

Nama : Aliefta Zulvansyah Bahyperdana

NIM : 222111873

Kelas : 3SI1

No. Absen: 05

## **PRAKTIKUM PERTEMUAN 5**

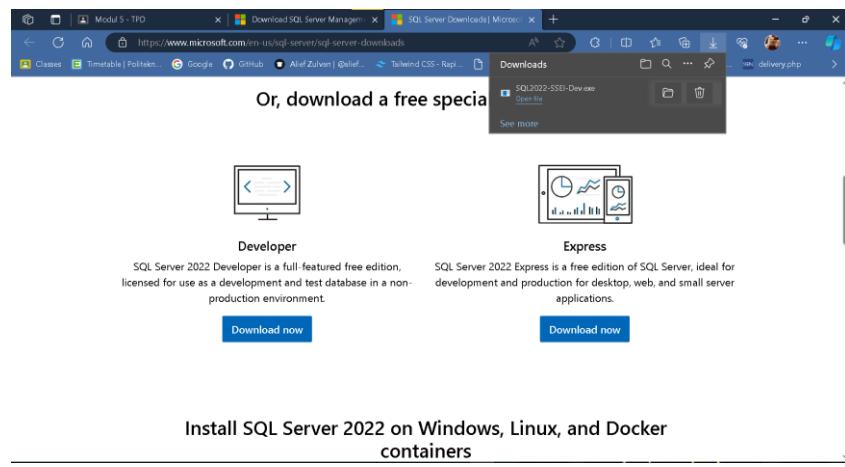
### **TEKNOLOGI PEREKAYASAAN DATA**

#### **5.4. Kegiatan Praktikum**

##### **A. Persiapan**

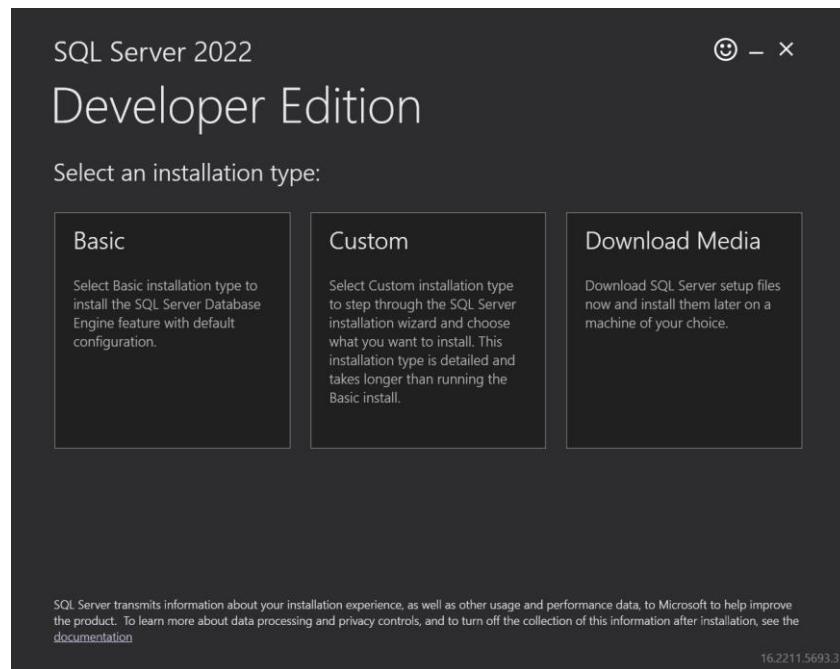
###### **1) Instalasi SQL**

- a) Akses link download: <https://www.microsoft.com/en-us/sql-server/sql-server-downloads>, maka akan muncul tampilan sebagai berikut, pilih developer.



Klik download now → jalankan file yang telah di-download

- b) Setelah itu, pilih Basic

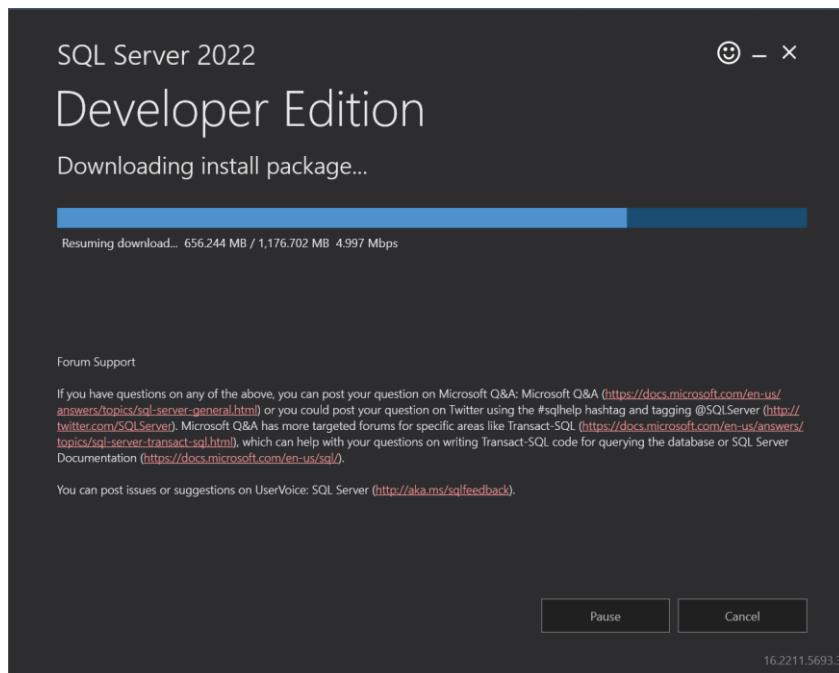


c) Accept Microsoft SQL Server License Term



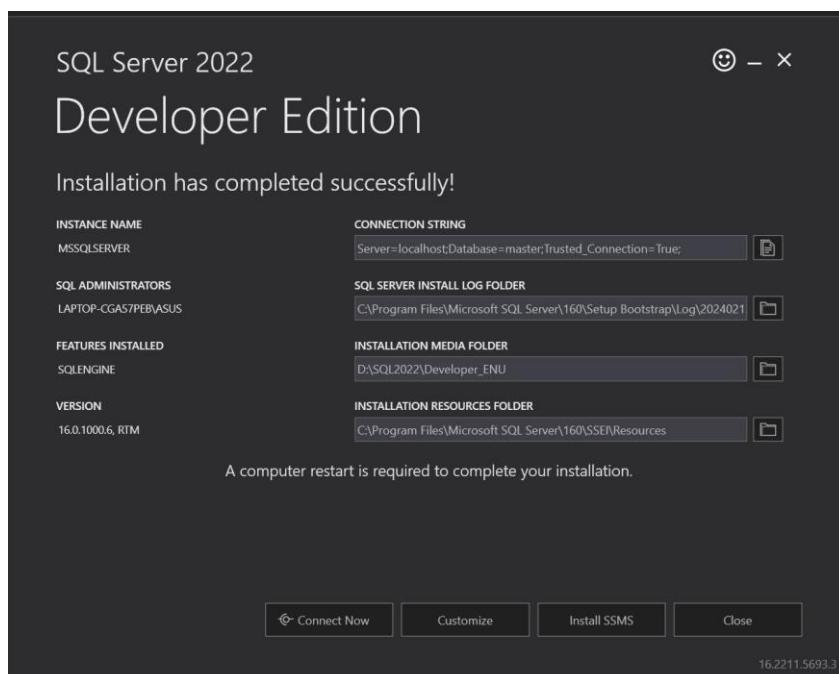
d) Path instalasi dapat diganti sesuai dengan kebutuhan, misal space penyimpanan di drive selain C: lebih memungkinkan untuk menyimpan data.

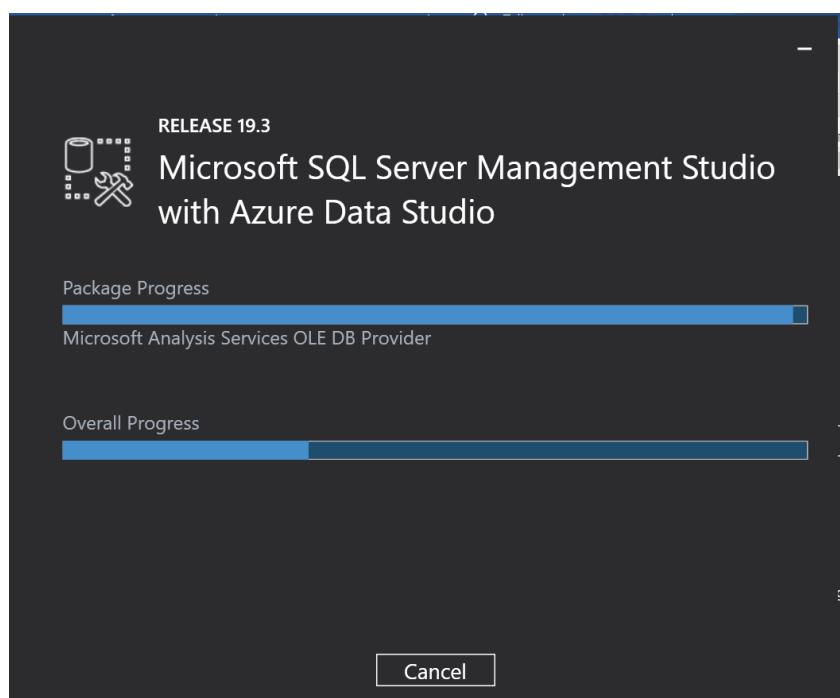
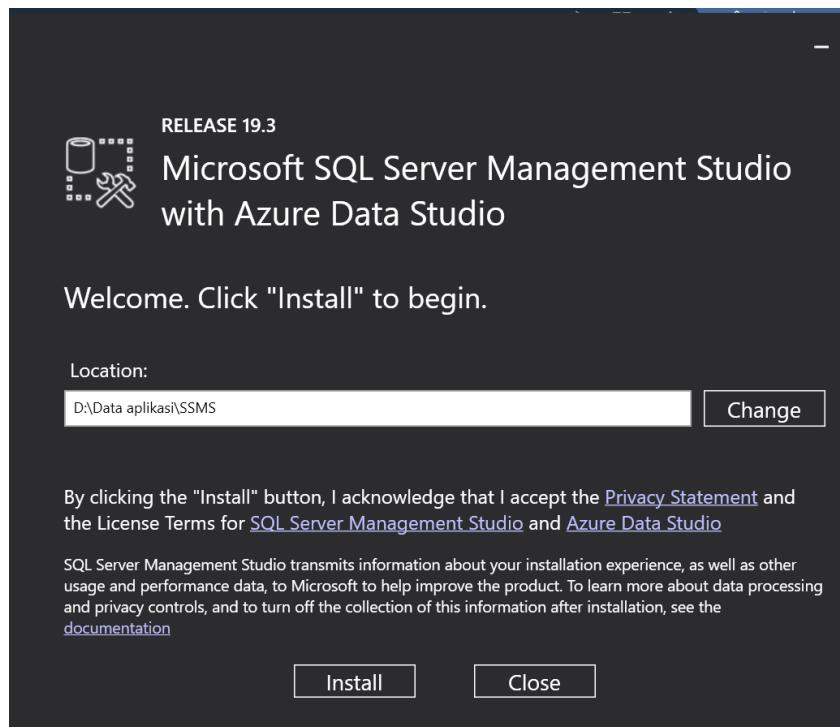
e) Klik instal, maka proses berikut akan berjalan.



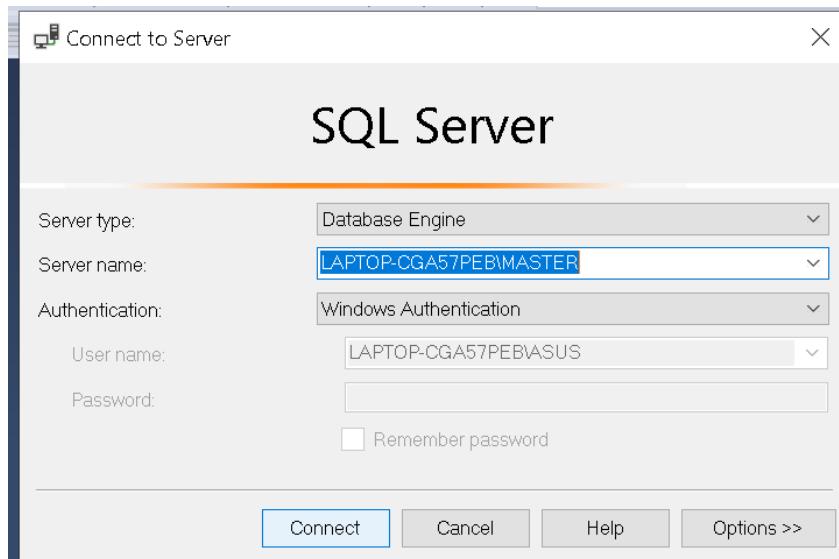
Instalasi SSMS dapat dilakukan pada tahap ini, jika komputer/laptop belum terinstal SSMS. Ketika klik Instal SSMS, maka akan indirect ke link download SSMS. Lakukan unduh file dan jalankan file instalasi.

- f) Setelah instalasi SSMS selesai, maka pengecekan database dapat dilakukan melalui SSMS. Pilih icon connection:

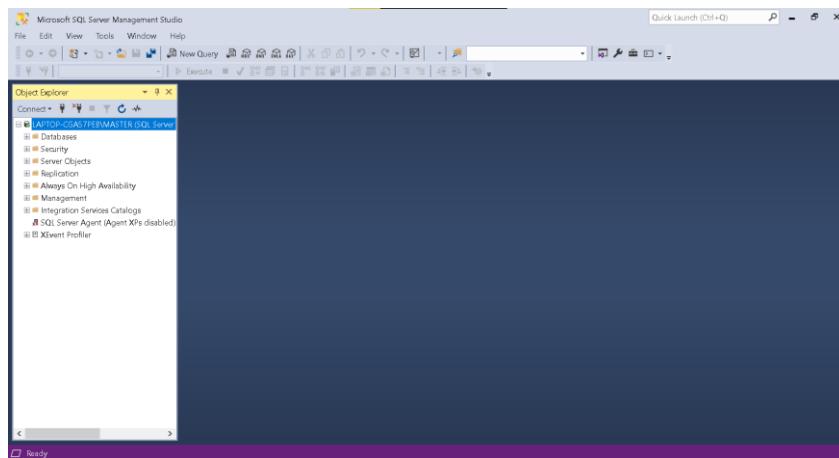




Pada pop-up login, masukkan input pada server type, server name, dan authentication.



Jika tidak mengetahui server name, maka pilih browse pada drop-down liat server name dan expand database engine, maka akan terlihat server name yang tersedia seperti gambar di bawah ini.



Pilih Windows Authentication untuk login ke database.

## 2) Instalasi Visual Studio

- Kunjungi halaman: <https://visualstudio.microsoft.com/vs/community/>

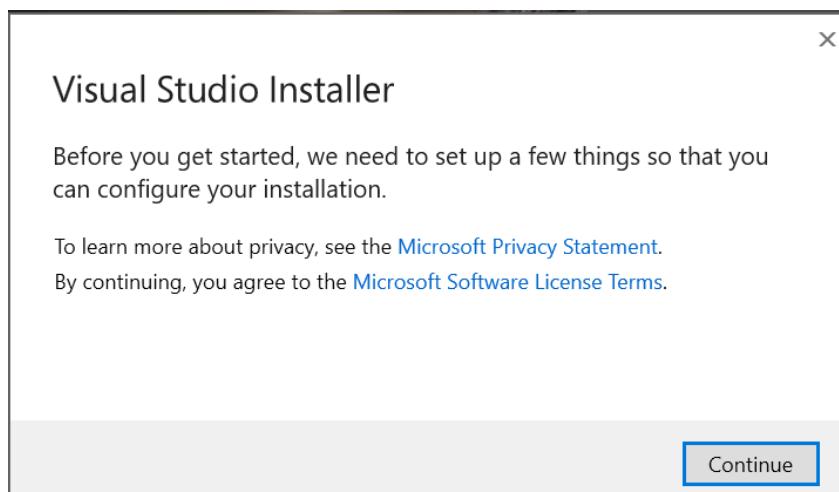


Klik Download, maka otomatis file instalasi visual studio akan ter-download.

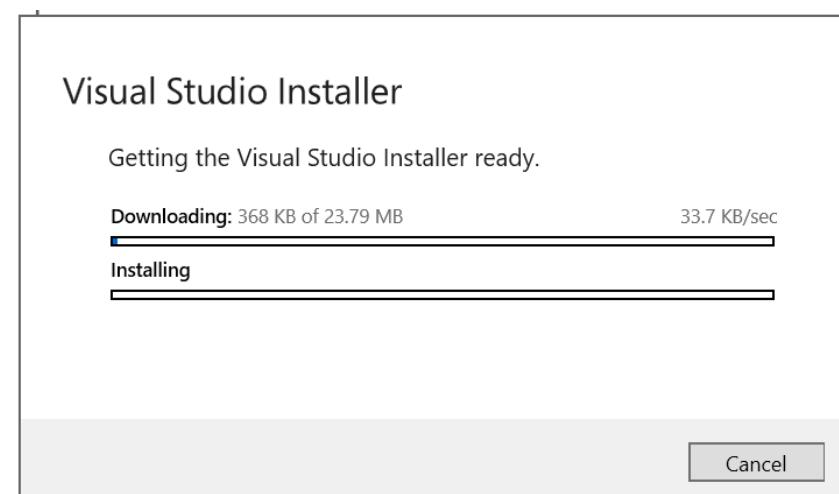
b) Klik file intalasi berikut.

Klik Yes pada pop-up konfirmasi berikut.

Klik Continue.



Proses instalasi akan berjalan sebagaimana gambar di bawah.

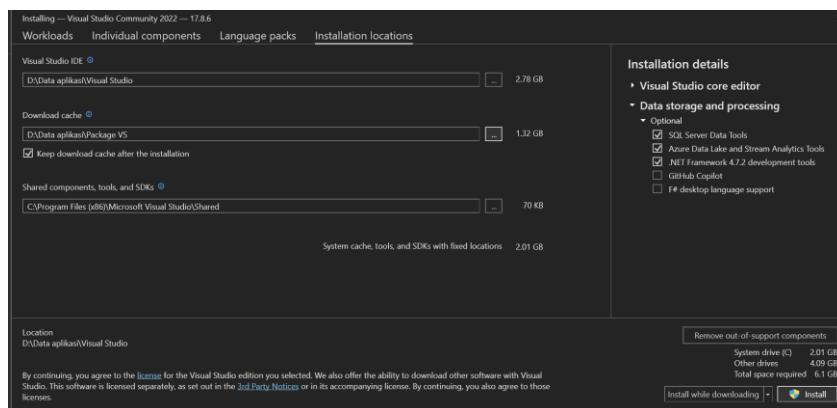
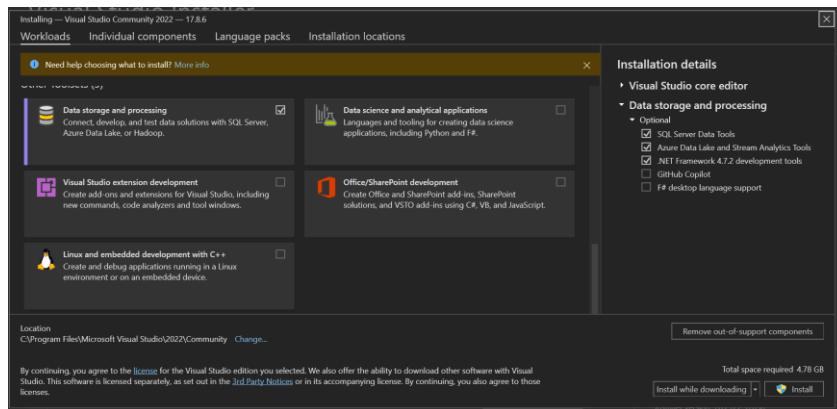


## Visual Studio Installer

Getting the Visual Studio Installer ready.

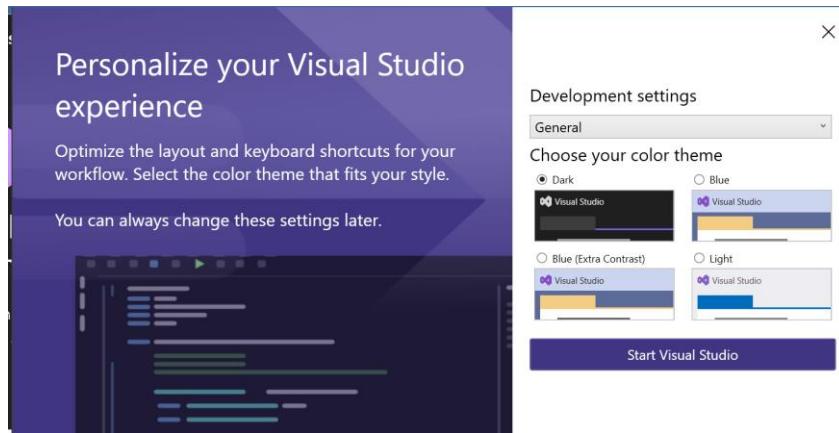


- c) Selesai proses download, tambahkan komponen Data Storage and processing pada halaman instalasi visual studio. Centang pilihan di sebelah kiri sesuai gambar berikut.

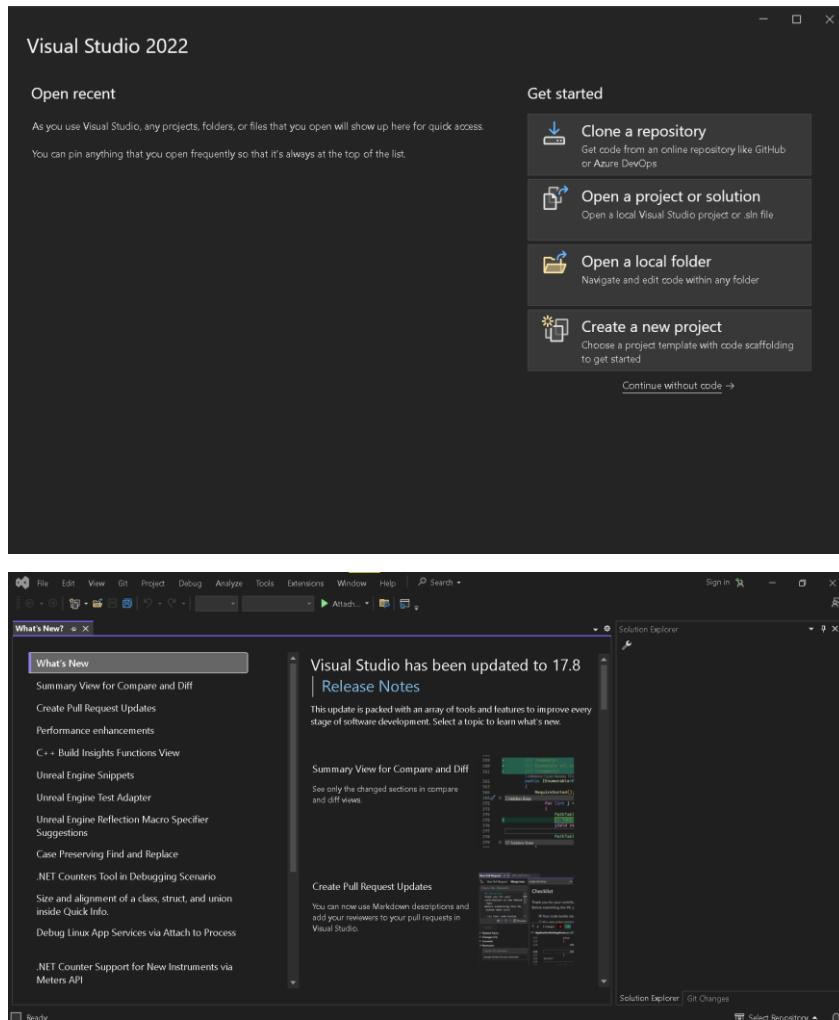


Klik install dan proses akan berjalan.

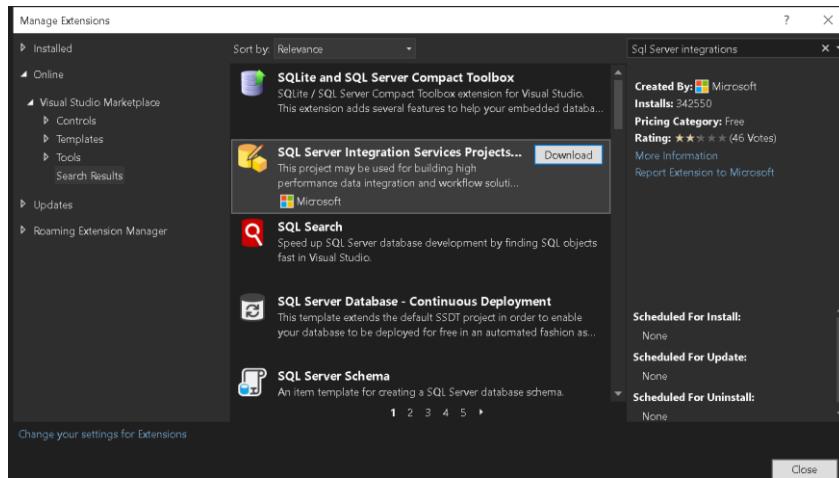
- d) Selesai instalasi, maka akan muncul halaman visual studio. Pilih tampilan designer dan start visual studio.



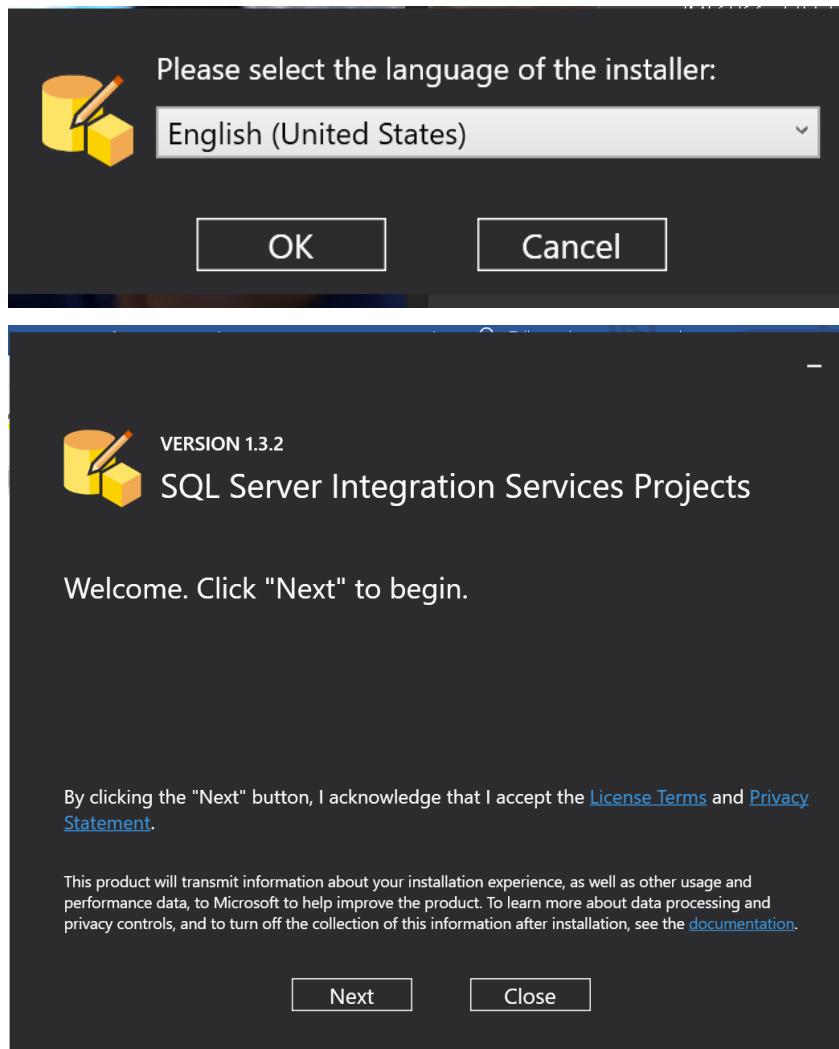
e) Pilih Continue without code → menu Extensions → Manage Extensions

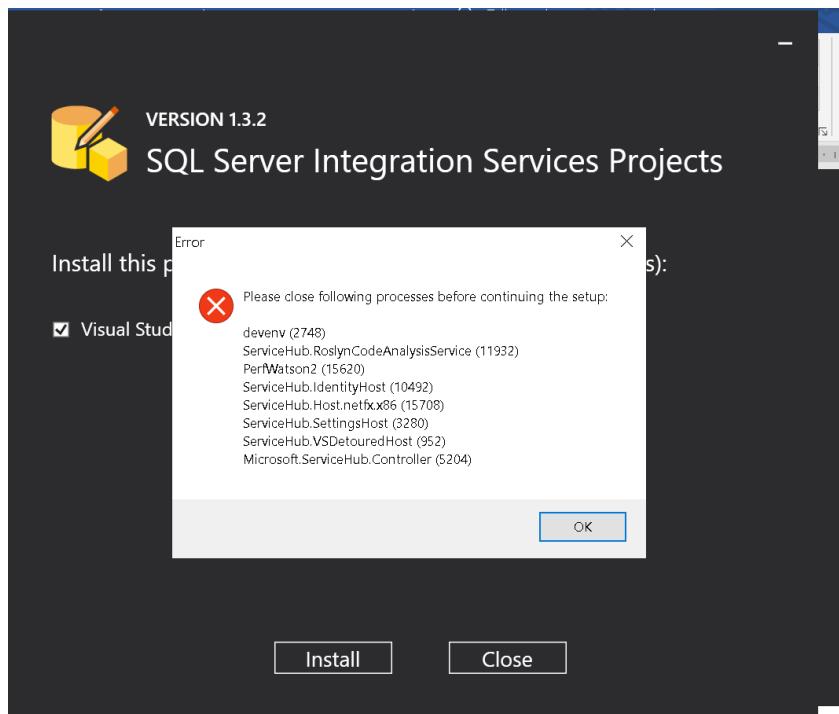


f) Ketik Integration pada search box → pilih SQL Server Integration Services Projects 2022 pada list extensions yang tampil

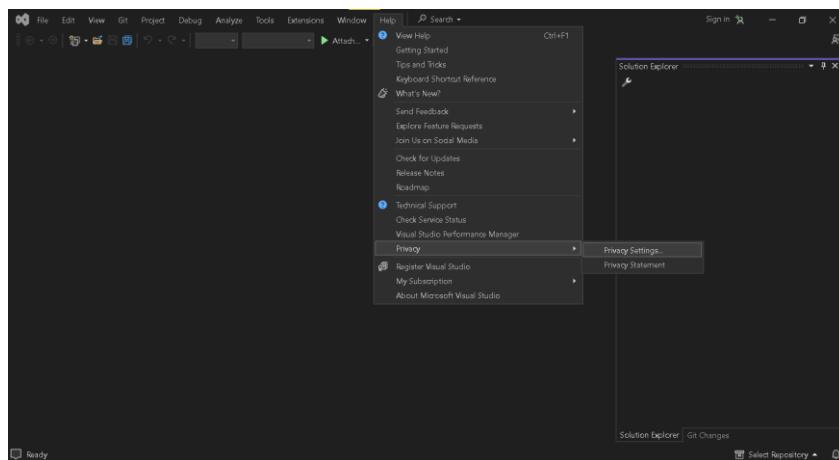


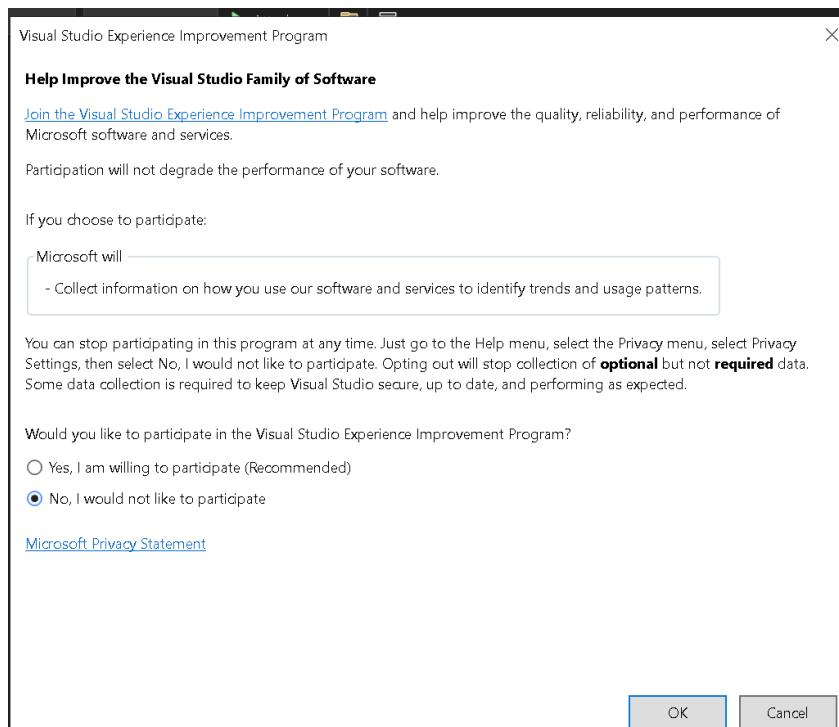
g) Klik download → lakukan instalasi dengan menggunakan file Microsoft.DataTools.IntegrationServices. Selanjutnya, ikuti langkah-langkah berikut.





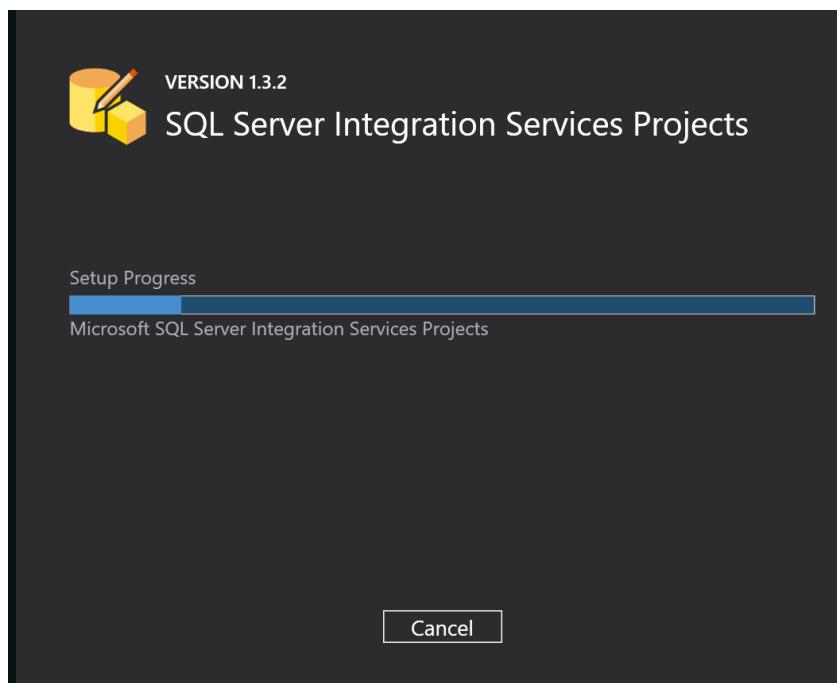
Jika muncul notifikasi error seperti gambar di atas, maka lakukan langkah berikut.

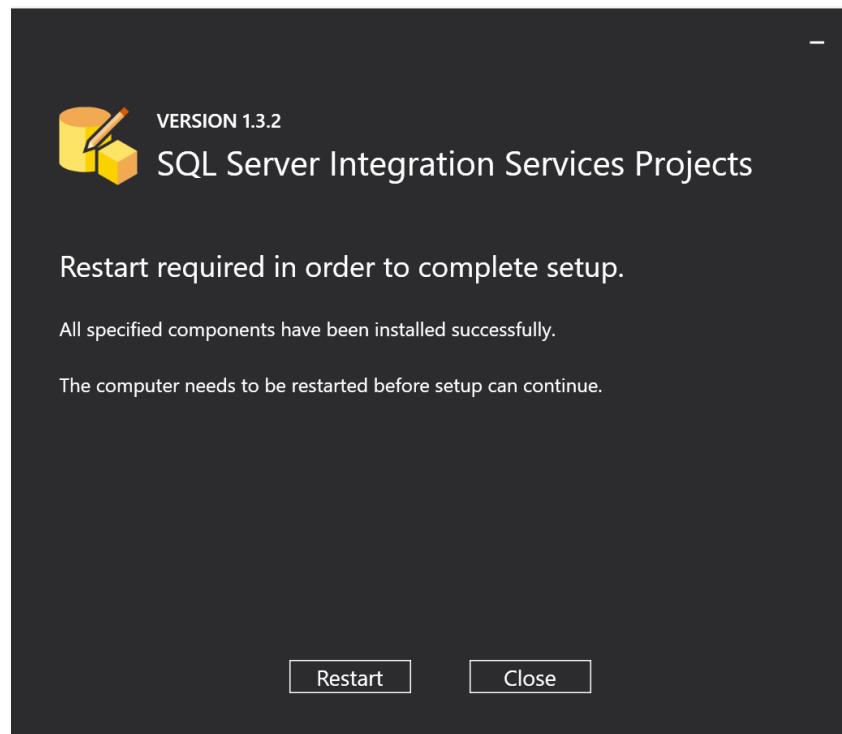




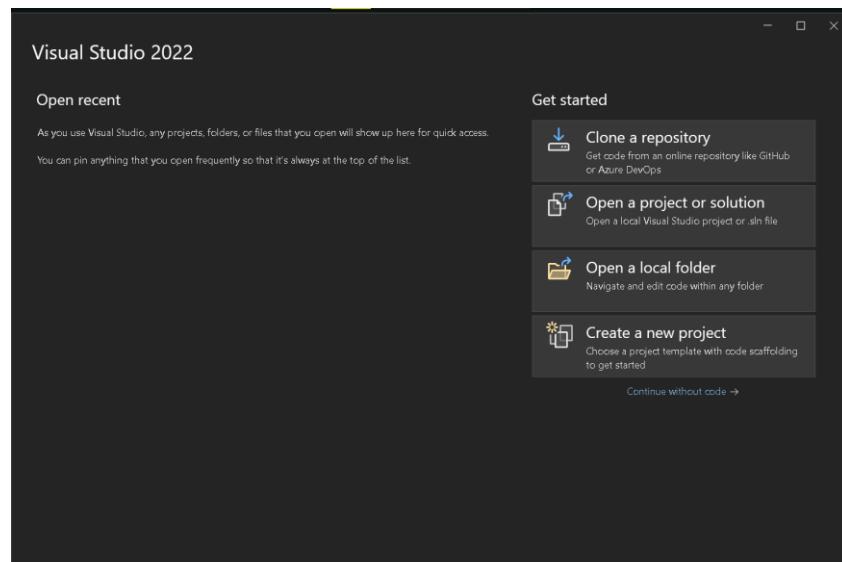
Pilih No, I would not like to participate, pada dialog visual studio experience improvement program. Lalu, klik OK dan close visual studio.

