

LAPORAN PRAKTIKUM JOBSHEET 3 (A & B)
DATA WAREHOUSE



Disusun Oleh:
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SIB 2B

SISTEM INFORMASI BISNIS
JURUSAN TEKNOLOGI INFORMASI
POLITEKNIK NEGERI MALANG

2025

A. Dimensi Waktu

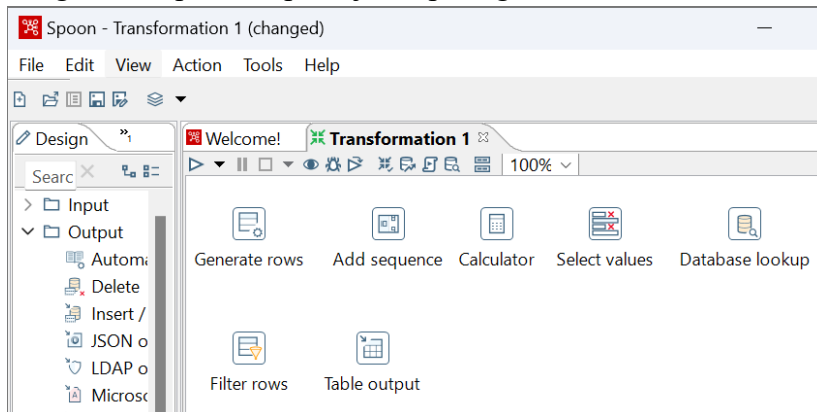
1. Membuat database yang digunakan sebagai OLAP dengan nama dw_legendvehicle.



2. Membuat tabel untuk menyimpan data master waktu atau yang disebut dengan tabel dimensi dengan nama dimDate.

```
1 CREATE TABLE dimDate (  
2     id_dimDate INT NOT NULL AUTO_INCREMENT PRIMARY KEY,  
3     `date` DATE NOT NULL,  
4     year INT NOT NULL,  
5     month INT NOT NULL,  
6     day INT NOT NULL  
7 );
```

3. Drag and drop beberapa objek seperti gambar di bawah.



4. Konfigurasi Generate Rows dengan 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).
5. Membuat fields baru bernama CurrentDate dengan type data Date dan format dd-MM-yyyy serta value awal 01-01-2003.

Generate rows

Step name: Generate rows

Limit: 1825

Never stop generating rows: ☐

Interval in ms (delay): 5000

Current row time field name: now

Previous row time field name: FiveSecondsAgo

Fields :

#	Name	Type	Format	Length	Precision	Currency	Decimal	Group	Value	Set en
1	CurrentDate	Date	dd-MM...						01-01-2003	

Help OK Preview Cancel

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

Add sequence

Step name: Add sequence

Name of value: incrementDay

Use a database to generate the sequence

Use DB to get sequence? ☐

Connection: Edit... New... Wizard...

Schema name: Schemas...

Sequence name: SEQ_ Sequences...

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: 99999999

Help OK Cancel

8. Konfigurasi Calculator

Calculator

Step name: Calculator

☒ Throw an error on non existing files

Fields:

#	New field	Calculation	Field A	Field B	Field C	Value type	Length	Precision	Remove	Conversion mask	Decimal symbol	Grouping symbol	Currency symbol
1	streamDate	Date A + B...	Current...	increm...		None			N				
2	streamYear	Year of dat...	stream...			None			N				
3	streamMonth	Month of ...	stream...			None			N				
4	streamDay	Day of mo...	stream...			None			N				

Help OK Cancel

- 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.

Step name: Select values

Select & Alter Remove Meta-data

Fields :

#	Fieldname	Rename to	Length	Precision
1	CurrentDate			
2	incrementDay			
3	streamDate			
4	streamYear			
5	streamMonth			
6	streamDay			

Get fields to select
Edit Mapping

Include unspecified fields, ☐

Help OK Cancel

11. Dikarenakan tidak semua fields digunakan, maka pada tab Remove diisikan fields CurrentDate dan incrementDay dikarenakan kedua fields tersebut tidak digunakan.

