

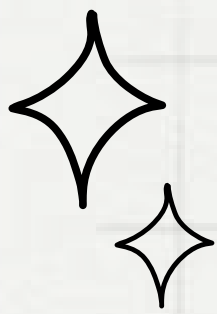


# Data Warehouse Project

ID/X PARTNERS DATA ENGINEER PROJECT BASED INTERNSHIP PROGRAM

**Presented By Akhmad Masyudi**





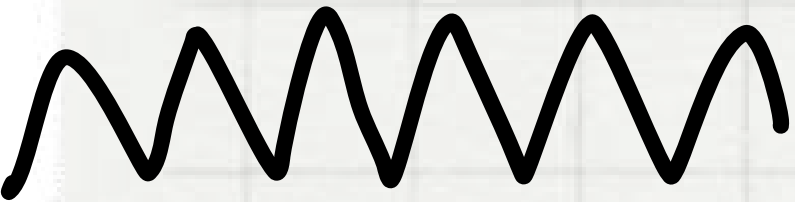
**AKHMAD  
MASYUDI**

## About

Bachelor degree graduate in 2021 with an interest in technologies. Has work experience in the fields of data collection, graphic design, and system operator. Seek employment opportunities that provide opportunities for further personal development. I am hard worker, enjoy working together, and eager to learn new things.

## Experiences

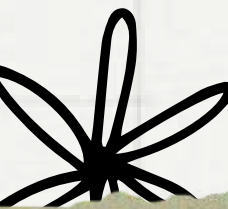
- **Ministry of Religion, East Kutai Regency**  
Hajj and Umrah Organizing Staff (JAN 2022 – JUN 2023)
- **KEDAIREKA Gojek X Unmul Online Culinary Program**  
Web and Design Team Leader (OCT – DES 2021)
- **East Kalimantan Province Central Statistics Agency (BPS)**  
Intern (JAN – FEB 2020)
- **Faculty of Computer Science and Information Technology,  
Mulawarman University**  
Laboratory Assistant (JAN 2019 – JUN 2020)



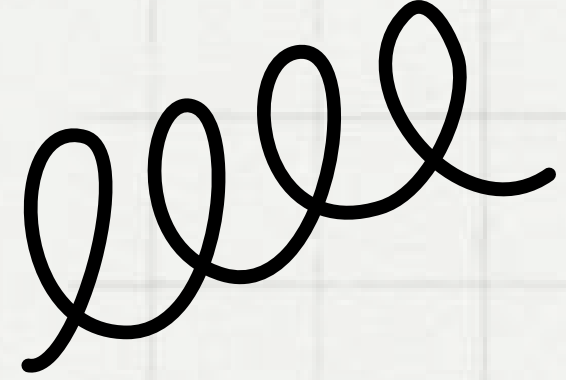
# Case Study

Salah satu client dari ID/X Partners yang bergerak di bidang e-commerce memiliki kebutuhan untuk membuat sebuah Data Warehouse yang berasal dari beberapa tabel dari database sumber. Data Warehouse ini nantinya terdiri dari satu tabel Fact dan beberapa tabel Dimension. Sebagai Data Engineer, ada beberapa task yang perlu anda lakukan yaitu :

1. Melakukan Import/Restore Database Staging.
2. Membuat sebuah Database bernama DWH\_Project, serta membuat Tabel Fact dan Dimension dari tabel yang ada di database Staging.
3. Membuat Job ETL di aplikasi talend untuk memindahkan data dari Staging ke Data Warehouse. Khusus untuk Tabel DimCustomer, lakukan transformasi data dengan merubah data dari kolom FirstName dan LastName menjadi huruf kapital semua, lalu gabungkan kedua kolom tersebut menjadi satu kolom yang bernama CustomerName.
4. Membuat Store Procedure (SP) untuk menampilkan summary sales order berdasarkan status pengiriman.



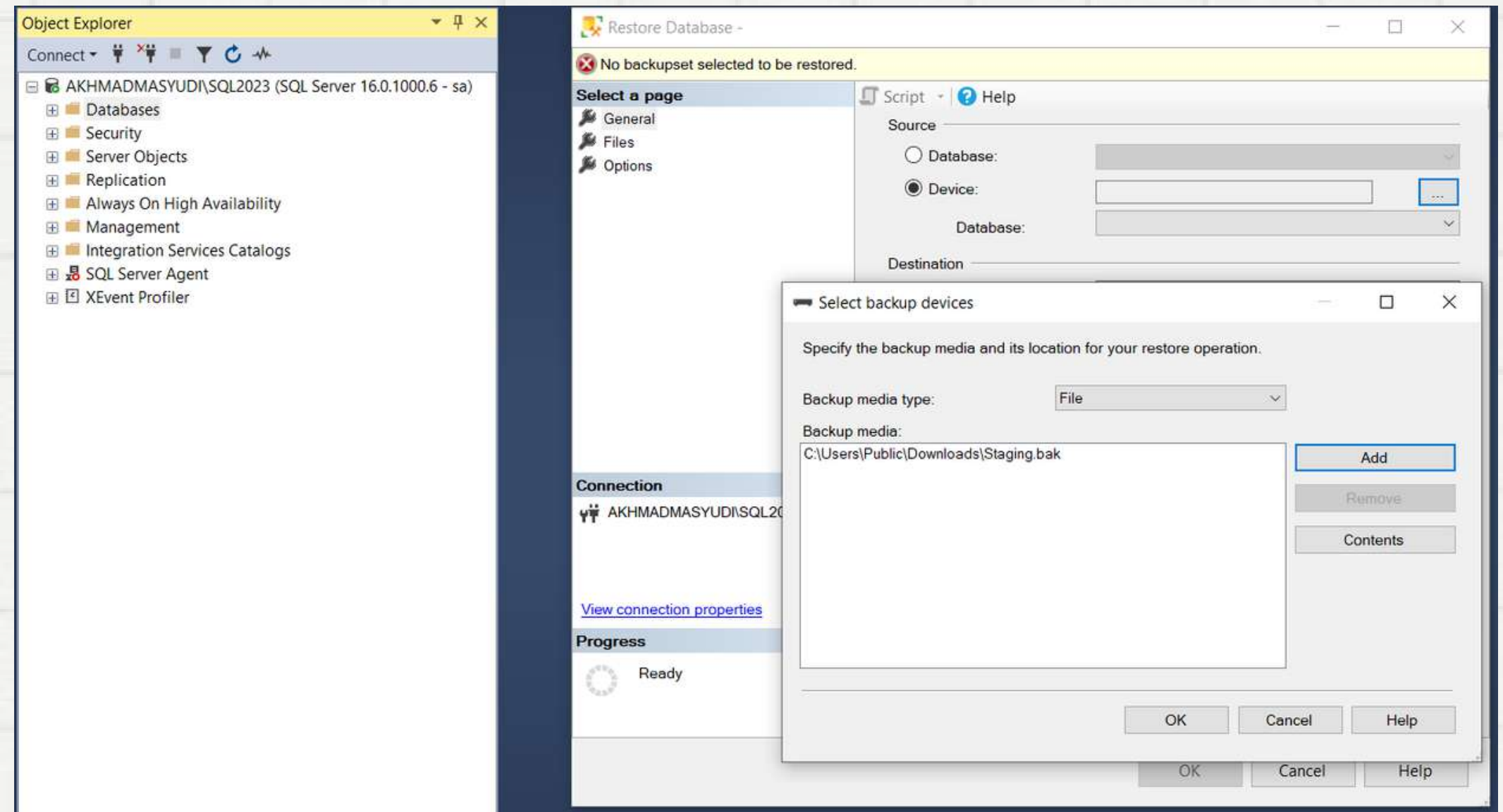


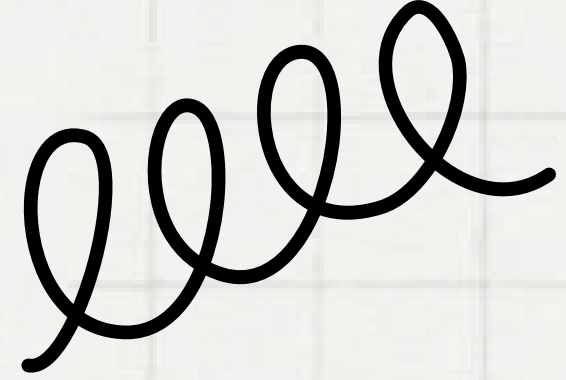


# Result (1)

## Restore Database

- Buka aplikasi SQL Server Management Studio.
- Pada "Object Explorer" bagian Databases klik kanan lalu pilih "Restore Database".
- Pada bagian General, pilih Source "Device" dan klik kotak "..." yang di sebelah kanan.
- Pada bagian "Backup media type", pastikan tipenya "File" lalu klik "Add" untuk menambahkan file database yang ingin kita restorasi.
- Setelah selesai klik "OK".

