



Pada modul praktikum ketiga mengenai mata kuliah big data, kita akan mempelajari bagaimana implementasi Data Multidimensi dengan *Star Schema*. Disini praktikum masih menggunakan **Database MySQL**.

Untuk database silakan menggunakan database pada file dwlatihan.sql (ERD ada di halaman terakhir materi ini) pada link berikut ini.

<https://drive.google.com/file/d/1xU8G3PPkm-PRKj2N9aLIHY1tm1n2Rtzc/view?usp=sharing>

Silakan dilakukan import file sql tersebut ke dalam Database MySQL dengan command Prompt (Windows) atau terminal (Unix). Berikut langkah-langkahnya:

A. Persiapan

Import file sql dwlatihan.sql ke dalam database MySQL.

```
Command Prompt - mysql -u root -p -P 3310

C:\Program Files\MySQL\MySQL Server 8.0\bin>mysql -u root -p -P 3310
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 10
Server version: 8.0.18 MySQL Community Server - GPL

Copyright (c) 2000, 2019, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database dwlatihan;
Query OK, 1 row affected (0.45 sec)

mysql> use dwlatihan;
Database changed
mysql> source G:\STT NF\2022\Ajar 2022_2023_Ganjil\Big Data\dwlatihan.sql
```

B. SQL Star Schema

a. Tampilkan masing-masing data pada tabel di database tersebut dengan query berikut :

- *select * from customer;*

```
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 12
Server version: 8.0.18 MySQL Community Server - GPL

Copyright (c) 2000, 2019, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use dwlatihan;
Database changed
mysql> select * from customer;
```

ID	FirstName	LastName	City	Country	Phone
1	Maria	Anders	Berlin	Germany	030-0074321
2	Ana	Trujillo	Mexico D.F.	Mexico	(5) 555-4729
3	Antonio	Moreno	Mexico D.F.	Mexico	(5) 555-3932
4	Thomas	Hardy	London	UK	(171) 555-7788
5	Christina	Berglund	Luleå	Sweden	0921-12 34 65
6	Hanna	Moos	Mannheim	Germany	0621-08460
7	Françoise	Citeaux	Strasbourg	France	88.60.15.31
8	Martin	Sommer	Madrid	Spain	(91) 555 22 82
9	Laurence	Lebihan	Marseille	France	91.24.45.40
10	Elizabeth	Lincoln	Tsawassen	Canada	(604) 555-4729
11	Victoria	Ashworth	London	UK	(171) 555-1212
12	Patricio	Simpson	Buenos Aires	Argentina	(1) 135-5555
13	Francisco	Chang	Mexico D.F.	Mexico	(5) 555-3392
14	Yang	Wang	Bern	Switzerland	0452-076545
15	Pedro	Afonso	Sao Paulo	Brazil	(11) 555-7647
16	Elizabeth	Brown	London	UK	(171) 555-2282
17	Sven	Ottlieb	Aachen	Germany	0241-039123
18	Janine	Labruno	Nantes	France	40.67.88.88
19	Ann	Devon	London	UK	(171) 555-0297
20	Roland	Mendel	Graz	Austria	7675-3425
21	Aria	Cruz	Sao Paulo	Brazil	(11) 555-9857
22	Diego	Roel	Madrid	Spain	(91) 555 94 44
23	Martine	Rancière	Lille	France	20.16.10.16

- *select * from product;*

```
mysql> select * from product;
```

ID	ProductName	SupplierID	UnitPrice	Package	IsDiscontinued
1	Chai	1	18.00	10 boxes x 20 bags	
2	Chang	1	19.00	24 - 12 oz bottles	
3	Aniseed Syrup	1	10.00	12 - 550 ml bottles	
4	Chef Anton's Cajun Seasoning	2	22.00	48 - 6 oz jars	
5	Chef Anton's Gumbo Mix	2	21.35	36 boxes	0
6	Grandma's Boysenberry Spread	3	25.00	12 - 8 oz jars	
7	Uncle Bob's Organic Dried Pears	3	30.00	12 - 1 lb pkgs.	
8	Northwoods Cranberry Sauce	3	40.00	12 - 12 oz jars	
9	Mishi Kobe Niku	4	97.00	18 - 500 g pkgs.	0
10	Ikura	4	31.00	12 - 200 ml jars	
11	Queso Cabrales	5	21.00	1 kg pkg.	
12	Queso Manchego La Pastora	5	38.00	10 - 500 g pkgs.	
13	Konbu	6	6.00	2 kg box	
14	Tofu	6	23.25	40 - 100 g pkgs.	
15	Genen Shouyu	6	15.50	24 - 250 ml bottles	
16	Pavlova	7	17.45	32 - 500 g boxes	
17	Alice Mutton	7	39.00	20 - 1 kg tins	0
18	Carnarvon Tigers	7	62.50	16 kg pkg.	
19	Teatime Chocolate Biscuits	8	9.20	10 boxes x 12 pieces	
20	Sir Rodney's Marmalade	8	81.00	30 gift boxes	
21	Sir Rodney's Scones	8	10.00	24 pkgs. x 4 pieces	
22	Gustaf's Knackebod	9	21.00	24 - 500 g pkgs.	
23	Tunnbod	9	9.00	12 - 250 g pkgs.	
24	Guaraná Fantástica	10	4.50	12 - 355 ml cans	0
25	NuNuCa Nougat-Creme	11	14.00	20 - 450 g glasses	