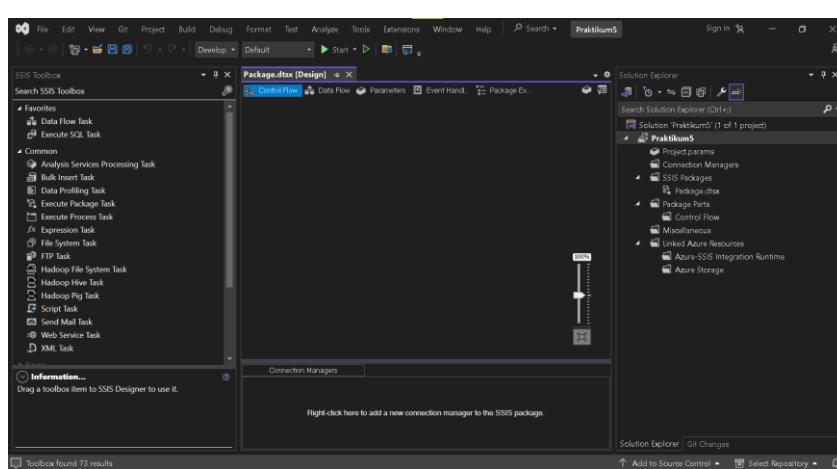
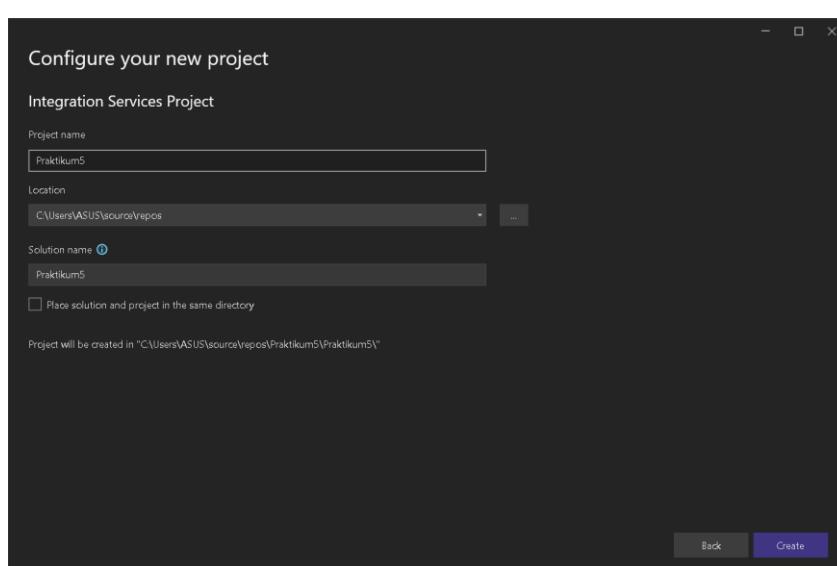
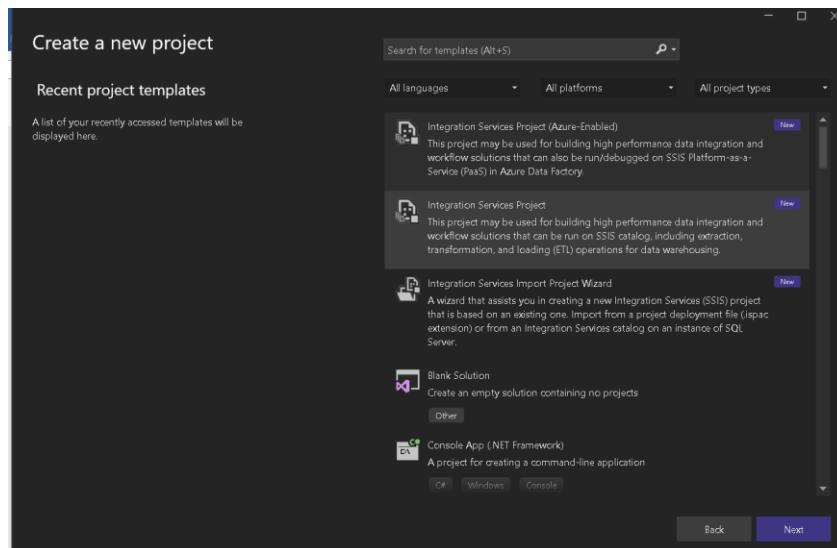
Lanjutlan instalasi SSIS.





- h) Setelah berhasil melakukan instalasi SSIS, buka kembali visual studio dan cek apakah SSIS sudah dapat digunakan dengan melakukan Create a new project → Integration Services Projects → Configure your new project → Create.

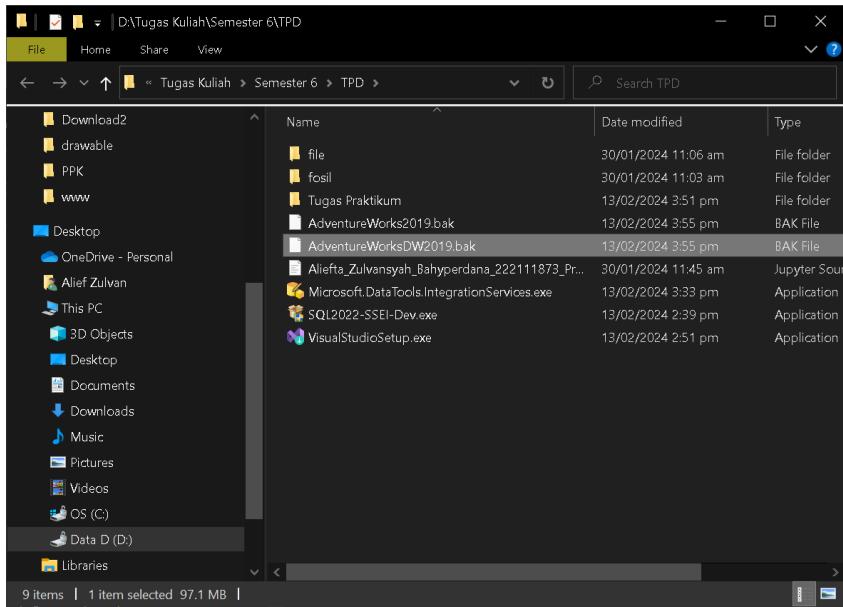




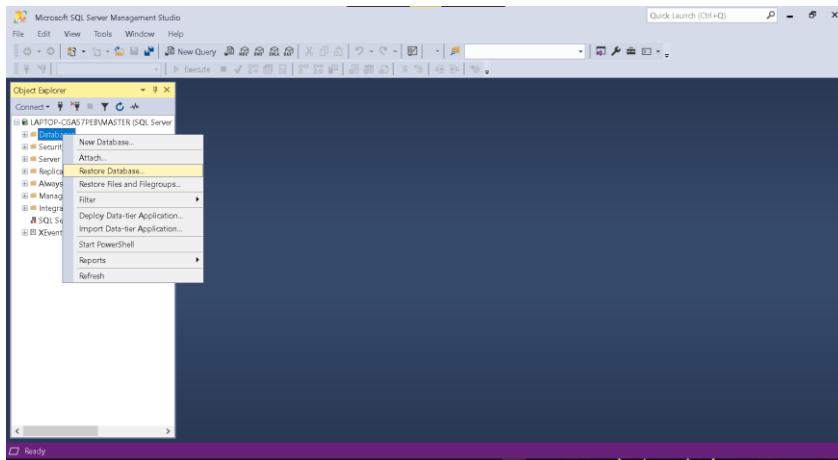
### 3) Restore DB

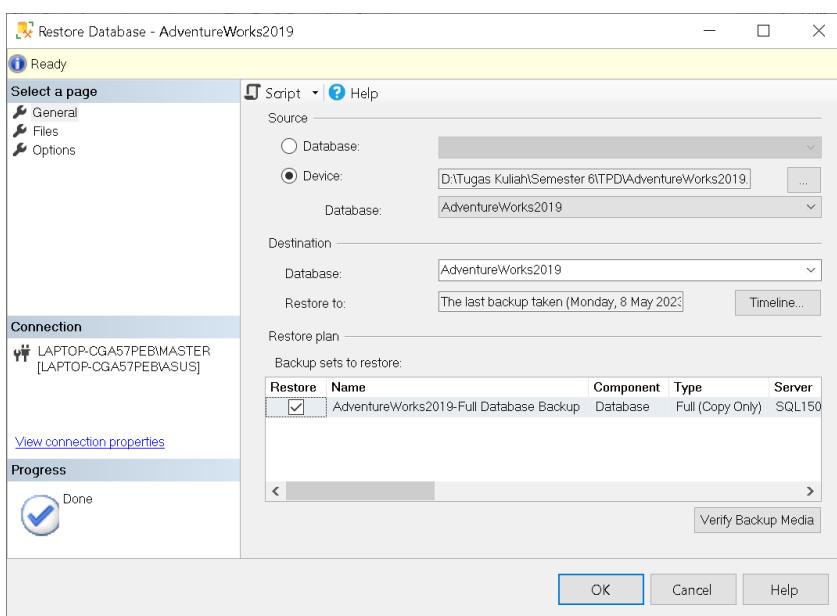
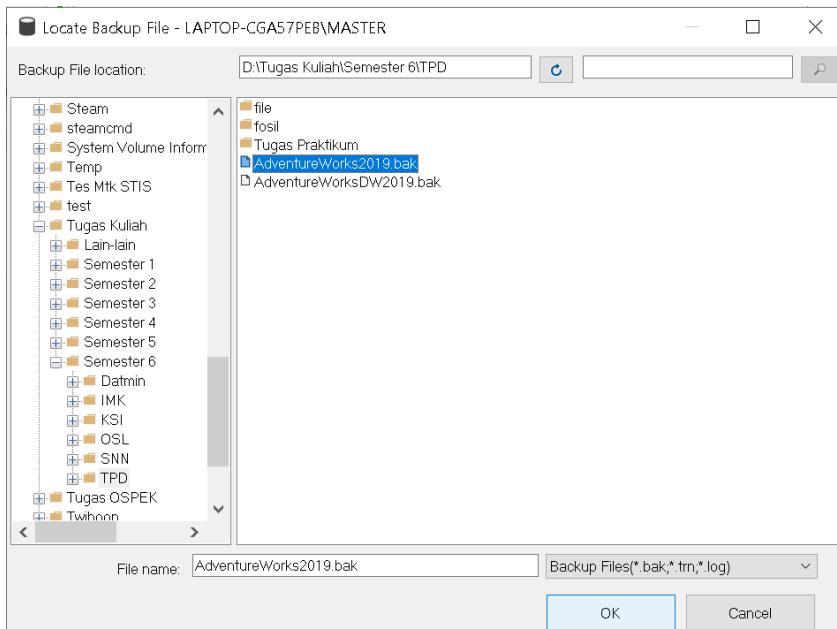
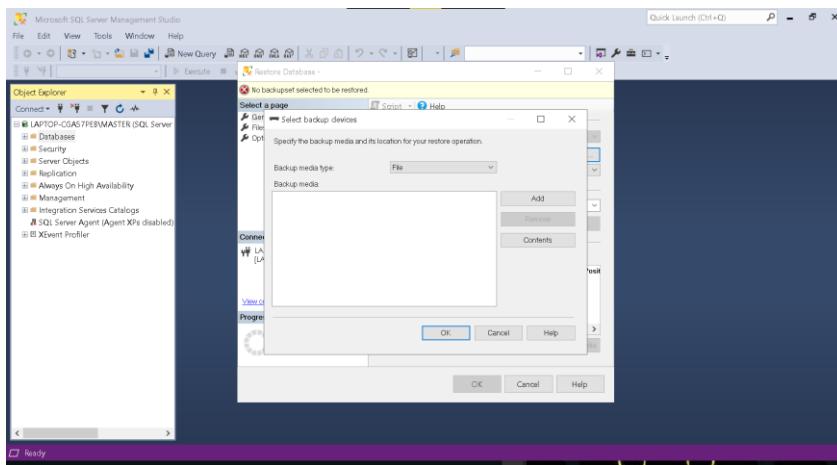
Untuk praktik, data yang digunakan adalah data dari <https://learn.microsoft.com/en-us/sql/samples/adventureworks-install-configure?view=sql-server-ver16&tabs=ssms>.

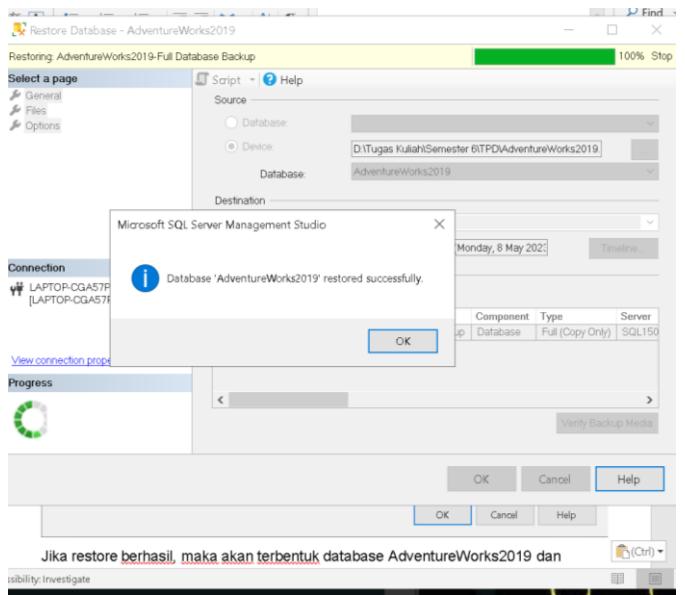
Pilih AdventureWorks2019.bak dan AdventureWorksDW2019.bak. File backup tersebut kemudian di-copy atau disimpan di folder backup sesuai dengan path saat instalasi SQL server.



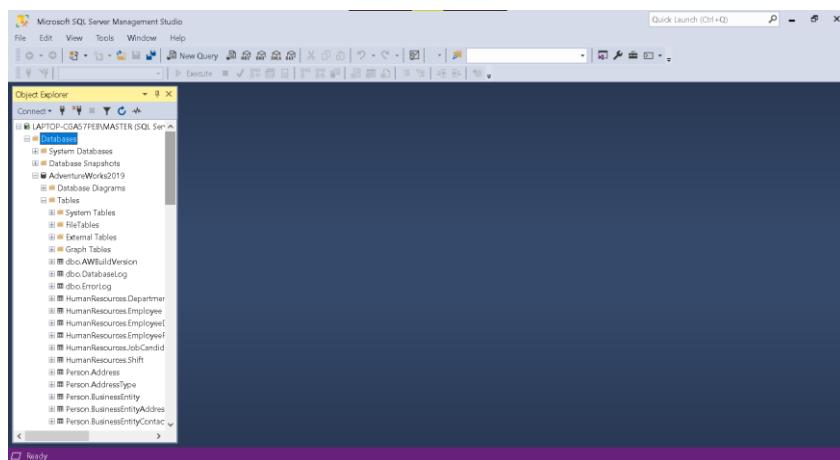
Buka SSMS, lakukan restore dengan klik kanan pada Database → Restore database → pilih device → klik add → pilih file backup







Jika restore berhasil, maka akan terbentuk database AdventureWorks2019 dan AdventureWorksDW2019.

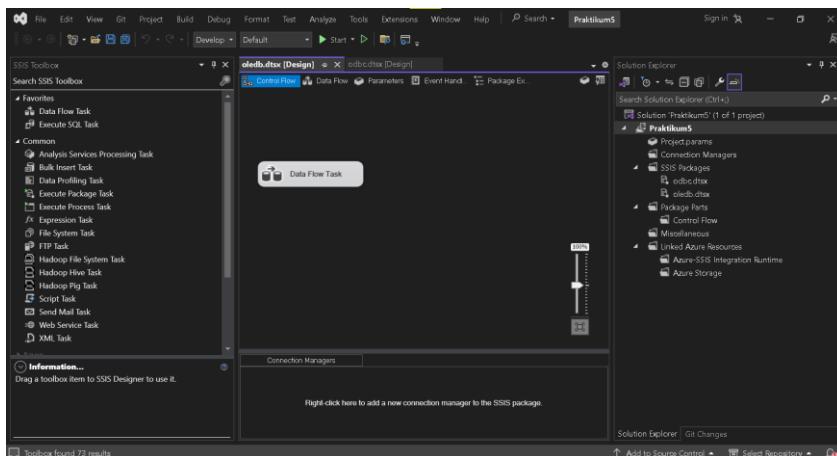


## B. ETL

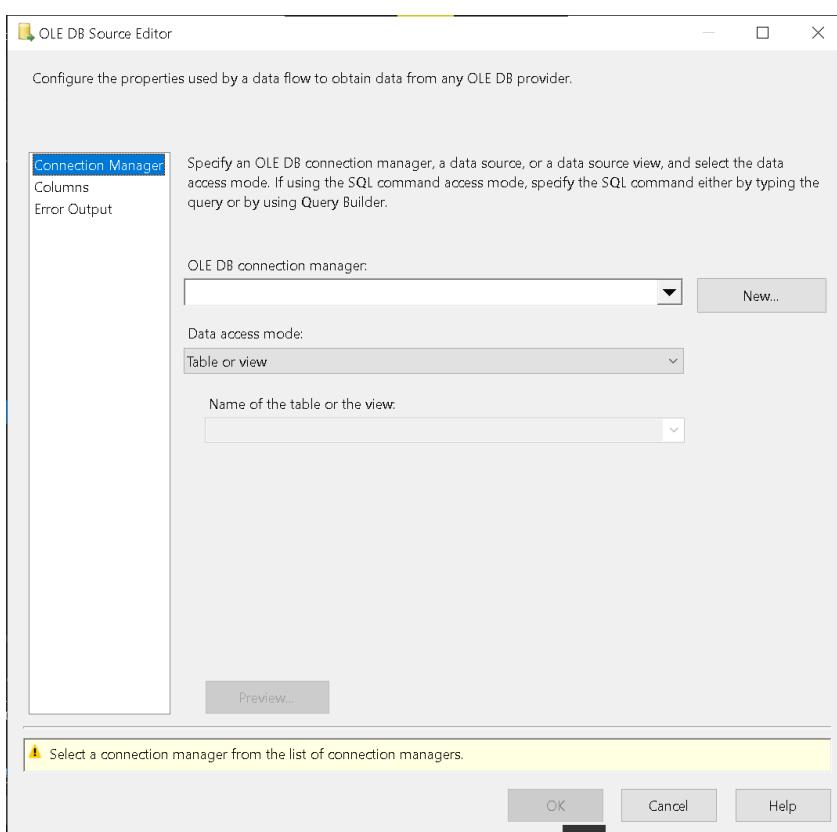
Setelah semua persiapan untuk ETL selesai, maka kegiatan selanjutnya mempraktikkan bagaimana membuat koneksi baik OLE DB maupun ODBC, transformasi data, dan ekspor data.

### 1. Koneksi OLE DB

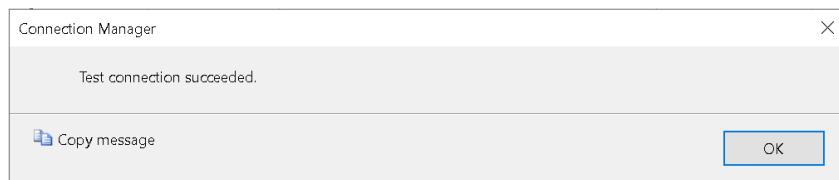
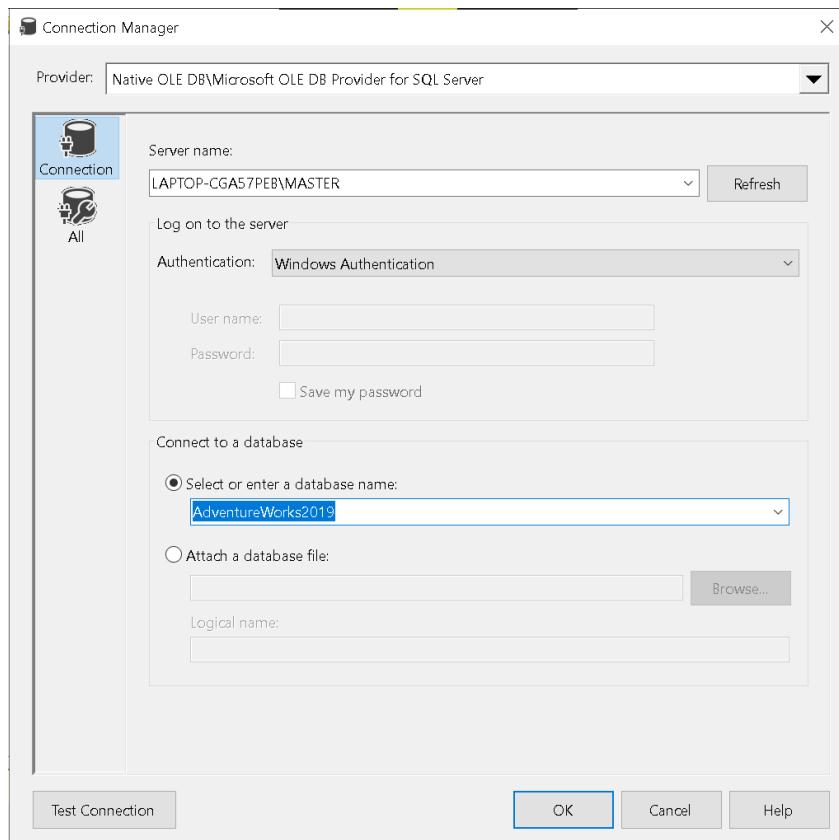
Klik kanan pada Project Praktikum 5 → create package → rename package → Pilih Data Flow Task → drag ke board designer → double klik pada Data Flow Task.



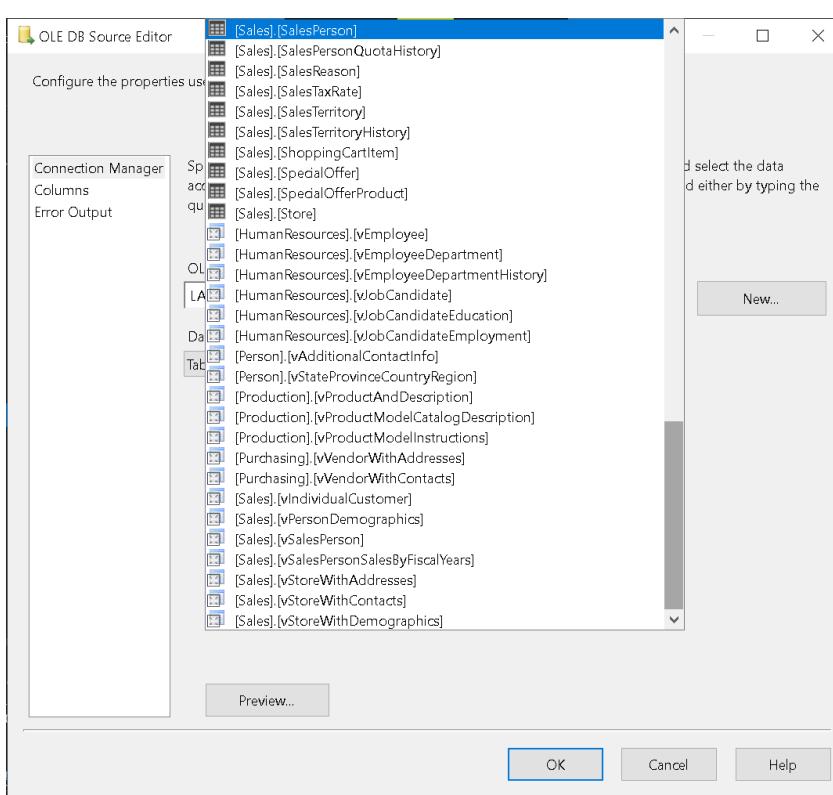
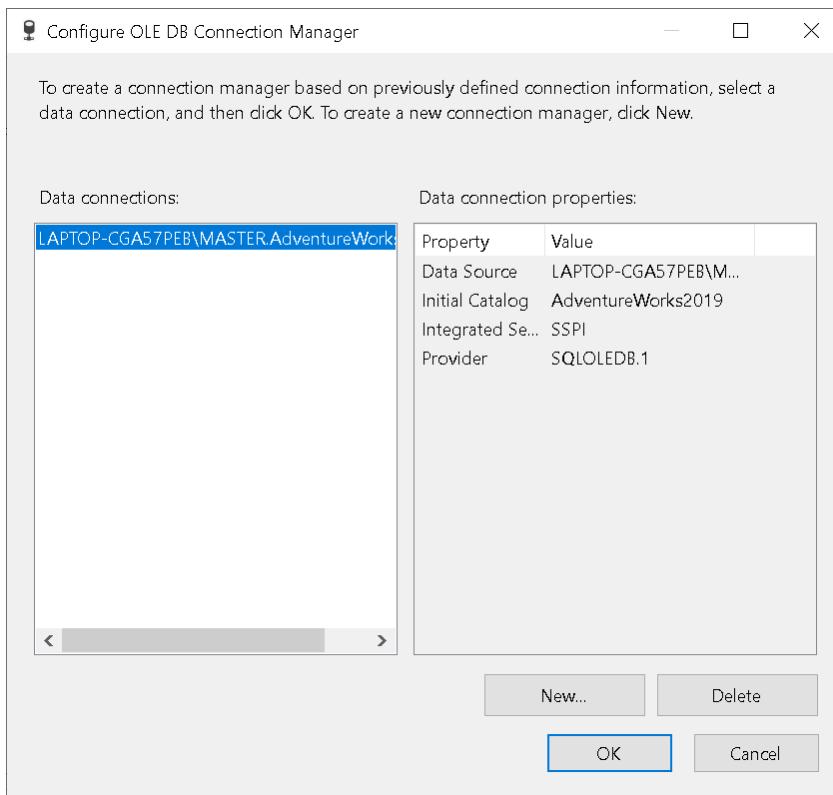
Pilih OLE DB Source pada SSIS Toolbox → drag ke board designer → klik New.



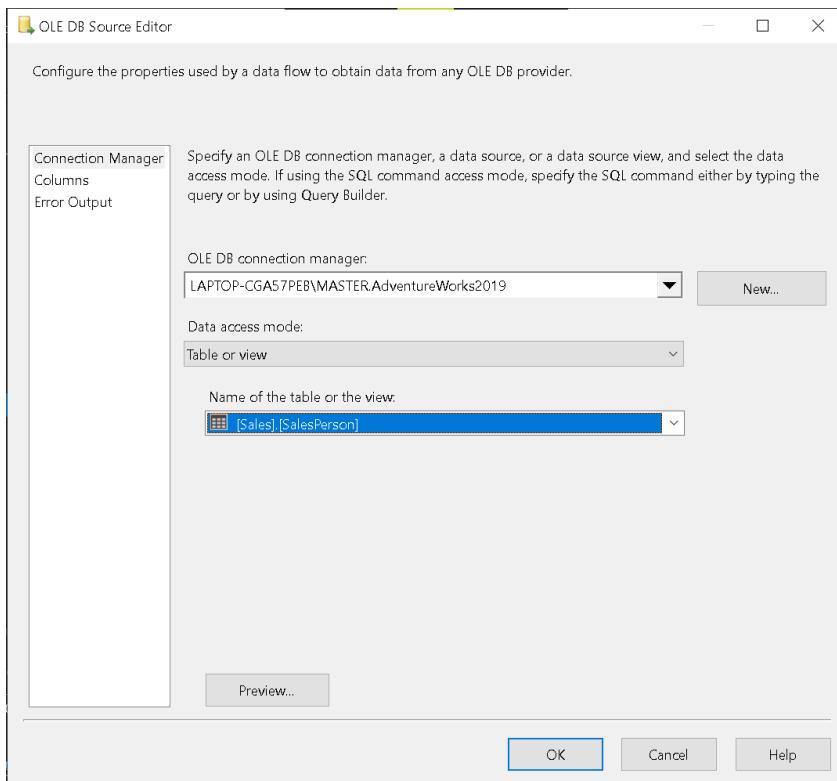
Pada halaman konfigurasi, pilih New → New → pilih provider → ketik nama server → pilih windows authentication → select database → tes koneksi.



Jika koneksi berhasil dibuat, maka dapat digunakan dalam proses ekstraksi data. Pilih koneksi → OK.



Setelah itu, pilih table or view pada data access mode → pilih tabel yang akan diakses.



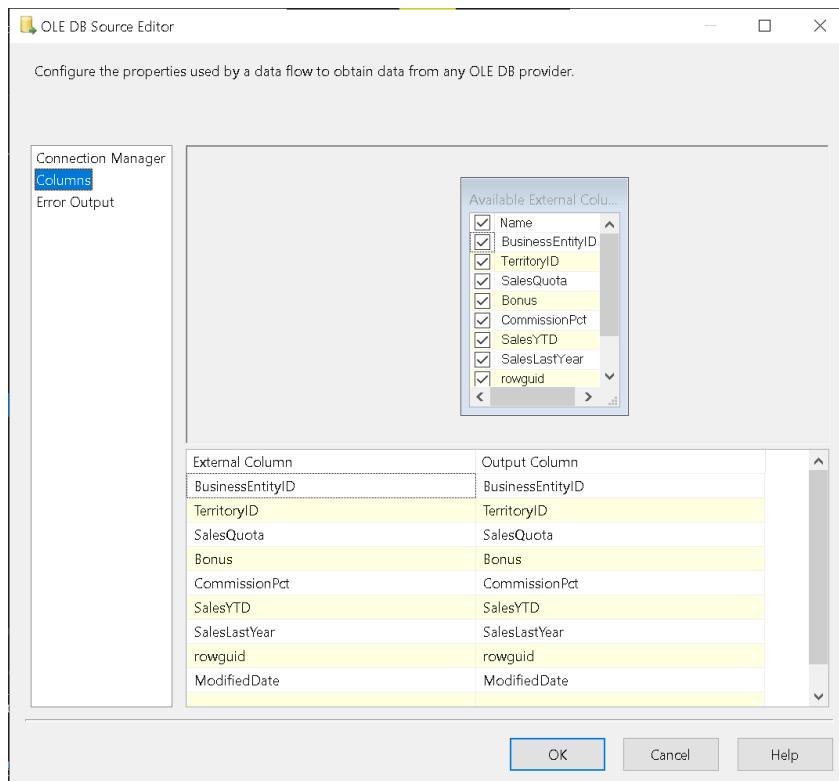
Tabel data di-preview dengan klik tombol preview.

The screenshot shows the 'Preview Query Results' dialog box. It displays a table titled 'Query result (up to the first 200 rows)'. The table has columns: Busine..., Territ..., Sales..., Bonus, Comm..., SalesY..., SalesL..., and rowguid. The data is as follows:

Busine...	Territ...	Sales...	Bonus	Comm...	SalesY...	SalesL...	rowguid
274	NULL	NULL	0.0000	0.0000	5596...	0.0000	4875.
275	2	300000	4100	0.012	3763...	1750...	1e0a7
276	4	250000	2000	0.015	4251...	1439...	4dd9e
277	3	250000	2500	0.015	3189...	1997...	3901.
278	6	250000	500	0.01	1453...	1620...	7a0ae
279	5	300000	6700	0.01	2315...	1849...	52a51
280	1	250000	5000	0.01	1352...	1927...	be941
281	4	250000	3550	0.01	2458...	2073...	3532.
282	6	250000	5000	0.015	2604...	2038...	31fd7
283	1	250000	3500	0.012	1573...	1371...	6bac1
284	1	300000	3900	0.019	1576...	0.0000	ac94e
285	NULL	NULL	0.0000	0.0000	1725...	0.0000	cfdbef
286	9	250000	5650	0.018	1421...	2278...	9b96.
287	NULL	NULL	0.0000	0.0000	5199...	0.0000	1dd1f
288	8	250000	75	0.018	1827...	1307...	224b.
289	10	250000	5150	0.02	4116...	1635...	25f68
290	7	250000	985	0.016	3121	2306	f5n0o2

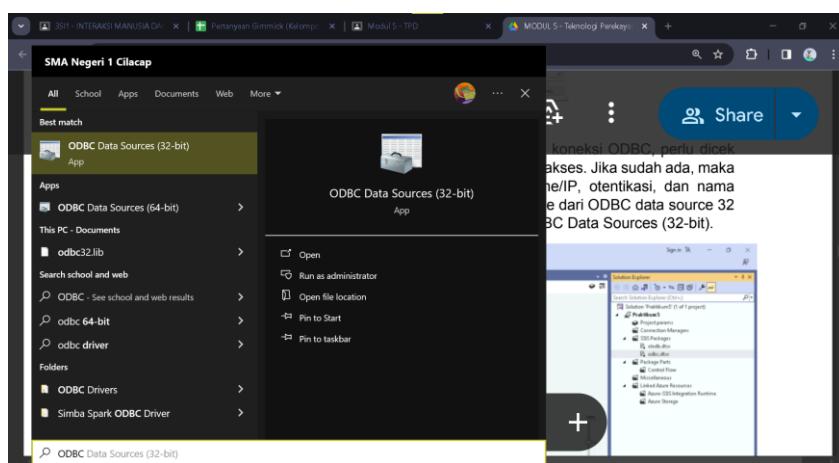
At the bottom right is a 'Close' button.

Pilih kolom yang dibutuhkan pada fitur Column → klik OK → koneksi OLE DB berhasil.