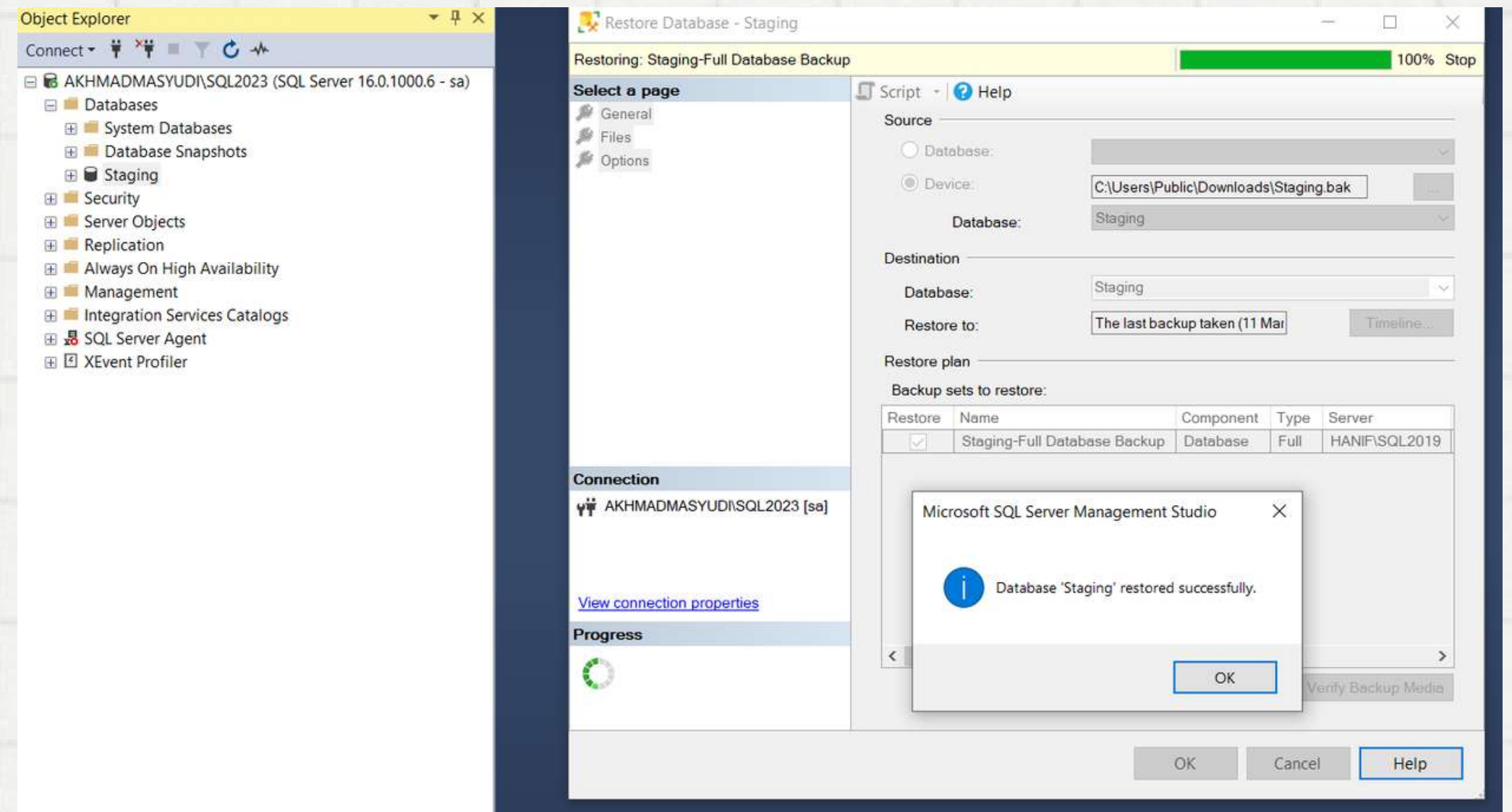




# Result (1)

## Restore Database

- Setelah itu bisa cek kembali untuk hasil pemilihan filenya. Jika sudah yakin, klik "OK".
- Tinggal menunggu proses dan jika berhasil akan muncul notifikasi seperti di gambar bahwa database yang kita inginkan berhasil direstorasi.