Step name: Select values

Select & Alter Remove Meta-data

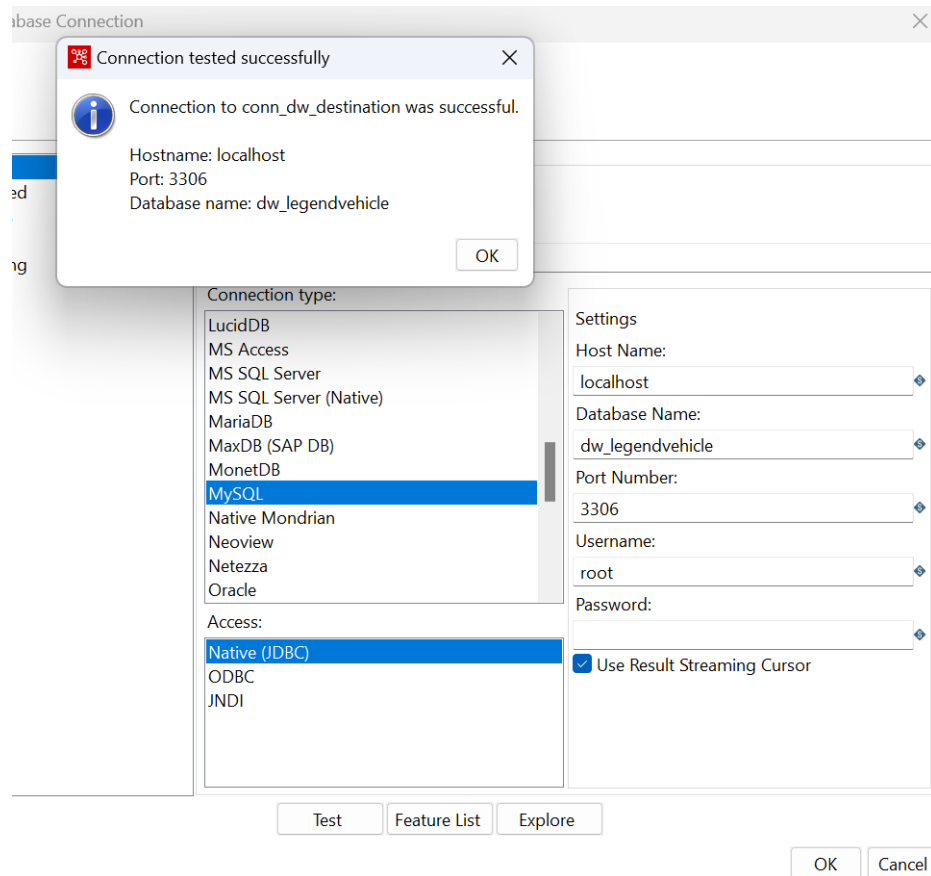
Fields to remove :

#	Fieldname
1	CurrentDate
2	incrementDay

Get fields to remove

Help OK Cancel

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

Database lookup

Step name: Database lookup

Connection: conn_dw_destination [Edit...] [New...] [Wizard...]

Lookup schema: dw_legendvehicle [Browse...]

Lookup table: dimdate [Browse...]

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	=	streamDate	
2	year	=	streamYear	
3	month	=	streamMonth	
4	day	=	streamDay	

Values to return from the lookup table :

#	Field	New name	Default	Type
1	date			None
2	year			None
3	month			None
4	day			None

Do not pass the row if the lookup fails ☐

Fail on multiple results? ☐

Order by:

[?] Help [OK] [Cancel] [Get Fields] [Get lookup fields]

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).

Filter rows

Step name: Filter rows

Send 'true' data to step: Table output

Send 'false' data to step:

The condition:

☐

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.

Table output

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: ☒

Main options: Database fields

Fields to insert:

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

Buttons: Get fields, Enter field mapping

Buttons: Help, OK, Cancel, SQL

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

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

Tugas 1

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
Generate rows			Input hanya menetapkan 01-01-2003 tanpa perubahan, sementara output menghasilkan 1000 baris dengan nilai yang sama. Interval 5000 ms tidak mempengaruhi karena tidak ada logika penambahan tanggal. Untuk perubahan nilai, diperlukan transformasi tambahan.
Add Sequence			Proses Add Sequence menambahkan kolom incrementDay yang dimulai dari 0 dan bertambah 1 setiap baris, sementara nilai CurrentDate tetap 01-01-2003. Meskipun ada urutan angka, tanggal belum berubah karena belum dikombinasikan dengan transformasi lain seperti Formula untuk menambahkan hari ke tanggal.
Calculator			Pada proses Calculator, kolom streamDate dibuat dengan menambahkan nilai incrementDay ke CurrentDate, sehingga menghasilkan tanggal yang bertambah setiap baris. Selain itu, streamYear, streamMonth, dan streamDay diekstrak dari streamDate untuk mendapatkan informasi tahun, bulan, dan hari secara terpisah. Hasilnya, tanggal kini berubah secara dinamis.