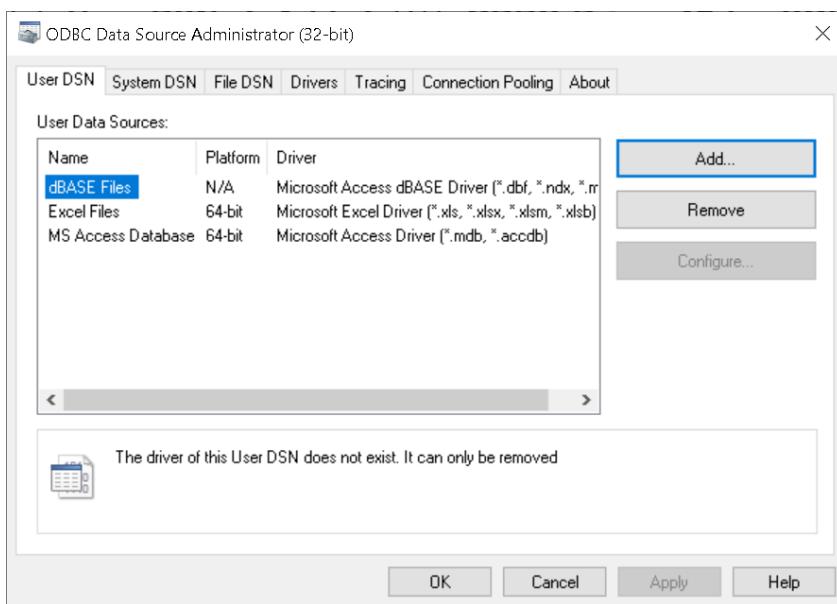
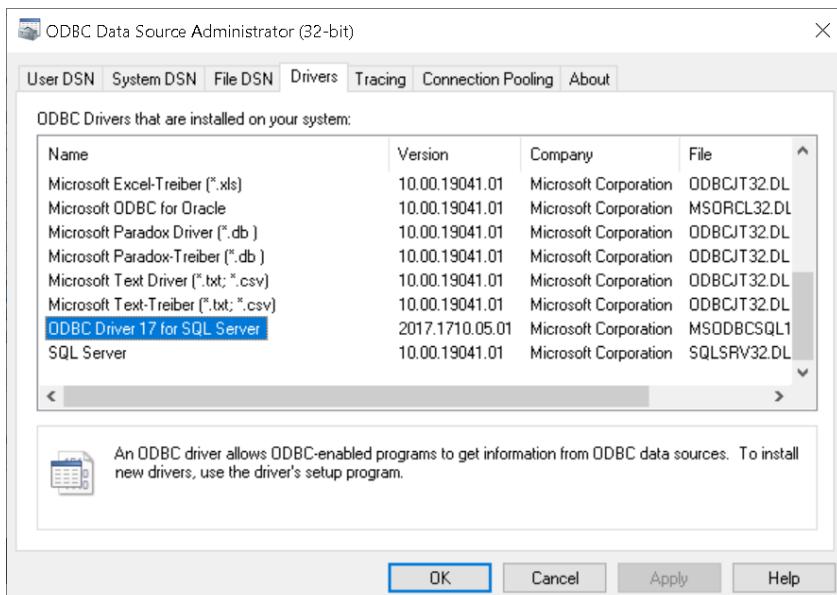


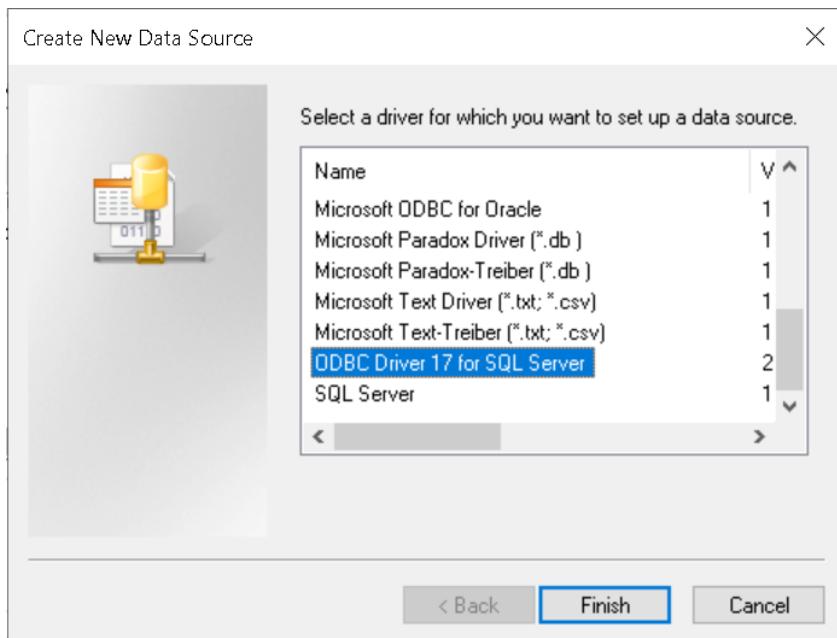
## 2. Koneksi ODBC

Berbeda dengan koneksi OLE DB, untuk menggunakan koneksi ODBC, perlu dicek apakah sudah terdapat driver dari database yang akan diakses. Jika sudah ada, maka konfigurasi dapat dilanjutkan, seperti input server name/IP, otentikasi, dan nama database. SSIS akan memunculkan list data source name dari ODBC data source 32 bit sehingga konfigurasi ODBC akan dilakukan pada ODBC Data Sources (32-bit).

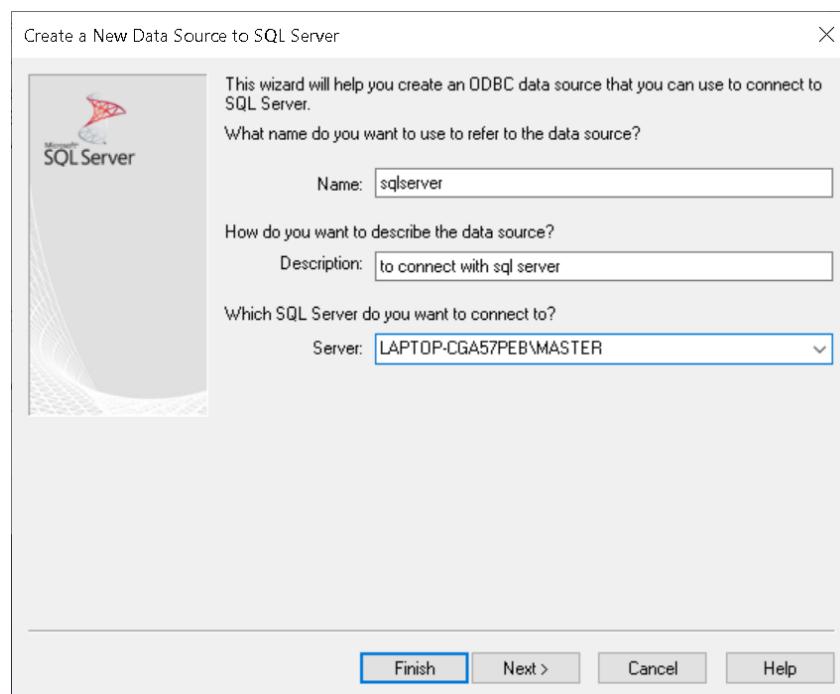


Pada tab Drivers, cek kembali apakah terdapat ODBC driver untuk SQL server. Jika ada, maka klik tab User DSN → Add → Pilih ODBC Driver 17 for SQL Server → Finish.





- Masukkan nama koneksi dan nama server → finish
- Pilih Otentikasi → Next
- Change default database → Next → finish
- Tes koneksi



Create a New Data Source to SQL Server

How should SQL Server verify the authenticity of the login ID?

With Integrated Windows authentication.  
 SPN (Optional):

With Azure Active Directory Integrated authentication.

With SQL Server authentication using a login ID and password entered by the user.

With Azure Active Directory Password authentication using a login ID and password entered by the user.

With Azure Active Directory Interactive authentication using a login ID entered by the user.

With Azure Managed Service Identity authentication.

With Azure Service Principal authentication.

Login ID:  ASUS  
Password:

< Back Next > Cancel Help

Create a New Data Source to SQL Server

Change the default database to:  
 AdventureWorks2019

Mirror server:

SPN for mirror server (Optional):

Attach database filename:

Use ANSI quoted identifiers.  
 Use ANSI nulls, paddings and warnings.

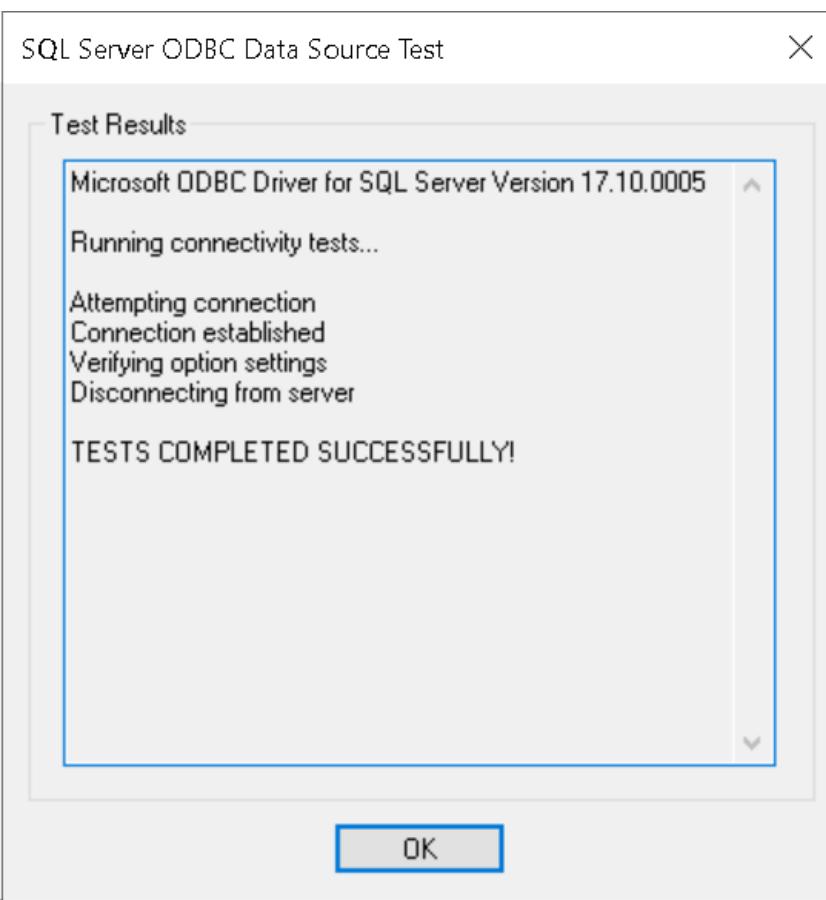
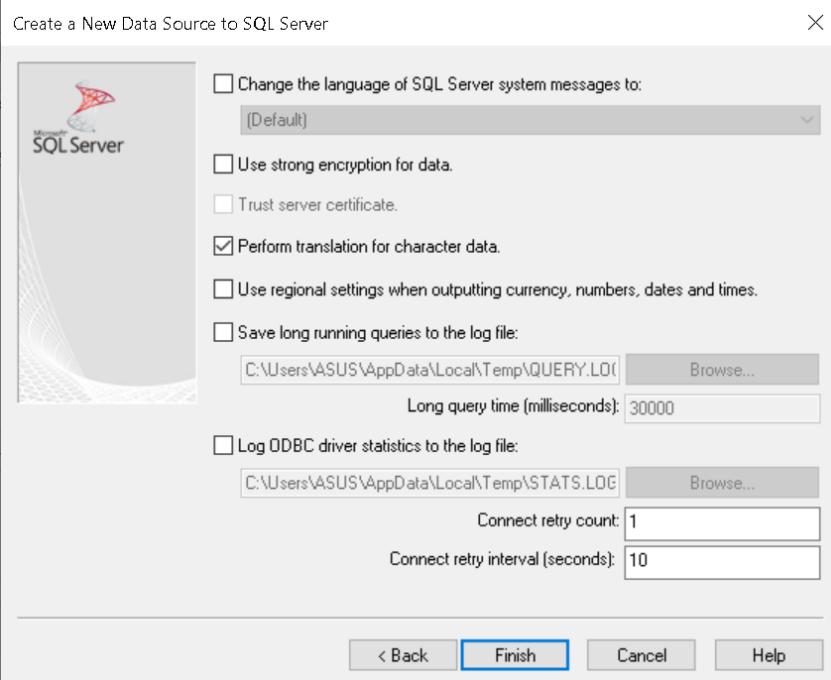
Application intent:  
 READWRITE

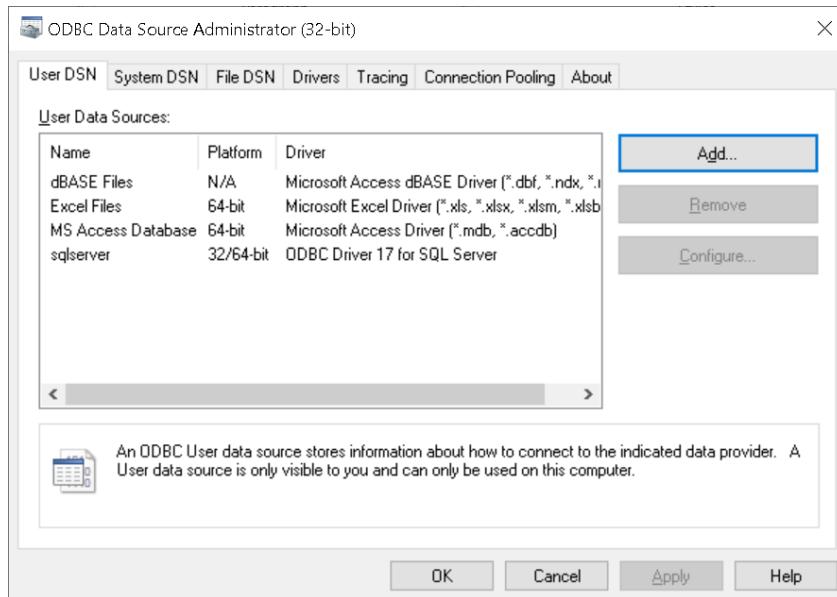
Multi-subnet failover.  
 Transparent Network IP Resolution.  
 Column Encryption.

Enclave Attestation Info:   
Keystore Configuration...

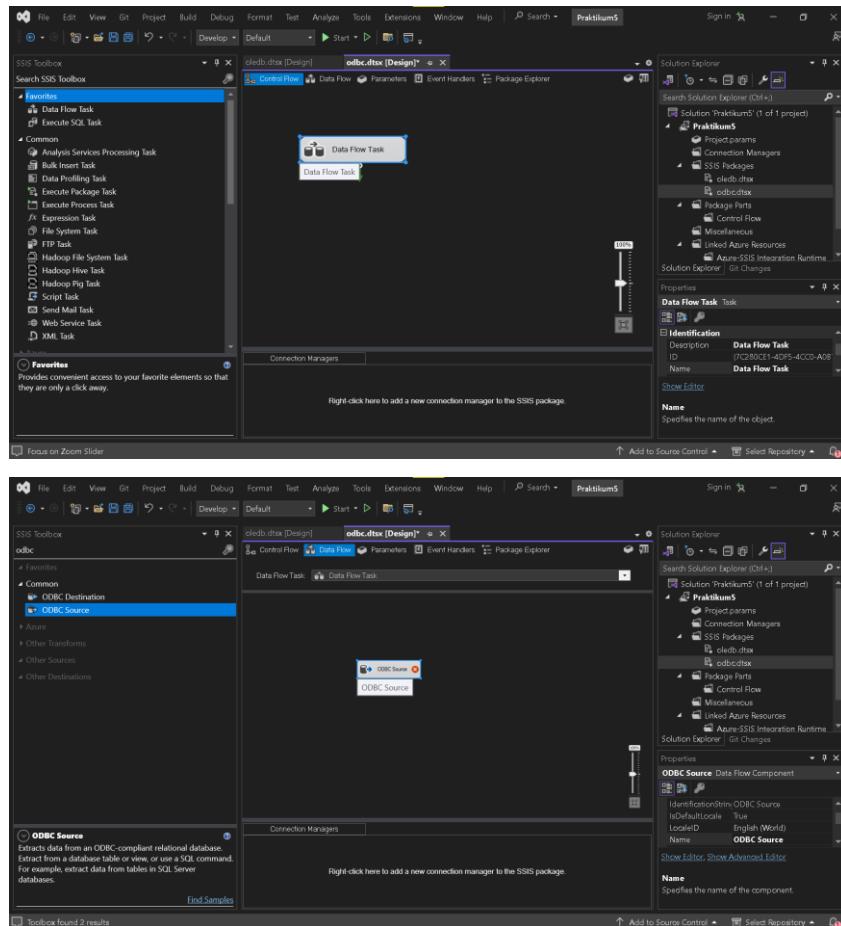
Use FMTONLY metadata discovery.

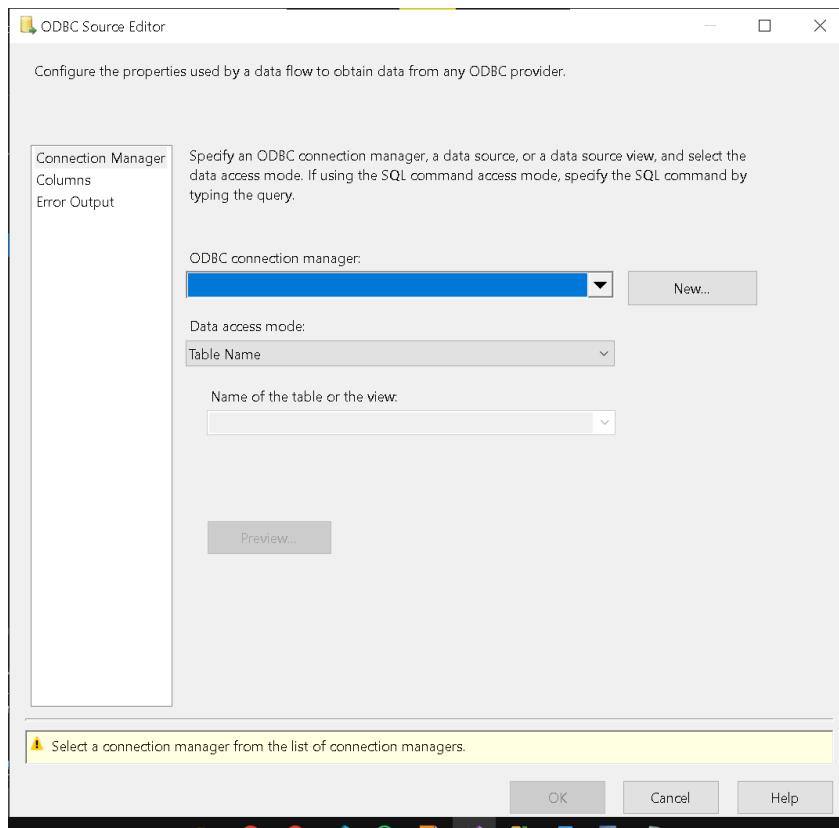
< Back Next > Cancel Help



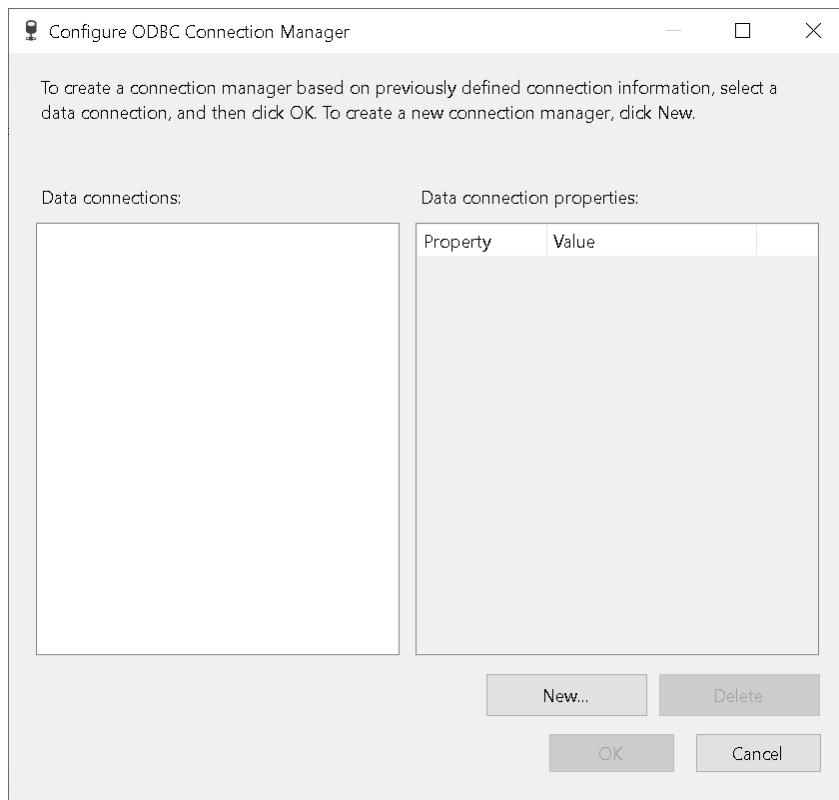


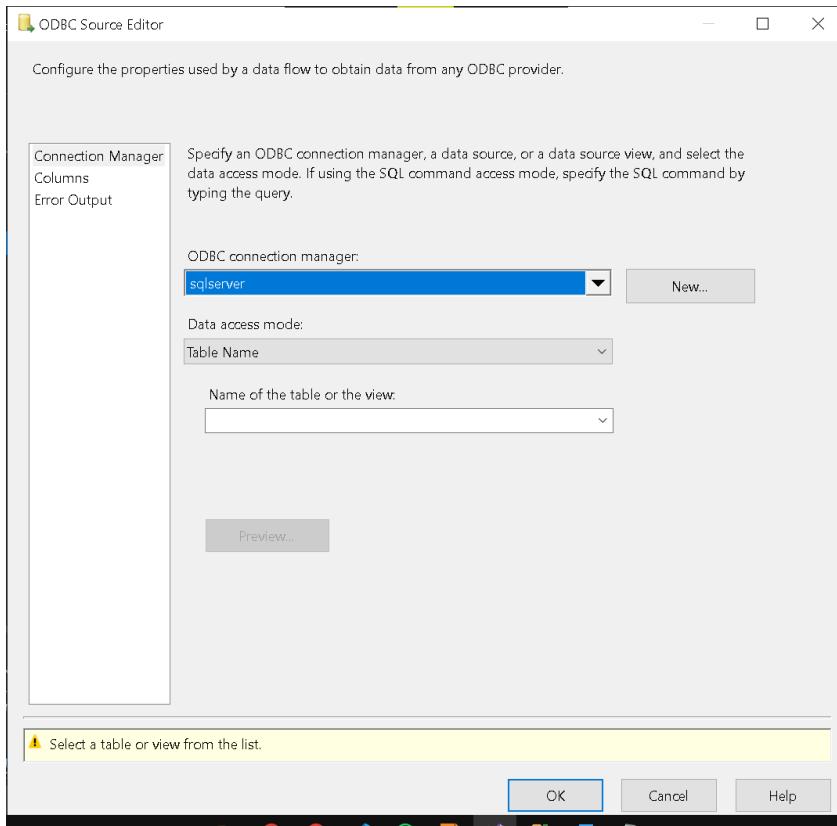
Klik kanan pada Project Praktikum 5 → create package → rename package → Pilih Data Flow Task → drag ke board designer → double klik pada Data Flow Task. Pilih ODBC Source pada SSIS Toolbox → drag ke board designer → klik New.



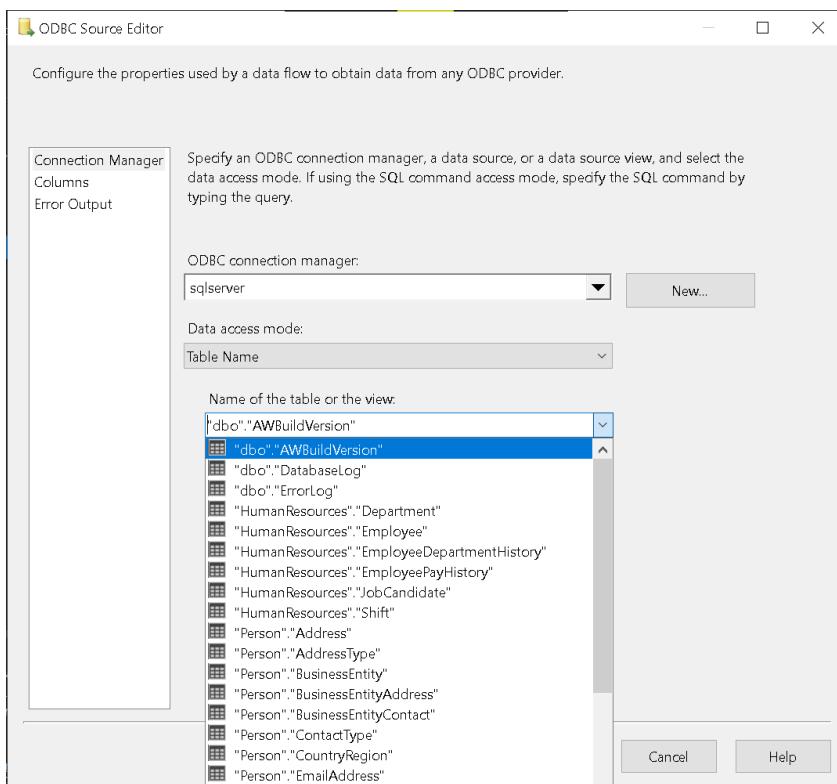


Pilih DSN yang telah dibuat sebelumnya → tes koneksi.





Jika koneksi ODBC berhasil, maka akan muncul list tabel yang dapat diakses.



Preview Query Results

Query result (up to the first 200 rows):

BusinessEntityID	TerritoryID	SalesQuota	Bonus	CommissionPct	SalesYTD	SalesLastYear	rowguid
274	NULL	NULL	0.0000	0.0000	5596...	0.0000	4875...
275	2	3000...	4100....	0.0120	3763...	1750...	1e0a7...
276	4	2500...	2000....	0.0150	4251...	1439...	4dd9e...
277	3	2500...	2500....	0.0150	3189...	1997...	3901...
278	6	2500...	500.0...	0.0100	1453...	1620...	7a0ae...
279	5	3000...	6700....	0.0100	2315...	1849...	52a51...
280	1	2500...	5000....	0.0100	1352...	1927...	be941...
281	4	2500...	3550....	0.0100	2458...	2073...	3532...
282	6	2500...	5000....	0.0150	2604...	2038...	31fd7...
283	1	2500...	3500....	0.0120	1573...	1371...	6bac1...
284	1	3000...	3900....	0.0190	1576...	0.0000	ac94e...
285	NULL	NULL	0.0000	0.0000	1725...	0.0000	cfdbef...
286	9	2500...	5650....	0.0180	1421...	2278...	9b96...
287	NULL	NULL	0.0000	0.0000	5199...	0.0000	1dd1f...
288	8	2500...	75.0000	0.0180	1827...	1307...	224b...
289	10	2500...	5150....	0.0200	4116...	1635...	25f68...
290	7	2500	985.0	0.0160	3121	2396	f5002...

Close

ODBC Source Editor

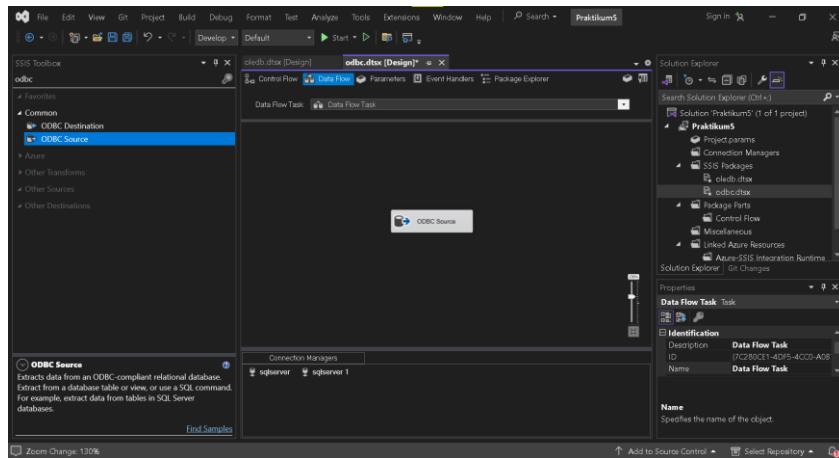
Configure the properties used by a data flow to obtain data from any ODBC provider.

Connection Manager  
Columns  
Error Output

Available External Columns	
<input checked="" type="checkbox"/>	Name
<input checked="" type="checkbox"/>	ModifiedDate
<input checked="" type="checkbox"/>	BusinessEntityID
<input checked="" type="checkbox"/>	TerritoryID
<input checked="" type="checkbox"/>	SalesQuota
<input checked="" type="checkbox"/>	Bonus
<input checked="" type="checkbox"/>	CommissionPct
<input checked="" type="checkbox"/>	SalesYTD
<input checked="" type="checkbox"/>	SalesLastYear

External Column	Output Column
ModifiedDate	ModifiedDate
BusinessEntityID	BusinessEntityID
TerritoryID	TerritoryID
SalesQuota	SalesQuota
Bonus	Bonus
CommissionPct	CommissionPct
SalesYTD	SalesYTD
SalesLastYear	SalesLastYear
rowguid	rowguid

OK Cancel Help

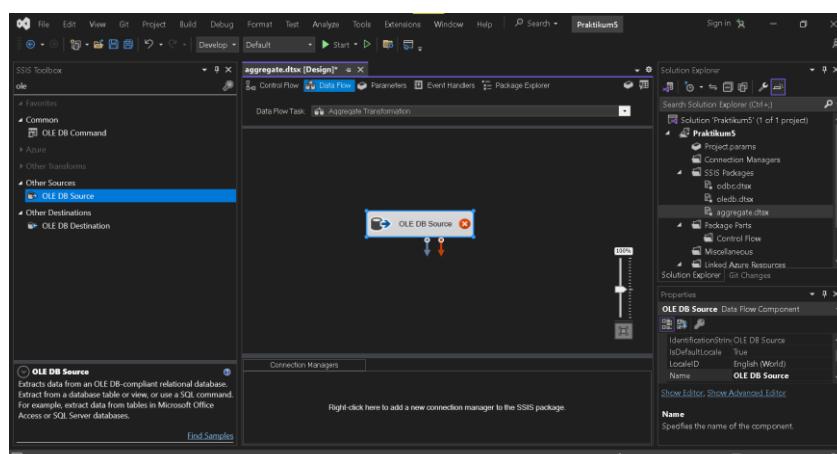
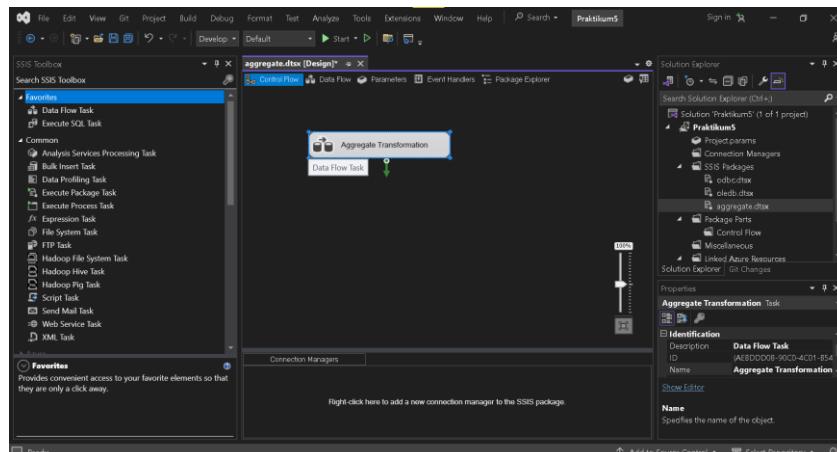


### 3. Transformasi

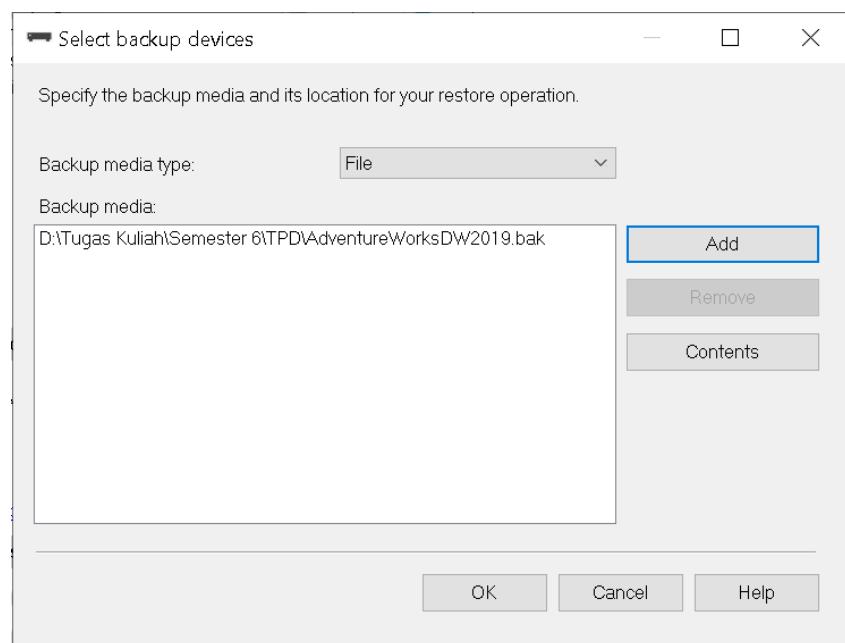
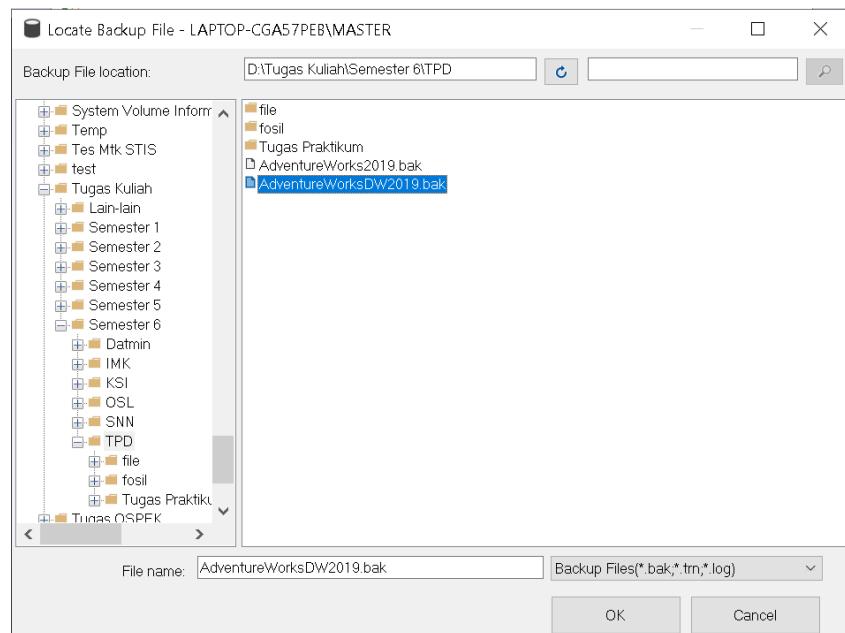
Contoh transformasi yang akan dijelaskan adalah agregasi yang terbagi menjadi basic dan advance.

