



id/x partners

# Data Engineer Test

ID/X Partners Data Engineer VIX

Presented by  
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Nopember (ITS)

# 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.



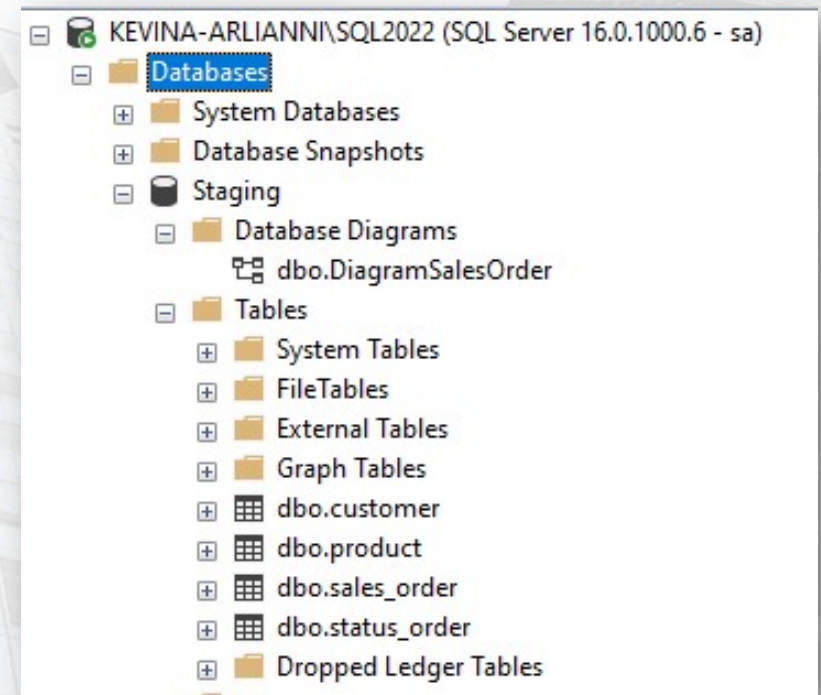
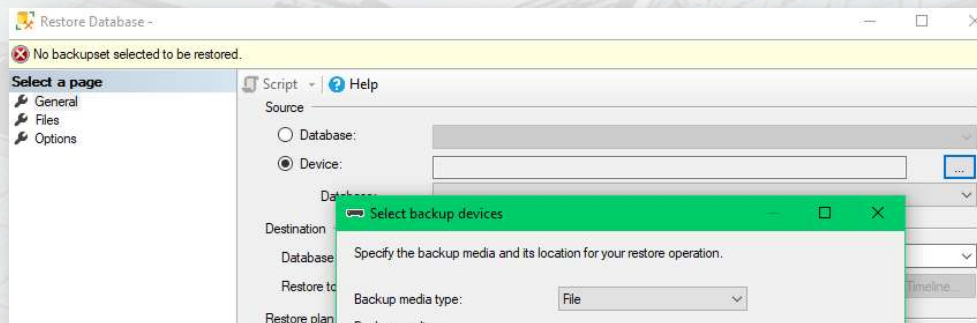
# My Result

# Task 1

Melakukan Import/Restore Database Staging.

Step yang dilakukan :

1. Buka SQL Server Management Studio
2. Klik kanan **Databases** (pane kiri)
3. Klik **Restore Database**
4. Pilih **Device**, Klik **button (...)** , Klik **Add**, pilih file Staging.bak, klik **OK**



