

**LAPORAN PRAKTIKUM  
BUSINESS INTELLIGENCE**

**TUGAS WEEK 7**



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**JURUSAN TEKNOLOGI INFORMASI  
POLITEKNIK NEGERI MALANG  
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## TUGAS 1

### Database legendvehicle

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> customers		123	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> orderdetails		2,996	InnoDB	utf8mb4_general_ci	240.0 KiB	-
<input type="checkbox"/> orders		326	InnoDB	utf8mb4_general_ci	64.0 KiB	-
<input type="checkbox"/> productlines		7	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> products		111	InnoDB	utf8mb4_general_ci	32.0 KiB	-
5 tables	Sum	3,563	InnoDB	utf8mb4_0900_ai_ci	368.0 KiB	0 B

### Database dw\_legendvehicle

Table	Action	Rows	Type	Collation	Size	Overhead
<input type="checkbox"/> dimcustomer		0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> dimdate		1,826	InnoDB	utf8mb4_general_ci	96.0 KiB	-
<input type="checkbox"/> dimproduct		0	InnoDB	utf8mb4_general_ci	16.0 KiB	-
<input type="checkbox"/> factorders		0	InnoDB	utf8mb4_general_ci	64.0 KiB	-
4 tables	Sum	1,826	InnoDB	utf8mb4_0900_ai_ci	192.0 KiB	0 B

## TUGAS 2

### Preview data

<div> <div>Logging</div> <div>Execution History</div> <div>Step Metrics</div> <div>Performance Graph</div> <div>Metrics</div> <div>Preview data</div> </div>					
<div> <div>First rows</div> <div>Last rows</div> <div>Off</div> </div>					
#	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	
11	2003/01/11 00:00:00.000	2003	1	11	
12	2003/01/12 00:00:00.000	2003	1	12	
13	2003/01/13 00:00:00.000	2003	1	13	
14	2003/01/14 00:00:00.000	2003	1	14	
15	2003/01/15 00:00:00.000	2003	1	15	
16	2003/01/16 00:00:00.000	2003	1	16	
17	2003/01/17 00:00:00.000	2003	1	17	
18	2003/01/18 00:00:00.000	2003	1	18	
19	2003/01/19 00:00:00.000	2003	1	19	
20	2003/01/20 00:00:00.000	2003	1	20	

#### 1. Generate rows

**Jawab:** Step ini memulai proses dengan membuat 1.826 baris data baru yang masing-masing berisi satu field tanggal awal CurrentDate bernilai 01-01-2003.

#### 2. Add sequence

**Jawab:** Step ini menambahkan sebuah field baru bernama incrementDay yang berisi urutan angka (sequence) yang dimulai dari 0 dan bertambah 1 untuk setiap barisnya.

#### 3. Calculator

**Jawab:** Step ini melakukan kalkulasi untuk menghasilkan field tanggal baru (streamDate) dengan menambahkan tanggal awal dan angka sekuensial, kemudian mengekstrak tahun, bulan, serta hari dari tanggal baru tersebut.

#### 4. Select values

**Jawab:** Step ini memilih field mana yang akan diteruskan ke proses selanjutnya dengan cara menghapus field-field sementara (CurrentDate dan incrementDay) yang sudah tidak

diperlukan lagi.

## 5. Database lookup

**Jawab:** Step ini berfungsi untuk memeriksa apakah setiap data tanggal yang dihasilkan (streamDate) sudah ada di dalam tabel DimDate pada database tujuan atau belum.

## 6. Table output

**Jawab:** Step ini bertugas menyimpan atau memasukkan baris data tanggal baru yang belum ada di database (yang merupakan output error dari step sebelumnya) ke dalam tabel DimDate.

## Tugas 3

1. Save dan run transformation. Screenshot Step Metrics pada Execution Results.

Logging Execution History Step Metrics Performance Graph Metrics Preview data

#	Stepname	Copynr	Read	Written	Input	Output	Updated	Rejected	Errors	Active
1	Table input	0	0	111	111	0	0	0	0	Finished
2	Database lookup	0	111	0	0	0	0	111	0	Finished
3	Update	0	0	0	0	0	0	0	0	Finished
4	Table output	0	111	111	0	111	0	0	0	Finished