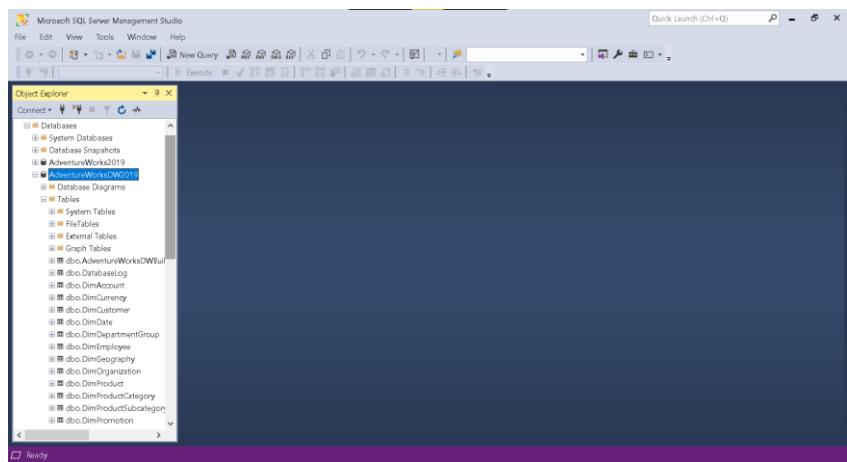
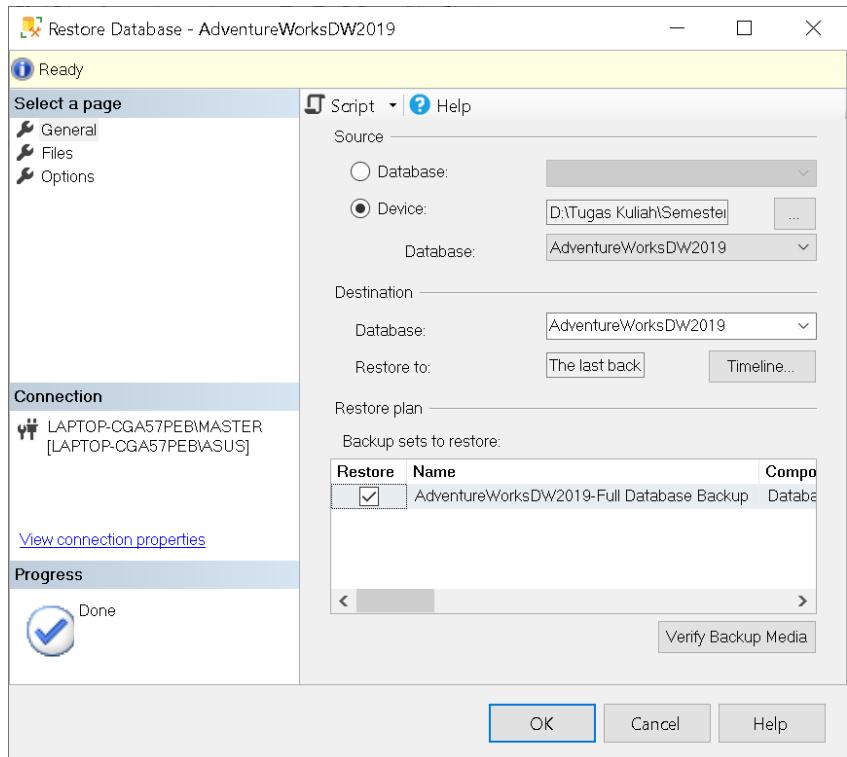
#### a) Aggregation-Basic

- Buat package baru → rename → drag Data Flow Task
- Pilih OLE DB Source → New → Buat koneksi OLE DB ke database AdventureWorksDW2019

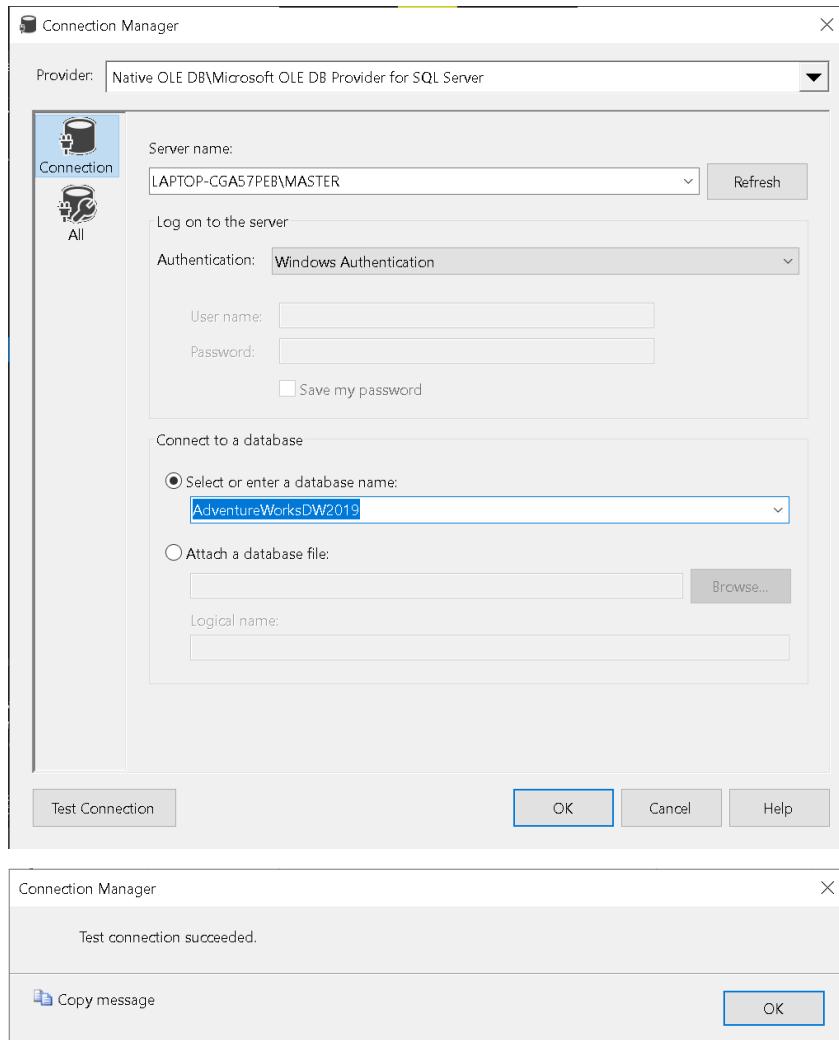


- Restore dulu database AdventureWorksDW2019

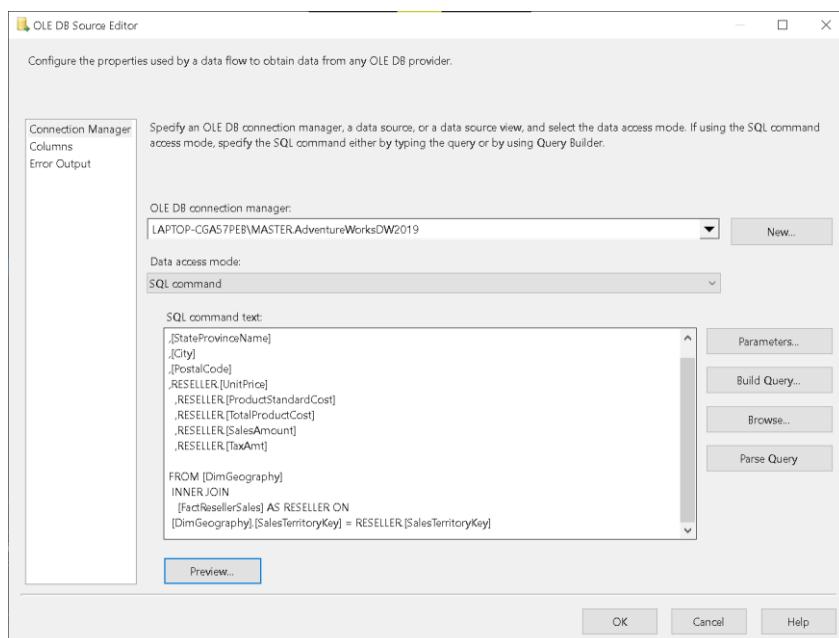




- Buat koneksi OLE DB ke AdventureWorksDW2019



- Pilih Data Access Mode: SQL Command



- Ketik SQL command berikut pada SQL command text → Preview → OK

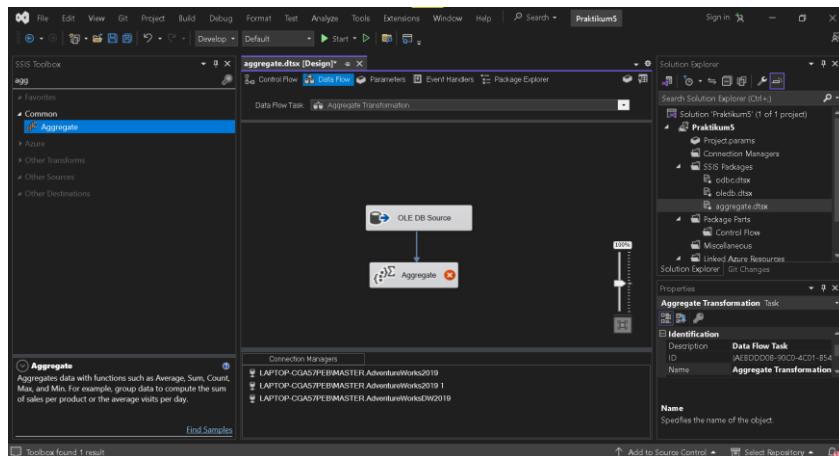
Preview Query Results

Query result (up to the first 200 rows):

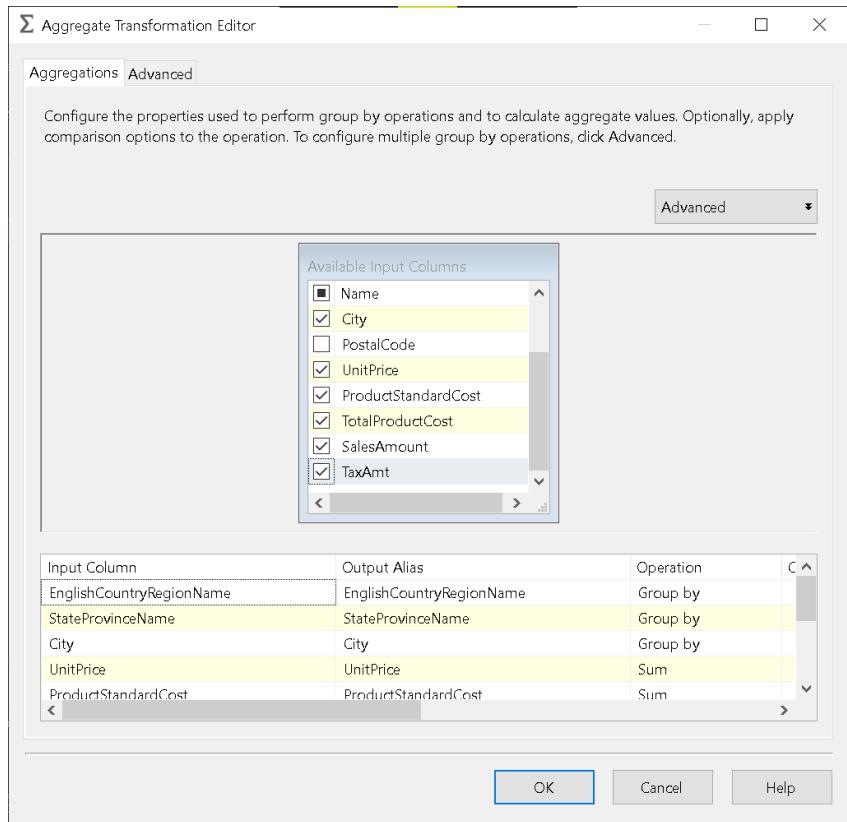
EnglishCountryRegionname	StateProvince name	City	PostalCode	UnitPrice	ProductStandardCost	TotalProductCost	SalesAmount
United States	Alabama	Birmingham	35203	2024.00	1898.00	1898.00	2024.00
United States	Alabama	Florence	35630	2024.00	1898.00	1898.00	2024.00
United States	Alabama	Huntsville	35801	2024.00	1898.00	1898.00	2024.00
United States	Alabama	Mobile	36602	2024.00	1898.00	1898.00	2024.00
United States	Alabama	Montgomery	36104	2024.00	1898.00	1898.00	2024.00
United States	Florida	Altamonte Springs	32701	2024.00	1898.00	1898.00	2024.00
United States	Virginia	Falls Church	22046	2024.00	1898.00	1898.00	2024.00
United States	Virginia	Leesburg	20176	2024.00	1898.00	1898.00	2024.00
United States	Virginia	Newport News	23607	2024.00	1898.00	1898.00	2024.00
United States	Virginia	Virginia Beach	23451	2024.00	1898.00	1898.00	2024.00
United States	Tennessee	Maryville	37801	2024.00	1898.00	1898.00	2024.00
United States	Tennessee	Memphis	38103	2024.00	1898.00	1898.00	2024.00
United States	Tennessee	Millington	38054	2024.00	1898.00	1898.00	2024.00
United States	Tennessee	Nashville	37203	2024.00	1898.00	1898.00	2024.00
United States	Tennessee	Pigeon Forge	37863	2024.00	1898.00	1898.00	2024.00
United States	Virginia	Chantilly	20151	2024.00	1898.00	1898.00	2024.00
United States	South Carolina	Gaffney	29340	2024.00	1898.00	1898.00	2024.00

Close

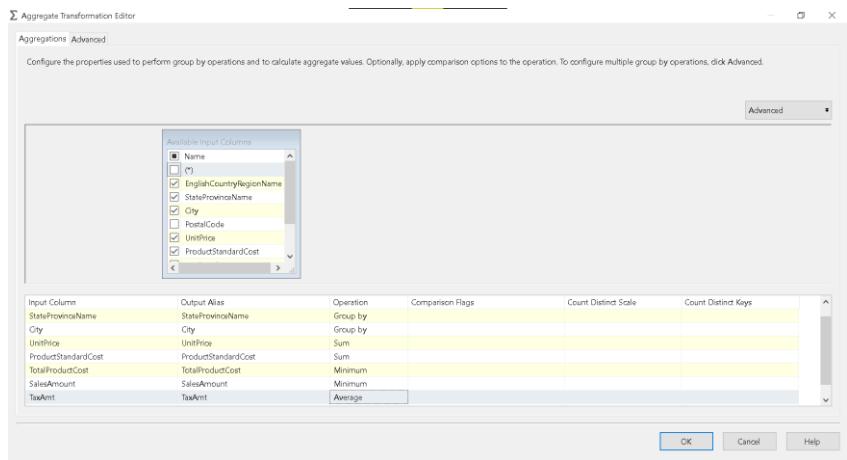
- Drag Aggregate dari SSIS Toolbox → double click



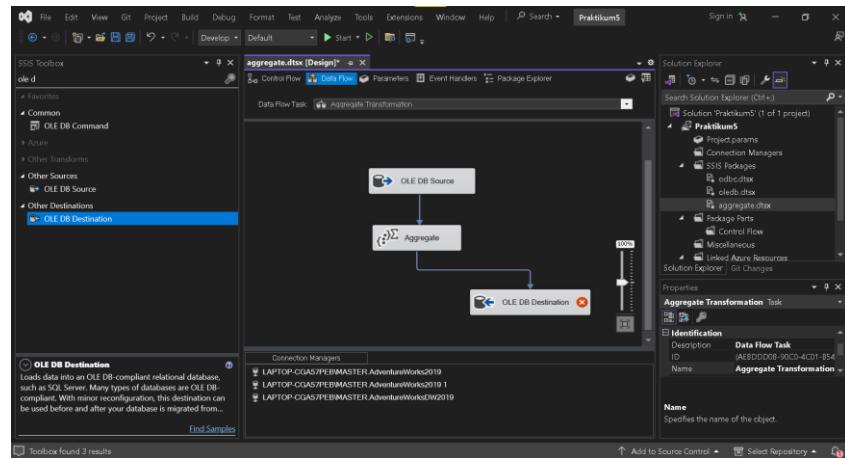
- Pilih kolom: EnglishCountryRegionname, StateProvince name, City, UnitPrice, ProductStandardCost, TotalProductCost, SalesAmount, TaxAmt



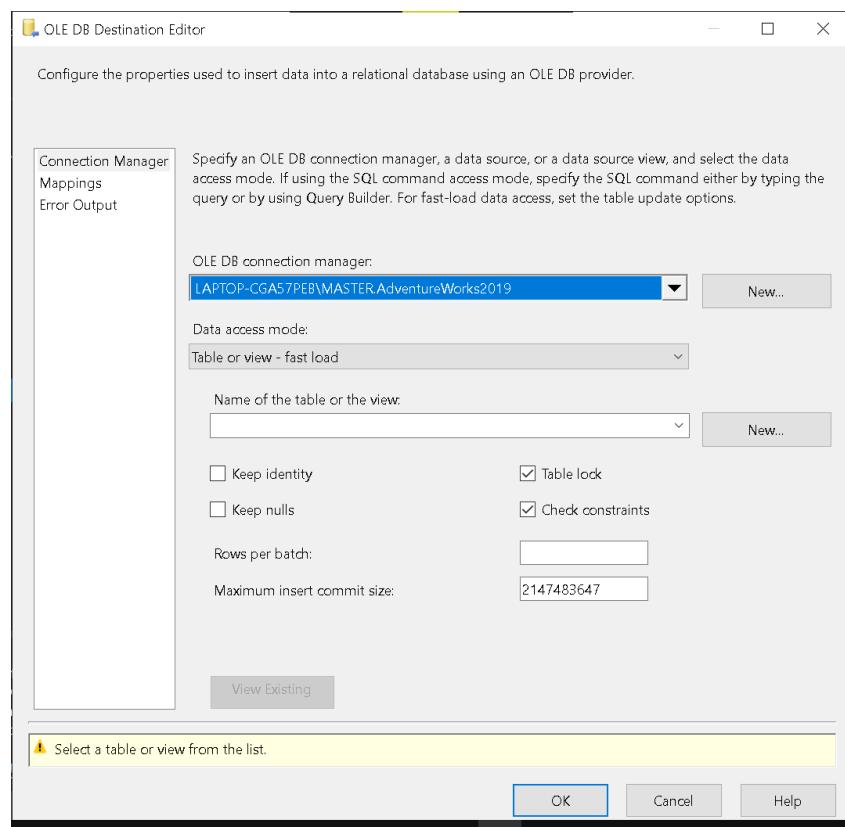
- Sesuaikan operasi pada tiap-tiap kolom seperti gambar berikut → OK



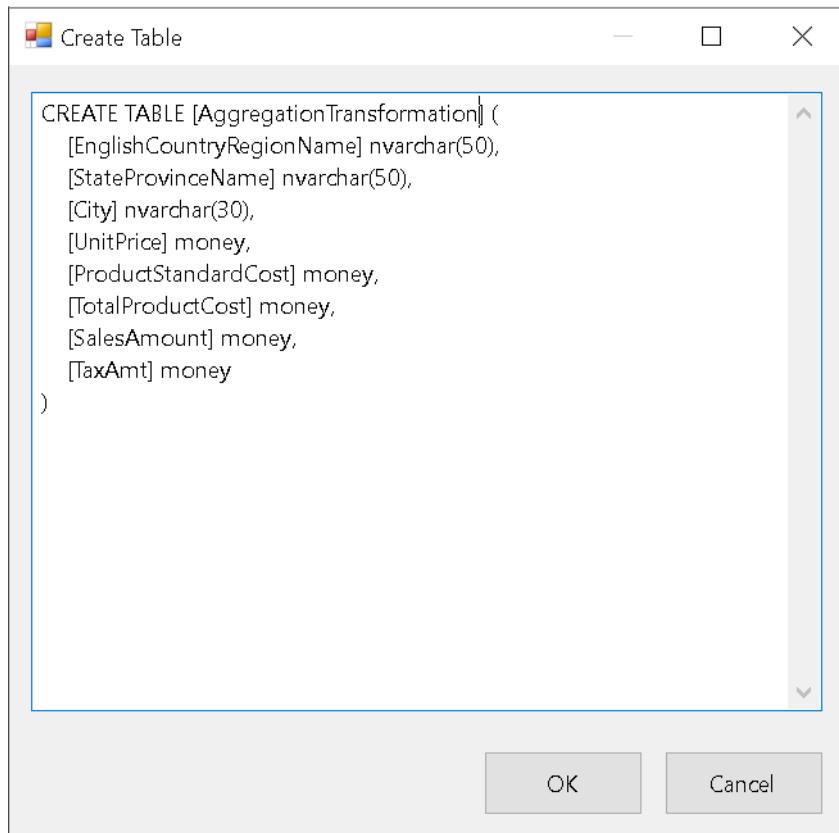
- Drag OLE DB Destination ke board designer



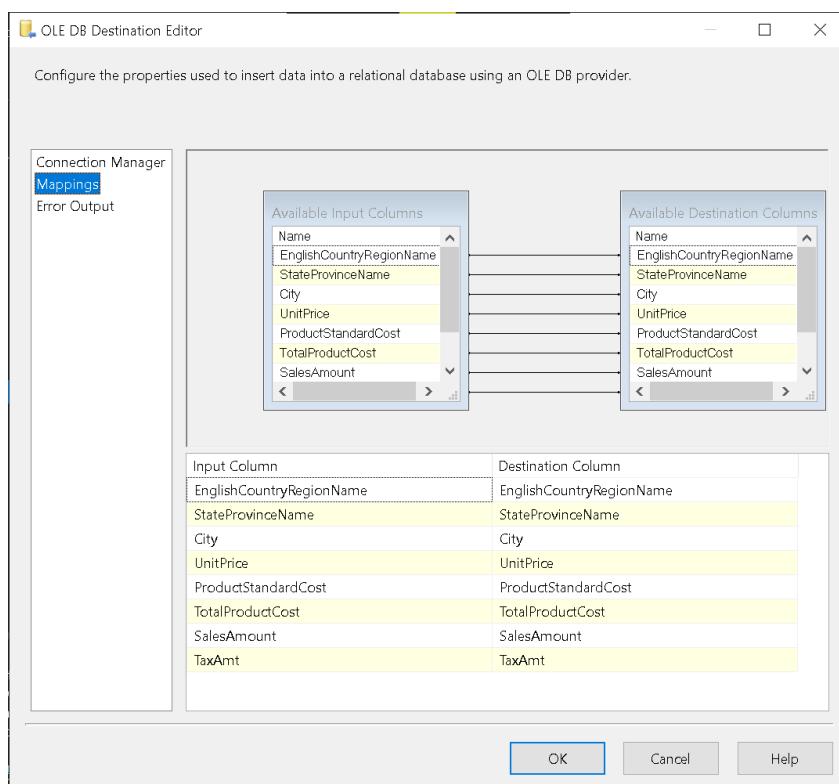
- Konfigurasi OLE DB Destination → buat koneksi ke salah satu database



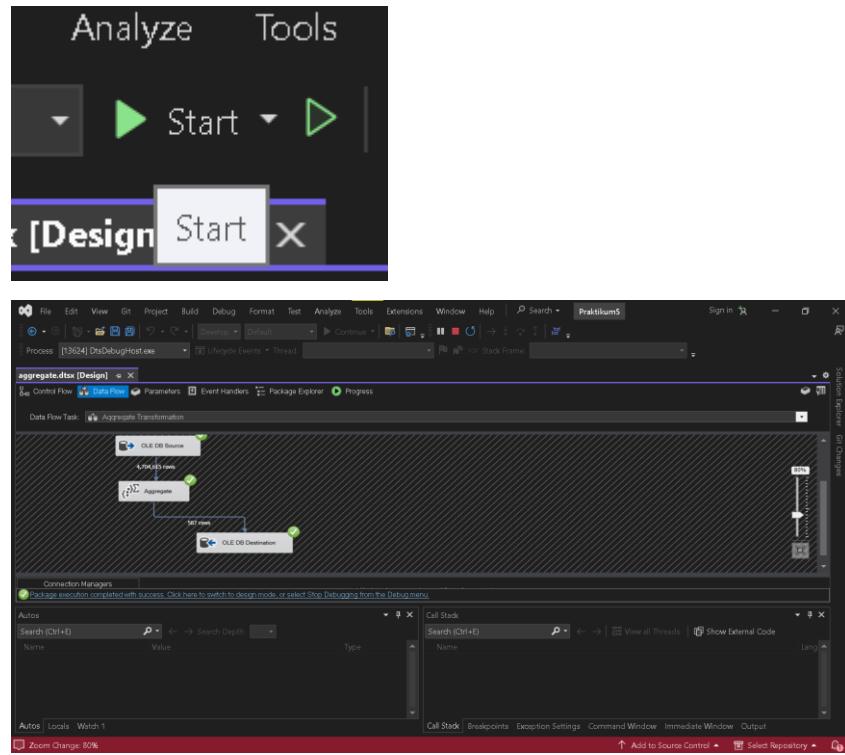
- Data access mode: Table or view – fast load
- Klik New



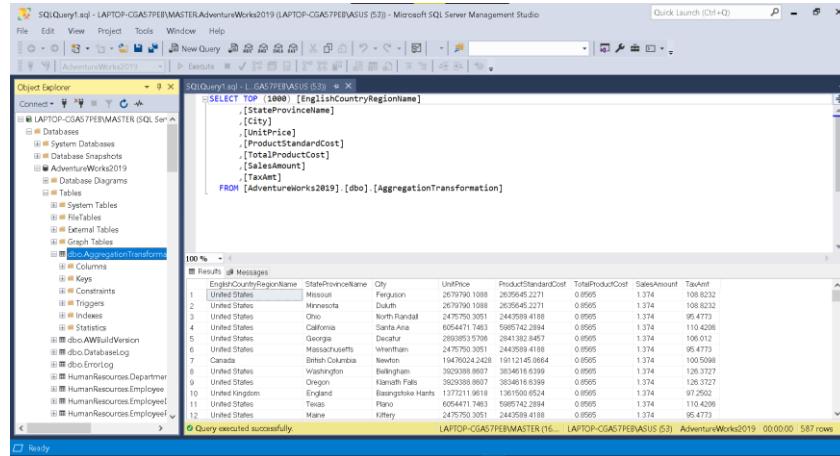
- Ganti nama table pada box create table → OK
- Klik Mapping untuk memastikan input – output → klik OK.



- Jalankan package dengan klik tombol start

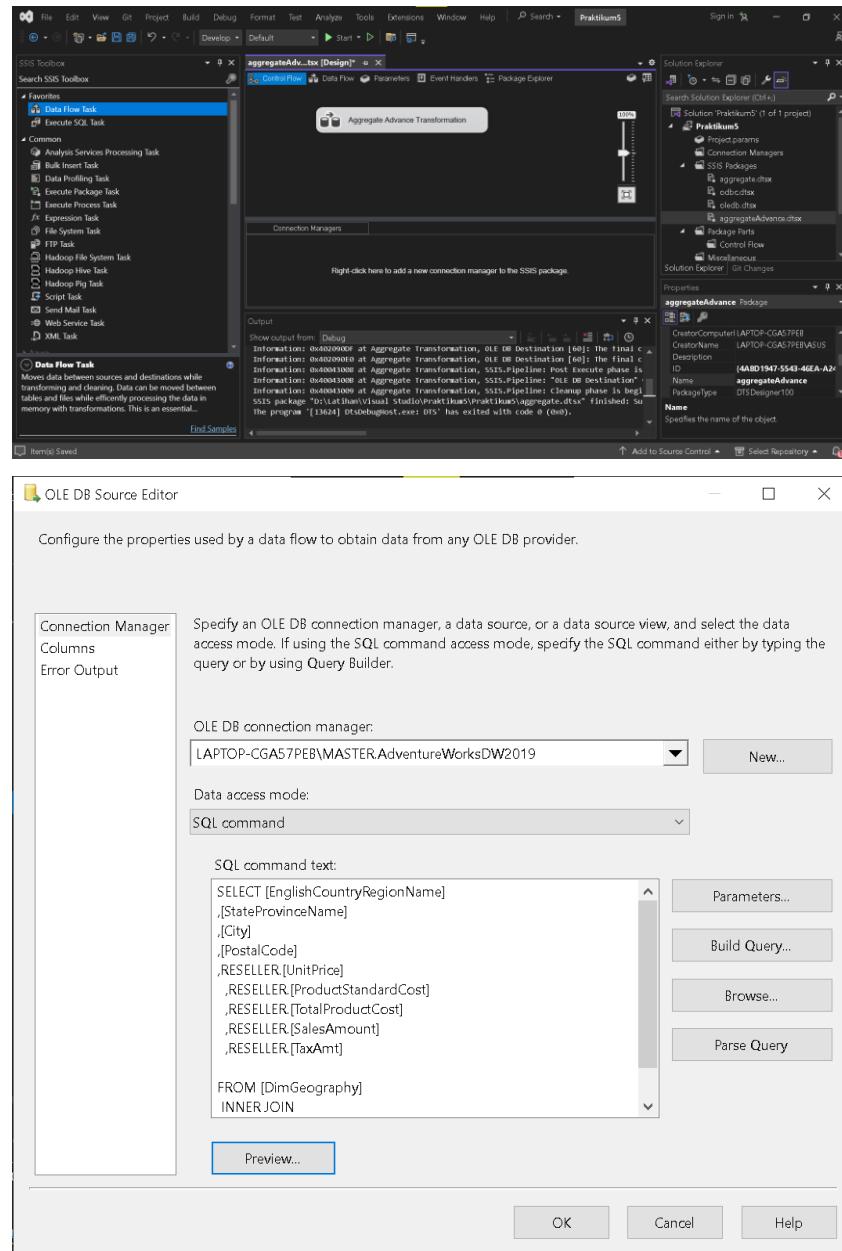


- Setelah selesai, klik tombol stop.
  - Cek tabel yang telah dibuat serta datanya pada database

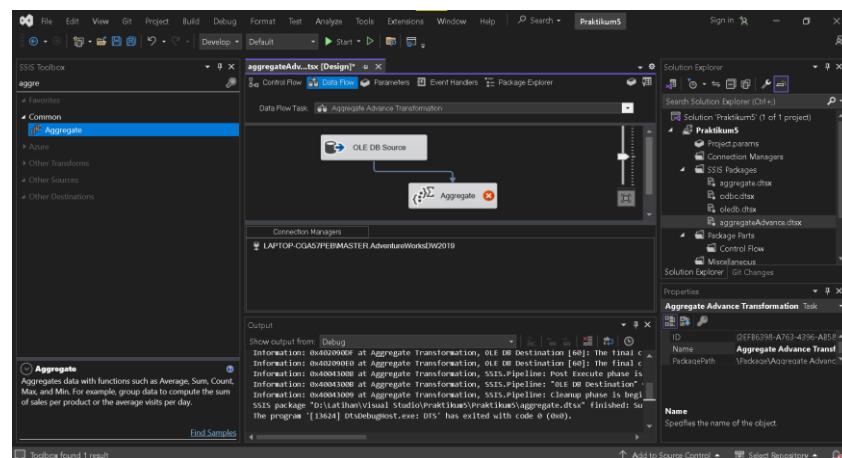


### b) Aggregation-Advance

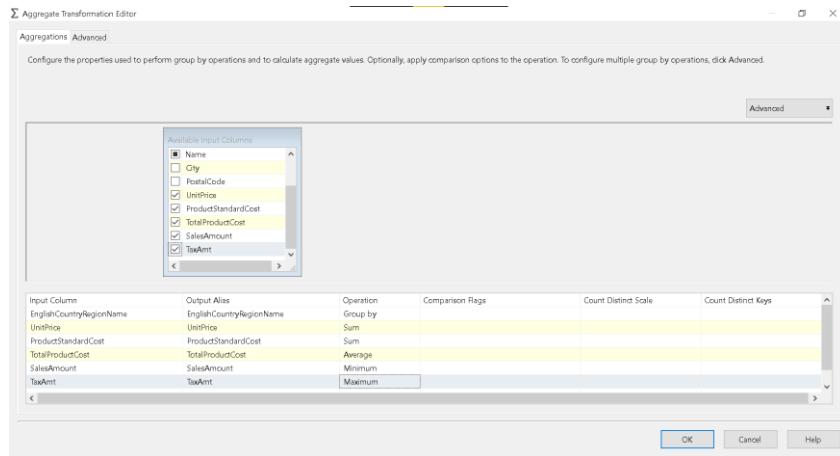
- Sama seperti langkah sebelumnya, lakukan tahapan mulai dari membuat koneksi OLE DB dan input SQL command.



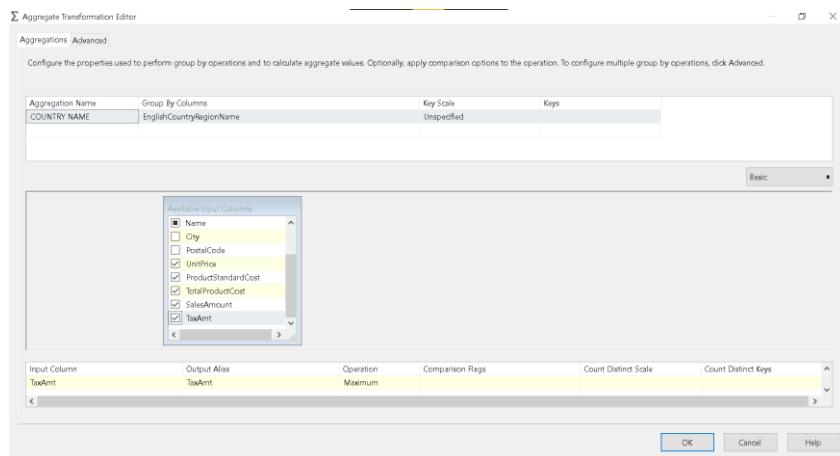
- Drag Aggregate dari SSIS Toolbox → double click



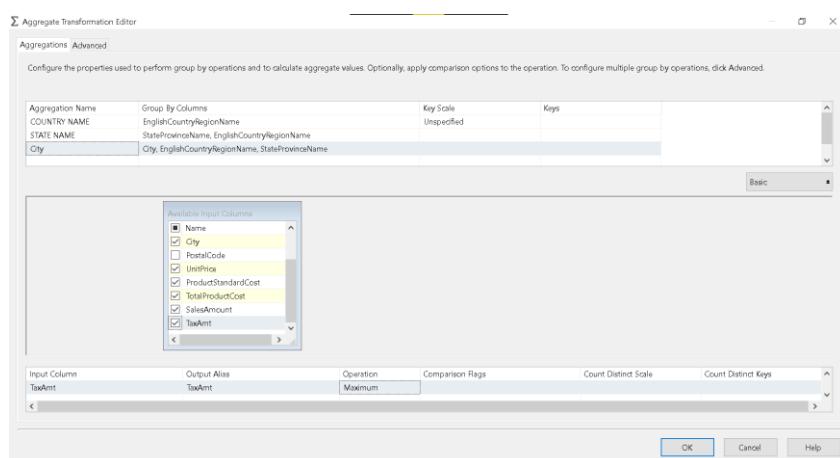
- Pilih kolom: **EnglishCountryRegionname, UnitPrice, ProductStandardCost, TotalProductCost, SalesAmount,**



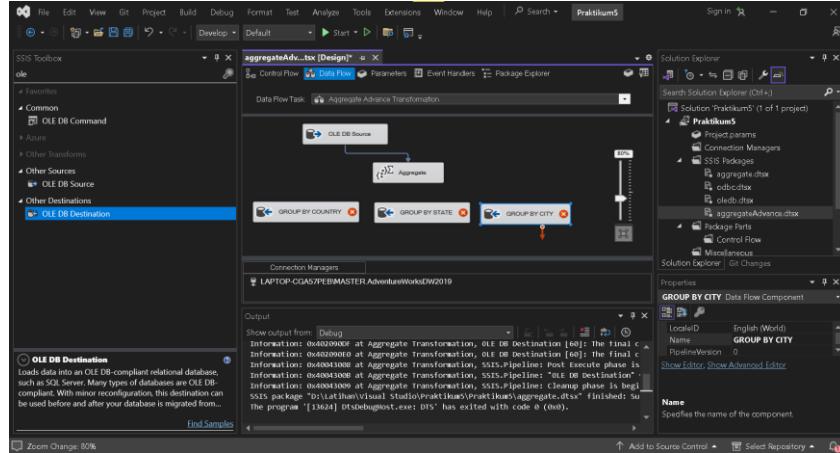
- Klik Advanced → input aggregation name: COUNTRY NAME



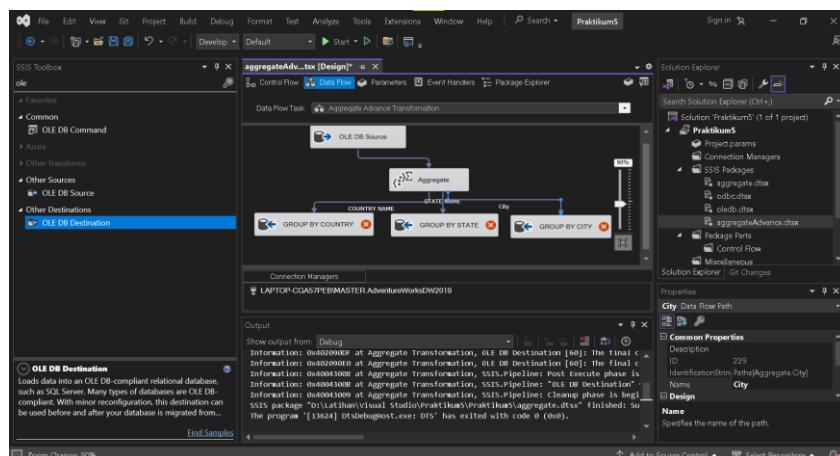
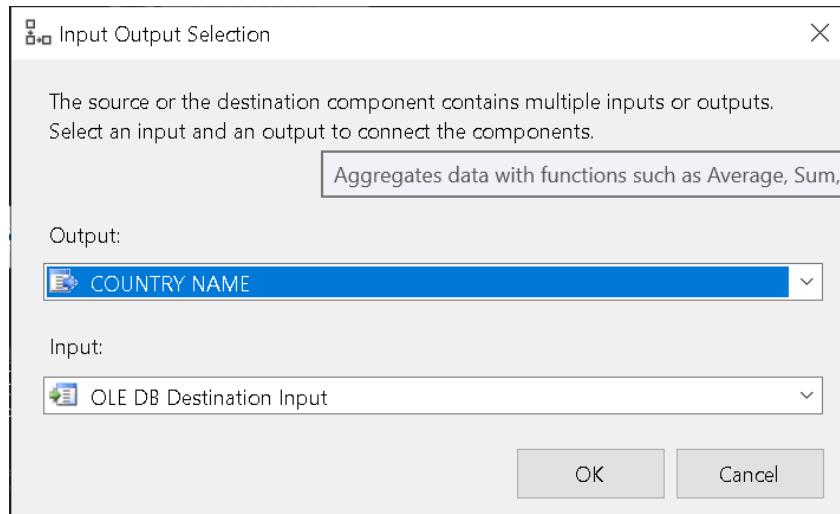
- Tambahkan kolom StateProvinceName → input aggregation name: STATE NAME
- Tambahkan kolom City → input aggregation name: CITY
- Klik OK