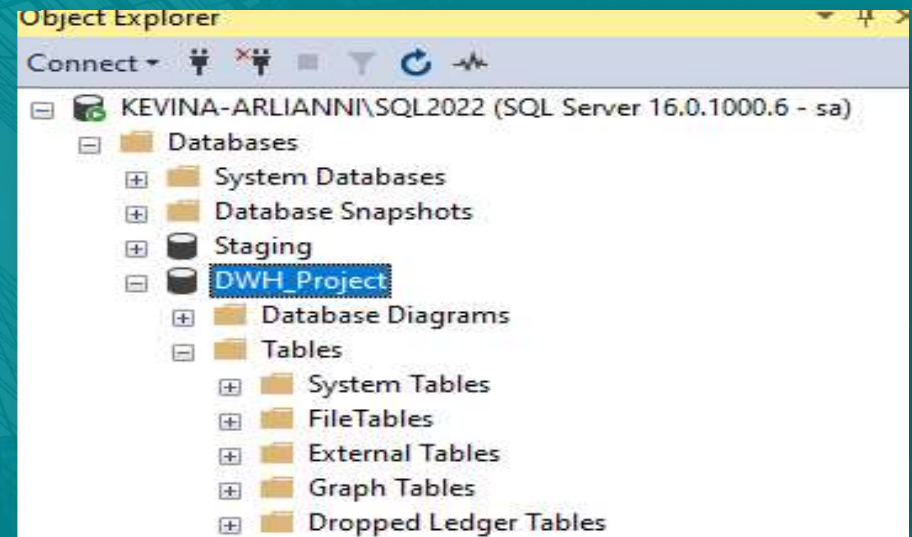
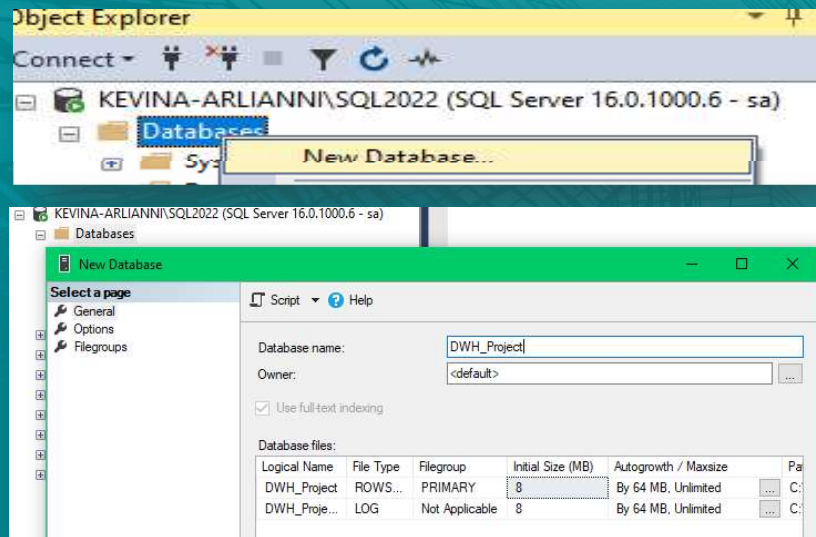
# Task 2



Membuat sebuah Database bernama DWH\_Project  
Membuat Tabel Fact dan Dimension dari tabel yang ada di database Staging.

Step yang dilakukan :

1. Buka SQL Server Management Studio
2. Buat Database  
(Klik kanan pada Databases > New Database > Database Name diisi DWH\_Project > OK > Selesai)



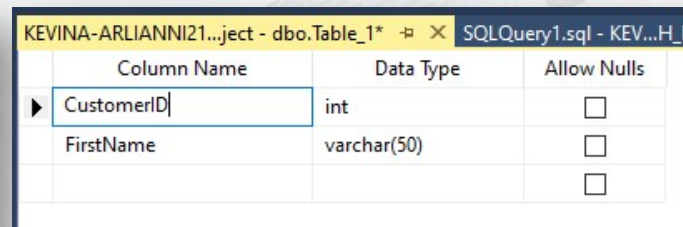
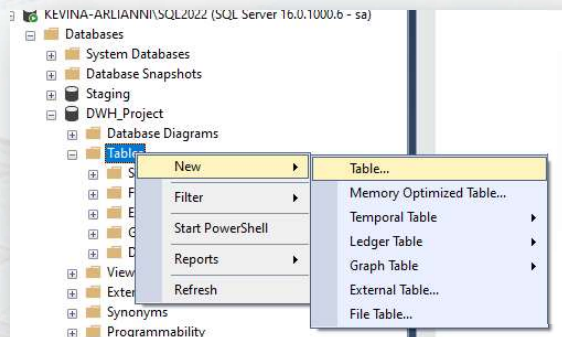