			sesuai dengan urutan yang diberikan.																																																																																																																																																					
Select values	<div><div><div>Step name</div><div>Select values</div></div><div><div>select & Alter</div><div>Remove</div><div>Meta-data</div></div><div>Fields :</div><table><tr><th>#</th><th>Fieldname</th><th>Rename to</th><th>Length</th><th>Pre</th></tr><tr><td>1</td><td>CurrentDate</td><td></td><td></td><td></td></tr><tr><td>2</td><td>incrementDay</td><td></td><td></td><td></td></tr><tr><td>3</td><td>streamDate</td><td></td><td></td><td></td></tr><tr><td>4</td><td>streamYear</td><td></td><td></td><td></td></tr><tr><td>5</td><td>streamMonth</td><td></td><td></td><td></td></tr><tr><td>6</td><td>streamDay</td><td></td><td></td><td></td></tr></table><div><div>Step name</div><div>Select values</div></div><div><div>Select & Alter</div><div>Remove</div><div>Meta-data</div></div><div>Fields to remove :</div><table><tr><th>#</th><th>Fieldname</th></tr><tr><td>1</td><td>CurrentDate</td></tr><tr><td>2</td><td>incrementDay</td></tr></table></div>	#	Fieldname	Rename to	Length	Pre	1	CurrentDate				2	incrementDay				3	streamDate				4	streamYear				5	streamMonth				6	streamDay				#	Fieldname	1	CurrentDate	2	incrementDay	<div>Rows of step: Select values (1000 rows)</div> <table><tr><th>#</th><th>streamDate</th><th>streamYear</th><th>streamMonth</th><th>streamDay</th></tr><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></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	Pada proses Select Values, kolom CurrentDate dan incrementDay dihapus, sehingga hasil akhirnya hanya menyisakan streamDate, streamYear, streamMonth, dan streamDay. Data kini lebih bersih dengan hanya menampilkan informasi tanggal yang telah dihitung sebelumnya.																																																					
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9	2003/01/09 00:00:00.000	2003	1	9	2003/01/09 00:00:00.000	2003	1	9																																																																																																																																																
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Filter rows	<div><div><div>Filter rows</div><div><div>Step name</div><div>Filter rows</div></div><div><div>Sending 'true' data to step:</div><div>Table output</div></div><div><div>Sending 'false' data to step:</div><div></div></div><div><div>The condition:</div><div><div><div></div></div><div><div>date IS NULL</div></div></div><div><div>AND</div></div><div><div><div></div></div><div><div>year IS NULL</div></div></div><div><div>AND</div></div><div><div><div></div></div><div><div>month IS NULL</div></div></div><div><div>AND</div></div><div><div><div></div></div><div><div>day IS NULL</div></div></div></div></div></div>	<div><div>Step fields and data origins</div><div>Step name: Filter rows</div><div>Fields:</div><table><tr><th>#</th><th>Fieldname</th><th>Type</th><th>Length</th><th>Precision</th><th>Step origin</th><th>Storage</th><th>Mask</th><th>Currency</th><th>Decimal</th><th>Group</th><th>Comments</th></tr><tr><td>1</td><td>streamDate</td><td>Date</td><td></td><td></td><td>Calculator</td><td>normal</td><td></td><td></td><td></td><td></td><td>none ASO (2015)</td></tr><tr><td>2</td><td>streamYear</td><td>Integer</td><td>9</td><td>0</td><td>Calculator</td><td>normal</td><td></td><td></td><td></td><td></td><td>none YEAR OF 2015</td></tr><tr><td>3</td><td>streamMonth</td><td>Integer</td><td>9</td><td>0</td><td>Calculator</td><td>normal</td><td></td><td></td><td></td><td></td><td>none MONTH OF 2015</td></tr><tr><td>4</td><td>streamDay</td><td>Integer</td><td>9</td><td>0</td><td>Calculator</td><td>normal</td><td></td><td></td><td></td><td></td><td>none DAY OF 2015/2016</td></tr><tr><td>5</td><td>date</td><td>Date</td><td></td><td></td><td>Database lookup</td><td>normal</td><td></td><td></td><td></td><td></td><td>none date</td></tr><tr><td>6</td><td>year</td><td>Integer</td><td>9</td><td>0</td><td>Database lookup</td><td>normal</td><td>#####</td><td>none</td><td></td><td></td><td>none year</td></tr><tr><td>7</td><td>month</td><td>Integer</td><td>9</td><td>0</td><td>Database lookup</td><td>normal</td><td>#####</td><td>none</td><td></td><td></td><td>none month</td></tr><tr><td>8</td><td>day</td><td>Integer</td><td>9</td><td>0</td><td>Database lookup</td><td>normal</td><td>#####</td><td>none</td><td></td><td></td><td>none day</td></tr></table><div><div>Edit origin step</div><div>Cancel</div></div></div>	#	Fieldname	Type	Length	Precision	Step origin	Storage	Mask	Currency	Decimal	Group	Comments	1	streamDate	Date			Calculator	normal					none ASO (2015)	2	streamYear	Integer	9	0	Calculator	normal					none YEAR OF 2015	3	streamMonth	Integer	9	0	Calculator	normal					none MONTH OF 2015	4	streamDay	Integer	9	0	Calculator	normal					none DAY OF 2015/2016	5	date	Date			Database lookup	normal					none date	6	year	Integer	9	0	Database lookup	normal	#####	none			none year	7	month	Integer	9	0	Database lookup	normal	#####	none			none month	8	day	Integer	9	0	Database lookup	normal	#####	none			none day	Proses Filter Rows menyaring data berdasarkan kondisi date IS NULL, year IS NULL, month IS NULL, dan day IS NULL. Jika semua nilai tersebut NULL, data akan dikirim ke langkah Table Output, sedangkan data yang memiliki nilai pada salah satu kolom akan diteruskan ke langkah lain yang belum ditentukan. Hal ini memastikan hanya data yang gagal ditemukan dalam proses Database Lookup																																									
#	Fieldname	Type	Length	Precision	Step origin	Storage	Mask	Currency	Decimal	Group	Comments																																																																																																																																													
1	streamDate	Date			Calculator	normal					none ASO (2015)																																																																																																																																													
2	streamYear	Integer	9	0	Calculator	normal					none YEAR OF 2015																																																																																																																																													
3	streamMonth	Integer	9	0	Calculator	normal					none MONTH OF 2015																																																																																																																																													
4	streamDay	Integer	9	0	Calculator	normal					none DAY OF 2015/2016																																																																																																																																													
5	date	Date			Database lookup	normal					none date																																																																																																																																													
6	year	Integer	9	0	Database lookup	normal	#####	none			none year																																																																																																																																													
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8	day	Integer	9	0	Database lookup	normal	#####	none			none day																																																																																																																																													