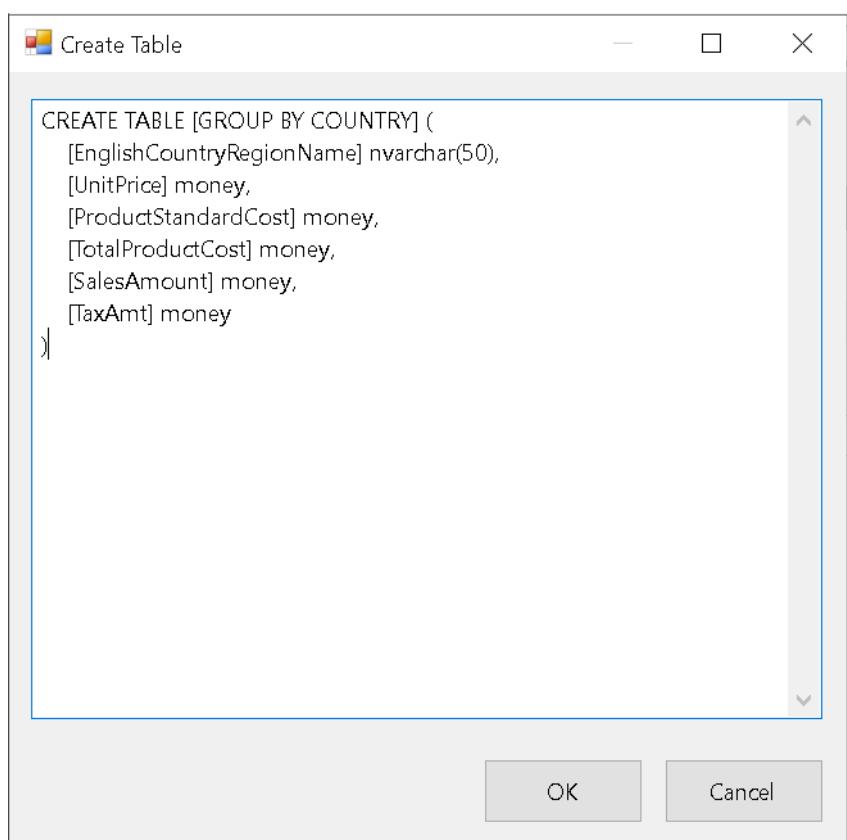
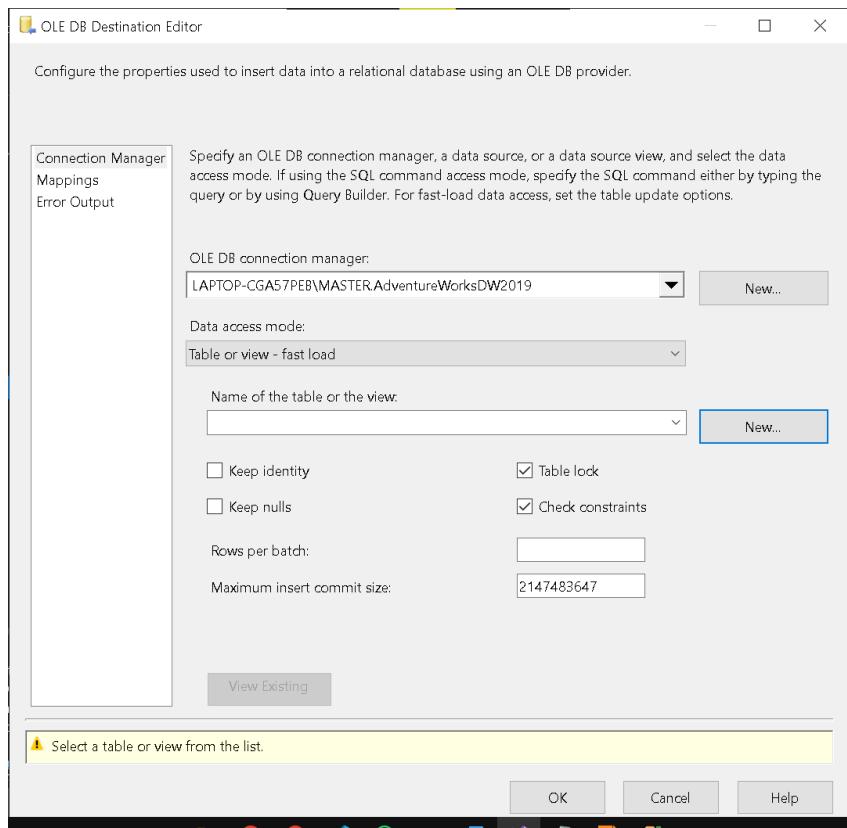
- Drag OLE DB Destination untuk menyimpan ketiga hasil agregasi: GROUP BY COUNTRY, GROUP BY STATE, GROUP BY CITY

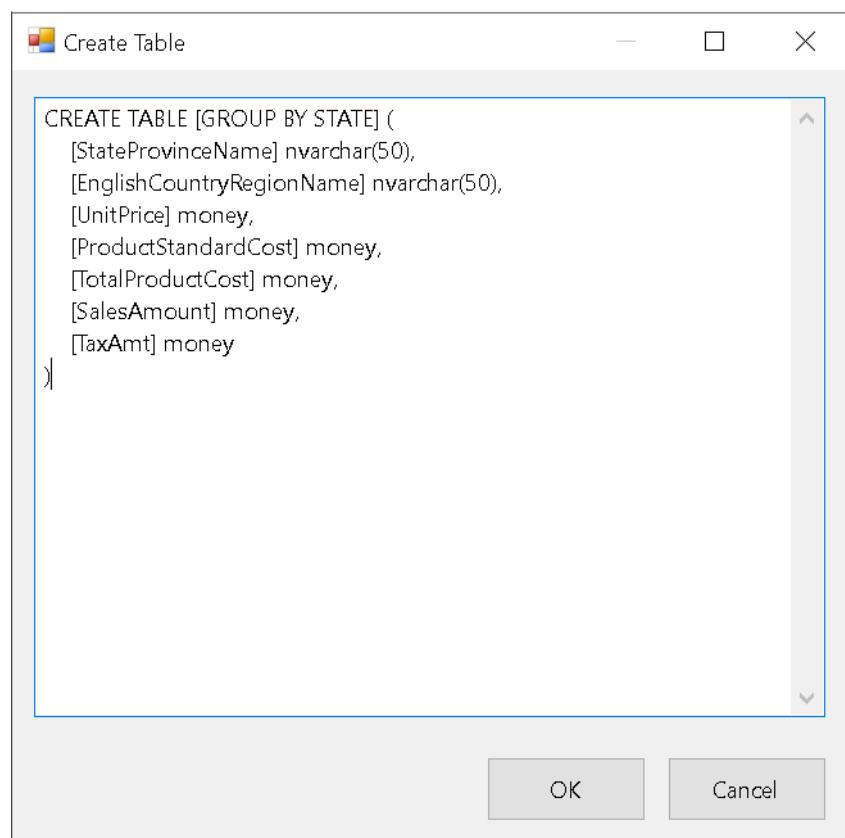
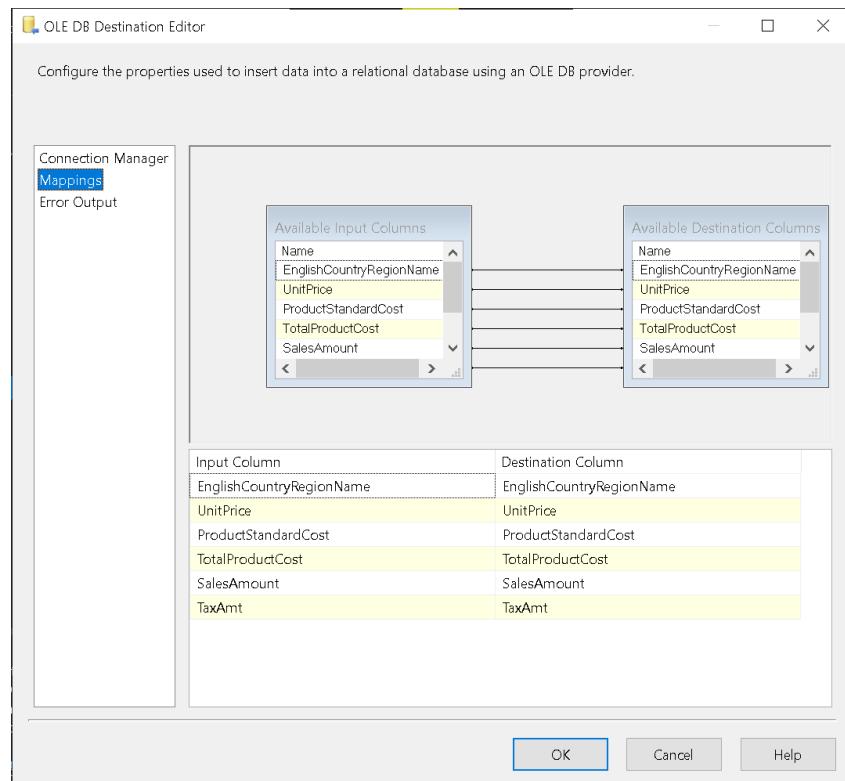


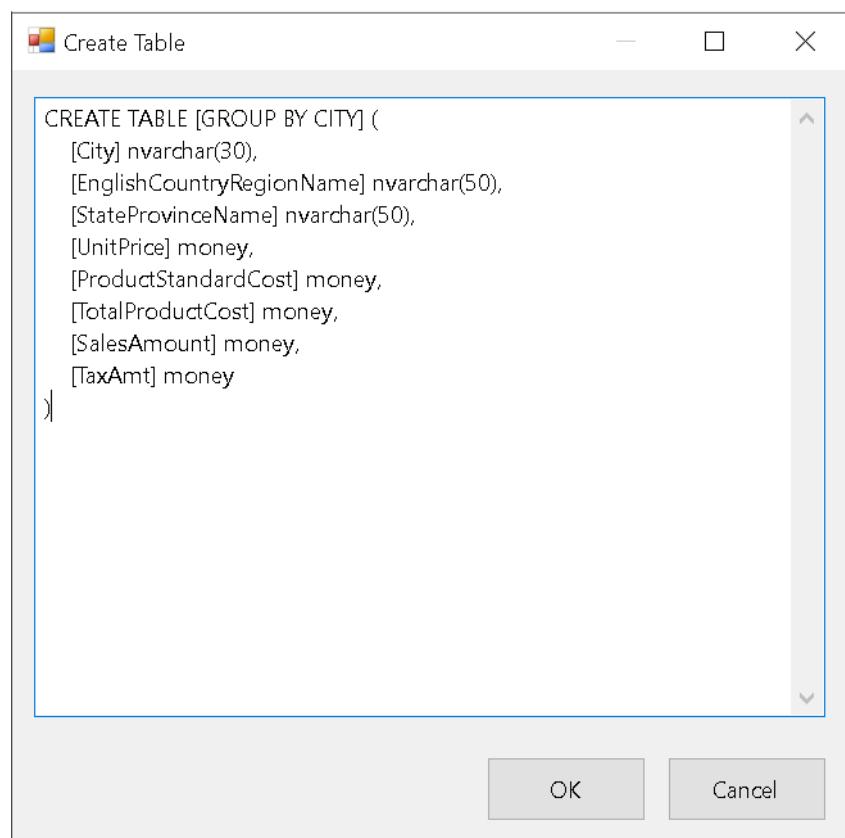
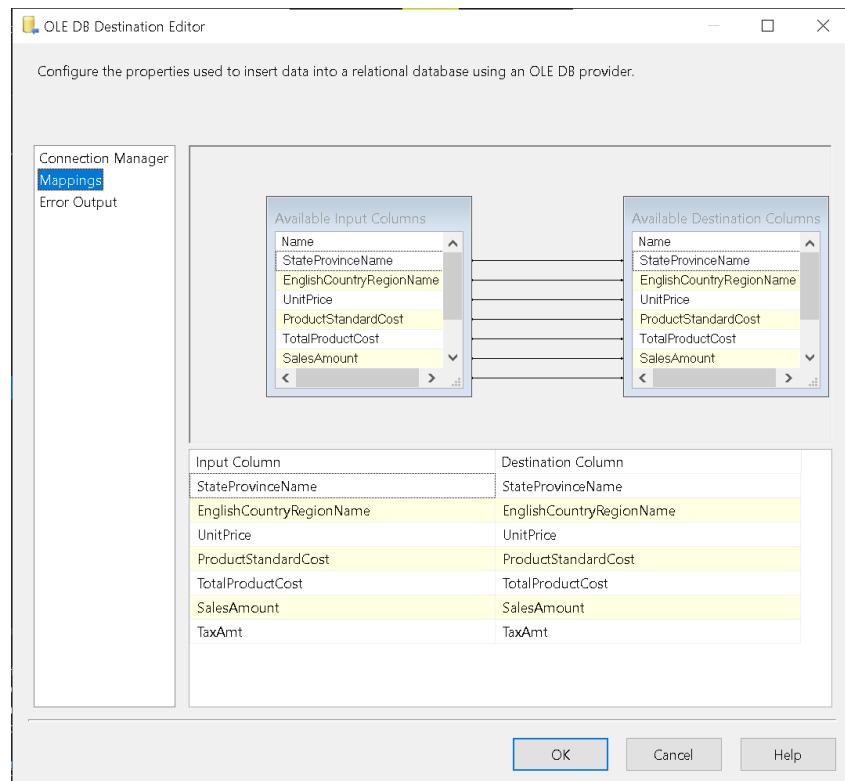
- Pilih output yang sesuai untuk tiap-tiap OLE DB Destination

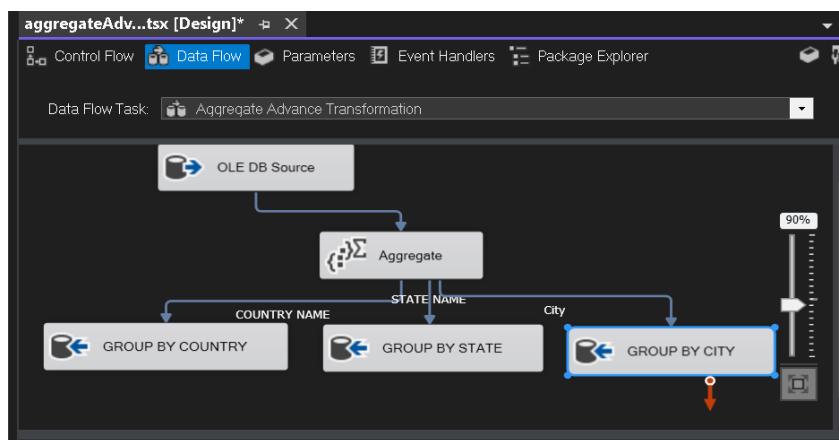
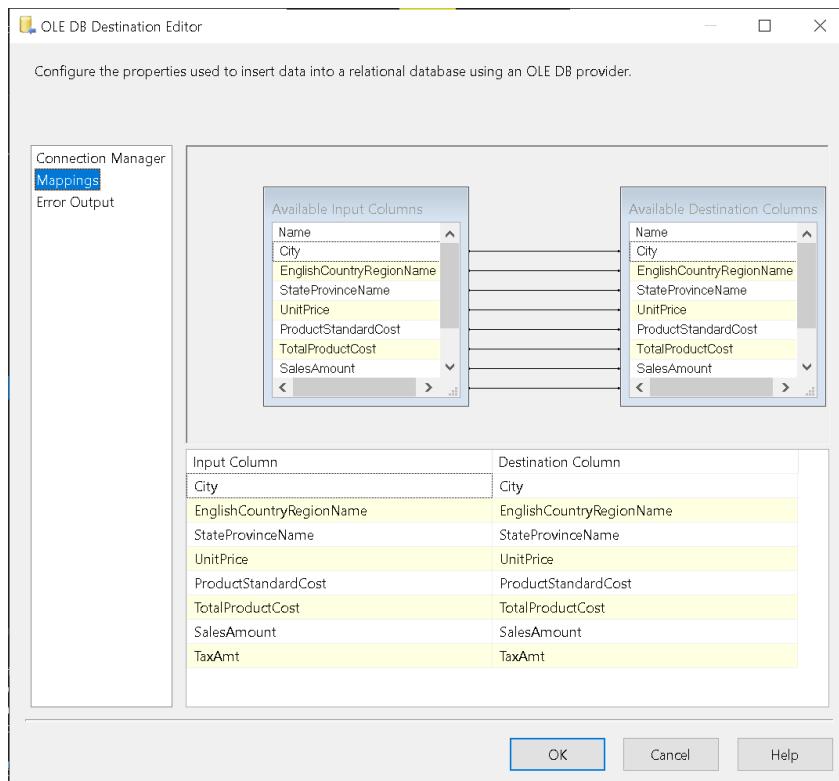


- Konfigurasi tiap-tiap OLE DB Destination

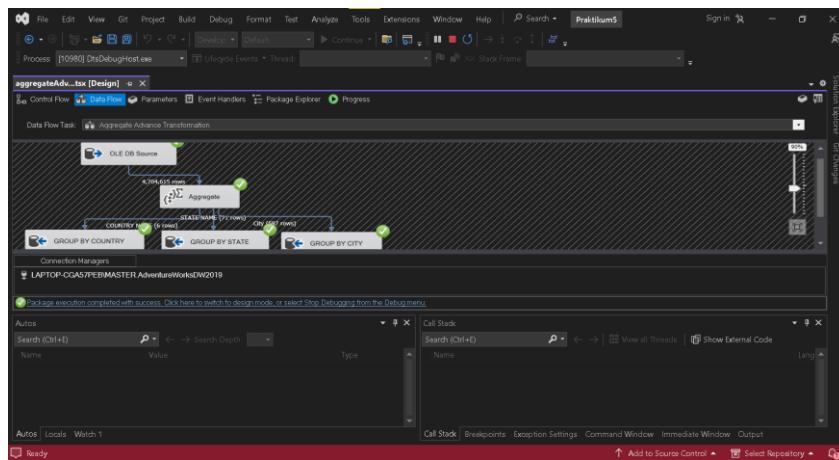








- Jalankan package dan lihat hasilnya di database



- Hasil Group By Country:

```

SELECT TOP (1000) [EnglishCountryRegionName]
,[UnitPrice]
,[ProductStandardCost]
,[TotalProductCost]
,[SalesAmount]
,[TaxAmt]
FROM [AdventureworksDW2019].[dbo].[GROUP BY COUNTRY]

```

The screenshot shows the SQL Server Management Studio interface with three tabs open. The top tab contains the query above. The middle tab shows the results, which are as follows:

	EnglishCountryRegionName	UnitPrice	ProductStandardCost	TotalProductCost	SalesAmount	TaxAmt
1	Australia	30709185.608	32268051.172	98411651	2.748	1409.3096
2	Canada	355471442.411	348796454.4618	1240.7698	1.374	1841.6105
3	China	45540000.0000	49560000.0000	1139.3376	2.748	1409.3096
4	Germany	44379402.235	45910017.66	1139.3376	1.374	1594.466
5	United States	1543196376.6455	1519351920.9312	1384.1501	1.374	2231.4995
6	United Kingdom	72992233.9754	72159534.5772	1213.6145	1.374	1793.7743

Below the results, it says "Query executed successfully".

- Hasil Group By State:

```

SELECT TOP (1000) [StateProvinceName]
,[EnglishCountryRegionName]
,[UnitPrice]
,[ProductStandardCost]
,[TotalProductCost]
,[SalesAmount]
,[TaxAmt]
FROM [AdventureworksDW2019].[dbo].[GROUP BY STATE]

```

The screenshot shows the SQL Server Management Studio interface with three tabs open. The top tab contains the query above. The middle tab shows the results, which are as follows:

	StateProvinceName	EnglishCountryRegionName	UnitPrice	ProductStandardCost	TotalProductCost	SalesAmount	TaxAmt
1	Lor et Cher	France	1315008.467	1300307.8995	1315.9208	2.748	1885.4284
2	Alberta	Canada	9738012.214	9556712.0332	1240.7698	1.374	1841.6105
3	Michigan	United States	40110000.0000	40000000.0000	1139.3376	2.748	1409.3096
4	Nordrhein-Westfalen	Germany	7510191.1467	7765387.404	1139.3375	1.374	1594.466
5	Montana	United States	11788166.582	1150840.9197	1551.5979	1.374	1688.143
6	Hamburg	Germany	10923914.3951	11300927.424	1139.3375	1.374	1594.466
7	British Columbia	Canada	247370.309	245000.0000	1139.3375	2.748	1885.4284
8	Quebec	Canada	88166094.3449	86802507.7324	1240.7698	1.374	1841.6105
9	Georgia	United States	34726242.8472	3409594.1484	1304.9257	1.374	1985.0781
10	New South Wales	Australia	1456883.1638	1532728.2067	994.1951	2.748	1409.3096
11	Utah	United States	3143510.8894	3067993.1165	1551.5979	1.374	1688.143
12	Colorado	United States	1675650.7614	16449516.5997	1380.1063	1.374	2164.4608

Below the results, it says "Query executed successfully".

- Hasil Group By City:

```

SELECT TOP (1000) [City]
,[EnglishCountryRegionName]
,[StateProvinceName]
,[UnitPrice]
,[ProductStandardCost]
,[TotalProductCost]
,[SalesAmount]
,[TaxAmt]
FROM [AdventureworksDW2019].[dbo].[GROUP BY CITY]

```

The screenshot shows the SQL Server Management Studio interface with three tabs open. The top tab contains the query above. The middle tab shows the results, which are as follows:

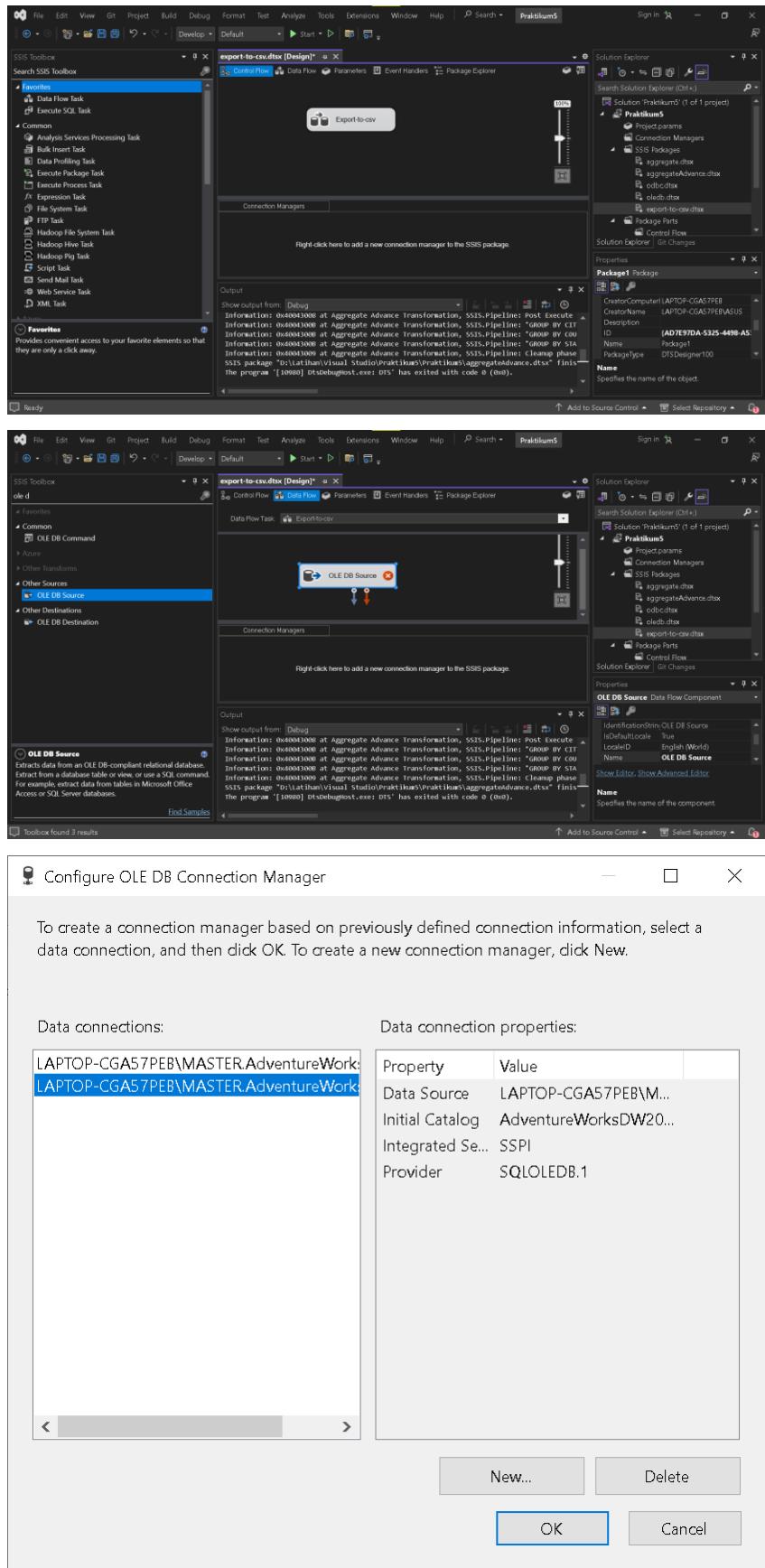
	City	EnglishCountryRegionName	StateProvinceName	UnitPrice	ProductStandardCost	TotalProductCost	SalesAmount	TaxAmt
1	Ferguson	United States	Missouri	263970.188	263954.2271	1338.1062	1.374	2164.4698
2	Durham	United States	Minnesota	263970.188	263954.2271	1338.1062	1.374	2164.4698
3	Montgomery	United States	Ohio	247570.3951	2449594.4188	1180.1672	1.374	1190.4032
4	Santa Ana	United States	California	6054471.7483	5987542.2994	1381.4242	1.374	2231.4995
5	Decatur	United States	Georgia	289395.576	284130.8467	1304.9256	1.374	1995.0781
6	Wrentham	United States	Massachusetts	247570.309	2449594.4188	1180.1672	1.374	1190.4032
7	Canton	United States	Baden-Carolina	1400000.4542	1384400.0000	1374.1672	1.374	1374.1672
8	Bethlehem	United States	Washington	302308.8607	3034616.5399	1951.5979	1.374	1688.143
9	Klanian Falls	United States	Oregon	9526388.8607	8834616.5399	1551.5979	1.374	1888.143
10	Basingstoke Harts	United Kingdom	England	1377211.9618	1361950.6524	1213.8145	1.374	1793.7743
11	Alano	United States	Texas	600000.0000	5987542.2994	1374.1672	1.374	1374.1672
12	Kittery	United States	Maine	247570.3951	2449594.4188	1180.1672	1.374	1190.4032

Below the results, it says "Query executed successfully".

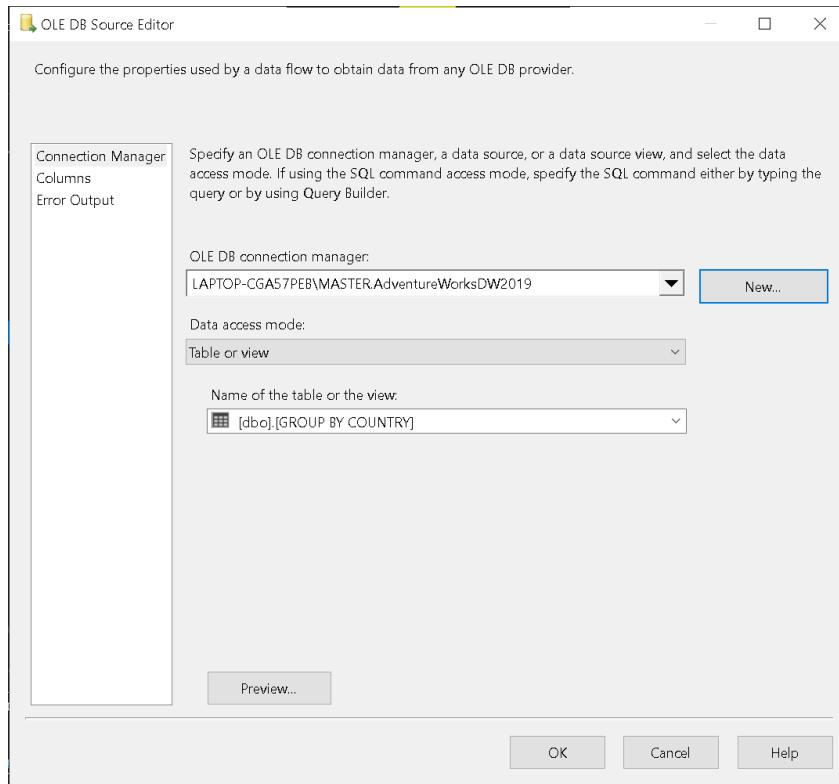
## 4. Export data

### RDBMS to csv:

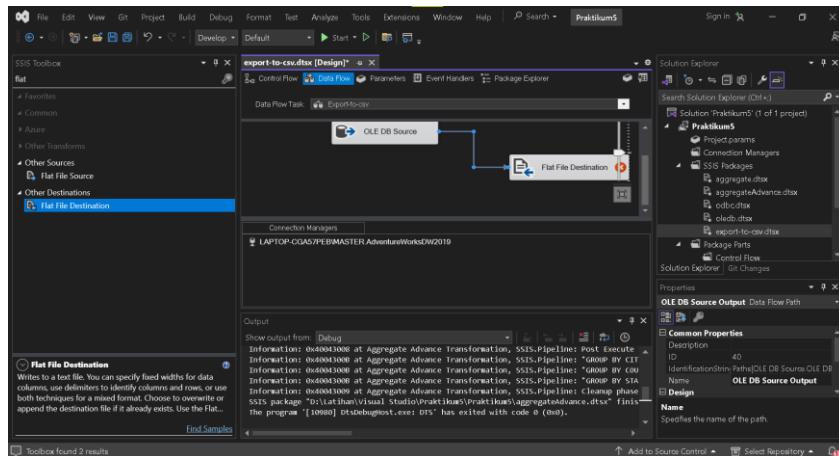
- Buat koneksi OLE DB



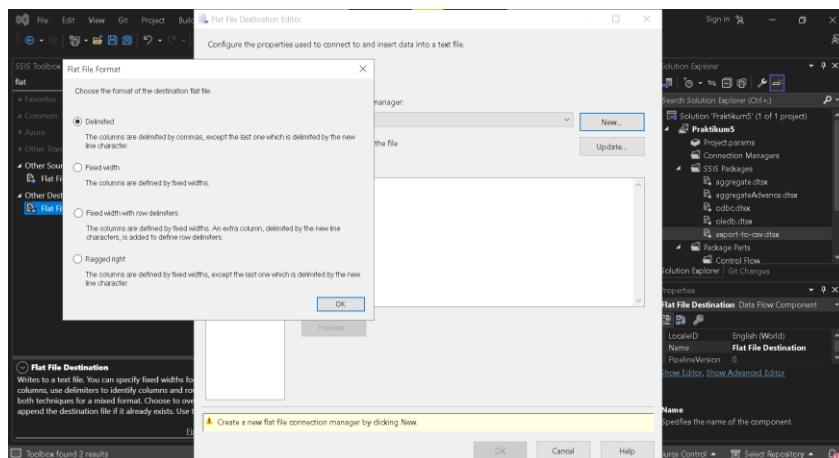
- Pilih tabel yang akan diekspor

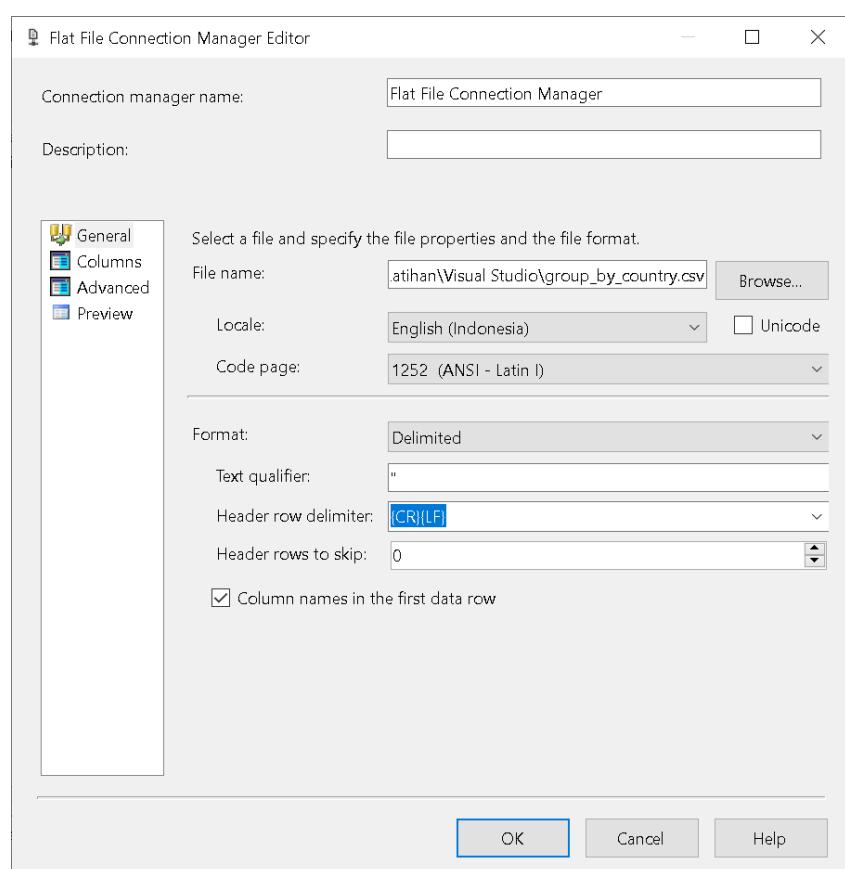
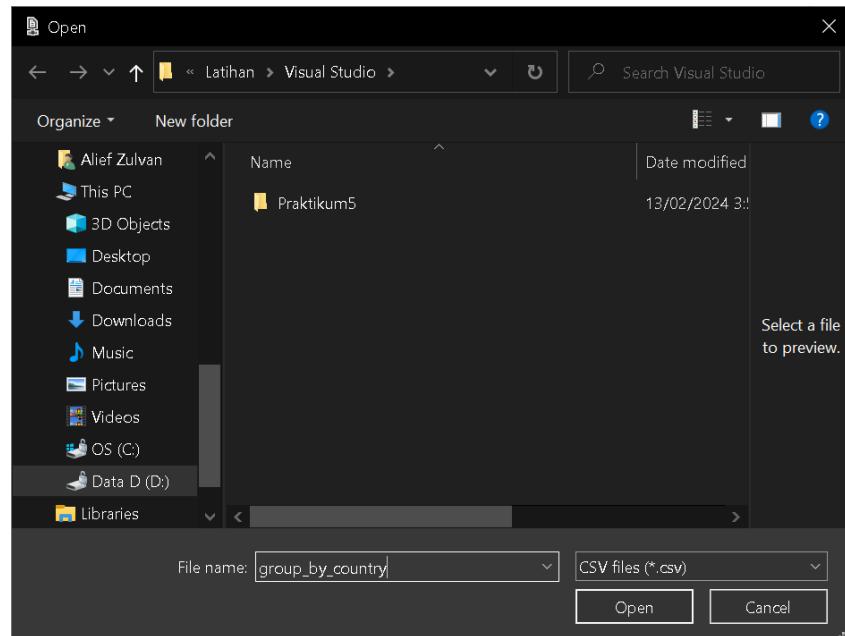


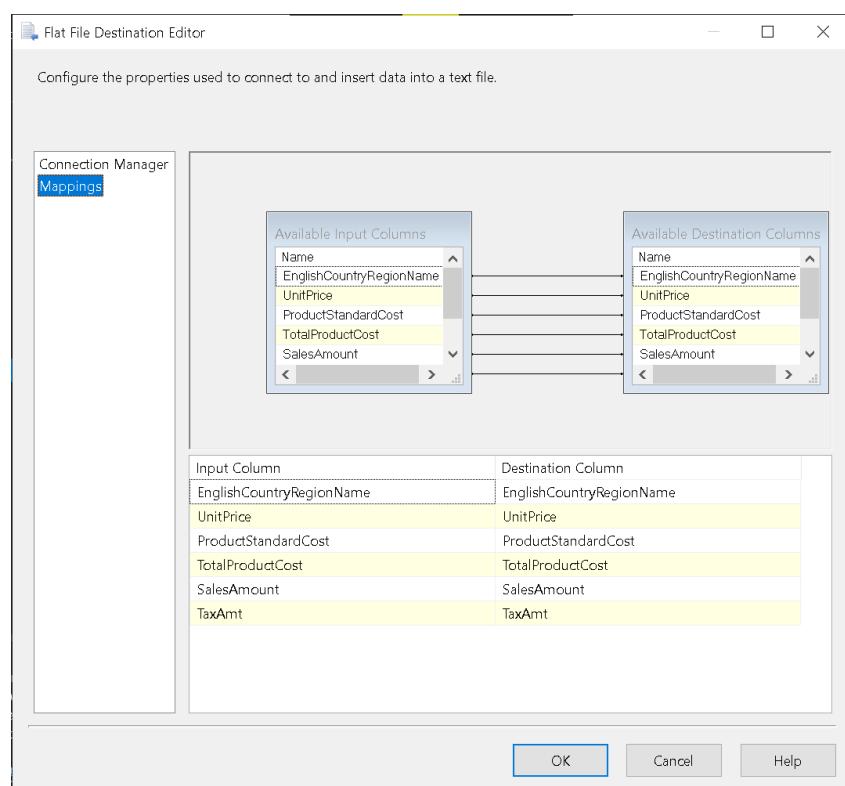
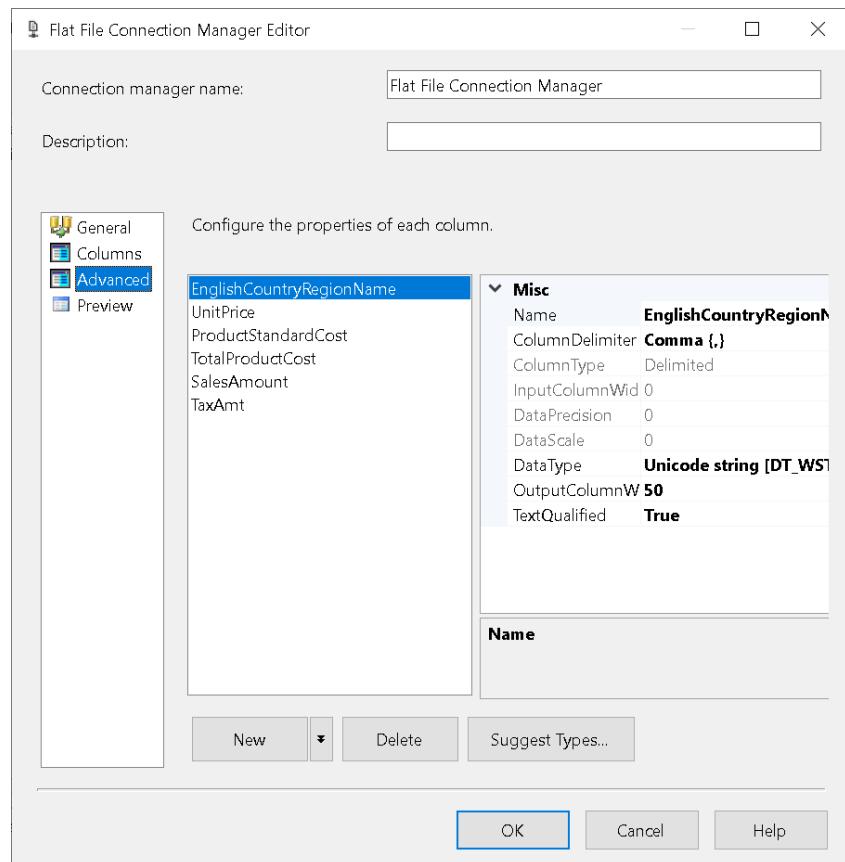
- Drag Flat File Destination

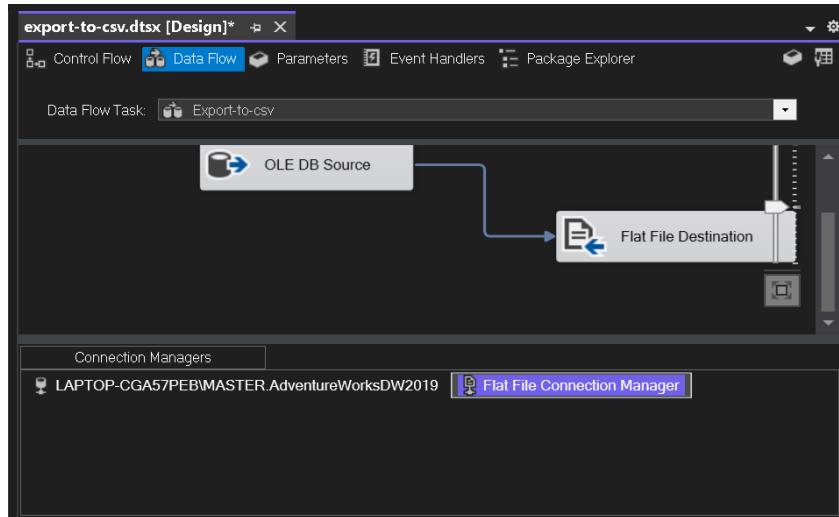


- Lakukan konfigurasi seperti gambar di bawah.