# Task 2

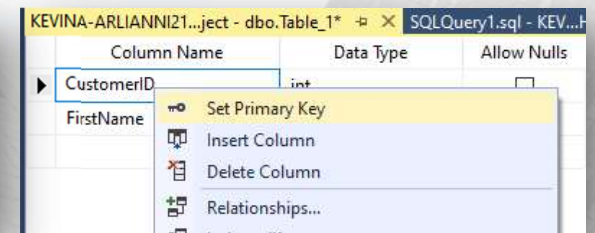
## 3. Buat Tabel

- Manual

{Klik + pada DWH\_Project > klik kanan pada Tables > New > Table > isi kolom dan tipe data > Define Primary Key dan Foreign Key > Ctrl+S > Beri Nama Tabel > Refresh (F5) }

A screenshot of the 'Table Designer' window for a table named 'Table\_1'. It shows a table with two columns: 'CustomerID' and 'FirstName'.

Column Name	Data Type	Allow Nulls
CustomerID	int	<input type="checkbox"/>
FirstName	varchar(50)	<input type="checkbox"/>



- Query

Secara Manual akan membutuhkan waktu lama sehingga lebih baik menggunakan query  
{Pada DWH\_Project lakukan klik kanan > New Query > Tulis Query > Execute > Refresh}

# Task 2

Berikut Query yang digunakan untuk membuat database DWH\_Project

1. Tabel DimCustomer =====>

```
CREATE TABLE DimCustomer (  
  CustomerID int NOT NULL,  
  FirstName varchar(50) NOT NULL,  
  LastName varchar(50) NOT NULL,  
  Age int,  
  Gender varchar(50) NOT NULL,  
  City varchar(50) NOT NULL,  
  NoHp varchar(50) NOT NULL,  
  PRIMARY KEY (CustomerID)  
);
```

2. Tabel DimStatusOrder =====>

```
CREATE TABLE DimStatusOrder (  
  StatusID int NOT NULL,  
  StatusOrder varchar(50) NOT NULL,  
  StatusOrderDesc varchar(50) NOT NULL,  
  PRIMARY KEY (StatusID),  
);
```

3. Tabel DimProduct =====>

```
CREATE TABLE DimProduct (  
  ProductID int NOT NULL,  
  ProductName varchar(255) NOT NULL,  
  ProductCategory varchar(255) NOT NULL,  
  ProductUnitPrice int NOT NULL,  
  PRIMARY KEY (ProductID)  
);
```



# Task 2

Berikut Database DWH\_Project



The screenshot displays the SQL Server Enterprise Manager interface. On the left, the Object Explorer shows the hierarchy of the 'DWH\_Project' database, including 'Tables' and 'Views'. The 'Tables' folder is expanded, showing 'dbo.DimCustomer', 'dbo.DimProduct', and 'dbo.DimStatusOrder'. On the right, the SQL Query window shows the script for creating these three tables.

```
CREATE TABLE DimCustomer (  
    CustomerID int NOT NULL,  
    FirstName varchar(50) NOT NULL,  
    LastName varchar(50) NOT NULL,  
    Age int,  
    Gender varchar(50) NOT NULL,  
    City varchar(50) NOT NULL,  
    NoHp varchar(50) NOT NULL,  
    PRIMARY KEY (CustomerID)  
);  
  
CREATE TABLE DimStatusOrder (  
    StatusID int NOT NULL,  
    StatusOrder varchar(50) NOT NULL,  
    StatusOrderDesc varchar(50) NOT NULL,  
    PRIMARY KEY (StatusID)  
);  
  
CREATE TABLE DimProduct (  
    ProductID int NOT NULL,  
    ProductName varchar(255) NOT NULL,  
    ProductCategory varchar(255) NOT NULL,  
    ProductUnitPrice int NOT NULL,  
    PRIMARY KEY (ProductID)  
);
```