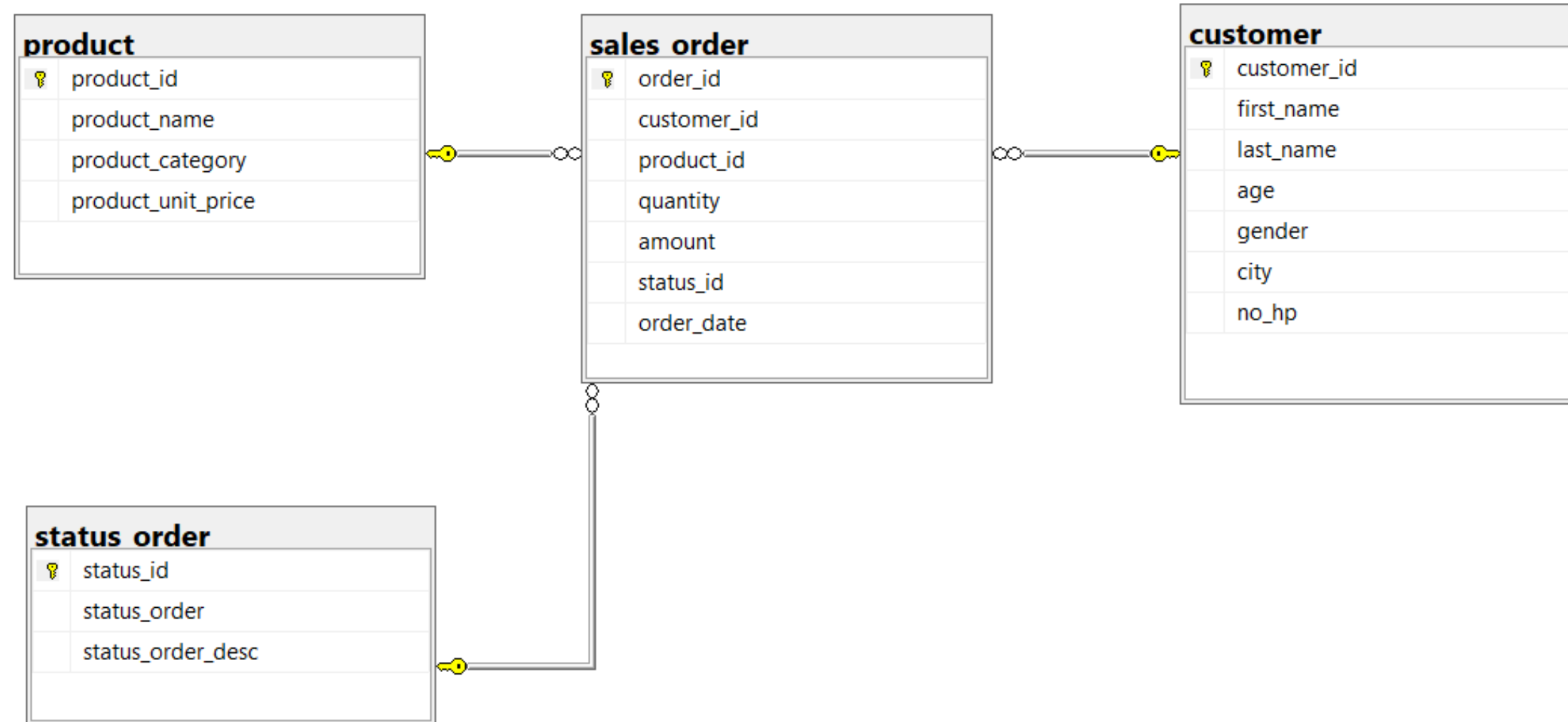


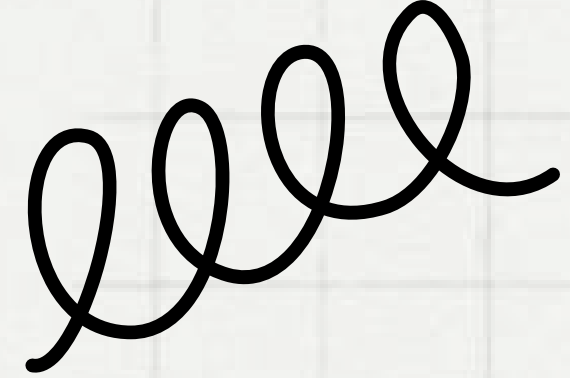


W

# Result (1)

## Restore Database

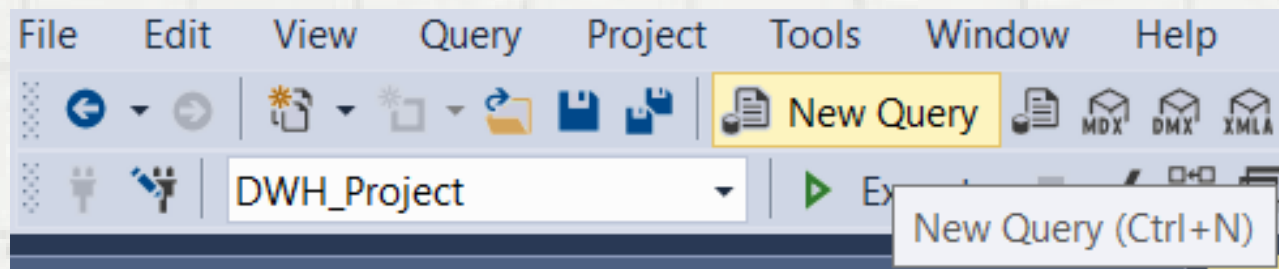




# Result (2)

## Membuat Database

### A. Membuat database baru



```
USE Staging;  
  
CREATE DATABASE DWH_Project;
```

### B. Membuat tabel Dimension Customer

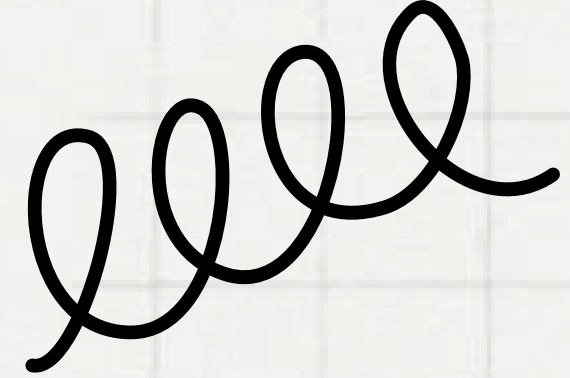
```
USE DWH_Project;  
  
CREATE TABLE DimCustomer (  
    CustomerID INT PRIMARY KEY NOT NULL  
    CustomerName VARCHAR(50) NOT NULL,  
    Age INT NOT NULL,  
    Gender VARCHAR(50) NOT NULL,  
    City VARCHAR(50) NOT NULL,  
    NoHP VARCHAR(50) NOT NULL  
);
```

### C. Membuat tabel Dimension Product

```
USE DWH_Project;  
  
CREATE TABLE DimProduct (  
    ProductID INT PRIMARY KEY NOT NULL,  
    ProductName VARCHAR(255) NOT NULL,  
    ProductCategory VARCHAR(255) NOT NULL,  
    ProductUnitPrice INT NULL  
);
```

### D. Membuat tabel Dimension Status Order

```
USE DWH_Project;  
  
CREATE TABLE DimStatusOrder (  
    StatusID INT PRIMARY KEY NOT NULL,  
    StatusOrder VARCHAR(50) NOT NULL,  
    StatusOrderDesc VARCHAR(50) NOT NULL  
);
```



# Result (2)

## Membuat Database

### E. Membuat table Fact Sales Order

```
USE DWH_Project;

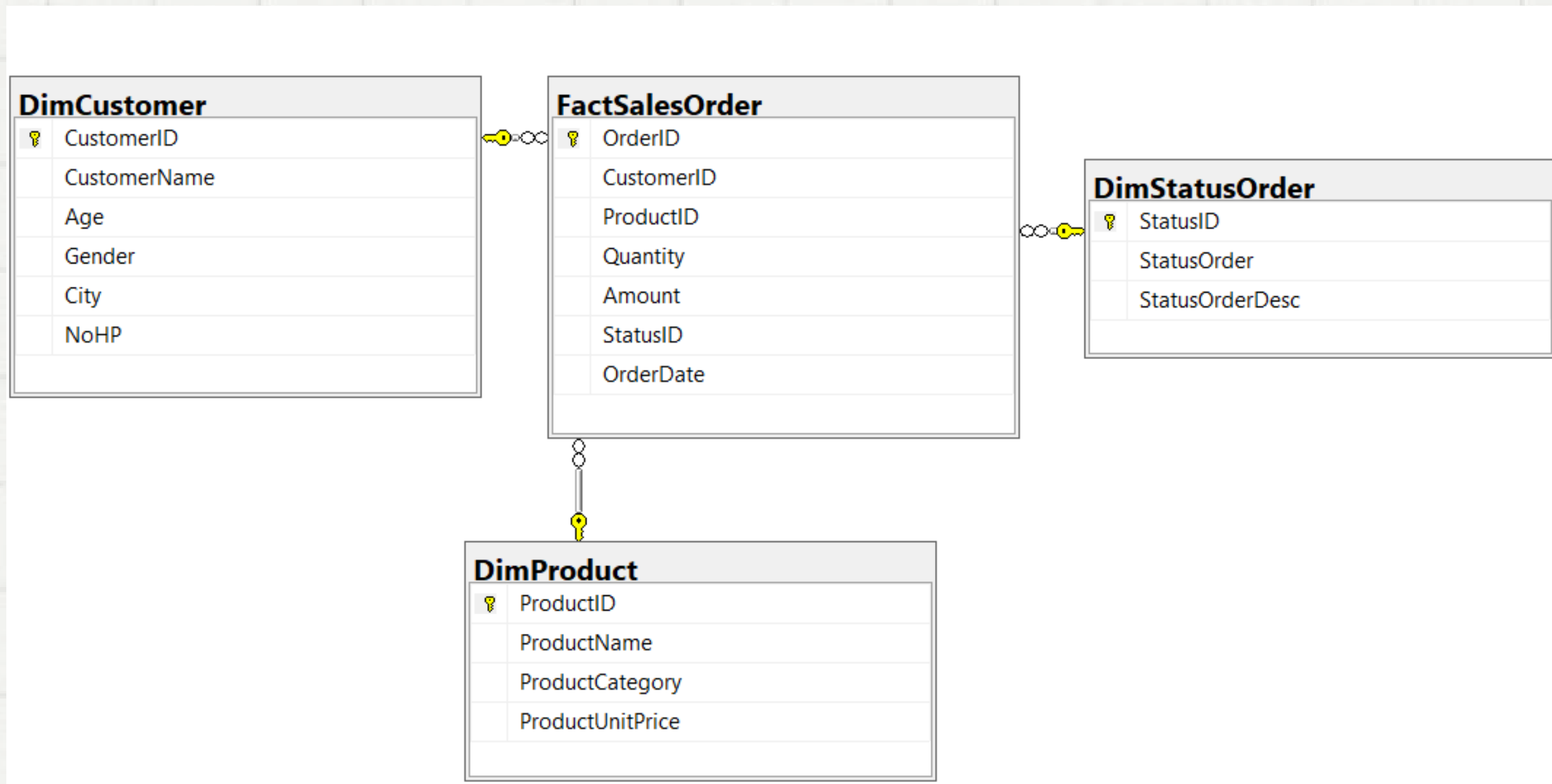
CREATE TABLE FactSalesOrder (
    OrderID INT PRIMARY KEY NOT NULL,
    CustomerID INT FOREIGN KEY REFERENCES DimCustomer(CustomerID) NOT NULL,
    ProductID INT FOREIGN KEY REFERENCES DimProduct(ProductID) NOT NULL,
    Quantity INT NOT NULL,
    Amount INT NOT NULL,
    StatusID INT FOREIGN KEY REFERENCES DimStatusOrder(StatusID) NOT NULL,
    OrderDate DATE NOT NULL
);
```