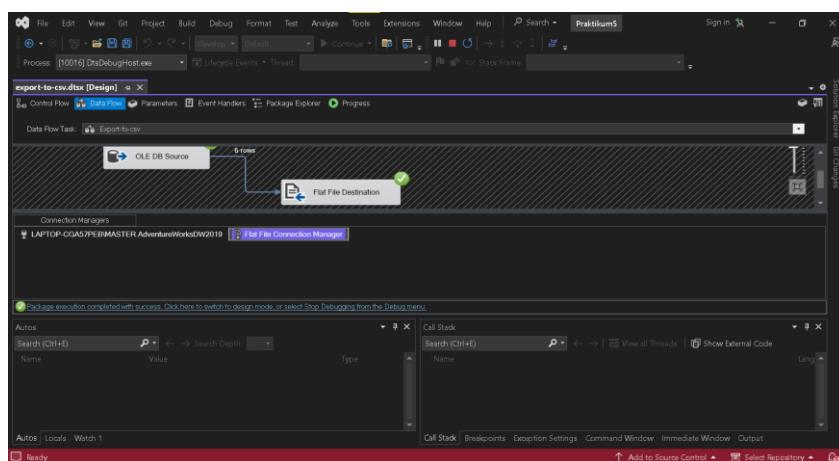








- Jalankan package



- Cek file hasil ekspor data

The screenshot shows an Excel spreadsheet titled 'group\_by\_country.csv'. The data is organized into columns: EnglishCountryRegionName, UnitPrice, ProductLineCount, TotalProductCost, SalesAmount, and Profit. The data includes records for Australia, Canada, France, Germany, United States, and United Kingdom.

EnglishCountryRegionName	UnitPrice	ProductLineCount	TotalProductCost	SalesAmount	Profit
Australia	30,709,185,608	32,268,055,172	9,941,951	2,745,18,093,096	
Canada	3,554,374,426,311	3,487,066,474,618	12,407,986	1,374,18,416,105	
France	631,636,246,416	62,414,778,696	13,158,209	2,745,18,934,284	
Germany	443,784,023,005	459,100,17,66	11,393,376	1,374,15,994,466	
United States	15,431,963,765,455	15,193,519,209,312	13,841,501	1,374,22,314,895	
United Kingdom	729,922,339,754	721,595,345,772	12,138,145	1,374,17,937,743	

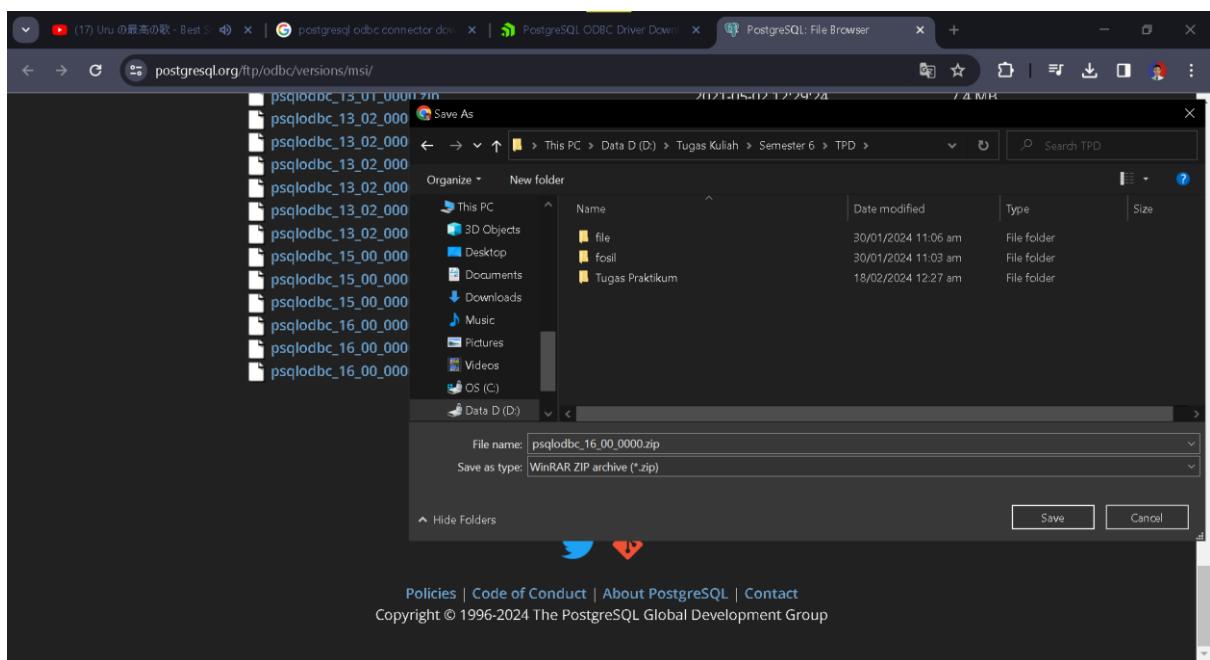
## C. PENUGASAN

- Lakukan langkah-langkah pada bagian ETL sesi 3 dan 4 dengan seksama dan screenshoot setiap package yang dibuat, proses run package, dan hasil tabel/file.
- Buatlah koneksi odbc ke database selain SQL server, misal PosgreSQL/MySQL.

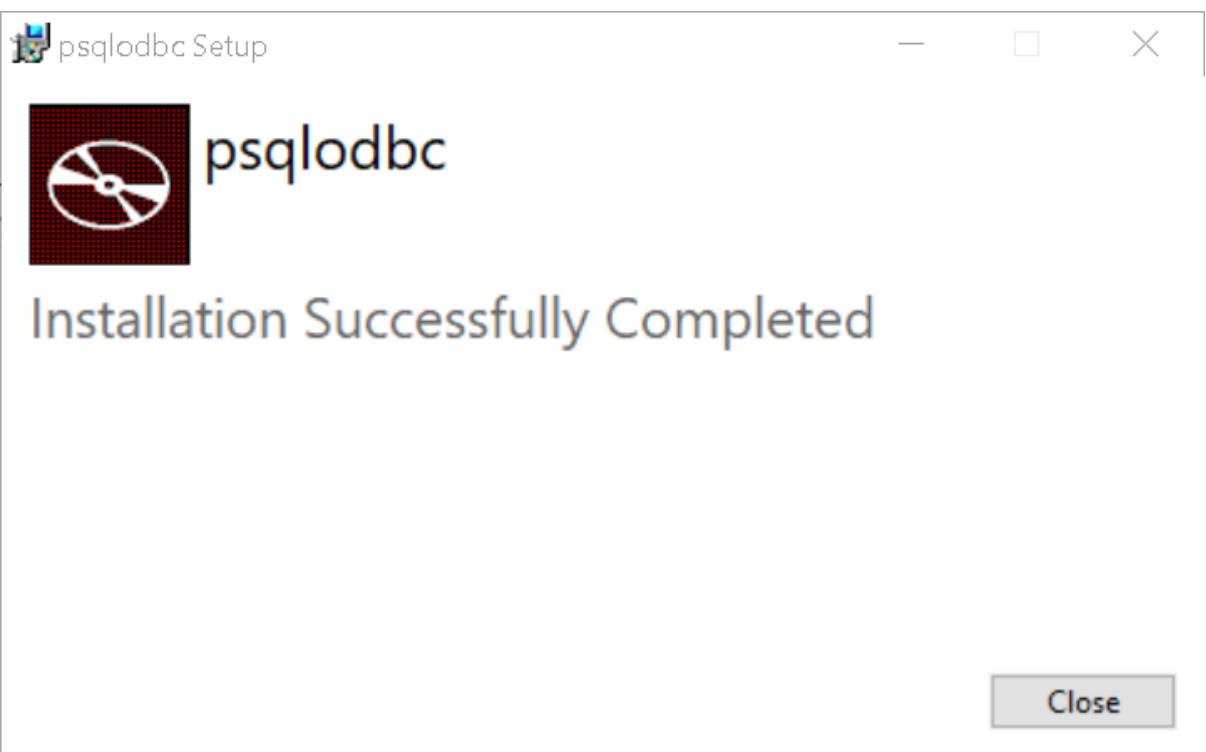
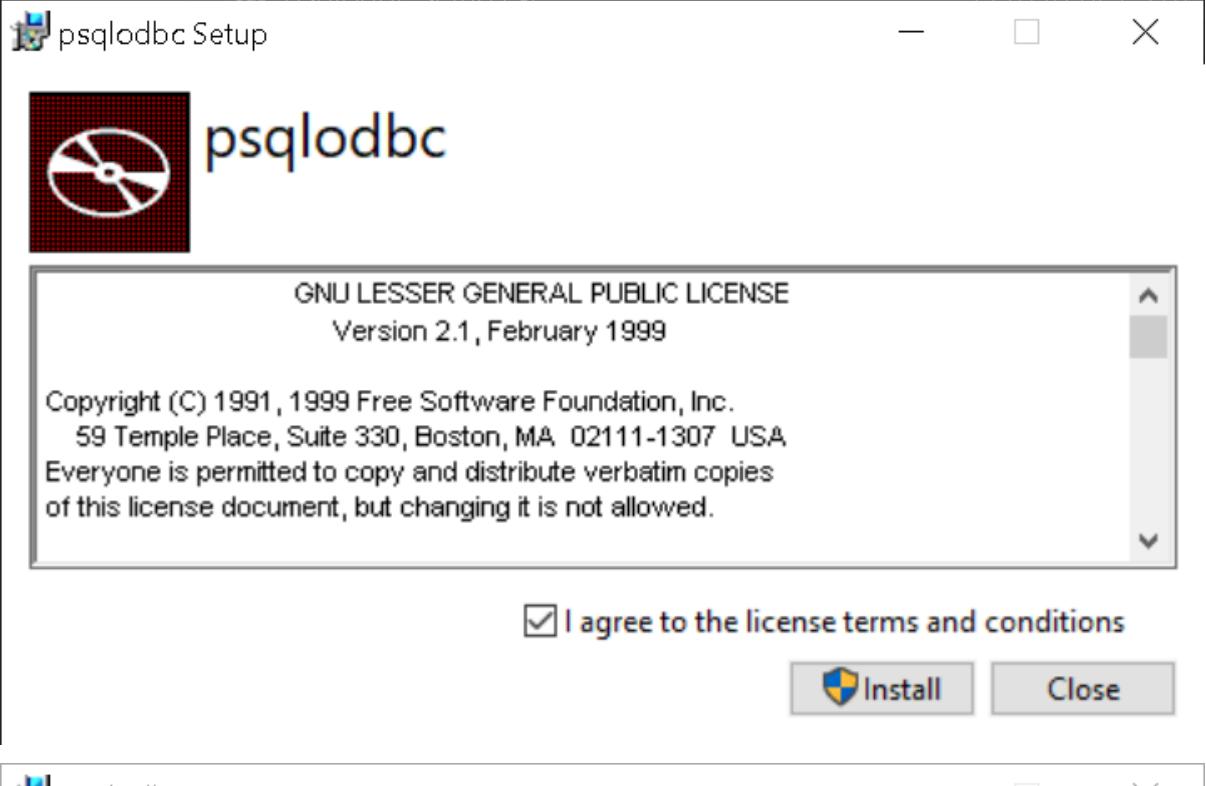
3. Import file imdb\_data.csv ke database yang dipilih pada poin 2 dengan menggunakan SSIS.
4. Buat dokumentasi untuk langkah 2 dan 3.
5. Buatlah package dengan memanfaatkan database AdventureWorks2019/AdventureWorksDW2019 dengan minimal dua fitur transformasi yang terdapat pada SSIS. Cantumkan dokumentasi pada file laporan praktikum. Cara penggunaan fitur transformasi dapat diperoleh dari berbagai referensi yang ada.
6. Tugas dikumpulkan dalam format pdf dengan penamaan file nama\_nim\_praktikum5

**Jawab:**

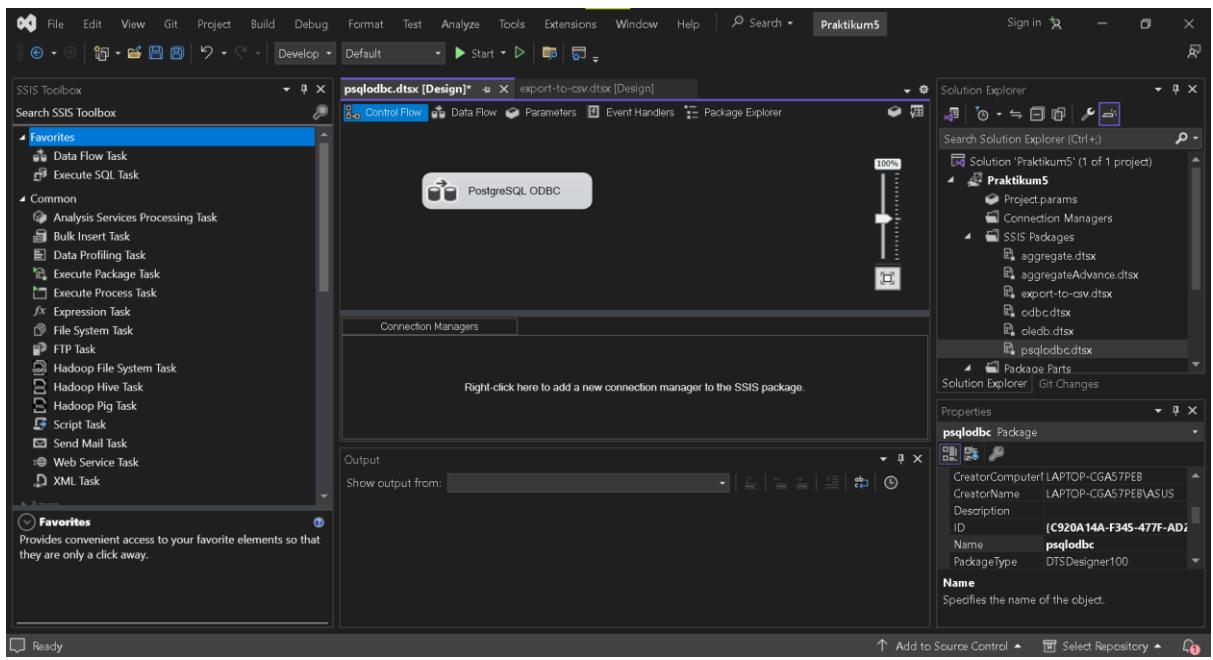
1. Sudah diatas
2. - Download ODBC PostgreSQL



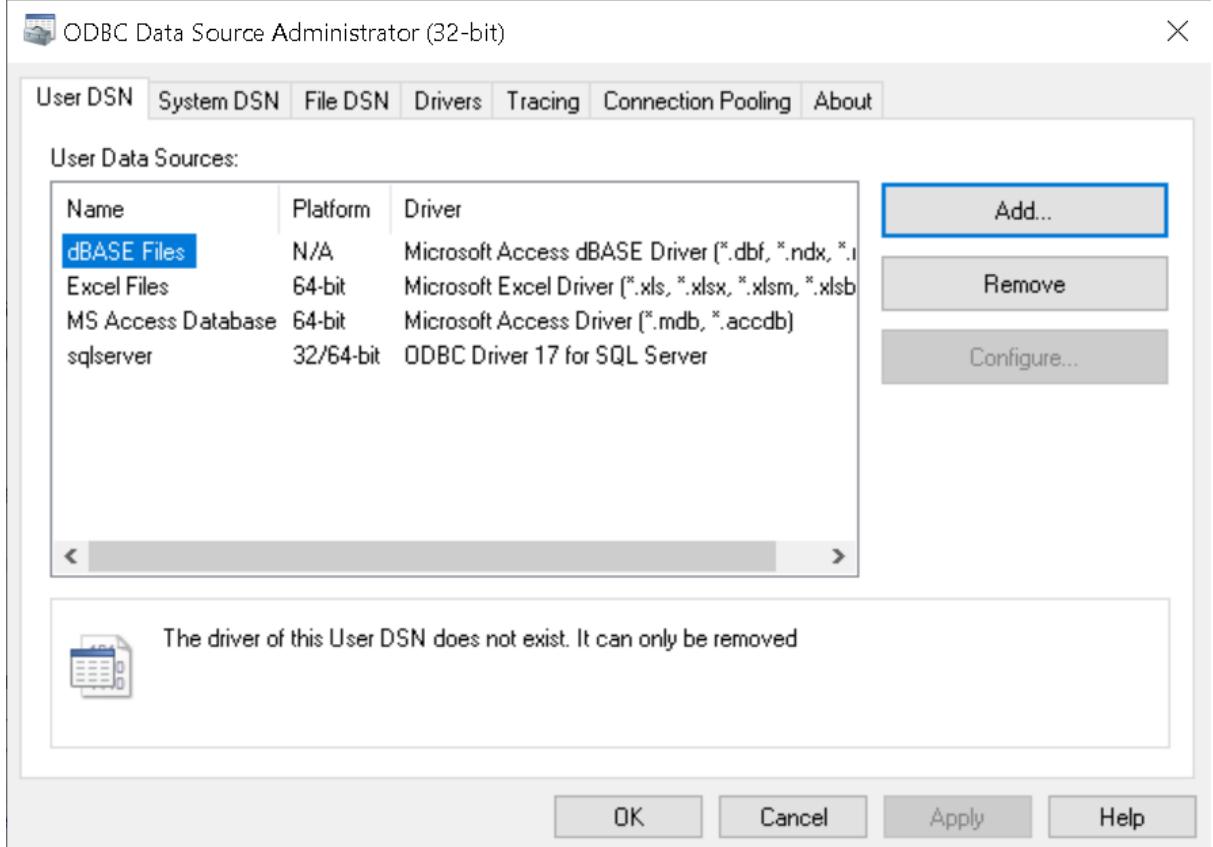
- Install psqlodbc

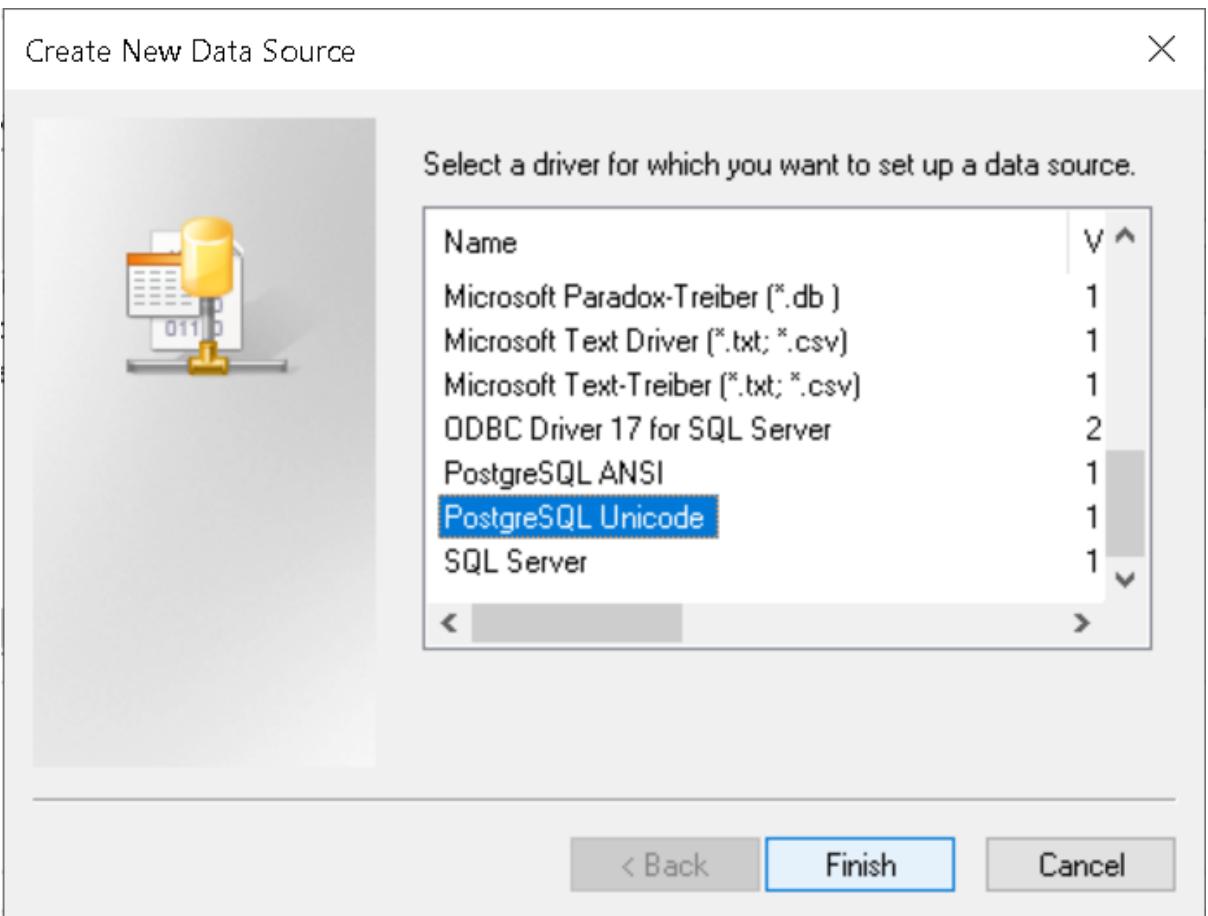


- Buka psqlodbc
- Buat data flow

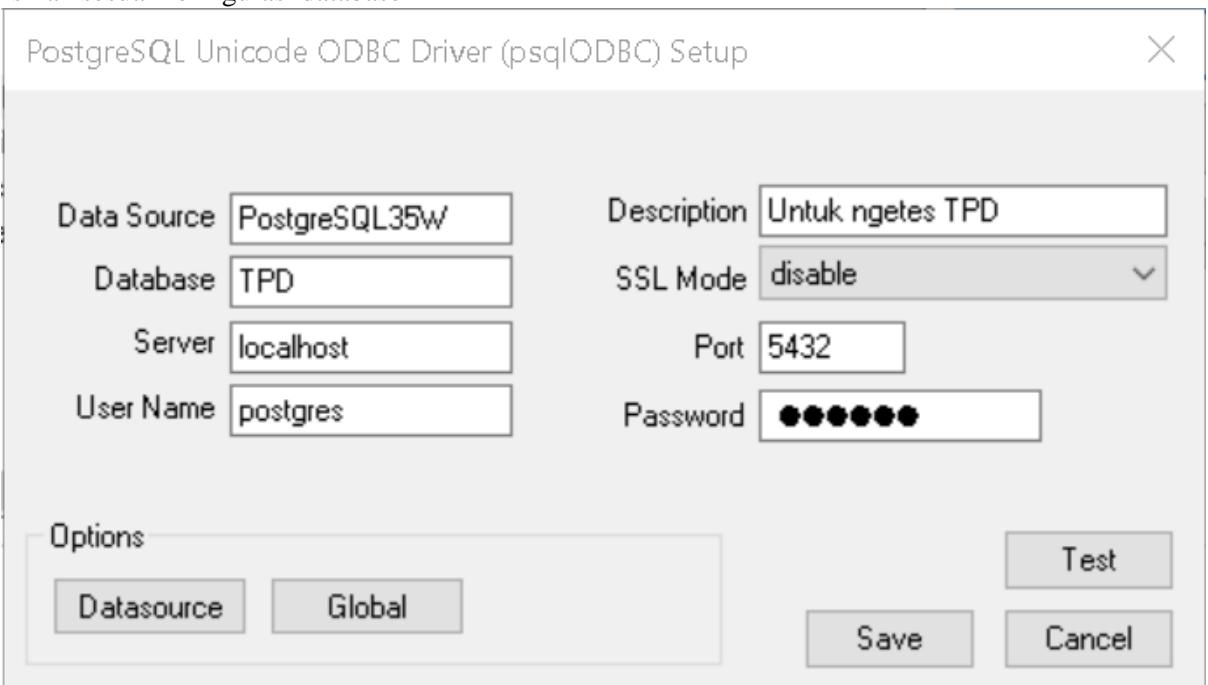


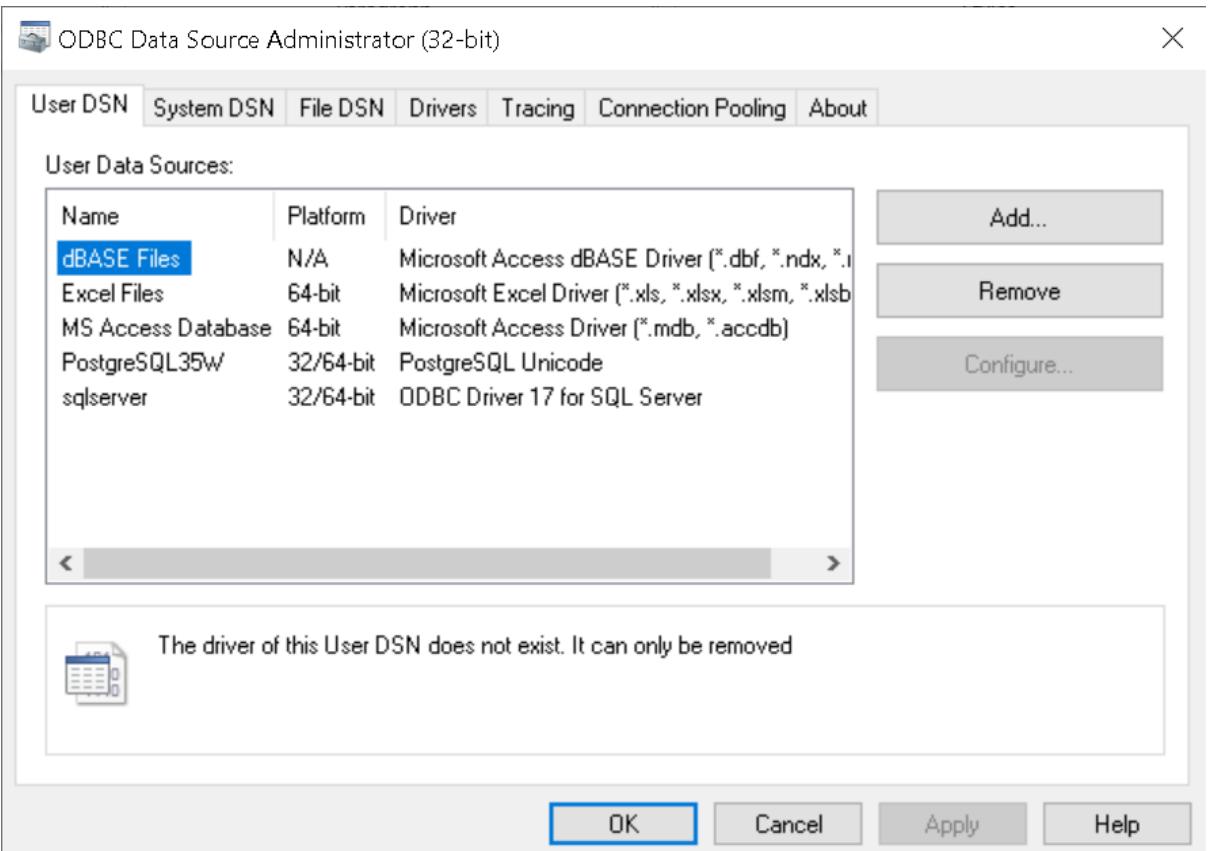
- Setting koneksi odbc di ODBC data source Administrator



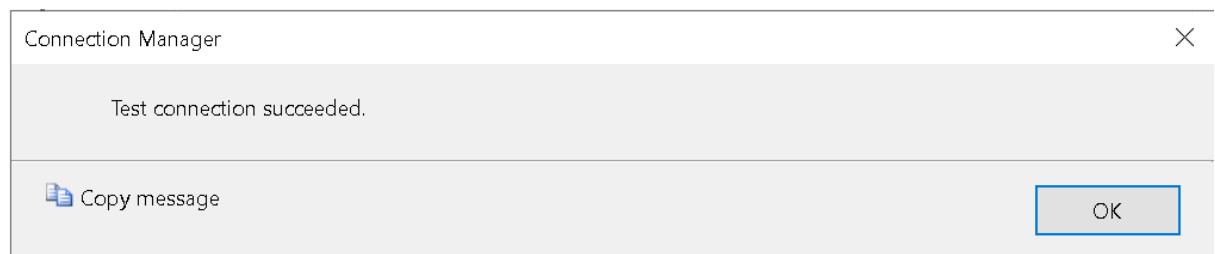
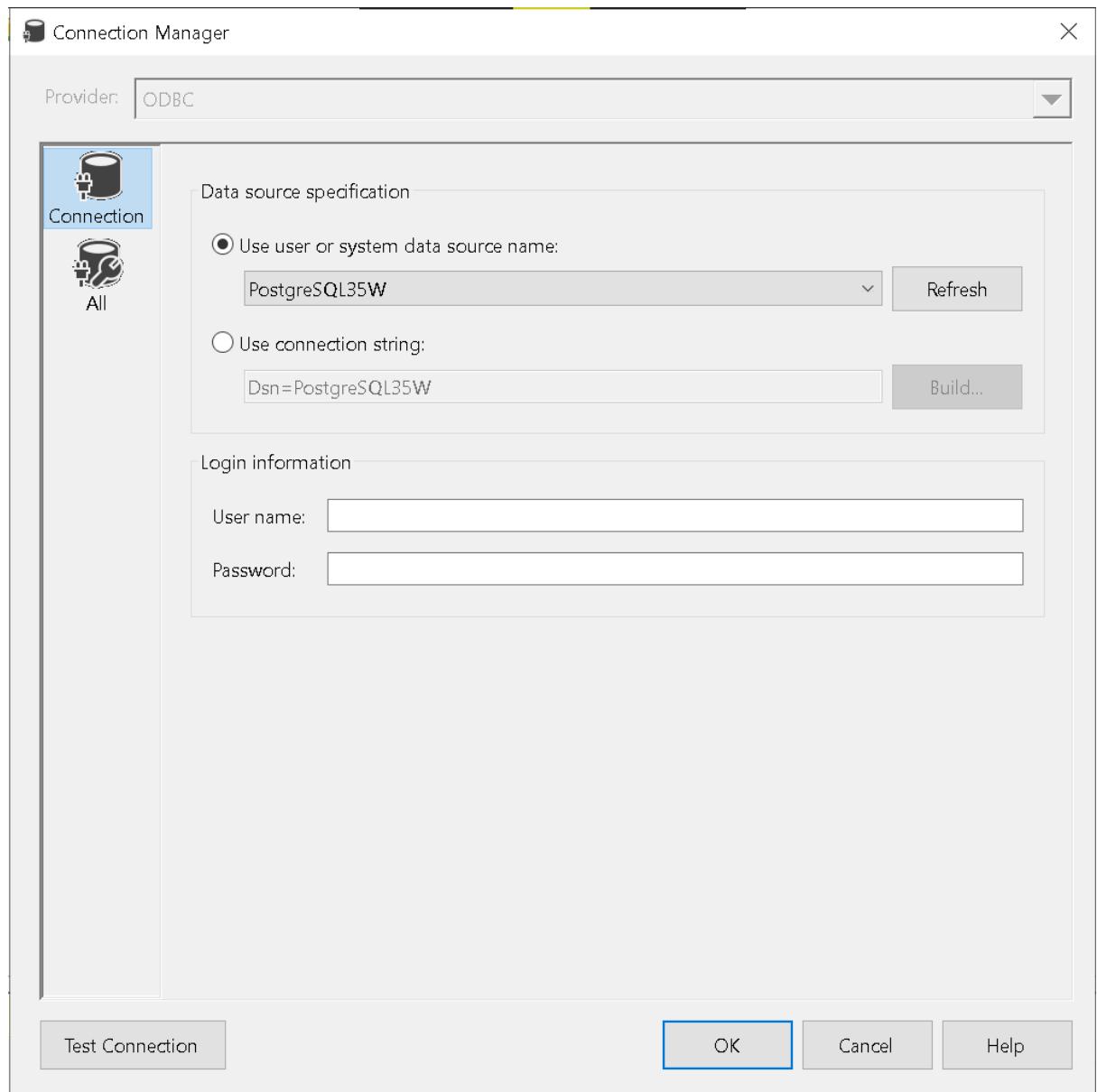


