
<input type="checkbox"/>		7	61	17	9	45	32.53	1463.85
<input type="checkbox"/>		8	64	17	9	46	44.35	2040.10
<input type="checkbox"/>		9	19	11	10	39	95.55	3726.45
<input type="checkbox"/>		10	20	11	10	41	43.13	1768.33
<input type="checkbox"/>		11	2	17	29	26	214.30	5571.80
<input type="checkbox"/>		12	6	17	29	42	119.67	5026.14
<input type="checkbox"/>		13	9	17	29	27	121.64	3284.28
<input type="checkbox"/>		14	17	17	29	35	94.50	3307.50
<input type="checkbox"/>		15	30	17	29	22	58.34	1283.48
<input type="checkbox"/>		16	35	17	29	27	92.19	2489.13
<input type="checkbox"/>		17	36	17	29	35	61.84	2164.40
<input type="checkbox"/>		18	38	17	29	25	86.92	2173.00
<input type="checkbox"/>		19	44	17	29	46	86.31	3970.26
<input type="checkbox"/>		20	52	17	29	36	98.07	3530.52