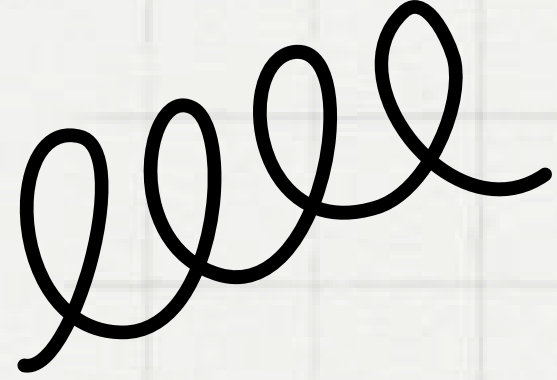


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# Result (2)

## Membuat Database



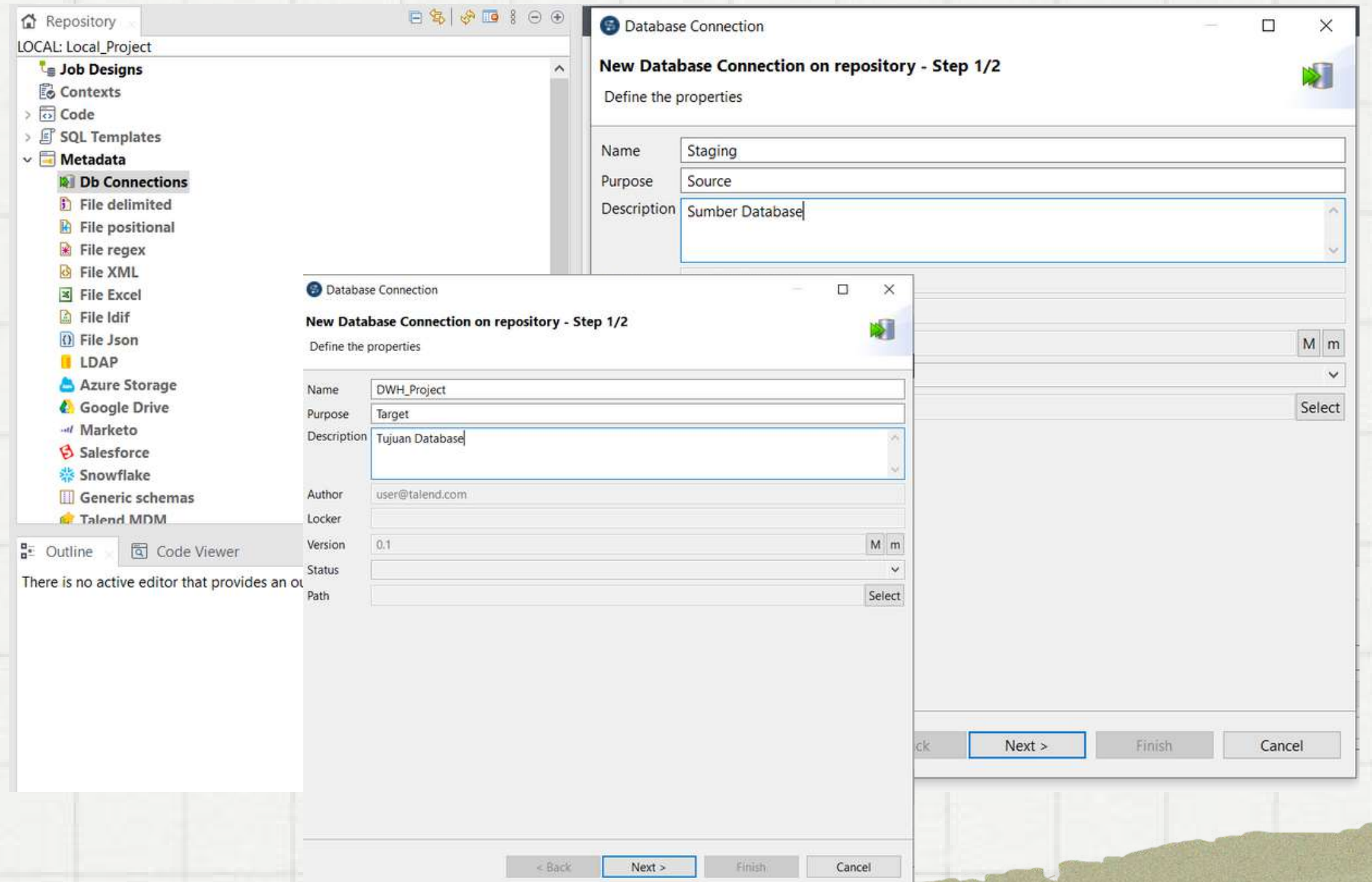


# Result (3)

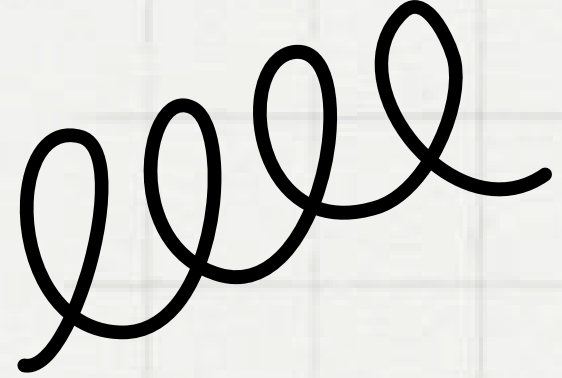
## Membuat ETL

### A. Membuat Metadata Database Source dan Target

- Pada "Repository" klik Metadata.
- Kemudian klik kanan pada "Db Connections" lalu pilih Create connection.
- Isi Name, Purpose, dan Description sesuai keinginan lalu klik "Next" untuk melanjutkan.





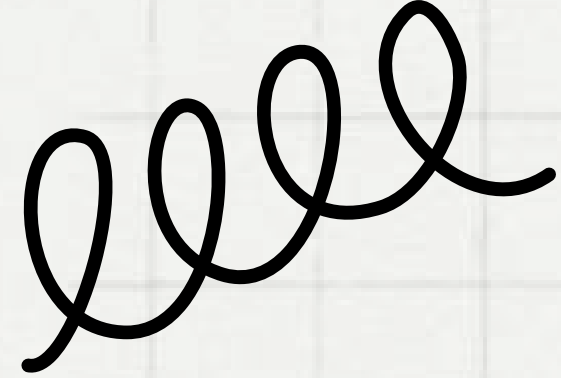


# Result (3)

## Membuat ETL

### A. Membuat Metadata Database Source dan Target

- Pada "DB Type" pilih sesuai tipe database, di sini saya memilih Microsoft SQL Server. Kemudian untuk DB Version saya memilih "Open source JDTs".
- Isi username Login, Password, Nama Server, Port, dan Nama DataBase lalu klik "Test connection" untuk memastikan metadata sudah terkoneksi.
- Jika berhasil akan ada notifikasi lalu klik OK dan Finish.