			yang akan difilter dan diproses lebih lanjut.																																																																																																																																				
Table Output	<div><div>Table output</div><div><div>Step name</div><div>Table output</div></div><div><div>Connection</div><div>conn_dw_destination</div></div><div><div>Target schema</div><div>dw_legendvehicle</div></div><div><div>Target table</div><div>dimdate</div></div><div><div>Commit size</div><div>1000</div></div><div><div>Truncate table</div><div><input type="checkbox"/></div></div><div><div>Ignore insert errors</div><div><input type="checkbox"/></div></div><div><div>Specify database fields</div><div><input checked="" type="checkbox"/></div></div><div><div>Main options</div><div>Database fields</div></div><div><div>Fields to insert:</div><table><thead><tr><th>#</th><th>Table field</th><th>Stream field</th></tr></thead><tbody><tr><td>1</td><td>date</td><td>streamDate</td></tr><tr><td>2</td><td>year</td><td>streamYear</td></tr><tr><td>3</td><td>month</td><td>streamMonth</td></tr><tr><td>4</td><td>day</td><td>streamDay</td></tr></tbody></table></div></div>	#	Table field	Stream field	1	date	streamDate	2	year	streamYear	3	month	streamMonth	4	day	streamDay	<div><div>SQL Step Fields and their origin</div><div><div>Step name: Table output</div><div>Fields</div><table><thead><tr><th>#</th><th>Field name</th><th>Type</th><th>Length</th><th>Precision</th><th>Step origin</th><th>Storage</th><th>Mask</th><th>Currency</th><th>Decimal</th><th>Group</th><th>Size</th><th>Comments</th></tr></thead><tbody><tr><td>1</td><td>streamDate</td><td>Date</td><td>-</td><td>0</td><td>Calculator</td><td>normal</td><td></td><td></td><td></td><td></td><td></td><td>none</td></tr><tr><td>2</td><td>streamYear</td><td>Integer</td><td>-</td><td>0</td><td>Calculator</td><td>normal</td><td></td><td></td><td></td><td></td><td></td><td>none</td></tr><tr><td>3</td><td>streamMonth</td><td>Integer</td><td>-</td><td>0</td><td>Calculator</td><td>normal</td><td></td><td></td><td></td><td></td><td></td><td>none</td></tr><tr><td>4</td><td>streamDay</td><td>Integer</td><td>-</td><td>0</td><td>Calculator</td><td>normal</td><td></td><td></td><td></td><td></td><td></td><td>none</td></tr><tr><td>5</td><td>date</td><td>Date</td><td>-</td><td>-</td><td>Database lookup</td><td>normal</td><td></td><td></td><td></td><td></td><td></td><td>none</td></tr><tr><td>6</td><td>year</td><td>Integer</td><td>9</td><td>0</td><td>Database lookup</td><td>normal</td><td>####-####</td><td></td><td></td><td></td><td></td><td>none</td></tr><tr><td>7</td><td>month</td><td>Integer</td><td>9</td><td>0</td><td>Database lookup</td><td>normal</td><td>####-####</td><td></td><td></td><td></td><td></td><td>none</td></tr><tr><td>8</td><td>day</td><td>Integer</td><td>9</td><td>0</td><td>Database lookup</td><td>normal</td><td>####-####</td><td></td><td></td><td></td><td></td><td>none</td></tr></tbody></table><div><div>Edit origin step</div><div>Cancel</div></div></div></div>	#	Field name	Type	Length	Precision	Step origin	Storage	Mask	Currency	Decimal	Group	Size	Comments	1	streamDate	Date	-	0	Calculator	normal						none	2	streamYear	Integer	-	0	Calculator	normal						none	3	streamMonth	Integer	-	0	Calculator	normal						none	4	streamDay	Integer	-	0	Calculator	normal						none	5	date	Date	-	-	Database lookup	normal						none	6	year	Integer	9	0	Database lookup	normal	####-####					none	7	month	Integer	9	0	Database lookup	normal	####-####					none	8	day	Integer	9	0	Database lookup	normal	####-####					none	yang akan difilter dan diproses lebih lanjut. Proses Table Output menyimpan data hasil transformasi ke dalam tabel dimdate pada skema dw_legendvehicle. Data yang dimasukkan terdiri dari streamDate, streamYear, streamMonth, dan streamDay, yang masing-masing dipetakan ke kolom date, year, month, dan day dalam tabel tujuan. Hal ini memastikan bahwa data yang telah melalui proses lookup dan filter dapat disimpan dengan struktur yang sesuai dalam data warehouse.
#	Table field	Stream field																																																																																																																																					
1	date	streamDate																																																																																																																																					
2	year	streamYear																																																																																																																																					
3	month	streamMonth																																																																																																																																					
4	day	streamDay																																																																																																																																					
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4	streamDay	Integer	-	0	Calculator	normal						none																																																																																																																											
5	date	Date	-	-	Database lookup	normal						none																																																																																																																											
6	year	Integer	9	0	Database lookup	normal	####-####					none																																																																																																																											
7	month	Integer	9	0	Database lookup	normal	####-####					none																																																																																																																											
8	day	Integer	9	0	Database lookup	normal	####-####					none																																																																																																																											