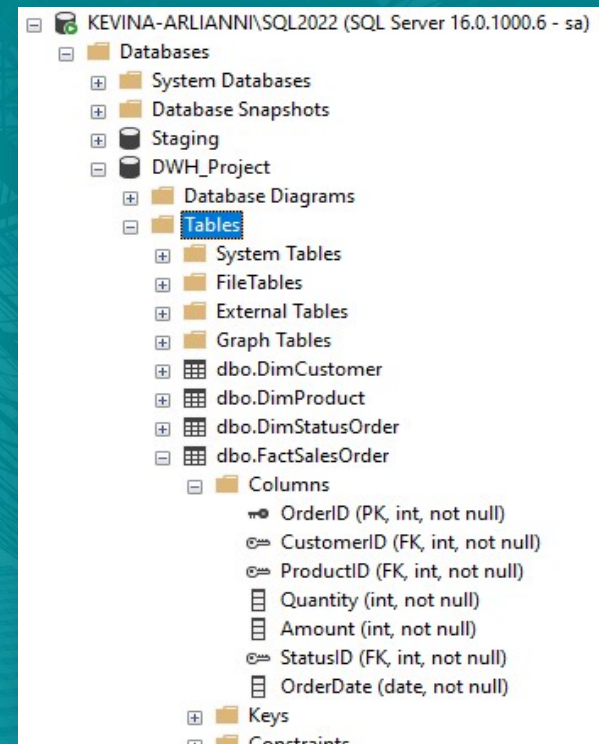
# Task 2



Membuat Tabel Fact dari tabel yang ada di database Staging.

Berikut Query yang digunakan

```
CREATE TABLE FactSalesOrder (  
  OrderID int NOT NULL,  
  CustomerID int NOT NULL,  
  ProductID int NOT NULL,  
  Quantity int NOT NULL,  
  Amount int NOT NULL,  
  StatusID int NOT NULL,  
  OrderDate date NOT NULL,  
  PRIMARY KEY (OrderID),  
  CONSTRAINT FK_CustomerOrder FOREIGN KEY  
    (CustomerID) REFERENCES DimCustomer(CustomerID),  
  CONSTRAINT FK_ProductOrder FOREIGN KEY  
    (ProductID) REFERENCES DimProduct(ProductID),  
  CONSTRAINT FK_StatusOrder FOREIGN KEY (StatusID)  
    REFERENCES DimStatusOrder(StatusID)  
);
```

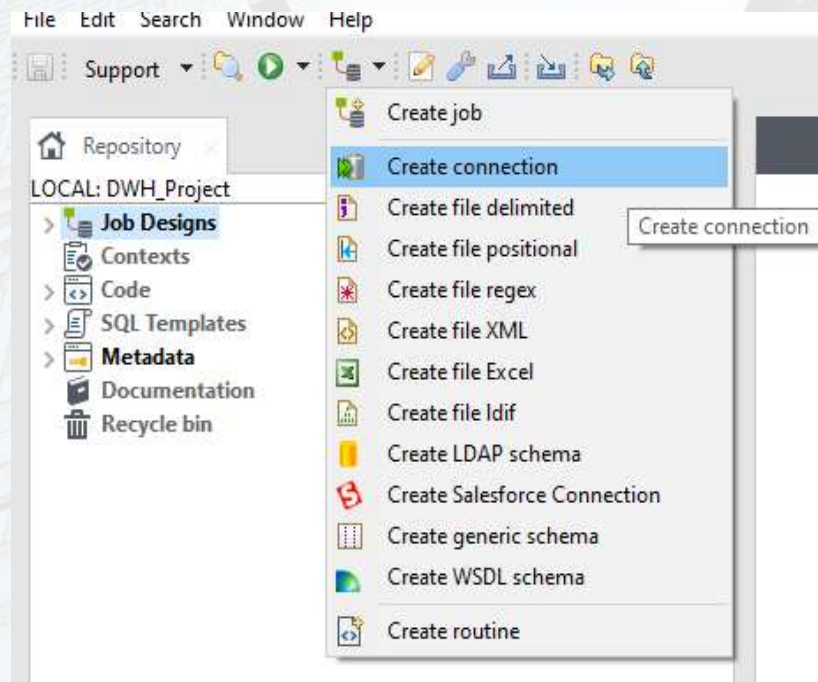


# Task 3

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.