2. Periksa apakah data produk sudah tersimpan di DimProduct

	id_dimProduct	productCode	productName	priorProductName	productLine	category	quantityInStock	buyPrice	MSRP
<input type="checkbox"/>	Edit Copy Delete	1 S10_1949	1952 Alpine Renault 1300	NULL	Classic Cars	Passenger Vehicles	7305	98.58	214.30
<input type="checkbox"/>	Edit Copy Delete	2 S10_4757	1972 Alfa Romeo GTA	NULL	Classic Cars	Passenger Vehicles	3252	85.68	136.00
<input type="checkbox"/>	Edit Copy Delete	3 S10_4962	1962 LanciaA Delta 16V	NULL	Classic Cars	Passenger Vehicles	6791	103.42	147.74
<input type="checkbox"/>	Edit Copy Delete	4 S12_1099	1968 Ford Mustang	NULL	Classic Cars	Passenger Vehicles	68	95.34	194.57
<input type="checkbox"/>	Edit Copy Delete	5 S12_1108	2001 Ferrari Enzo	NULL	Classic Cars	Passenger Vehicles	3619	95.59	207.80
<input type="checkbox"/>	Edit Copy Delete	6 S12_3148	1969 Corvair Monza	NULL	Classic Cars	Passenger Vehicles	6906	89.14	151.08
<input type="checkbox"/>	Edit Copy Delete	7 S12_3380	1968 Dodge Charger	NULL	Classic Cars	Passenger Vehicles	9123	75.16	117.44
<input type="checkbox"/>	Edit Copy Delete	8 S12_3891	1969 Ford Falcon	NULL	Classic Cars	Passenger Vehicles	1049	83.05	173.02
<input type="checkbox"/>	Edit Copy Delete	9 S12_3990	1970 Plymouth Hemi Cuda	NULL	Classic Cars	Passenger Vehicles	5663	31.92	79.80
<input type="checkbox"/>	Edit Copy Delete	10 S12_4675	1969 Dodge Charger	NULL	Classic Cars	Passenger Vehicles	7323	58.73	115.16
<input type="checkbox"/>	Edit Copy Delete	11 S18_1129	1993 Mazda RX-7	NULL	Classic Cars	Passenger Vehicles	3975	83.51	141.54

3. Insert 1 produk baru di table products (OLTP) dan update 1 data produk (misalnya ubah productName atau category). Run transformation kembali dan screenshot Step Metrics pada Execution Result.

- a. Menambah data baru

<input type="checkbox"/>	Edit Copy Delete	S24_1040	1970 Chevy Chevelle SS 454	Classic Cars	1000	49.24	13.43
<input type="checkbox"/>	Edit Copy Delete	S24_1090	Maxda	Classic Cars	190	50.50	60.92

- b. Update data

1 row affected.

```
UPDATE `products` SET `productName` = '1970 Dodge Coroneton' WHERE `products`.`productCode` = 'S24_1444';
```

## Step Metrics

Logging Execution History Step Metrics Performance Graph Metrics Preview data

#	Stepname	Copynr	Read	Written	Input	Output	Updated	Rejected	Errors	Active
1	Table input	0	0	112	112	0	0	0	0	Finished
2	Database lookup	0	112	111	111	0	0	1	0	Finished
3	Update	0	111	111	111	0	1	0	0	Finished
4	Table output	0	1	1	0	1	0	0	0	Finished

4. Apakah ada duplikasi data produk? Mengapa?

**Jawab:** Tidak ada duplikasi data, karena adanya pada saat menambah data baru data yang ditambahkan sudah berbeda, sedangkan saat melakukan update tetap tidak ada perubahan karena dari awal tidak ada duplikasi data.

5. Modifikasi step **Update** pada langkah 10 agar field **buyPrice** menggunakan SCD Type 0. Setelah modifikasi dilakukan, coba lakukan perubahan di OLTP, run transformation, dan screenshot Step Metrics. Pastikan field buyPrice di DW tidak berubah meskipun ada perubahan di OLTP. Screenshot dan jelaskan modifikasi yang dilakukan.

Logging Execution History Step Metrics Performance Graph Metrics Preview data										
#	Stepname	Copynr	Read	Written	Input	Output	Updated	Rejected	Errors	Active
1	Table input	0	0	111	111	0	0	0	0	Finished
2	Database lookup	0	111	111	111	0	0	0	0	Finished
3	Update	0	111	111	111	0	0	0	0	Finished
4	Table output	0	0	0	0	0	0	0	0	Finished

## Tugas 4

1. Save dan run transformation. Screenshot Step Metrics pada Execution Results.

Logging Execution History Step Metrics Performance Graph Metrics Preview data										
#	Stepname	Copynr	Read	Written	Input	Output	Updated	Rejected	Errors	Active
1	Table input	0	0	123	123	0	0	0	0	Finished
2	Add constants	0	123	123	0	0	0	0	0	Finished
3	Select values	0	123	123	0	0	0	0	0	Finished
4	Database lookup	0	123	0	0	0	0	123	0	Finished
5	Filter rows	0	0	0	0	0	0	0	0	Finished
6	Update 2	0	0	0	0	0	0	0	0	Finished
7	Update	0	0	0	0	0	0	0	0	Finished
8	Table output 2	0	0	0	0	0	0	0	0	Finished
9	Table output	0	123	123	0	123	0	0	0	Finished

2. Insert 1 baris baru pada table customers di OLTP. Modifikasi pula field phone pada salah satu data customer dan field city pada salah satu customer lainnya.

a. Insert customer

<input type="checkbox"/>	<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	497 Dea Bakery	0812312323	Manhattan
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b. Modifikasi field phone dan field city

```
UPDATE `customers` SET `phone` = '+65 9 5555500', `city` = 'Tokyo' WHERE `customers`.`customerNumber` = 496;
```

3. Run transformation kembali dan screenshot Step Metrics pada Execution Result. Ada berapa baris baru yang ditambahkan pada table DimCustomer?