Step name: Table output

Fields

#	Field name	Type	Length	Precision	Step origin	Storage	Mask	Currency	Decimal	Group	Size	Comments
1	streamDate	Date	-	0	Calculator	normal						none
2	streamYear	Integer	-	0	Calculator	normal						none
3	streamMonth	Integer	-	0	Calculator	normal						none
4	streamDay	Integer	-	0	Calculator	normal						none
5	date	Date	-	-	Database lookup	normal						none
6	year	Integer	4	0	Database lookup	normal	#####					none
7	month	Integer	2	0	Database lookup	normal	#####					none
8	day	Integer	2	0	Database lookup	normal	#####					none

Sub origin step

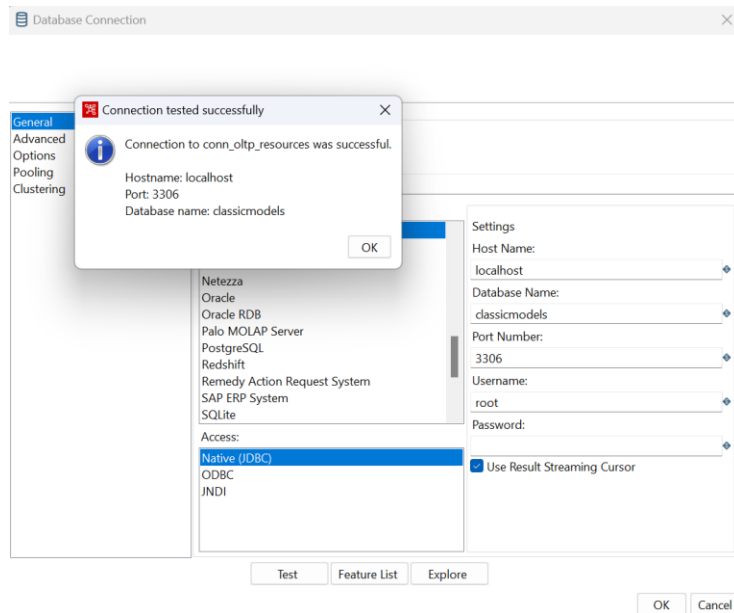
Cancel

B. Dimensi Pegawai

1. Membuat tabel dimPegawai pada dw_legendvehicle

```
1 CREATE TABLE dimEmployees (
2     id_dimEmployees INT NOT NULL AUTO_INCREMENT PRIMARY KEY,
3     employeeNumber INT(11),
4     firstName VARCHAR(50),
5     lastName VARCHAR(50),
6     jobTitle VARCHAR(50),
7     boss_firstName VARCHAR(50),
8     boss_lastName VARCHAR(50),
9     updated DATE DEFAULT (CURRENT_TIMESTAMP)
10 );
```

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 apada tabel dimEmployees.
- Table output: Memasukkan data ke dalam tavle dimEmployees



Table input



Select values



Database lookup



Filter rows



Table output

4. Konfigurasi tabel input dengan menghubungkan Connection pada koneksi conn_oltp_resources. Untuk mengambil data sumber menggunakan query dibawah ini.

Table input

Step name: Table input

Connection: conn_oltp_resources Edit... New... Wizard...

SQL Get SQL select statement...

```
SELECT *
FROM employees e
LEFT JOIN employees r
ON e.reportsTo = r.employeeNumber;
```

Line 5 Column 0

Store column info in step meta ☐

Enable lazy conversion ☐

Replace variables in script? ☐

Insert data from step

Execute for each row? ☐

Limit size: 0

Help OK Preview Cancel

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.

Database lookup

Step name: Database lookup

Connection: conn_dw_destination [Edit...] [New...] [Wizard...]

Lookup schema: dw_legendvehicle [Browse...]

Lookup table: dimemployees [Browse...]

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	=	StreamEmployeeNumber	
2	firstName	=	StreamFirstname	
3	lastName	=	StreamLastname	
4	jobTitle	=	StreamJobtitle	

Values to return from the lookup table :

#	Field	New name	Default	Type
1	employeeNumber			Integer
2	firstName			String
3	lastName	lastname		String
4	jobtitle			String

Do not pass the row if the lookup fails ☐

Fail on multiple results? ☐

Order by

[Help] [OK] [Cancel] [Get Fields] [Get lookup fields]

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.