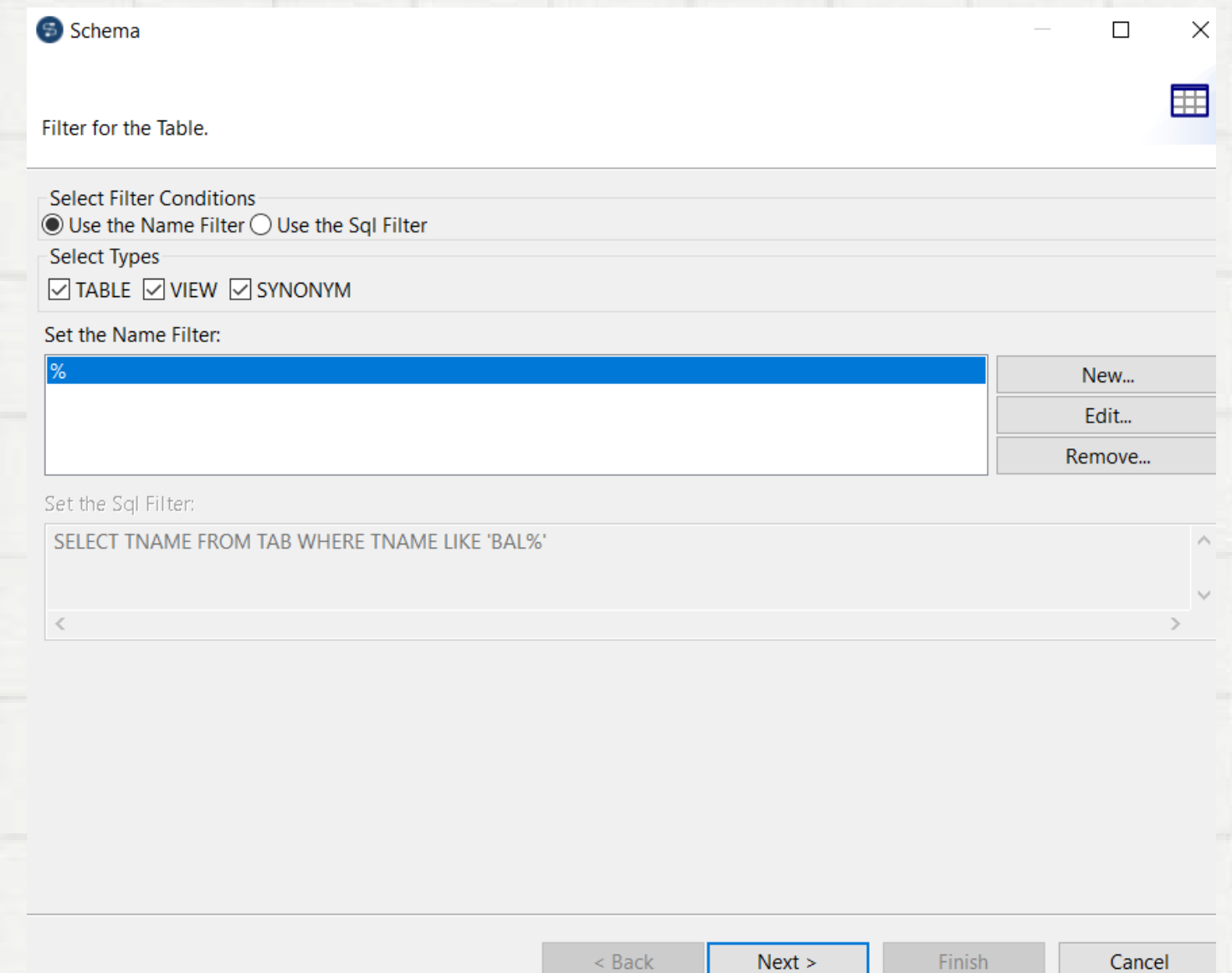
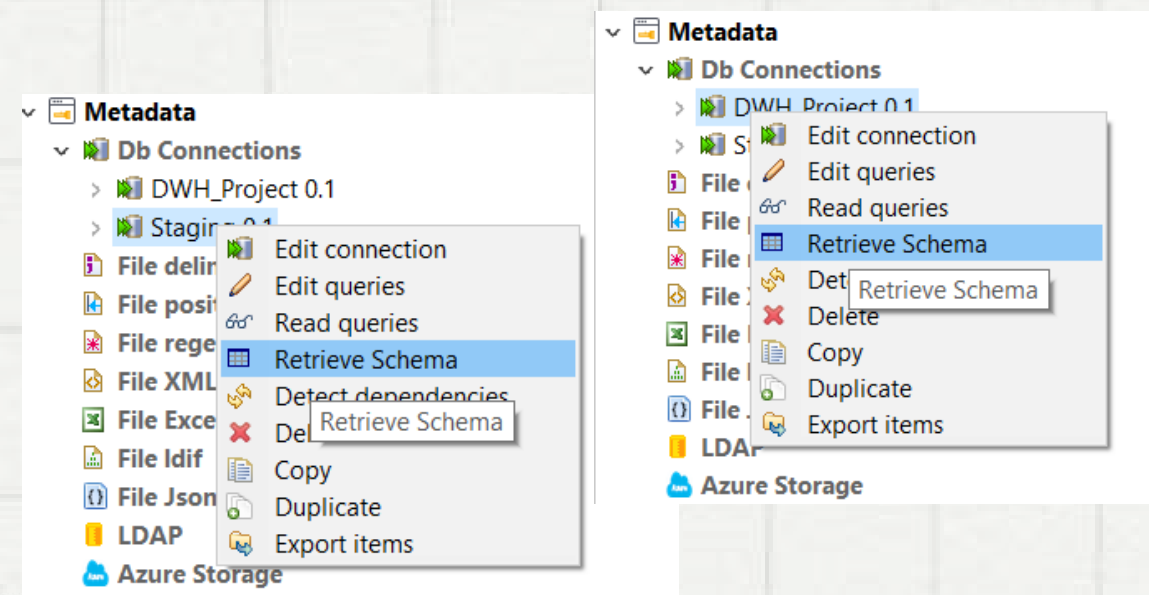


# Result (3)

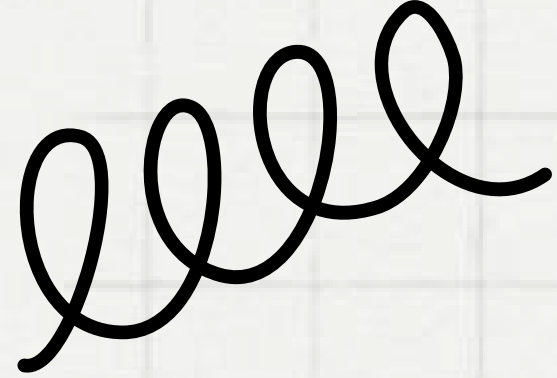
## Membuat ETL

### B. Membuat Schema Table Database Source dan Target

- Pada “Repository” klik Metadata. Kemudian klik pada “Db Connections”.
- Klik kanan pada Database yang akan dibuat schema lalu pilih “Retrieve Schema”.
- Selanjutnya klik “Next”.







# Result (3)

## Membuat ETL

### B. Membuat Schema Table Database Source dan Target

- Selanjutnya pilih schema table yang akan dibuat yaitu dbo yang terdiri dari customer, product, sales\_order, dan status\_order untuk Database Source. Sesuaikan pada Database Target.
- Selanjutnya klik "Next".

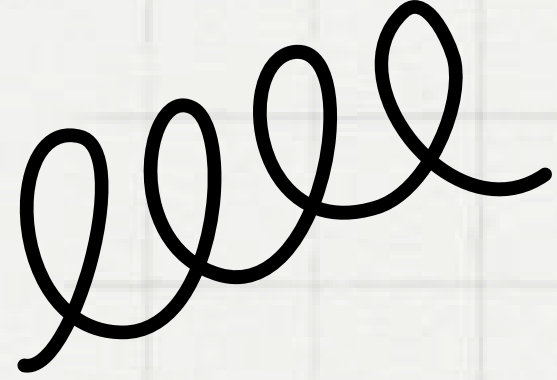
Select Schema to create

Name Filter:

Name	Type	Column number	Creation status
> <input type="checkbox"/> db_datareader	SCHEMA		
> <input type="checkbox"/> db_datawriter	SCHEMA		
> <input type="checkbox"/> db_owner	SCHEMA		
> <input type="checkbox"/> db_securityadmin	SCHEMA		
▼ <input checked="" type="checkbox"/> dbo	SCHEMA		
<input checked="" type="checkbox"/> DimCustomer	TABLE	6	Success
<input checked="" type="checkbox"/> DimProduct	TABLE	4	Success
<input checked="" type="checkbox"/> DimStatusOrder	TABLE	3	Success
<input checked="" type="checkbox"/> FactSalesOrder	TABLE	7	Success
<input type="checkbox"/> sysdiagrams	TABLE		
> <input type="checkbox"/> guest	SCHEMA		
> <input type="checkbox"/> INFORMATION_SCHEMA	SCHEMA		
> <input type="checkbox"/> sys	SCHEMA		

Select All Select None Check Connection

< Back **Next >** Finish Cancel



# Result (3)

## Membuat ETL

### B. Membuat Schema Table Database Source dan Target

- Dapat kita lihat schema dari table yang akan dibuat, jika sudah yakin klik "Finish".
- Hasil dari schema table dapat kita lihat di bagian repository.