Logging Execution History Step Metrics Performance Graph Metrics Preview data										
#	Stepname	Copynr	Read	Written	Input	Output	Updated	Rejected	Errors	Active
1	Table input	0	0	124	124	0	0	0	0	Finished
2	Add constants	0	124	124	0	0	0	0	0	Finished
3	Select values	0	124	124	0	0	0	0	0	Finished
4	Database lookup	0	124	0	0	0	0	124	0	Finished
5	Filter rows	0	0	0	0	0	0	0	0	Finished
6	Update 2	0	0	0	0	0	0	0	0	Finished
7	Update	0	0	0	0	0	0	0	0	Finished
8	Table output 2	0	0	0	0	0	0	0	0	Finished
9	Table output	0	124	124	0	124	0	0	0	Finished

4. Lakukan percobaan, jika **The keys to look up the values** pada langkah 14 diubah seperti pada langkah 16, apakah paket ETL masih bekerja dengan benar? Lakukan percobaan kemudian simpulkan.

Logging Execution History Step Metrics Performance Graph Metrics Preview data										
#	Stepname	Copynr	Read	Written	Input	Output	Updated	Rejected	Errors	Active
1	Table input	0	0	124	124	0	0	0	0	Finished
2	Add constants	0	124	124	0	0	0	0	0	Finished
3	Select values	0	124	124	0	0	0	0	0	Finished
4	Database lookup	0	124	0	0	0	0	124	0	Finished
5	Filter rows	0	0	0	0	0	0	0	0	Finished
6	Update 2	0	0	0	0	0	0	0	0	Finished
7	Update	0	0	0	0	0	0	0	0	Finished
8	Table output 2	0	0	0	0	0	0	0	0	Finished
9	Table output	0	124	124	0	124	0	0	0	Finished

## Tugas 5

1. Save dan run transformation. Screenshot Step Metrics pada Execution Results

Logging Execution History Step Metrics Performance Graph Metrics Preview data										
#	Stepname	Copynr	Read	Written	Input	Output	Updated	Rejected	Errors	Active
1	Table input	0	0	112	112	0	0	0	0	Finished
2	Select values	0	112	112	0	0	0	0	0	Finished
3	Database lookup	0	112	112	112	0	0	0	0	Finished
4	Update	0	112	112	112	0	112	0	0	Finished
5	Table output	0	0	0	0	0	0	0	0	Finished

- Lakukan perubahan productName di OLTP. Run transformation dan screenshot Step Metrics kembali. Periksa apakah field productName dan priorProductName di DimProduct berhasil diupdate.

Logging Execution History Step Metrics Performance Graph Metrics Preview data										
#	Stepname	Copynr	Read	Written	Input	Output	Updated	Rejected	Errors	Active
1	Table input	0	0	112	112	0	0	0	0	Finished
2	Select values	0	112	112	0	0	0	0	0	Finished
3	Database lookup	0	112	112	112	0	0	0	0	Finished
4	Update	0	112	112	112	0	1	0	0	Finished
5	Table output	0	0	0	0	0	0	0	0	Finished

- Tanpa melakukan perubahan data di OLTP, run kembali transformation. Perhatikan DimProduct. Mengapa priorProductName tetap diupdate meskipun tidak ada perubahan? Perbaiki kesalahan tersebut dengan menambahkan step **Filter rows** sebelum **Update** seperti pada contoh berikut. Screenshot konfigurasi step yang ditambahkan dan dimodifikasi.

Logging Execution History Step Metrics Performance Graph Metrics Preview data										
#	Stepname	Copynr	Read	Written	Input	Output	Updated	Rejected	Errors	Active
1	Table input	0	0	112	112	0	0	0	0	Finished
2	Select values	0	112	112	0	0	0	0	0	Finished
3	Database lookup	0	112	112	112	0	0	0	0	Finished
4	Filter rows	0	112	112	0	0	0	0	0	Finished
5	Update 2	0	112	112	112	0	1	0	0	Finished
6	Update	0	0	0	0	0	0	0	0	Finished
7	Table output	0	0	0	0	0	0	0	0	Finished