Filter rows

Step name: Filter rows

Send 'true' data to step: Table output

Send 'false' data to step:

The condition:

☐ To edit a subcondition, simply click on it

employeeNumber IS NULL

AND

firstName IS NULL

AND

lastName IS NULL

AND

jobtitle IS NULL

AND

boss_firstname IS NULL

AND

boss_lastname IS NULL

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

Table output

Step name: Table output

Connection: conn_dw_destination

Target schema: dw_legendvehicle

Target table: dimemployees

Commit size: 1000

Truncate table: ☐

Ignore insert errors: ☐

Specify database fields: ☒

Main options Database fields

Fields to insert:

#	Table field	Stream field
1	employeeNumber	StreamEmployeeNumber
2	firstName	StreamFirstname
3	lastName	StreamLastname
4	jobtitle	StreamJobtitle
5	boss_firstname	StreamFirstnameBoss
6	boss_lastname	StreamLastnameBoss

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

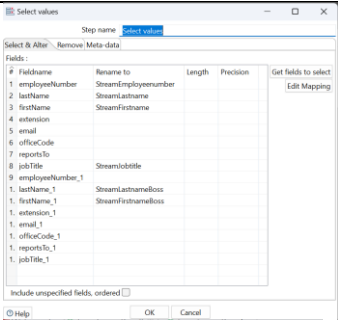
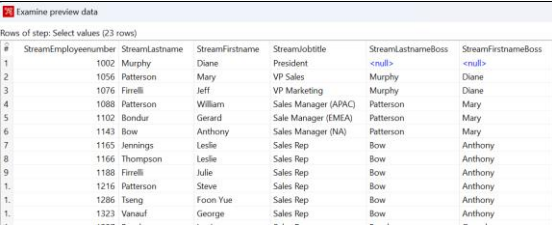
Database: dw_legendvehicle » Table: dimemployees								
SQL Search Insert Export Import Privileges Operations Triggers								
id_dimEmployees	employeeNumber	firstName	lastName	jobTitle	boss_firstName	boss_lastName	updated	
e	1	1002 Diane	Murphy	President	NULL	NULL	2025-03-08	
e	2	1056 Mary	Patterson	VP Sales	Diane	Murphy	2025-03-08	
e	3	1076 Jeff	Firrelli	VP Marketing	Diane	Murphy	2025-03-08	
e	4	1088 William	Patterson	Sales Manager (APAC)	Mary	Patterson	2025-03-08	
e	5	1102 Gerard	Bondur	Sale Manager (EMEA)	Mary	Patterson	2025-03-08	
e	6	1143 Anthony	Bow	Sales Manager (NA)	Mary	Patterson	2025-03-08	
e	7	1165 Leslie	Jennings	Sales Rep	Anthony	Bow	2025-03-08	
e	8	1166 Leslie	Thompson	Sales Rep	Anthony	Bow	2025-03-08	
e	9	1188 Julie	Firrelli	Sales Rep	Anthony	Bow	2025-03-08	
e	10	1216 Steve	Patterson	Sales Rep	Anthony	Bow	2025-03-08	
e	11	1286 Foon Yue	Tseng	Sales Rep	Anthony	Bow	2025-03-08	
e	12	1323 George	Vanauf	Sales Rep	Anthony	Bow	2025-03-08	
e	13	1337 Loui	Bondur	Sales Rep	Gerard	Bondur	2025-03-08	
e	14	1370 Gerard	Hernandez	Sales Rep	Gerard	Bondur	2025-03-08	
e	15	1401 Pamela	Castillo	Sales Rep	Gerard	Bondur	2025-03-08	
e	16	1501 Larry	Bott	Sales Rep	Gerard	Bondur	2025-03-08	
e	17	1504 Barry	Jones	Sales Rep	Gerard	Bondur	2025-03-08	
e	18	1611 Andy	Fixter	Sales Rep	William	Patterson	2025-03-08	
e	19	1612 Peter	Marsh	Sales Rep	William	Patterson	2025-03-08	