LOCAL: Local\_Project

- Metadata
  - Db Connections
    - DWH\_Project 0.1
      - Staging 0.1
        - Queries
        - Synonym schemas
        - Table schemas
          - customer
          - product
          - sales\_order
          - status\_order

Metadata

- Db Connections
  - DWH\_Project 0.1
    - Queries
    - Synonym schemas
    - Table schemas
      - DimCustomer
      - DimProduct
      - DimStatusOrder
      - FactSalesOrder

Schema

New Schema in connection "Staging"

Add a Schema on repository

Schema

- customer
- product
- sales\_order
- status\_order

Name: status\_order

Comment:

Type: TABLE

Based on table: status\_order

Retrieve Schema Guess Schema

Use the "Retrieve Schema" button to replace the current Schema by the table based Schema

Column	Db Column	K...	DB Ty...	Type	✓	N.	Date P...	Le...	Pre...	D...	Co...
status_id	status_id	✓	INT	int	✓			10	0		
status_or...	status_order		VARC...	Str...	✓			50	0		
status_or...	status_order...		VARC...	Str...	✓			50	0		

Add Schema Remove Schema

< Back Next > Finish Cancel

Schema

New Schema in connection "DWH\_Project"

Add a Schema on repository

Schema

- DimCustomer
- DimProduct
- DimStatusOrder
- FactSalesOrder

Name: FactSalesOrder

Comment:

Type: TABLE

Based on table: FactSalesOrder

Retrieve Schema Guess Schema

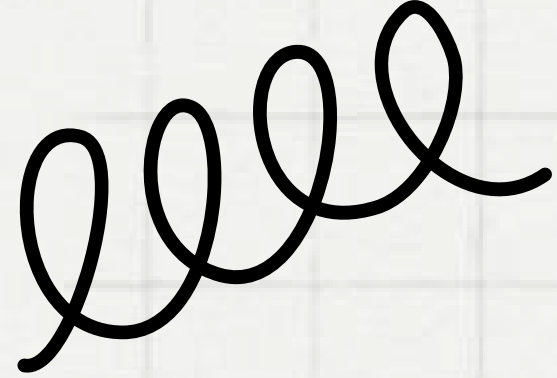
Use the "Retrieve Schema" button to replace the current Schema by the table based Schema

Column	Db Column	K...	DB Ty...	Ty...	✓	N.	Date P...	Le...	Pr...	D...	Co...
OrderID	OrderID	✓	INT	int	✓			10	0		
Custome...	CustomerID		INT	int	✓			10	0		
ProductID	ProductID		INT	int	✓			10	0		
Quantity	Quantity		INT	int	✓			10	0		

Add Schema Remove Schema

< Back Next > Finish Cancel



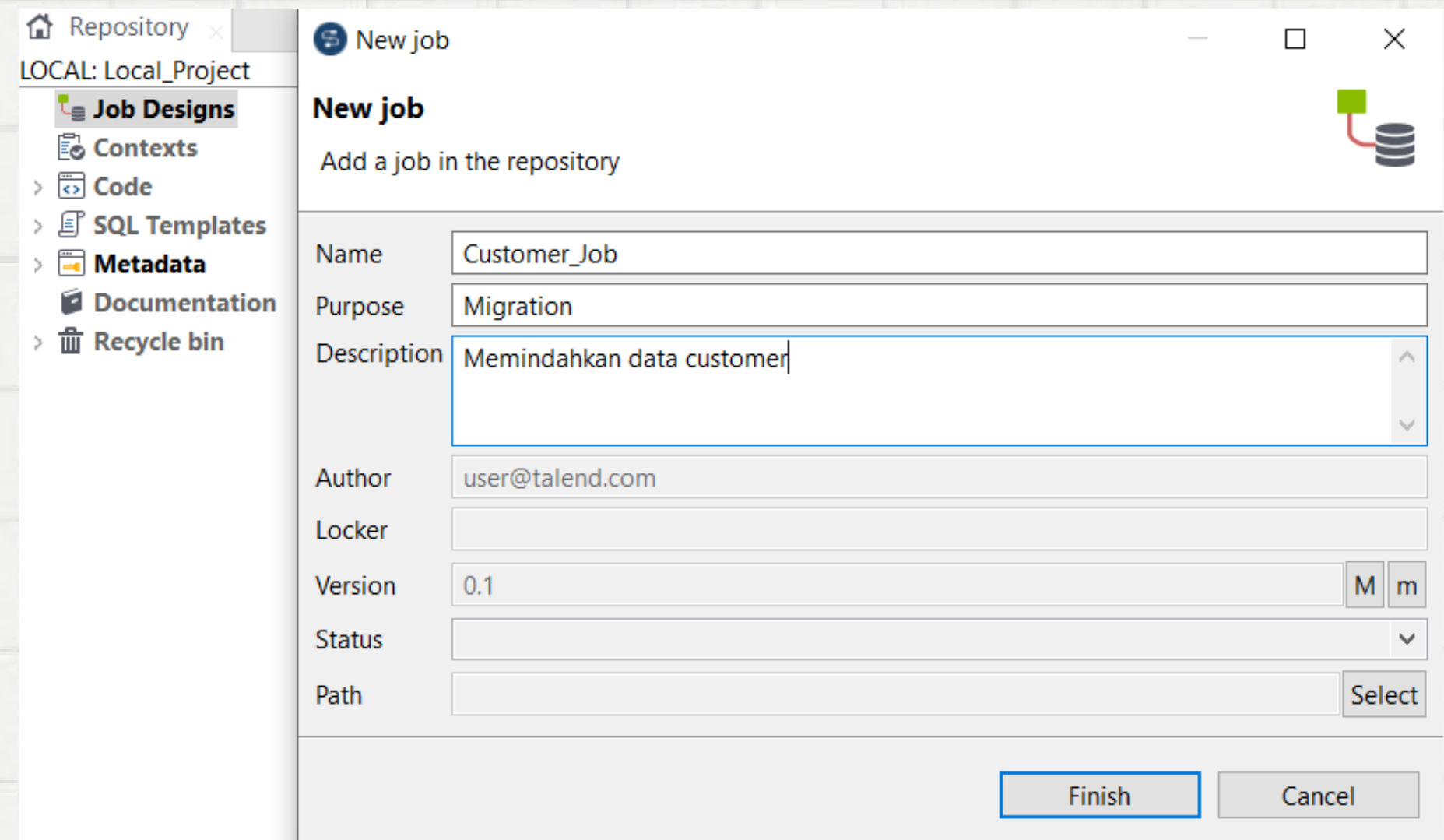
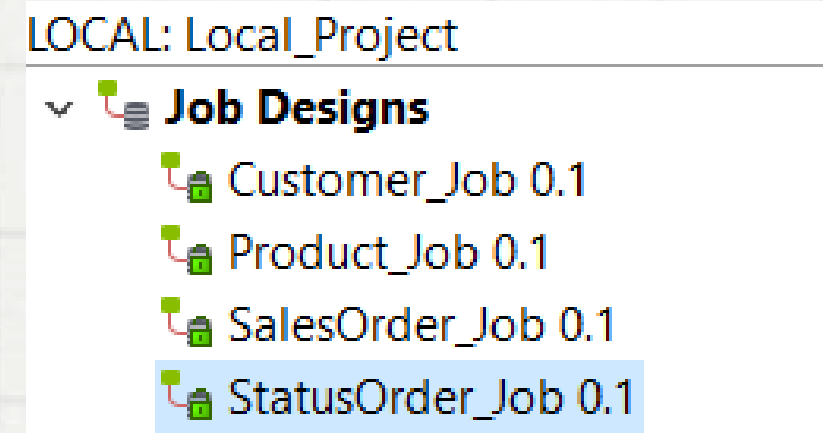