- Isikan sesuai konfigurasi database

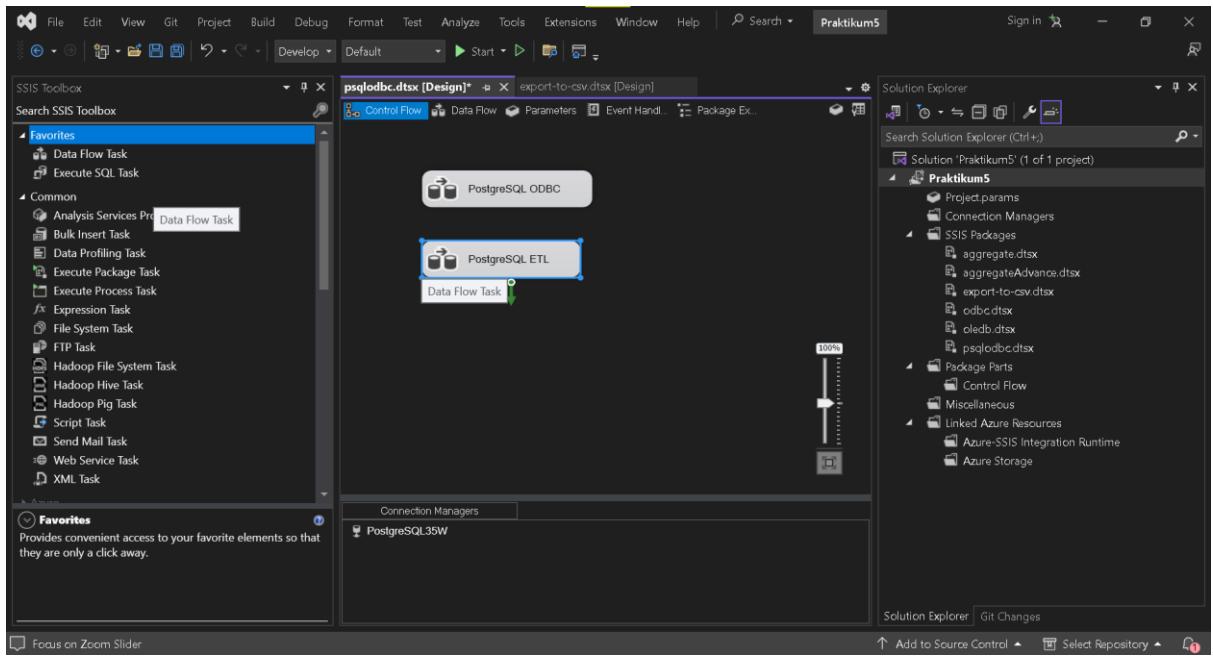




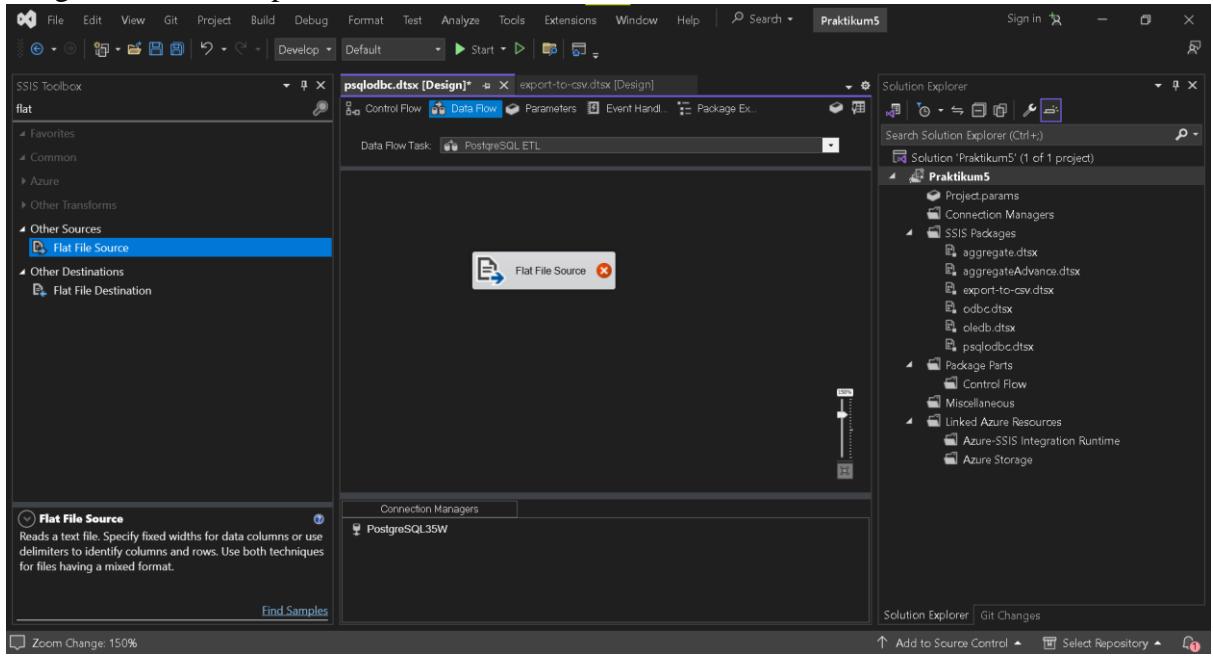
- Hubungkan di Visual Studio

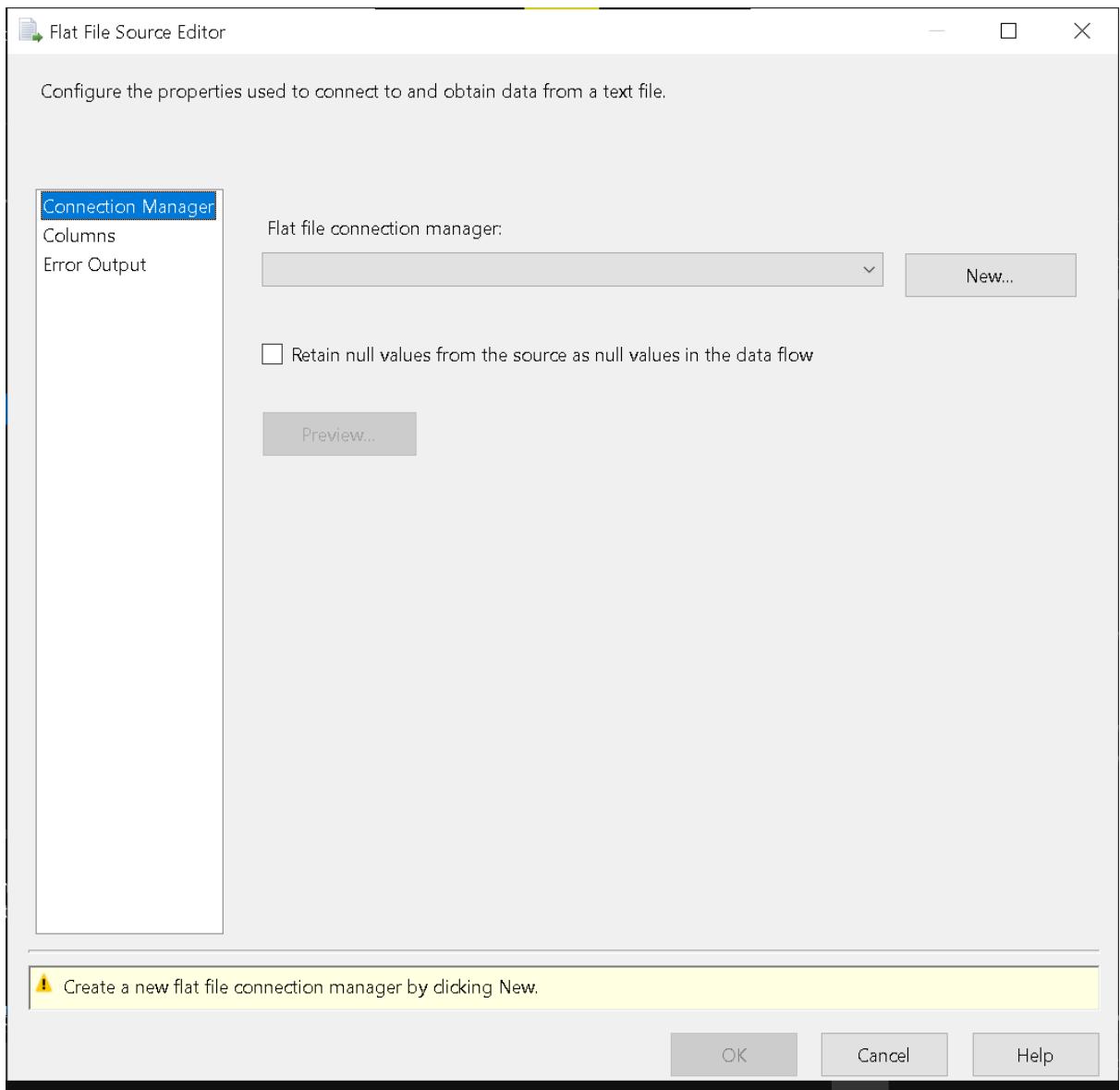


3. Import file `imdb_data.csv` (hasil modul sebelumnya) ke database yang dipilih pada nomor 2 dengan menggunakan SSIS.
  - Buat Flow baru

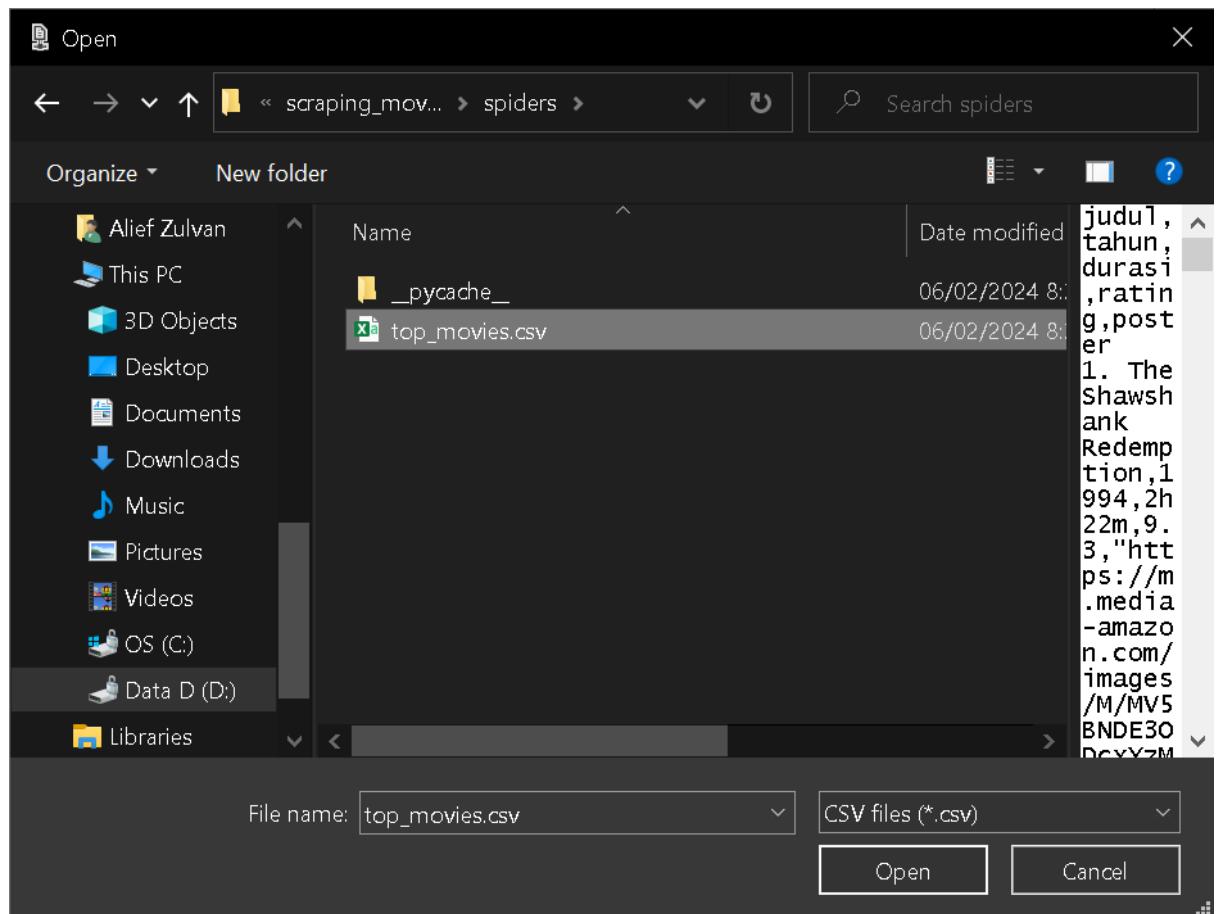


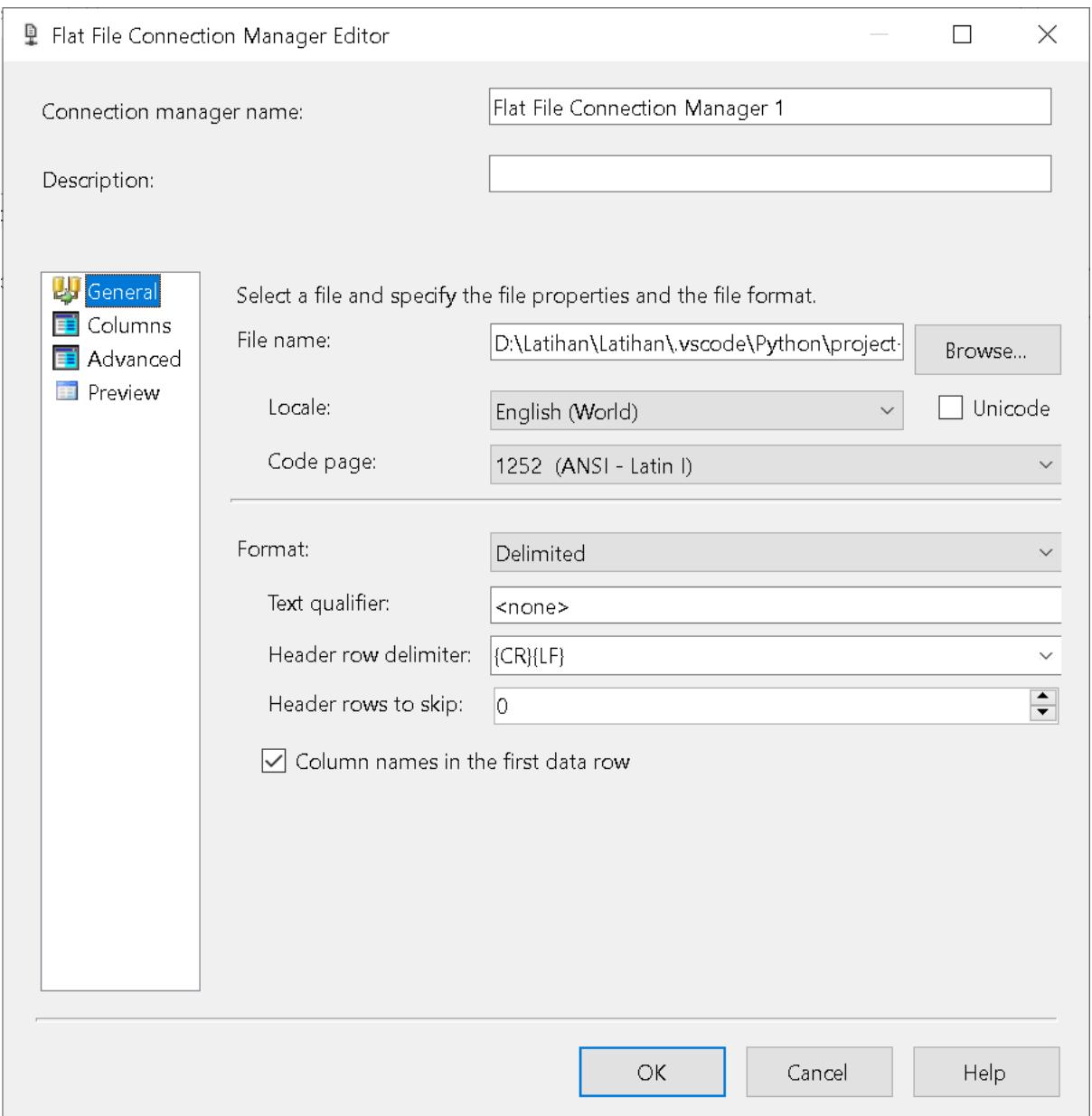
- Drag flat file source pada SSIS toolbox, lalu klik 2 kali, lalu klik new





- Pada file name, pilih file `imdb_movies.csv` lalu cek pada kolom, advanced, dan preview apakah data sudah benar, lalu klik OK





Flat File Connection Manager Editor

Connection manager name: Flat File Connection Manager 2

Description:

The preview shows the source file divided into the specified columns. Initial data rows that are skipped when the file is parsed during runtime, are not shown.

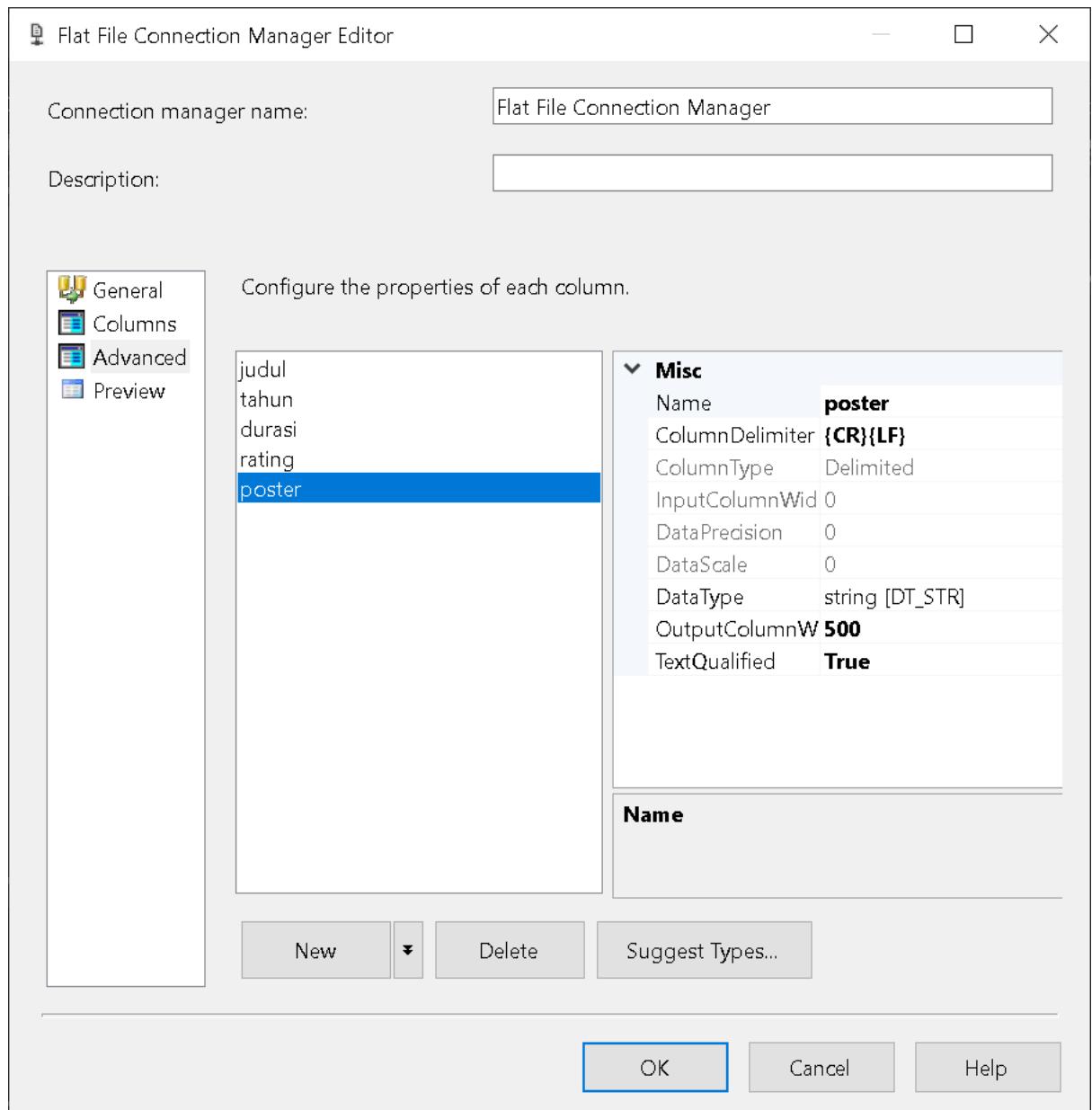
Data rows to skip: 0

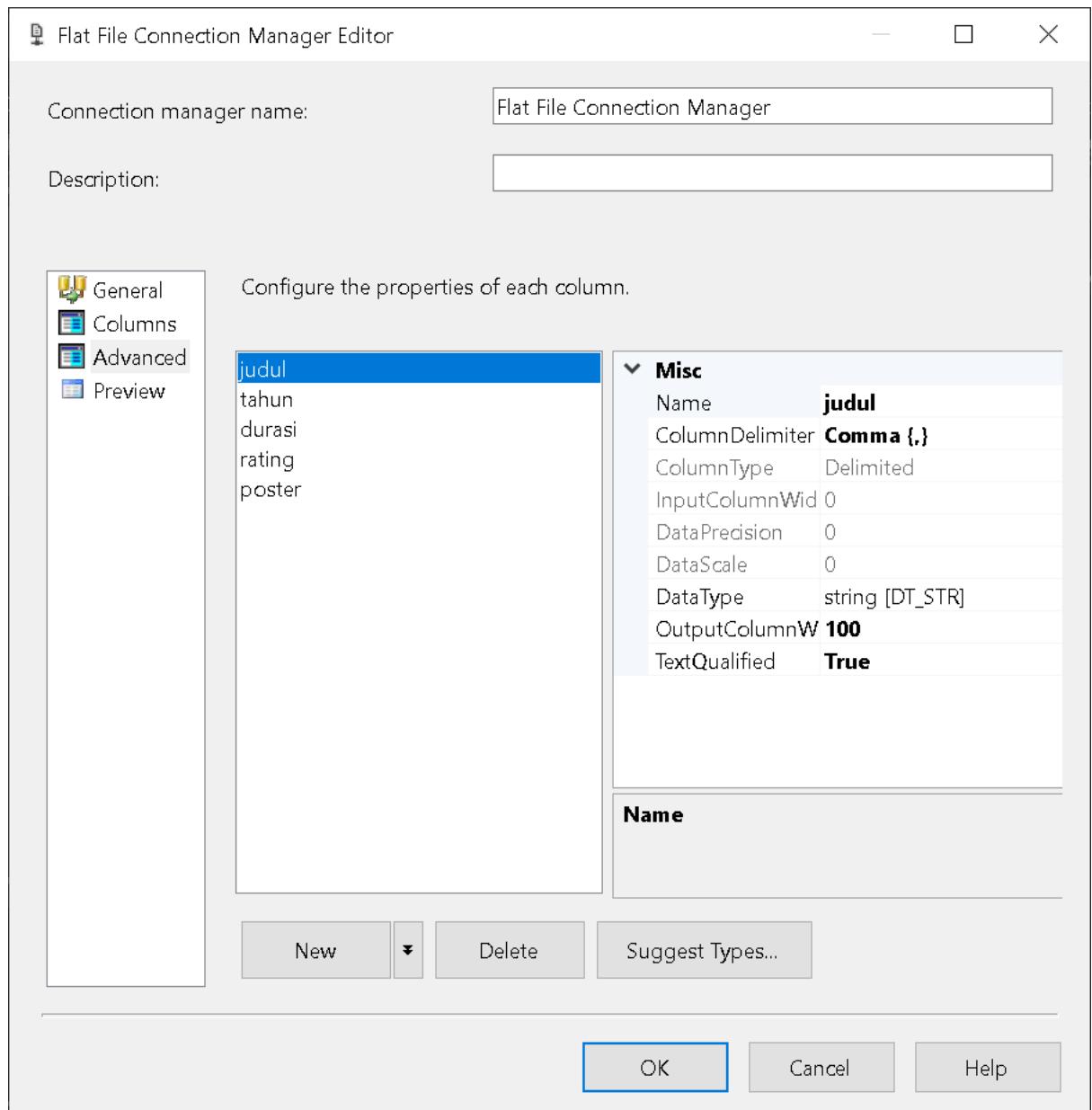
Preview rows 2-101:

judul	tahun	durasi	rating	po
1. The Shawshank...	1994	2h 22m	9.3	"h ^
2. The Godfather	1972	2h 55m	9.2	"h
3. The Dark Knight	2008	2h 32m	9.0	"h
4. The Godfather ...	1974	3h 22m	9.0	"h
5. 12 Angry Men	1957	1h 36m	9.0	"h
6. Schindler's List	1993	3h 15m	9.0	"h
7. The Lord of the...	2003	3h 21m	9.0	"h
8. Pulp Fiction	1994	2h 34m	8.9	"h
9. The Lord of the...	2001	2h 58m	8.9	"h ▼

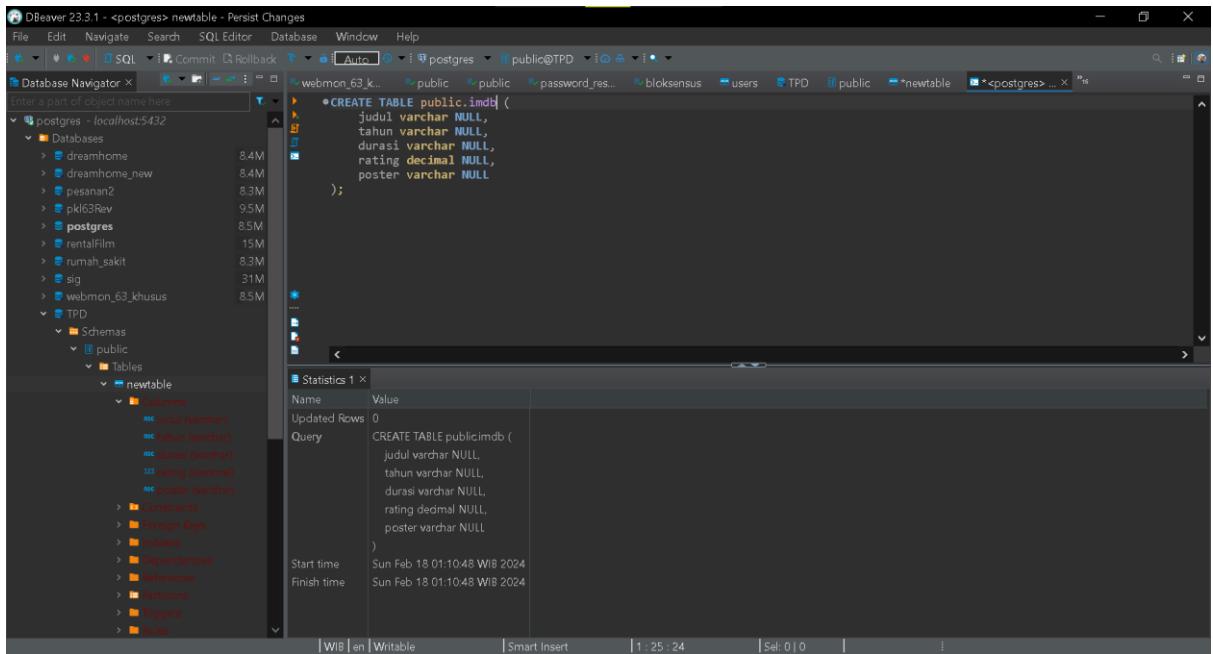
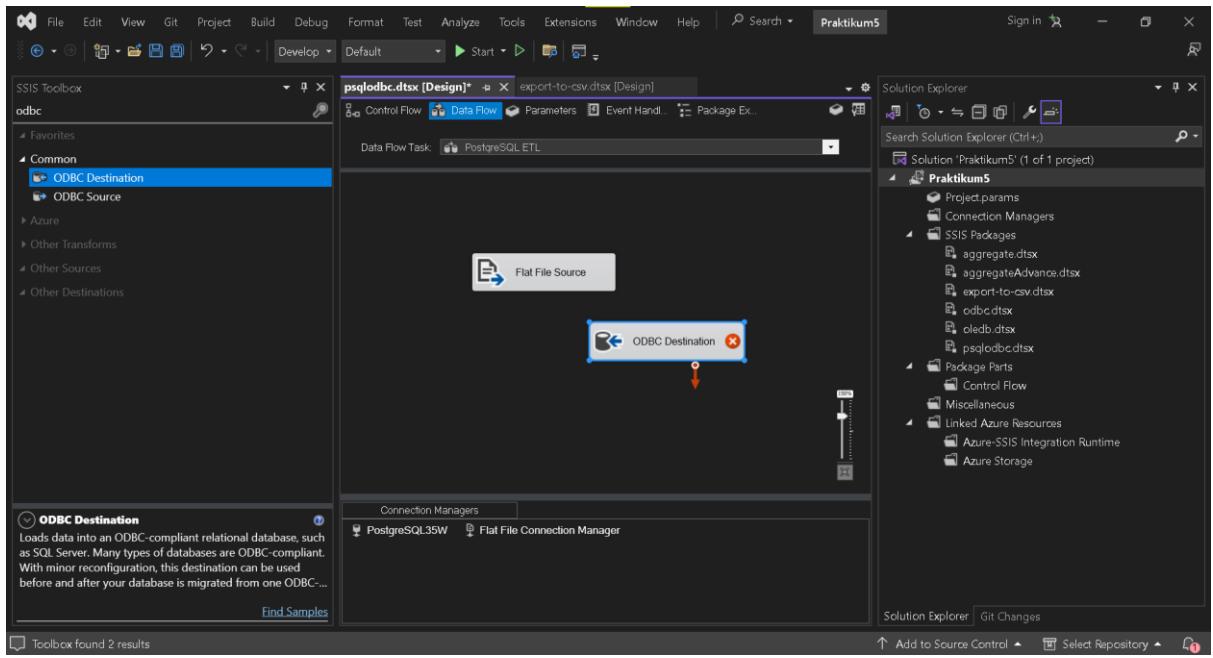
Refresh

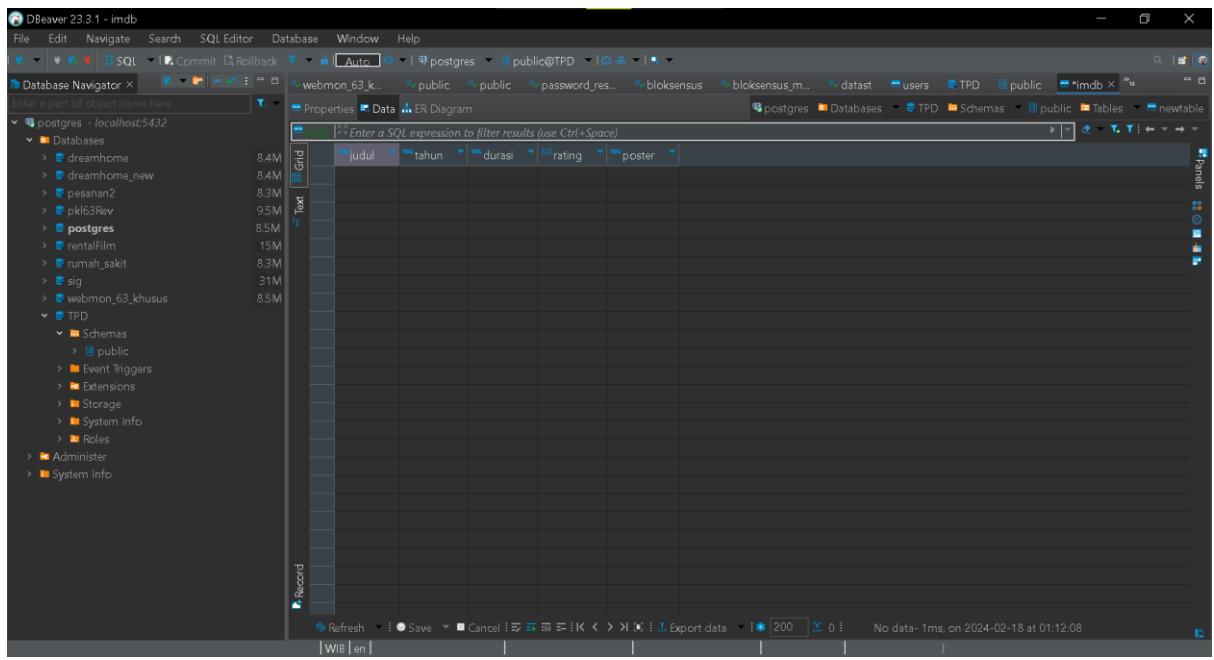
OK Cancel Help



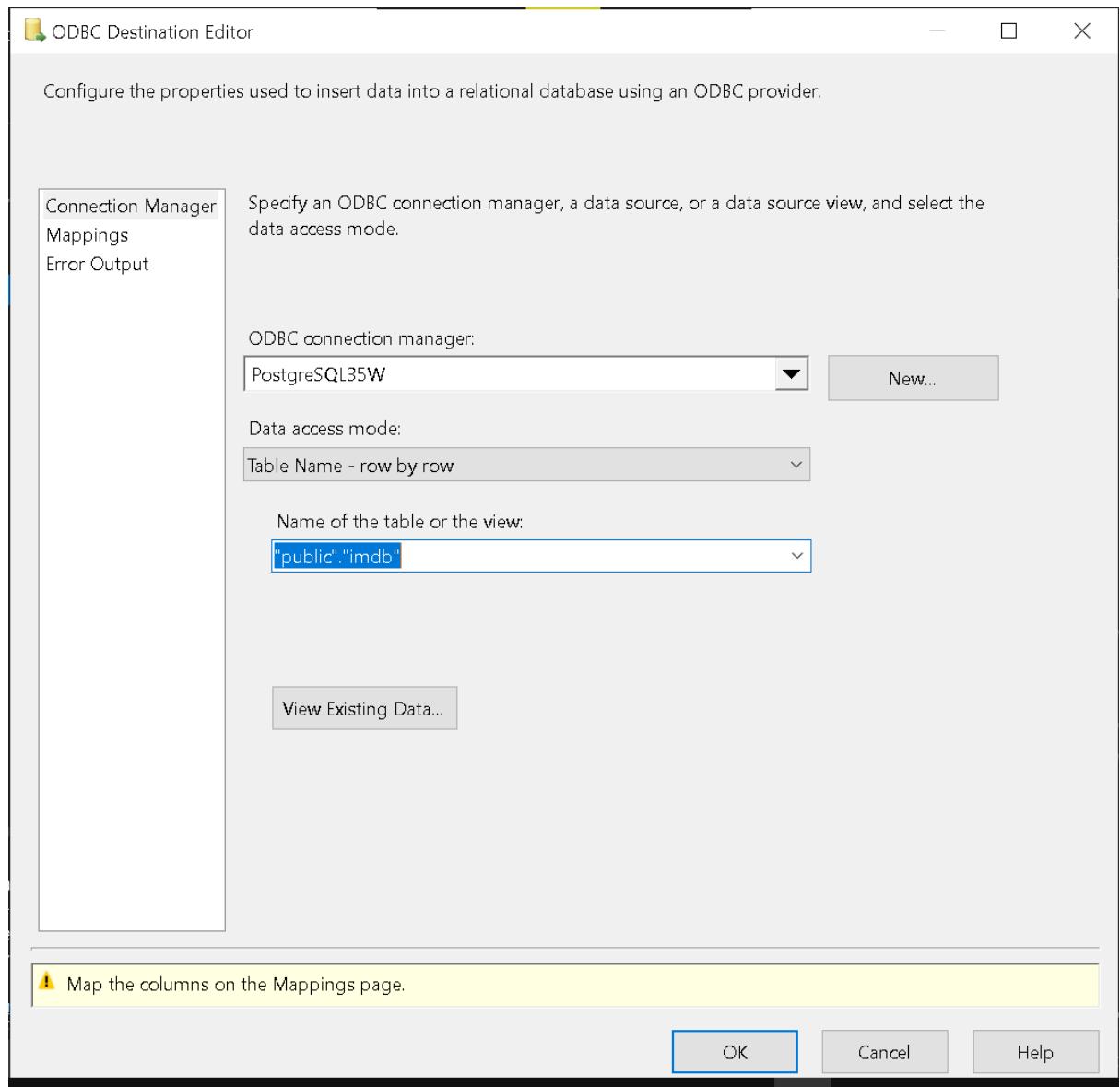


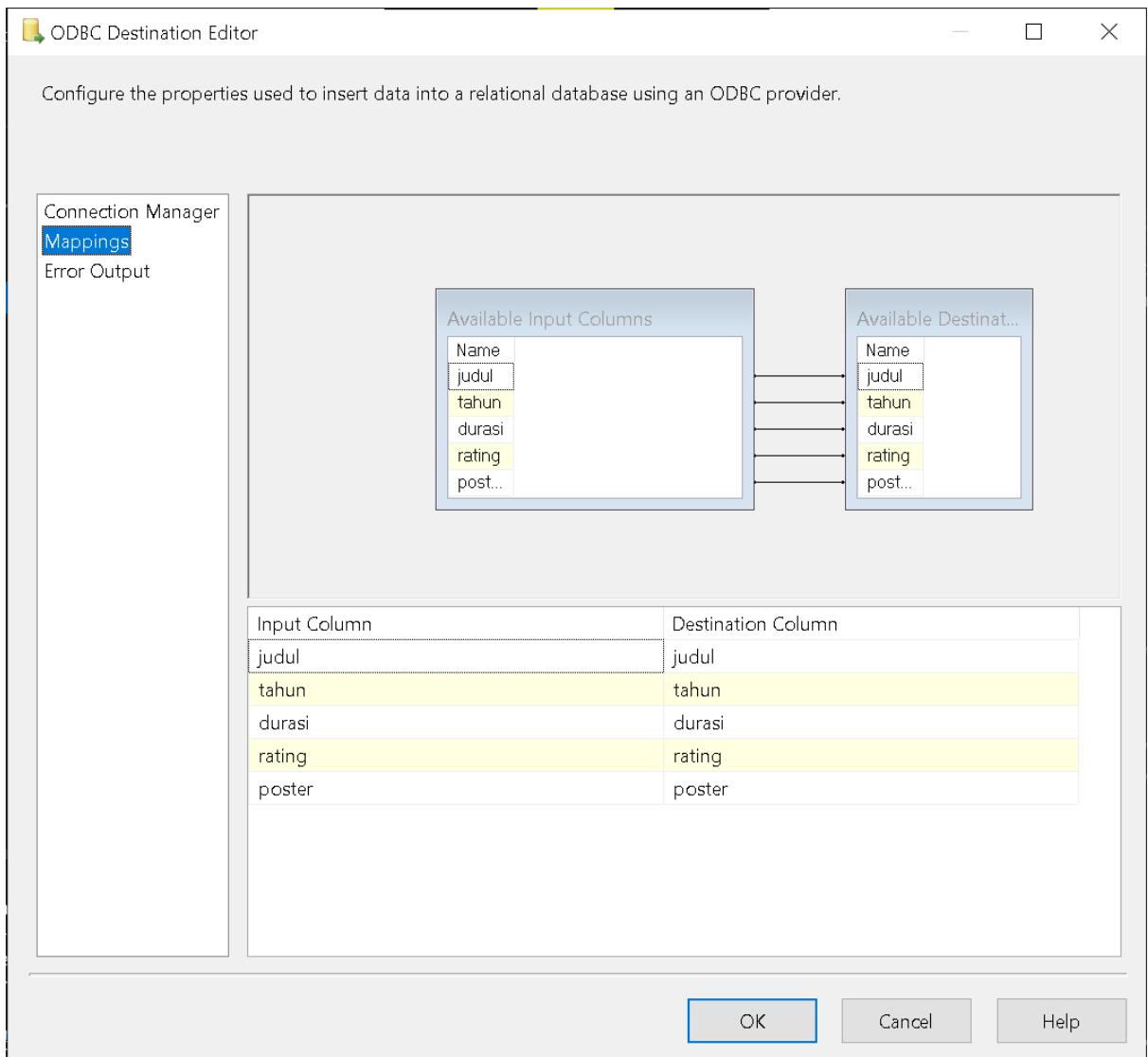
- Drag ODBC destination, hubungkan flat file source ke ODBC destination, lalu konfigurasikan ODBC destination