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																																																	
Table Input	<div><div>Table input</div><div><div>Step name</div><div>Table input</div></div><div><div>Connection</div><div>conn_oltp_resources</div></div></div> <div><div>SQL</div><div><pre>SELECT * FROM employees e LEFT JOIN employees r ON e.reportsTo = r.employeeNumber;</pre></div></div>	<div><div>Examine preview data</div><div>Rows of step: Table input (23 rows)</div><table><tr><th>#</th><th>employeeNumber</th><th>lastName</th><th>firstName</th><th>extension</th><th>email</th><th>office</th></tr><tr><td>1</td><td>1002</td><td>Murphy</td><td>Diane</td><td>x5800</td><td>dmurphy@classicmodelcars.com</td><td>1</td></tr><tr><td>2</td><td>1056</td><td>Patterson</td><td>Mary</td><td>x4611</td><td>mpatterson@classicmodelcars.com</td><td>1</td></tr><tr><td>3</td><td>1076</td><td>Firrelli</td><td>Jeff</td><td>x9273</td><td>jfirrelli@classicmodelcars.com</td><td>1</td></tr><tr><td>4</td><td>1088</td><td>Patterson</td><td>William</td><td>x4871</td><td>wpatterson@classicmodelcars.com</td><td>6</td></tr><tr><td>5</td><td>1102</td><td>Bondur</td><td>Gerard</td><td>x5408</td><td>gbondur@classicmodelcars.com</td><td>4</td></tr><tr><td>6</td><td>1143</td><td>Bow</td><td>Anthony</td><td>x5428</td><td>abow@classicmodelcars.com</td><td>1</td></tr></table></div>	#	employeeNumber	lastName	firstName	extension	email	office	1	1002	Murphy	Diane	x5800	dmurphy@classicmodelcars.com	1	2	1056	Patterson	Mary	x4611	mpatterson@classicmodelcars.com	1	3	1076	Firrelli	Jeff	x9273	jfirrelli@classicmodelcars.com	1	4	1088	Patterson	William	x4871	wpatterson@classicmodelcars.com	6	5	1102	Bondur	Gerard	x5408	gbondur@classicmodelcars.com	4	6	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	<p>Proses Table Input mengambil data dari tabel employees dalam koneksi conn_oltp_resources. Query yang digunakan melakukan LEFT JOIN pada tabel yang sama untuk menghubungkanProses Table Input mengambil data dari tabel employees dalam</p>
#	employeeNumber	lastName	firstName	extension	email	office																																														
1	1002	Murphy	Diane	x5800	dmurphy@classicmodelcars.com	1																																														
2	1056	Patterson	Mary	x4611	mpatterson@classicmodelcars.com	1																																														
3	1076	Firrelli	Jeff	x9273	jfirrelli@classicmodelcars.com	1																																														
4	1088	Patterson	William	x4871	wpatterson@classicmodelcars.com	6																																														
5	1102	Bondur	Gerard	x5408	gbondur@classicmodelcars.com	4																																														
6	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1																																														

			<p>koneksi conn_oltp_resources. Query yang digunakan melakukan LEFT JOIN pada tabel yang sama untuk menghubungkan setiap karyawan dengan atasannya berdasarkan kolom reportsTo. Hasil transformasi ini menghasilkan dataset yang mencakup informasi karyawan, termasuk employeeNumber, lastName, firstName, extension, email, dan lainnya, dengan total 23 baris.n setiap karyawan dengan atasannya berdasarkan kolom reportsTo. Hasil transformasi ini menghasilkan dataset yang mencakup informasi karyawan, termasuk employeeNumber, lastName, firstName, extension, email, dan lainnya, dengan total 23 baris.</p>
--	--	--	--

<p>Select values</p>			<p>Input memiliki lebih banyak kolom, termasuk extension, email, officeCode, dan beberapa versi duplikat dengan akhiran _1. Dalam proses Select Values, beberapa kolom diubah namanya, seperti employeeNumber menjadi StreamEmployeeNumber dan lastName_1 menjadi StreamLastnameBoss, sementara kolom yang tidak diperlukan dihapus. Output akhirnya lebih</p>
----------------------	---	--	--

--	--	--

ringkas, hanya menyisakan informasi penting tentang karyawan dan atasan mereka.

Database lookup

Step name: Database lookup

Connection: core_db_destination

Lookup schema: dw_warehouse

Lookup table: dimemployees

Enable cache?

Cache size in rows (optional):

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	employeeNumber			Integer
2	firstName			String
3	lastName	lastname		String
4	jobTitle			String

Do not pass the row if the lookup fails: ☐ Fail on multiple results: ☐

Order by:

Help OK Cancel Get Fields Get lookup fields

Execute previous data

Rows of step Database lookup (23 rows)	StreamEmployeeNumber	StreamFirstName	StreamJobTitle	StreamLastName	StreamEmployeeNumber	employeeNumber	firstName	lastname	jobTitle	boss_
1	1002	Murphy	Owner	Prosser	Smith	1002	Mary	Prosser	VP Sales	None
2	1003	Prosser	VP Sales	Murphy	Smith	1003	John	Prosser	VP Marketing	None
3	1004	Prosser	VP Marketing	Murphy	Smith	1004	William	Prosser	Sales Manager (2000)	None
4	1005	Prosser	Sales Manager (2000)	Prosser	Smith	1005	William	Prosser	Sales Manager (2000)	None
5	1102	Prosser	Owner	Prosser	Smith	1102	Prosser	Prosser	Sales Manager (2000)	None
6	1103	Prosser	Sales Rep	Prosser	Smith	1103	Prosser	Prosser	Sales Rep	None
7	1104	Prosser	Sales Rep	Prosser	Smith	1104	Prosser	Prosser	Sales Rep	None
8	1105	Prosser	Sales Rep	Prosser	Smith	1105	Prosser	Prosser	Sales Rep	None
9	1106	Prosser	Sales Rep	Prosser	Smith	1106	Prosser	Prosser	Sales Rep	None
10	1107	Prosser	Sales Rep	Prosser	Smith	1107	Prosser	Prosser	Sales Rep	None
11	1108	Prosser	Sales Rep	Prosser	Smith	1108	Prosser	Prosser	Sales Rep	None
12	1109	Prosser	Sales Rep	Prosser	Smith	1109	Prosser	Prosser	Sales Rep	None