Step yang dilakukan :

1. Buka Talend, **Create Connection**
2. Buat **Database Connection**,
3. **Klik Test Connection**
4. **Klik Finish**
5. **Buat Job dengan ketentuan dari task**
6. **Lalu cek di SSMS**





# Task 3

## TEST CONNECTION

Database Connection

**View Database Connection on repository - Step 2/2**  
Define the connection parameters

DB Type: Microsoft SQL Server

Db Version: Open source JTDS

String of Connection: jdbc:jtds:sqlserver://localhost:1433/Staging;

Login: sa

Password: .....

Server: localhost

Port: 1433

DataBase: Staging

Schema: .....

Additional parameters: .....

**Check Connection**  
"conDWH" connection successful.

OK

Test connection

Export as context Revert Context

[How to install a driver](#)

< Back Next > **Finish** Cancel

Database Connection

**Update Database Connection - Step 2/2**  
Update connection parameters

DB Type: Microsoft SQL Server

Db Version: Open source JTDS

String of Connection: jdbc:jtds:sqlserver://localhost:1433/Staging;

Login: sa

Password: .....

Server: localhost

Port: 1433

DataBase: Staging

Schema: .....

Additional parameters: .....

**Check Connection**  
"conStag" connection successful.

OK

Test connection

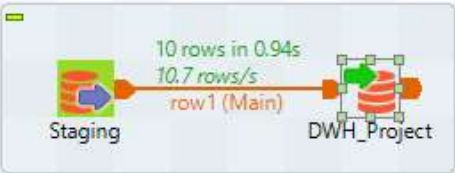
Export as context Revert Context

[How to install a driver](#)

< Back Next > **Finish** Cancel

# Job DimProduct

Job DimProduct 0.1



10 rows in 0.94s  
10.7 rows/s  
row1 (Main)

Staging → DWH\_Project

Designer | Code

Job(DimPr... | Contexts(Di... | Component | Run (Job Di...

### Job DimProduct

Basic Run | Debug Run | Advanced settings | Target Exec | Memory Run

Execution

Run | Kill | Clear

Starting job DimProduct at 14:04 04/06/202  
[statistics] connecting to socket on port  
[statistics] connected

DWH\_Project | Execute

SQLQuery1.sql - KEV...H\_Project (sa (65))\*

```
SELECT * FROM DimProduct
```

100 %

Results | Messages

	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

# Job DimStatusOrder

Job DimProduct 0.1

Job DimStatusOrder 0.1

Staging

5 rows in 1.1s  
4.53 rows/s  
row1 (Main)

DWH\_Project

Designer

Code

Job(DimStatusOrder 0.1)

Contexts(DimStatusOrder)

Component

Run (Job DimStatusOrder)

**Job DimStatusOrder**

Basic Run

Debug Run

Advanced settings

Target Exec

Memory Run

Execution

Run

Kill

Clear

Starting job DimStatusOrder at 14:48 04/06/2023.

[statistics] connecting to socket on port 3984

[statistics] connected

[statistics] disconnected

Job DimStatusOrder ended at 14:48 04/06/2023. [Exit code = 0]

DWH\_Project

Execute

SQLQuery1.sql - KEV...H\_Project (sa (65))\*

SELECT \* FROM DimStatusOrder

100 %

Results


Messages

	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



# Job FactSalesOrder

Job DimProduct 0.1   Job DimStatusOrder 0.1   \*Job FactSalesOrder 0.1 x



Staging → row1 (Main) → DWH\_Project

10 rows in 0.87s  
11.44 rows/s

Designer   Code

Job(FactSalesOrder 0.1)   Contexts(FactSalesOrder)   Component   Run (Job FactSalesOrder)

### Job FactSalesOrder

Basic Run  
Debug Run  
Advanced settings  
Target Exec  
Memory Run

Execution

Run   Kill   Clear

Starting job FactSalesOrder at 16:47 04/06/2023.  
[statistics] connecting to socket on port 3427  
[statistics] connected  
[statistics] disconnected  
Job FactSalesOrder ended at 16:47 04/06/2023. [Exit code = 0]