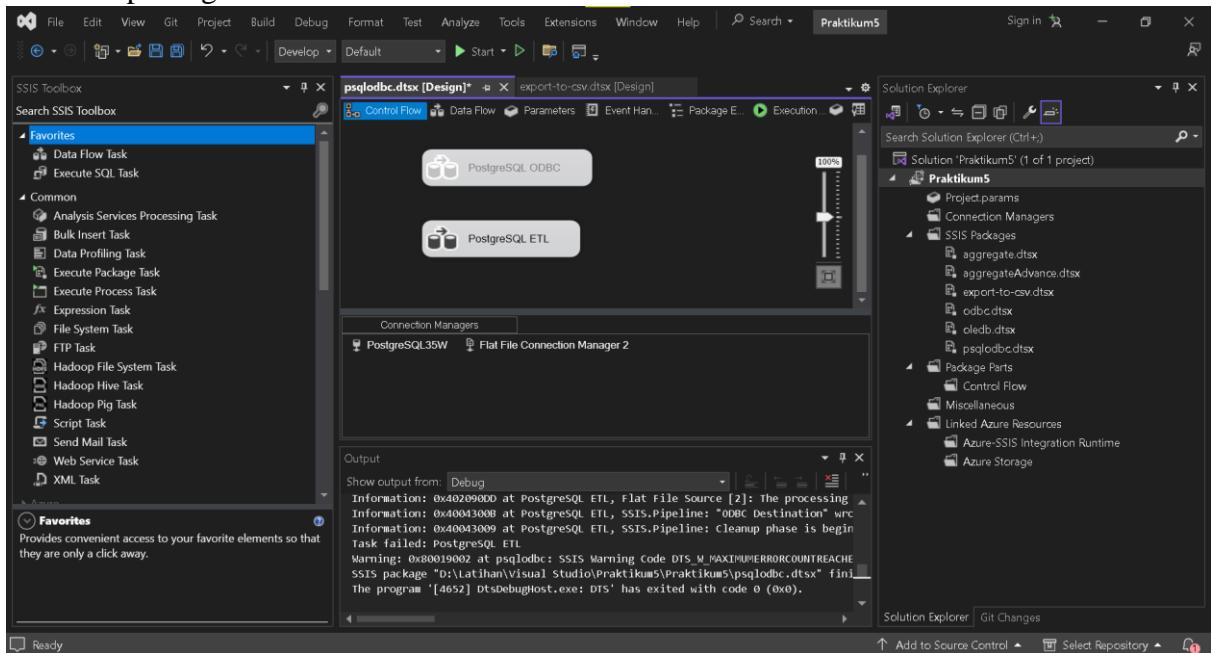


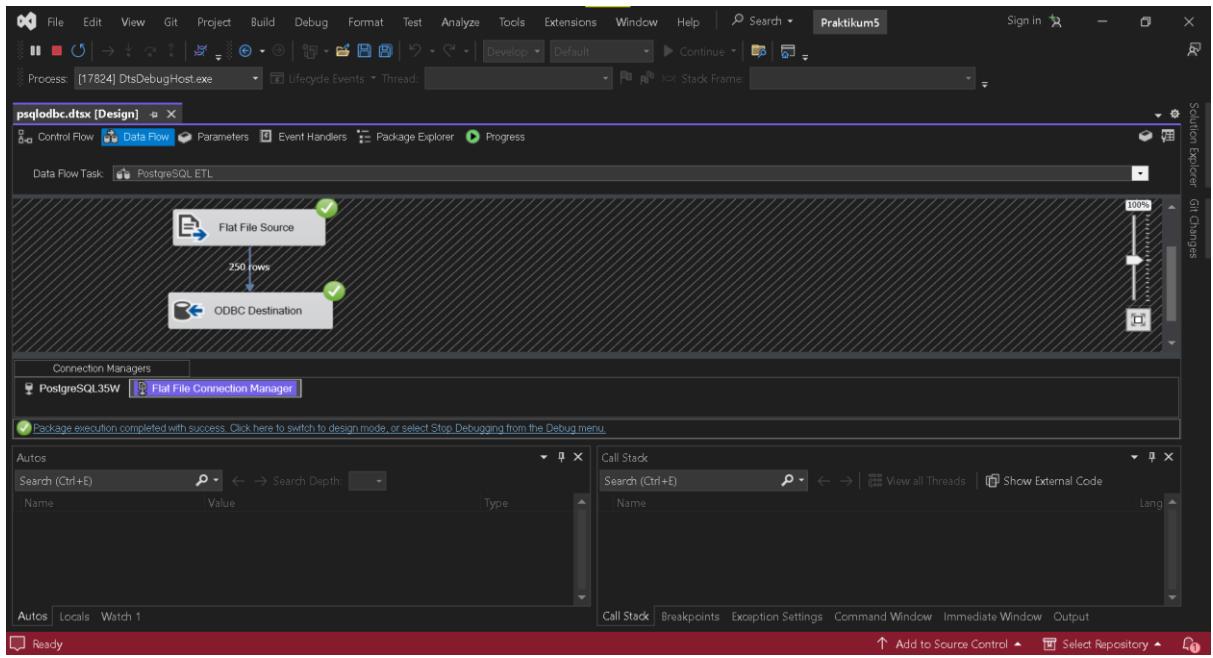
- Klik 2 kali ODBC destination lalu konfigurasikan dan cek mappings apakah sudah benar atau belum





## Jalankan package

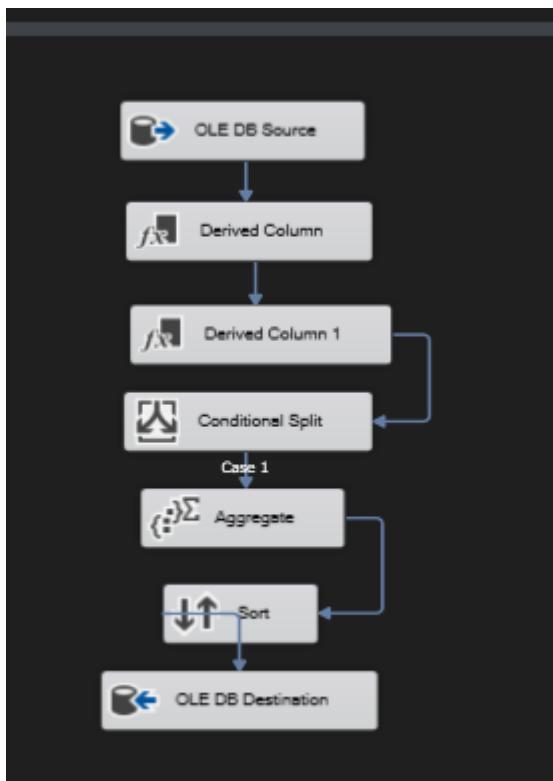


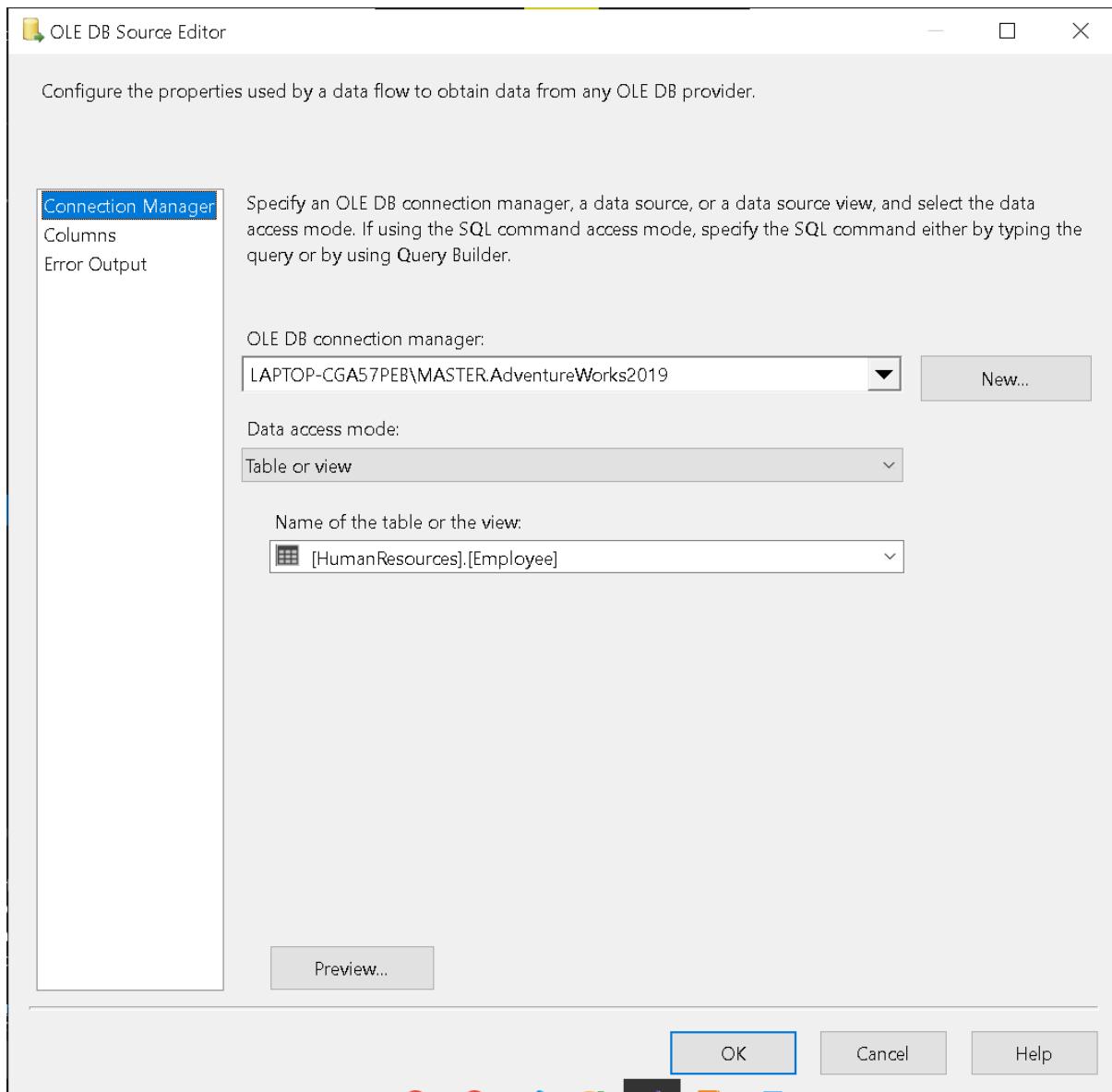


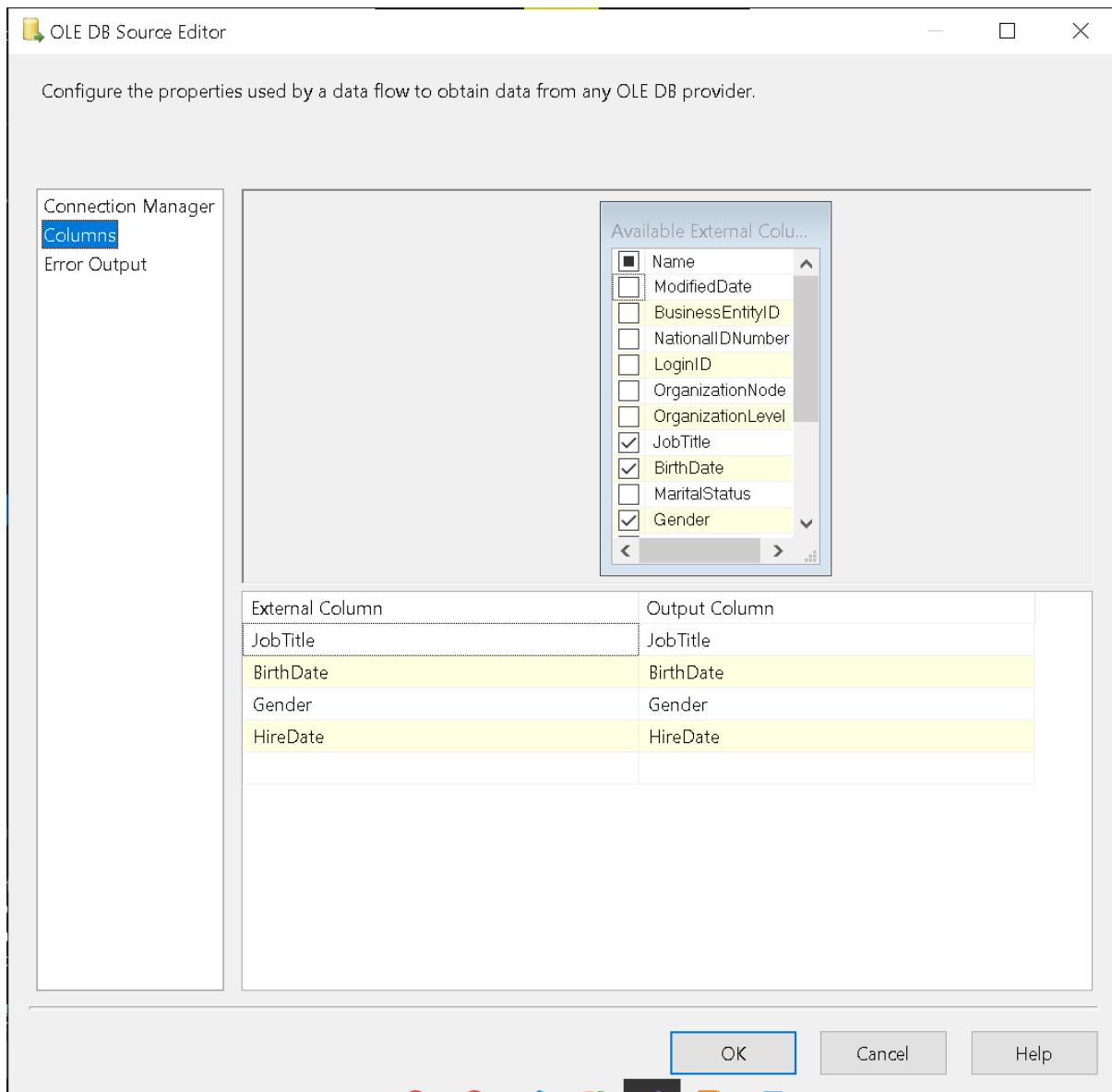
### - Hasil import data

	judul	tahun	durasi	rating	poster
1.	The Shaw 1994	2h 22m	9.3	<a href="https://m.media-amazon.com/images/M/MV5BNDExODoxYzMy2yzC00NmNlWjINDMtZDVzZWm2Mzlz">https://m.media-amazon.com/images/M/MV5BNDExODoxYzMy2yzC00NmNlWjINDMtZDVzZWm2Mzlz</a>	
2.	The Godft 1972	2h 55m	9.2	<a href="https://m.media-amazon.com/images/M/MV5BMjYwNjYxNmUyTAwNI00MTyxWlmNWytzQDYZtK3">https://m.media-amazon.com/images/M/MV5BMjYwNjYxNmUyTAwNI00MTyxWlmNWytzQDYZtK3</a>	
3.	The Dark I2008	2h 32m	9	<a href="https://m.media-amazon.com/images/M/MV5BMTMxNTMvCDMNF5BM8snBrXfzTzwDAyMtk2K3">https://m.media-amazon.com/images/M/MV5BMTMxNTMvCDMNF5BM8snBrXfzTzwDAyMtk2K3</a>	
4.	The Godft 1974	3h 22m	9	<a href="https://m.media-amazon.com/images/M/MV5BMWMwMjQzZtY2JlNC00ZWlWlyDgNDkZDQ2YjRjA">https://m.media-amazon.com/images/M/MV5BMWMwMjQzZtY2JlNC00ZWlWlyDgNDkZDQ2YjRjA</a>	
5.	12 Angry 1957	1h 36m	9	<a href="https://m.media-amazon.com/images/M/MV5BNDE4OTMxMtcNmRhYy00NW2LTg3YzltYTikM2JwOTU5">https://m.media-amazon.com/images/M/MV5BNDE4OTMxMtcNmRhYy00NW2LTg3YzltYTikM2JwOTU5</a>	
6.	Schindler's 1993	3h 15m	9	<a href="https://m.media-amazon.com/images/M/MV5BZGJkZDlZtU1TBZl00MTRUWfM2h1y2EwMWZl">https://m.media-amazon.com/images/M/MV5BZGJkZDlZtU1TBZl00MTRUWfM2h1y2EwMWZl</a>	
7.	The Lord r2003	3h 21m	9	<a href="https://m.media-amazon.com/images/M/MV5BnA5ZDNzZWMtM2NhNs00NDJlTk4NDltYTrm2EwMWZl">https://m.media-amazon.com/images/M/MV5BnA5ZDNzZWMtM2NhNs00NDJlTk4NDltYTrm2EwMWZl</a>	
8.	Pulp Ficti 1994	2h 34m	8.9	<a href="https://m.media-amazon.com/images/M/MV5BNgJjM3Nzl1NWlizM00MTgxLWlONTctMz4M2V0tDjZv">https://m.media-amazon.com/images/M/MV5BNgJjM3Nzl1NWlizM00MTgxLWlONTctMz4M2V0tDjZv</a>	
9.	The Rho 2001	2h 58m	8.9	<a href="https://m.media-amazon.com/images/M/MV5BZGJkZDlZtU1TBZl00MTRUWfM2h1y2EwMWZl">https://m.media-amazon.com/images/M/MV5BZGJkZDlZtU1TBZl00MTRUWfM2h1y2EwMWZl</a>	
10.	The Geo 1966	2h 58m	8.8	<a href="https://m.media-amazon.com/images/M/MV5BnhJyNmNkZgitM2NhYy00MjlmTk5NmQtNjg1NmM2ODU4C">https://m.media-amazon.com/images/M/MV5BnhJyNmNkZgitM2NhYy00MjlmTk5NmQtNjg1NmM2ODU4C</a>	
11.	Forrest C 1994	2h 22m	8.8	<a href="https://m.media-amazon.com/images/M/MV5BNWlwODRzZtY2Jz3S00Yzg1LWhNzYtVmZhyNmU1">https://m.media-amazon.com/images/M/MV5BNWlwODRzZtY2Jz3S00Yzg1LWhNzYtVmZhyNmU1</a>	
12.	Fight Clu 1999	2h 19m	8.8	<a href="https://m.media-amazon.com/images/M/MV5BnhJyNmExNTkyjQzTcdMC00YTVjTgZTEZWMwOwYyZON">https://m.media-amazon.com/images/M/MV5BnhJyNmExNTkyjQzTcdMC00YTVjTgZTEZWMwOwYyZON</a>	
13.	The Lord 2002	2h 59m	8.8	<a href="https://m.media-amazon.com/images/M/MV5BZGMxZdJzYmE2Nl00ZtdkLWl5NTgtNjlmJiBnJzU2Mm">https://m.media-amazon.com/images/M/MV5BZGMxZdJzYmE2Nl00ZtdkLWl5NTgtNjlmJiBnJzU2Mm</a>	
14.	Inceptor 2010	2h 28m	8.8	<a href="https://m.media-amazon.com/images/M/MV5BnhJyNmExNTkyjQzNf5BMSbanExKfZtzwntISOTM0Mw@.">https://m.media-amazon.com/images/M/MV5BnhJyNmExNTkyjQzNf5BMSbanExKfZtzwntISOTM0Mw@.</a>	
15.	Star War 1980	2h 4m	8.7	<a href="https://m.media-amazon.com/images/M/MV5BnhYmU1NDrNdgZmhiM00N_zmLtg5NgltZDNjU5NT14OT">https://m.media-amazon.com/images/M/MV5BnhYmU1NDrNdgZmhiM00N_zmLtg5NgltZDNjU5NT14OT</a>	
16.	The Matr 1999	2h 16m	8.7	<a href="https://m.media-amazon.com/images/M/MV5BnhQzOTigOTAnDQ0Z0ZtVlWl0MTetMDlZNkzNjNtQ">https://m.media-amazon.com/images/M/MV5BnhQzOTigOTAnDQ0Z0ZtVlWl0MTetMDlZNkzNjNtQ</a>	
17.	Goodfell 1990	2h 25m	8.7	<a href="https://m.media-amazon.com/images/M/MV5BnhQzExMDgrN2qy00zW1LW4zQzWjWmJnblZGe">https://m.media-amazon.com/images/M/MV5BnhQzExMDgrN2qy00zW1LW4zQzWjWmJnblZGe</a>	
18.	One Flev 1975	2h 13m	8.7	<a href="https://m.media-amazon.com/images/M/MV5BZAO0WvhOTAtWQxNl00yZnlWl4AZtYnfjZtEYjnlNDVl">https://m.media-amazon.com/images/M/MV5BZAO0WvhOTAtWQxNl00yZnlWl4AZtYnfjZtEYjnlNDVl</a>	
19.	Se7en 1995	2h 7m	8.6	<a href="https://m.media-amazon.com/images/M/MV5B0TUwODMsMTzQzZm000TktLtg3NWUuNnVmtazTN">https://m.media-amazon.com/images/M/MV5B0TUwODMsMTzQzZm000TktLtg3NWUuNnVmtazTN</a>	
20.	It's a Wc 1946	2h 10m	8.6	<a href="https://m.media-amazon.com/images/M/MV5Bzh4NDZhZWmNGEzYs002ZWU2LThM2h1y2EwMWZl">https://m.media-amazon.com/images/M/MV5Bzh4NDZhZWmNGEzYs002ZWU2LThM2h1y2EwMWZl</a>	
21.	Interstell 2014	2h 49m	8.7	<a href="https://m.media-amazon.com/images/M/MV5BZgkTU3DkN2kOS00OgEyLWfmMktYf2MmZknWYc">https://m.media-amazon.com/images/M/MV5BZgkTU3DkN2kOS00OgEyLWfmMktYf2MmZknWYc</a>	
22.	Seven St 1954	3h 27m	8.6	<a href="https://m.media-amazon.com/images/M/MV5BnhQz15NMWtMjNIN00ZtjhjLWl4NzQndI4M2406M1y/">https://m.media-amazon.com/images/M/MV5BnhQz15NMWtMjNIN00ZtjhjLWl4NzQndI4M2406M1y/</a>	
23.	The Silen 1991	1h 58m	8.6	<a href="https://m.media-amazon.com/images/M/MV5BnhJyNmJk0ZmEnNjhMio0yZfilWE1MmEtY2M1ZmMGWwf">https://m.media-amazon.com/images/M/MV5BnhJyNmJk0ZmEnNjhMio0yZfilWE1MmEtY2M1ZmMGWwf</a>	
24.	Saving P 1998	2h 49m	8.6	<a href="https://m.media-amazon.com/images/M/MV5Bzh4NDM4MwiZtWjQCO0ZDRlLthmYtaM2ISNzUmNmNl">https://m.media-amazon.com/images/M/MV5Bzh4NDM4MwiZtWjQCO0ZDRlLthmYtaM2ISNzUmNmNl</a>	
25.	City of G 2002	2h 10m	8.6	<a href="https://m.media-amazon.com/images/M/MV5BnhJyNmC0Nz7mTk1YtrnAvhTlIM2Nz">https://m.media-amazon.com/images/M/MV5BnhJyNmC0Nz7mTk1YtrnAvhTlIM2Nz</a>	

4. Disini kita akan mentransformasi tabel HumanResources.Employee dari database AdventureWorks2019 untuk mendapatkan data terkait posisi kerja dengan rata-rata lama kerja pegawai (mulai dari awal jadi pegawai) dan usia rata rata pegawainya yang berjenis kelamin perempuan. SSIS Toolbox yang digunakan untuk transformasi disini ada derived column untuk membuat kolom baru yaitu umur dan lama kerja yang dihitung dari tanggal lahir dan tanggal di hire , conditional split untuk memisahkan case gender = F atau perempuan, aggregate untuk mengelompokkan berdasarkan jobTitle dan menghitung rata rata lama kerja dan umur tiap job title. Serta sort untuk mengurutkan dari umur yang terkecil. Berikut prosesnya







Derived Column Transformation Editor

Specify the expressions used to create new column values, and indicate whether the values update existing columns or populate new columns.

Variables and Parameters

Columns

Mathematical Functions

String Functions

Date/Time Functions

NULL Functions

Type Casts

Operators

Description:

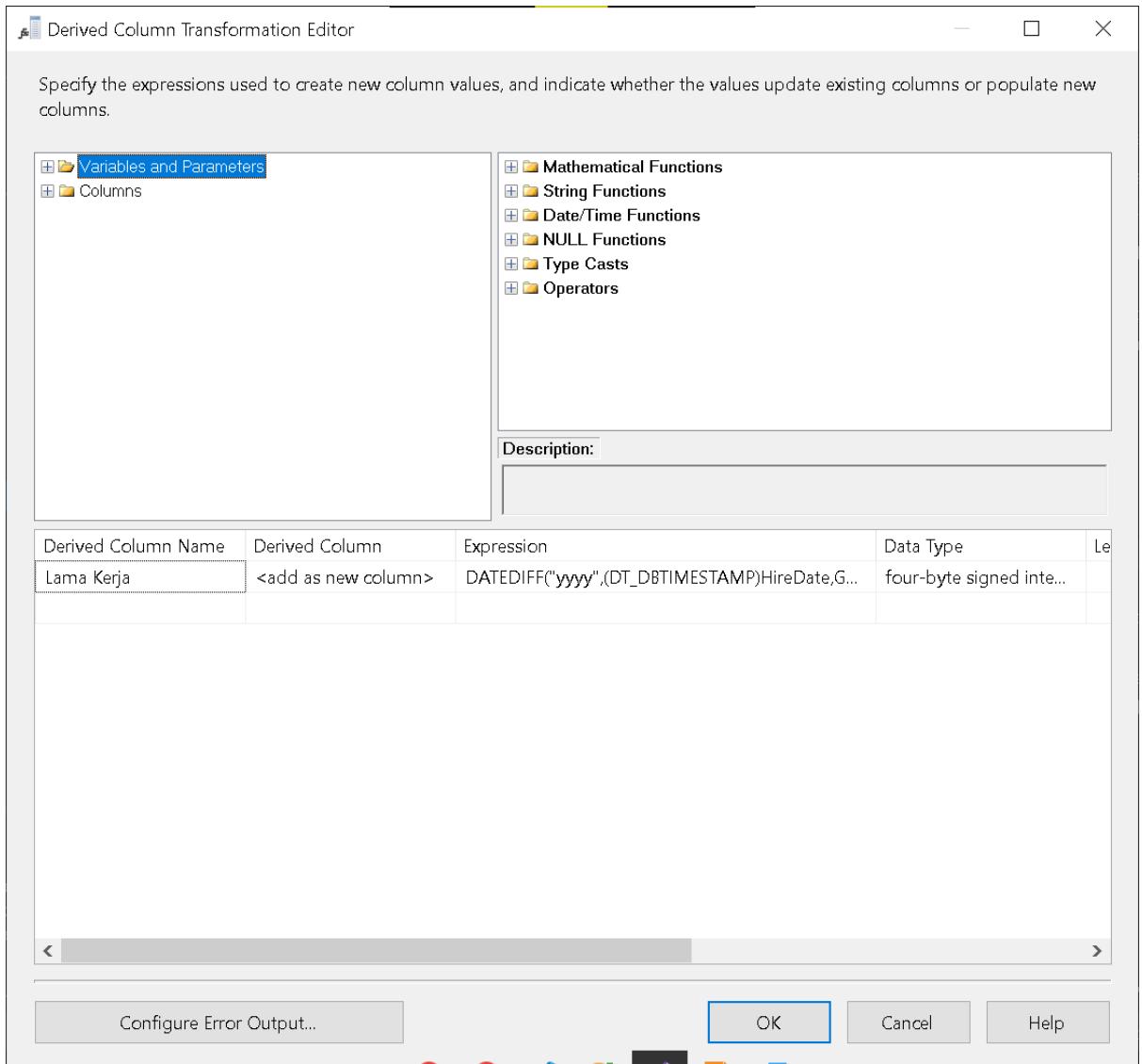
Derived Column Name	Derived Column	Expression	Data Type	Length
Age	<add as new column>	DATEDIFF("yyyy",(DT_DBTIMESTAMP)BirthDate,GetDate())	four-byte signed integer	4

Configure Error Output...

OK

Cancel

Help



 Conditional Split Transformation Editor

Specify the conditions used to direct input rows to specific outputs. If an input row matches no condition, the row is directed to a default output.

-  Variables and Parameters
-  Columns
  - JobTitle
  - BirthDate
  - Gender
  - HireDate
  - Age
  - Lama Kerja

-  Mathematical Functions
-  String Functions
-  Date/Time Functions
-  NULL Functions
-  Type Casts
-  Operators

Description:

Order	Output Name	Condition
1	Case 1	[Gender] == "F"



Default output name:

Conditional Split Default Output

Configure Error Output...

OK

Cancel

Help

## $\Sigma$ Aggregate Transformation Editor

- □ ×

Aggregations Advanced

Configure the properties used to perform group by operations and to calculate aggregate values. Optionally, apply comparison options to the operation. To configure multiple group by operations, click Advanced.

Advanced

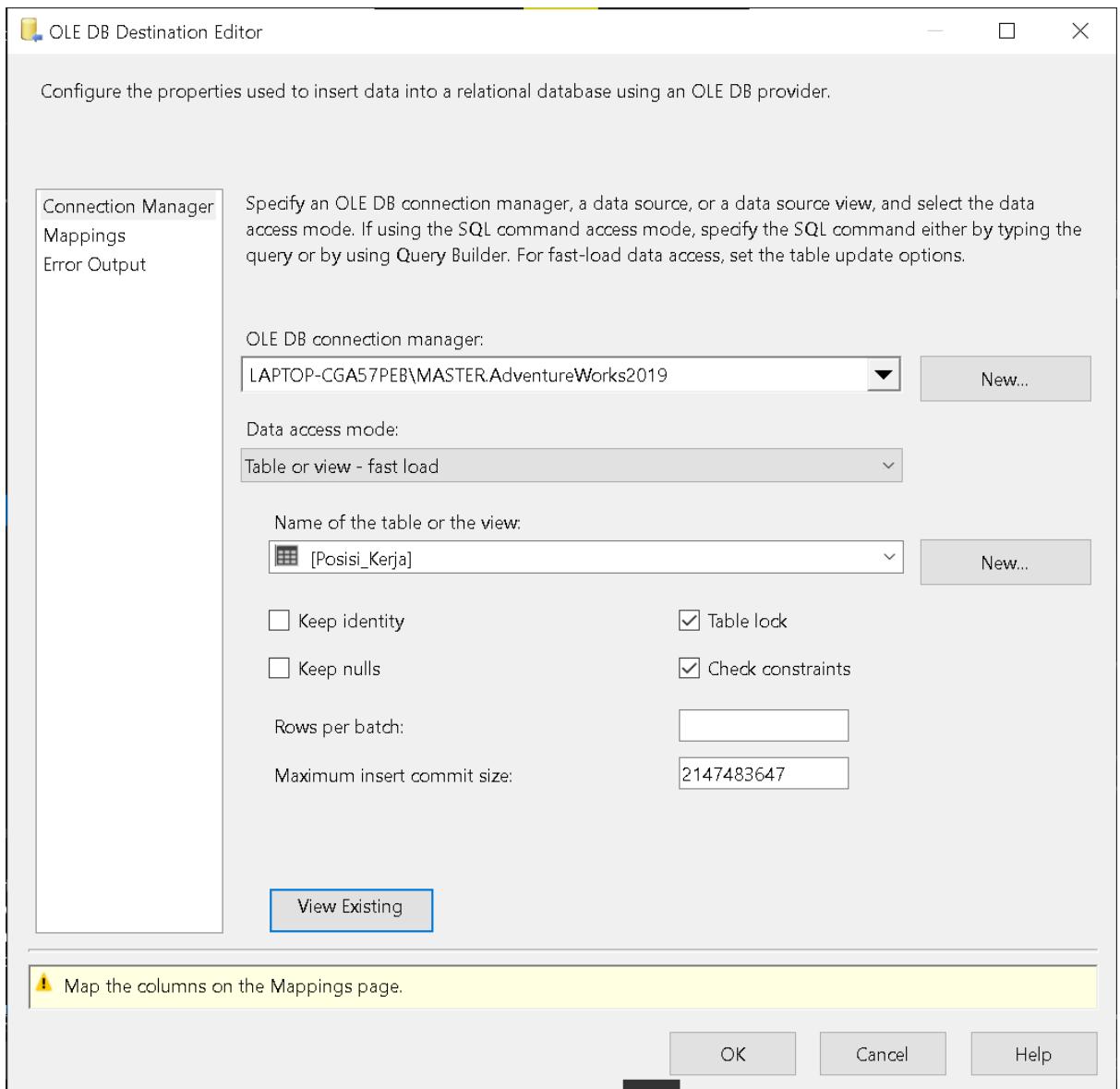
Available Input Co...	
<input checked="" type="checkbox"/>	Name
<input type="checkbox"/>	(*)
<input checked="" type="checkbox"/>	JobTitle
<input type="checkbox"/>	BirthDate
<input type="checkbox"/>	Gender
<input type="checkbox"/>	HireDate
<input checked="" type="checkbox"/>	Age
<	>
...	...

Input Column	Output Alias	Operation	Compa
JobTitle	JobTitle	Group by	
Lama Kerja	Lama Kerja	Average	
Age	Age	Average	

OK

Cancel

Help



## Sort Transformation Editor

Specify the columns to sort, and set their sort type and their sort order. All nonselected columns are copied unchanged.

Available Input Columns		
	Name	Pass T...
<input type="checkbox"/>	JobTitle	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Lama Kerja	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	Age	<input type="checkbox"/>

Input Column	Output Alias	Sort Type	Sort Order	Com
Age	Age	ascending	1	

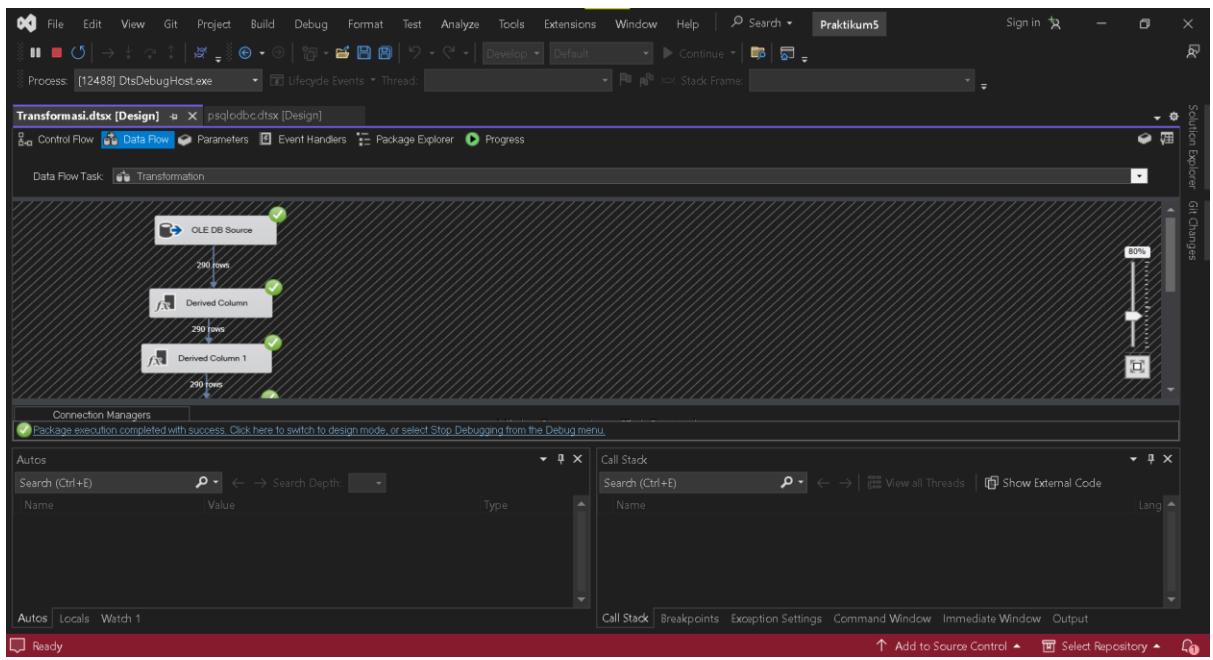


Remove rows with duplicate sort values

OK

Cancel

Help



## Hasil Transformasi:

```

SELECT TOP (1000) [JobTitle]
      ,[Lama Kerja]
      ,[Age]
  FROM [AdventureWorks2019].[dbo].[Posisi_Kerja]
  
```

JobTitle	Lama Kerja	Age
Tool Designer	14	35
Production Technician - WC50	15.28571428571429	36.8571428571429
Production Technician - WC40	15	37
Network Manager	15	40
Finance Manager	16	40
Production Supervisor - WC20	15	40
Benefits Specialist	16	40
Production Supervisor - WC40	15	41
Research and Development Engineer	15.5	41.5
Production Technician - WC30	15.6	41.6
Production Technician - WC60	15	41.83333333333333
Application Specialist	15.5	42.5
Production Supervisor - WC30	15	43
Stocker	16	43
Production Technician - WC45	15.2	44
Production Supervisor - WC45	15	44
Accounts Payable Specialist	15	45
Production Technician - WC20	14.833333333333	45.16666666666667
Purchasing Manager	13	46
Purchasing Assistant	14	46

Query executed successfully.