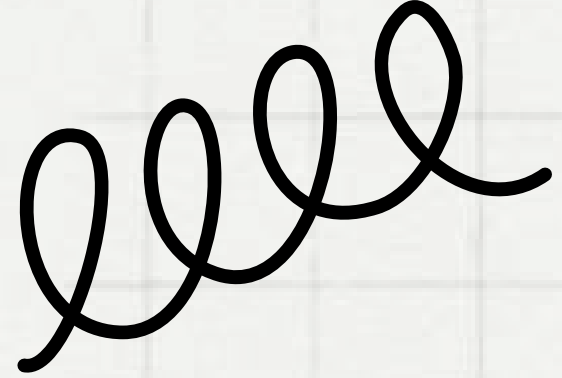
# Result (3)

## Membuat ETL

### C. Membuat Job Designs

- Pada "Repository" klik kanan di bagian Job Designs lalu pilih Create job.
- Isi Name, Purpose, dan Description sesuai keinginan lalu klik "Finish". Saya membuat job untuk setiap tugas memindahkan tabel.



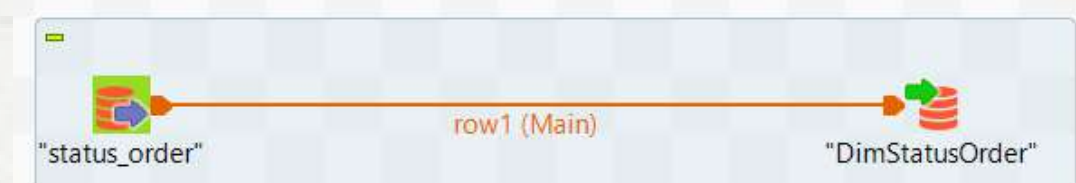
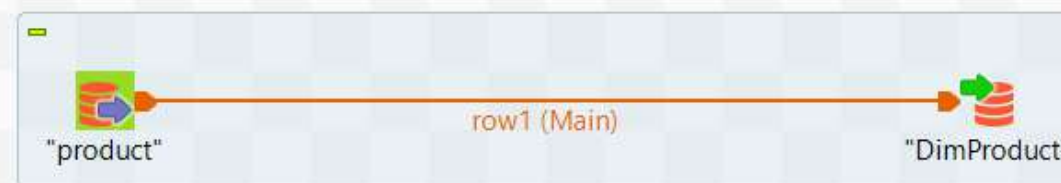
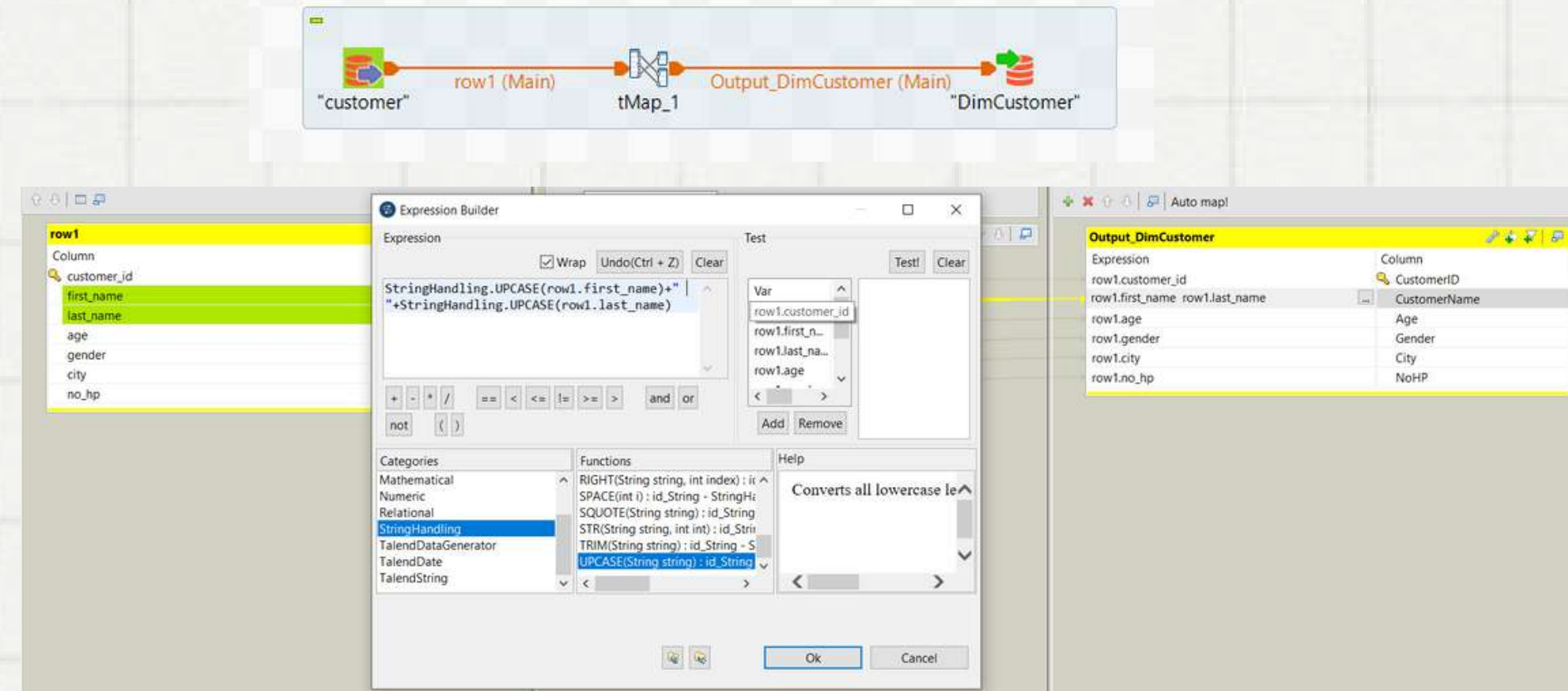


# Result (3)

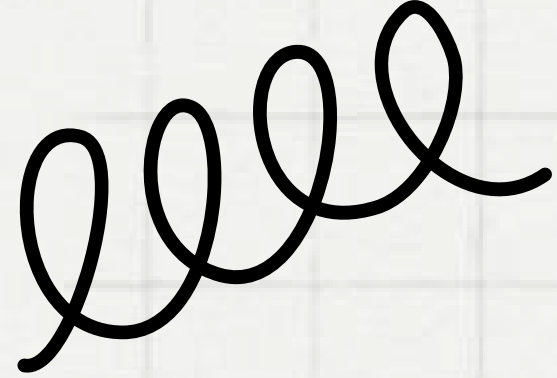
## Membuat ETL

### C. Membuat Job Designs

- Pada setiap job design hubungkan antara tabel dari database Staging sebagai komponen input dan tabel dari database DWH\_Project sebagai komponen output. Simpan job.
- Khusus untuk Customer\_Job tambahkan komponen tMap di tengahnya karena dibutuhkan transformasi data.







# Result (3)

## Membuat ETL

### C. Membuat Job Designs

- Untuk menjalankan job klik “Run” pada setiap job design.
- Kita dapat melihat hasil migrasi data dengan mengecek di SSMS.