DWH\_Project   Execute   ✓   Object Explorer

SQLQuery1.sql - KEV...H\_Project (sa (74)) \* x

```
select * from FactSalesOrder
```

100 %

Results   Messages

	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	6000000	3	2022-03-28

Job DimProduct 0.1 Job DimStatusOrder 0.1 Job DimCostumer 0.1

8 rows in 0.23s  
34.04 rows/s  
row1 (Main)

8 rows in 0.81s  
9.93 rows/s  
CustomerName (Main)

tMap\_1

tDBOutput\_1

esigner Code

Job(DimCostumer 0.1) Contexts(DimCostumer) Component Run (Job DimCostumer)

**Job DimCostumer**

Execution

Run Kill Clear

Starting job DimCostumer at 16:04 04/06/2023.  
[statistics] connecting to socket on port 3719  
[statistics] connected  
[statistics] disconnected  
Job DimCostumer ended at 16:04 04/06/2023. [Exit code = 0]

DWH\_Project Execute

SQLQuery1.sql - KEV...H\_Project (sa (74))\* Object Explorer

```
select * from DimCustomer
```

100 %

Results Messages

	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

# Job DimCustomer

DWH\_Project Execute

SQLQuery1.sql - KEV...H\_Project (sa (74))\* Object Explorer

```
select * from Staging.dbo.customer
select * from DimCustomer
```

100 %

Results Messages

	customer_id	first_name	last_name	age	gender	city	no_hp
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	Adria	24	Wanita	Tangerang	087647665712
8	208	Rahma	Amelia	18	Wanita	Bogor	087645431212

	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

# Task 4

Membuat Store Procedure (SP) untuk menampilkan summary sales order berdasarkan status pengiriman.

Step yang dilakukan :

1. Buka **SSMS**
2. Buat **Query Store Procedure**, Running
3. **Running SP dengan EXEC**

```
SQLQuery3.sql - KEV...H_Project (sa (52))*  SQLQuery2.sql - KEV...H_Project (sa (62))*
CREATE PROCEDURE summary_order_status
(
    @StatusID int
) AS
BEGIN
    SELECT
        a.OrderID, a.Quantity, b.CustomerName,
        c.ProductName, d.StatusOrder
    FROM FactSalesOrder a
    INNER JOIN DimCustomer b on a.CustomerID = b.CustomerID
    INNER JOIN DimProduct c on a.ProductID = c.ProductID
    INNER JOIN DimStatusOrder d on a.StatusID = d.StatusID
    WHERE a.StatusID = @StatusID
END
```

Messages

Commands completed successfully.

Completion time: 2023-06-04T17:08:30.7991591+07:00

SQLQuery3.sql - KEV...H\_Project (sa (52))\* SQLQuery2.sql - KEV...H\_Project (sa (62))\*

```
EXEC summary_order_status @StatusID = 1
EXEC summary_order_status @StatusID = 2
EXEC summary_order_status @StatusID = 3
EXEC summary_order_status @StatusID = 4
```

100 %

Results Messages

	OrderID	Quantity	CustomerName	ProductName	StatusOrder
1	1303	1	BUDI SANTOSO	Macbook Air 2020 13 inch	Awaiting Payment
2	1310	2	LIA RAHMAWATI	Kipas Angin Cosmos	Awaiting Payment

	OrderID	Quantity	CustomerName	ProductName	StatusOrder
1	1301	2	LIA RAHMAWATI	Converse Cap Original	Awaiting Shipment
2	1304	2	AJENG SRIASIH	T-Shirt Polo Nevada	Awaiting Shipment
3	1307	1	RAHMA AMELIA	Pull & Bear T-Shirt	Awaiting Shipment

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

	OrderID	Quantity	CustomerName	ProductName	StatusOrder
1	1302	1	RIFKI MUHAMMAD	HP Elitebook 840 G4	Completed
2	1306	1	RIFKI MUHAMMAD	Asus Zenbook 800	Completed
3	1309	1	AJENG SRIASIH	Bagpack Navy Club	Completed



# Thank You



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