Filter rows

Step name: Filter rows

Send 'true' data to step: Table output

Send 'false' data to step:

The condition:

employeeNumber IS NULL

AND

firstName IS NULL

AND

lastName IS NULL

AND

jobTitle IS NULL

AND

boss_firstName IS NULL

AND

boss_lastName IS NULL

Execute previous data

Rows of step Filter rows (23 rows)	StreamEmployeeNumber	StreamFirstName	StreamJobTitle	StreamLastName	StreamEmployeeNumber	employeeNumber	firstName	lastname	jobTitle	boss_
1	1002	Murphy	Owner	Prosser	Smith	1002	Mary	Prosser	VP Sales	None
2	1003	Prosser	VP Sales	Murphy	Smith	1003	John	Prosser	VP Marketing	None
3	1004	Prosser	VP Marketing	Murphy	Smith	1004	William	Prosser	Sales Manager (2000)	None
4	1005	Prosser	Sales Manager (2000)	Prosser	Smith	1005	William	Prosser	Sales Manager (2000)	None
5	1102	Prosser	Owner	Prosser	Smith	1102	Prosser	Prosser	Sales Manager (2000)	None
6	1103	Prosser	Sales Rep	Prosser	Smith	1103	Prosser	Prosser	Sales Rep	None
7	1104	Prosser	Sales Rep	Prosser	Smith	1104	Prosser	Prosser	Sales Rep	None
8	1105	Prosser	Sales Rep	Prosser	Smith	1105	Prosser	Prosser	Sales Rep	None
9	1106	Prosser	Sales Rep	Prosser	Smith	1106	Prosser	Prosser	Sales Rep	None
10	1107	Prosser	Sales Rep	Prosser	Smith	1107	Prosser	Prosser	Sales Rep	None
11	1108	Prosser	Sales Rep	Prosser	Smith	1108	Prosser	Prosser	Sales Rep	None
12	1109	Prosser	Sales Rep	Prosser	Smith	1109	Prosser	Prosser	Sales Rep	None

Proses Database Lookup mencocokkan data input berdasarkan employeeNumber, firstName, dan lastname, lalu menambahkan kolom dari tabel referensi, seperti jobTitle. Hasilnya, output berisi data awal yang diperkaya dengan informasi tambahan dari lookup table.

Proses Filter Rows menyaring data berdasarkan kondisi IS NULL untuk beberapa kolom, seperti employeeNumber, firstName, lastName, jobTitle, boss_firstname, dan boss_lastname. Data yang memenuhi semua kondisi ini akan difilter dan tidak muncul dalam output. Hasilnya, output hanya berisi baris dengan data lengkap, menghindari entri yang memiliki nilai kosong di kolom-kolom penting.

Table Output

Table output

Step name: **table_output**

Connection: **conn_dw_destination**

Target schema: **dw_legendvehicle**

Target table: **dimemployees**

Commit size: **1000**

Truncate table: ☐

Ignore insert errors: ☐

Specify database fields: ☒

Main options: Database fields

Fields to insert:

#	Table field	Stream field
1	employee...	StreamEmpl...
2	firstName	StreamFirstn...
3	lastName	StreamLastn...
4	jobtitle	StreamJobti...
5	boss_first...	StreamFirstn...
6	boss_lastn...	StreamLastn...

Korea's Most Valued 100 (2012)									
Rank	Company Name	Industry	Revenue (USD)	Profit (USD)	Assets (USD)	Liabilities (USD)	Equity (USD)	Debt (USD)	Score
1	Hyundai Motor	Automotive	10,000	1,000	10,000	10,000	0	10,000	100
2	Samsung Electronics	Electronics	9,000	900	9,000	9,000	0	9,000	95
3	SK Group	Finance	8,000	800	8,000	8,000	0	8,000	90
4	Daewoo Group	Automotive	7,000	700	7,000	7,000	0	7,000	85
5	Hyundai Heavy Industries	Shipbuilding	6,000	600	6,000	6,000	0	6,000	80
6	SK Chemical	Chemicals	5,000	500	5,000	5,000	0	5,000	75
7	Hyundai Engineering & Construction	Construction	4,000	400	4,000	4,000	0	4,000	70
8	Hyundai Securities	Finance	3,000	300	3,000	3,000	0	3,000	65
9	Hyundai Shipbuilding & Heavy Industries	Shipbuilding	2,000	200	2,000	2,000	0	2,000	60
10	Hyundai Steel	Steel	1,000	100	1,000	1,000	0	1,000	55