**Job Customer\_Job**  
Execution  
Run Kill Clear  
Starting job Customer\_Job at 22:10 23/01/2024.  
[statistics] connecting to socket on port 3490  
[statistics] connected  
[statistics] disconnected  
Job Customer\_Job ended at 22:10 23/01/2024. [Exit code = 0]

**Job Product\_Job**  
Execution  
Run Kill Clear  
Starting job Product\_Job at 22:25 23/01/2024.  
[statistics] connecting to socket on port 3787  
[statistics] connected  
[statistics] disconnected  
Job Product\_Job ended at 22:25 23/01/2024. [Exit code = 0]

**Job StatusOrder\_Job**  
Execution  
Run Kill Clear  
Starting job StatusOrder\_Job at 22:28 23/01/2024.  
[statistics] connecting to socket on port 3656  
[statistics] connected  
[statistics] disconnected  
Job StatusOrder\_Job ended at 22:28 23/01/2024. [Exit code = 0]

**Job SalesOrder\_Job**  
Execution  
Run Kill Clear  
Starting job SalesOrder\_Job at 22:30 23/01/2024.  
[statistics] connecting to socket on port 4009  
[statistics] connected  
[statistics] disconnected  
Job SalesOrder\_Job ended at 22:30 23/01/2024. [Exit code = 0]

```
USE DWH_Project;
select * from DimCustomer;
```

	CustomerID	CustomerName	Age	Gender	City	NoHP
1	201	BUDI SANTOSO	45	Pria	Jakarta	087645465712
2	202	AJENG SRIASIH	25	Wanita	Bogor	089045465712
3	203	BAGUS PRAKOSO	20	Pria	Depok	087905465712
4	204	LIA RAHMAWATI	31	Wanita	Bekasi	089945408712
5	205	AZMU FATI	28	Pria	Jakarta	087689765712
6	206	RIFKI MUHAMMAD	22	Pria	Depok	087645468907
7	207	BELA ADRILIA	24	Wanita	Tangerang	087647665712
8	208	RAHMA AMELIA	18	Wanita	Bogor	087645431212

```
USE DWH_Project;
select * from DimProduct;
```

	ProductID	ProductName	ProductCategory	ProductUnitPrice
1	1001	Macbook Air 2020 13 inch	Komputer & Laptop	12000000
2	1002	T-Shirt Polo Nevada	Pakaian	150000
3	1003	Blender Philips 500 watt	Elektronik	200000
4	1004	Kipas Angin Cosmos	Elektronik	120000
5	1005	HP Elitebook 840 G4	Komputer & Laptop	10000000
6	1006	Asus Zenbook 800	Komputer & Laptop	9000000
7	1007	Luciana Set Dress 2 in 1	Pakaian	300000
8	1008	Converse Cap Original	Topi	180000
9	1009	Pull & Bear T-Shirt	Pakaian	250000
10	1010	Bagpack Navy Club	Tas	350000

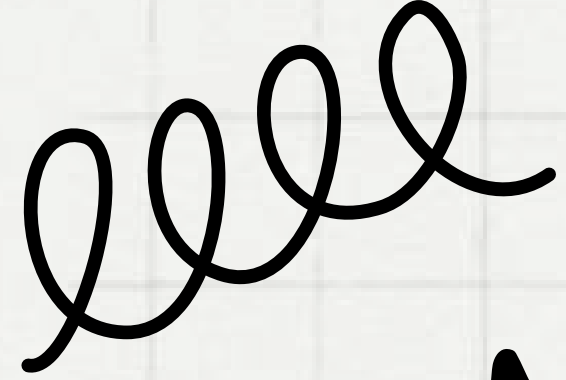
```
USE DWH_Project;
select * from FactSalesOrder;
```

	OrderID	CustomerID	ProductID	Quantity	Amount	StatusID	OrderDate
1	1301	204	1008	2	360000	2	2022-01-06
2	1302	206	1005	1	10000000	4	2022-01-20
3	1303	201	1001	1	12000000	1	2022-02-02
4	1304	202	1002	2	300000	2	2022-02-04
5	1305	203	1003	3	600000	3	2022-03-28
6	1306	206	1006	1	9000000	4	2022-03-15
7	1307	208	1009	1	250000	2	2022-03-09
8	1308	207	1007	2	600000	3	2022-04-28
9	1309	202	1010	1	350000	4	2022-04-22
10	1310	204	1004	2	240000	1	2022-04-25

```
USE DWH_Project;
select * from DimStatusOrder;
```

	StatusID	StatusOrder	StatusOrderDesc
1	1	Awaiting Payment	Menunggu Pembayaran
2	2	Awaiting Shipment	Menunggu Pengiriman
3	3	Shipped	Sedang Dikirim
4	4	Completed	Pesanan sampai tujuan
5	5	Cancelled	Pesanan dibatalkan oleh customer





# Result (4)

## Membuat Stored Procedure

- Sama seperti Result (2) saat membuat database baru, kembali menggunakan "New Query" di aplikasi SSMS. Gunakan "Execute" untuk menjalankan query.
- Setelah SP berhasil dibuat kita juga dapat melihatnya di Object Explorer.

The screenshot displays the SQL Server Enterprise Manager (SSMS) interface. The top menu bar includes File, Edit, View, Query, Project, Tools, Window, and Help. The 'Query' menu is open, showing options like 'New Query' (highlighted) and 'Execute' (with a tooltip 'New Query (Ctrl+N)'). The 'DWH\_Project' database is selected in the 'Server' dropdown.

The 'Object Explorer' pane on the left shows the database structure for 'AKHMADMASYUDI\SQL2023 (SQL Server 16.0.1000.6 - sa)'. The 'DWH\_Project' database is expanded, showing various objects including 'Stored Procedures'. Under 'Stored Procedures', the 'dbo.summary\_order\_status' procedure is visible.

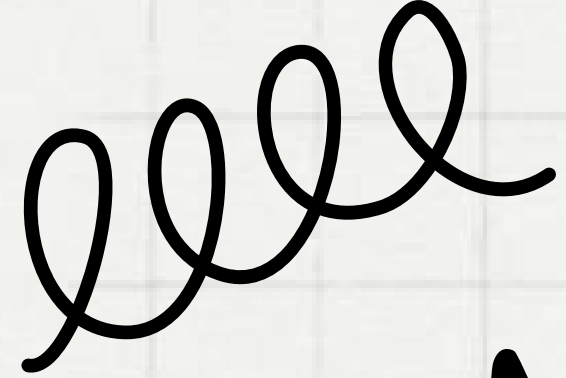
The main query editor window shows the following SQL code:

```
USE DWH_Project;
GO
CREATE PROCEDURE summary_order_status
    @StatusID INT
AS
BEGIN
    SELECT
        F.OrderID,
        C.CustomerName,
        P.ProductName,
        F.Quantity,
        S.StatusOrder
    FROM
        FactSalesOrder as F
    JOIN
        DimCustomer C on F.CustomerID = C.CustomerID
    JOIN
        DimProduct P on F.ProductID = P.ProductID
    JOIN
        DimStatusOrder S on F.StatusID = S.StatusID
    WHERE
        F.StatusID = @StatusID;
END;
GO
```

The 'Messages' pane at the bottom shows the execution results:

```
Commands completed successfully.
Completion time: 2024-01-23T23:01:47.7791564+08:00
```





# Result (4)

## Membuat Stored Procedure

- Untuk membuktikan SP berhasil atau tidak gunakan, query EXEC seperti contoh di gambar.

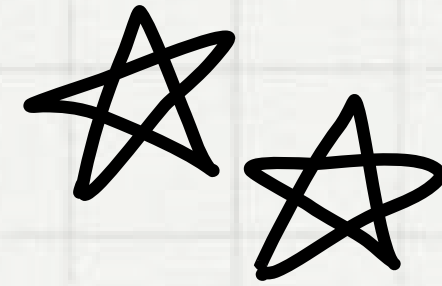
```
USE DWH_Project;  
EXEC summary_order_status @StatusID = 3;
```

100 %

Results Messages

	OrderID	CustomerName	ProductName	Quantity	StatusOrder
1	1305	BAGUS PRAKOSO	Blender Philips 500 watt	3	Shipped
2	1308	BELA ADRILIA	Luciana Set Dress 2 in 1	2	Shipped

# GitHub Link



[https://github.com/akhmadmasyudi/FinalTask\\_IDX-Partners\\_DE\\_AkhmadMasyudi](https://github.com/akhmadmasyudi/FinalTask_IDX-Partners_DE_AkhmadMasyudi)



# Video Presentation Link▶

<https://youtu.be/eXZ0kVMmNSE>



**Thank  
you!**