- *select * from supplier;*

```
mysql> select * from supplier;
```

	Id	CompanyName	ContactName	ContactTitle	City	Country	Phone	Fax
1	1	Exotic Liquids	Charlotte Cooper	NULL	London	UK	(171) 555-2222	NULL
2	2	New Orleans Cajun Delights	Shelley Burke	NULL	New Orleans	USA	(100) 555-4822	NULL
3	3	Grandma Kelly's Homestead	Regine Murphy	NULL	Ann Arbor	USA	(313) 555-5735	(313) 555-3349
4	4	Tokyo Traders	Yoshi Nagase	NULL	Tokyo	Japan	(03) 3555-5011	NULL
5	5	Cooperativa de Quesos 'Las Cabras'	Antonio del Valle Saavedra	NULL	Oviedo	Spain	(98) 598 76 54	NULL
6	6	Mayumi's	Mayumi Ohno	NULL	Osaka	Japan	(06) 431-7877	NULL
7	7	Pavlova, Ltd.	Ian Devling	NULL	Melbourne	Australia	(03) 444-2343	(03) 444-6588
8	8	Specialty Biscuits, Ltd.	Peter Wilson	NULL	Manchester	UK	(161) 555-4448	NULL
9	9	PB Knäckebröd AB	Lars Peterson	NULL	Göteborg	Sweden	031-987 65 43	031-987 65 01
10	10	Refrescos Americanas LTDA	Carlos Diaz	NULL	Sao Paulo	Brazil	(11) 555 4640	NULL
11	11	Heil Suwaren GmbH & Co. KG	Petra Winkler	NULL	Berlin	Germany	(030) 9984510	NULL
12	12	Plutzer Lebensmittelgroßmärkte AG	Martin Bein	NULL	Frankfurt	Germany	(069) 992755	NULL
13	13	Nord-Ost-Fisch Handelsgesellschaft mbH	Sven Petersen	NULL	Cuxhaven	Germany	(04721) 8713	(04721) 8714
14	14	Formaggi Fortini s.r.l.	Elio Rossi	NULL	Ravenna	Italy	(0544) 60323	(0544) 60603
15	15	Norske Meierier	Beate Vileid	NULL	Sandvika	Norway	(0)2-953010	NULL
16	16	Bigfoot Breweries	Cheryl Saylor	NULL	Bend	USA	(503) 555-9931	NULL
17	17	Svensk Sjöföda AB	Michael Björn	NULL	Stockholm	Sweden	08-123 45 67	NULL
18	18	Aux joyeux ecclesiastiques	Guylene Nodier	NULL	Paris	France	(1) 03.03.00.60	(3) 03.03.00.62
19	19	New England Seafood Cannery	Robb Merchant	NULL	Boston	USA	(617) 555-3267	(617) 555-3389
20	20	Leka Trading	Chandra Leka	NULL	Singapore	Singapore	555-8787	NULL
21	21	Lyngbysild	Niels Petersen	NULL	Lyngby	Denmark	43844188	43844115
22	22	Zaanse Snoepfabriek	Dirk Luchte	NULL	Zaandam	Netherlands	(12345) 1212	(12345) 1210
23	23	Karkki Oy	Anne Heikkinen	NULL	Lappeenranta	Finland	(953) 10956	NULL
24	24	G'day, Mate	Wendy Mackenzie	NULL	Sydney	Australia	(02) 555-5914	(02) 555-4873
25	25	Ma Maison	Jean-Guy Lauzon	NULL	Montreal	Canada	(514) 555-9022	NULL
26	26	Pasta Buttini s.r.l.	Giovanni Giudici	NULL	Salerno	Italy	(089) 6547665	(089) 6547667
27	27	Escargots Nouveaux	Marie Delamare	NULL	Montceau	France	85.57.00.07	NULL
28	28	Gai pâturage	Eliane Hoz	NULL	Annecy	France	38.76.98.06	38.76.98.58
29	29	Forêts vierges	Chantal Goulet	NULL	Ste-Hyacinthe	Canada	(514) 555-2955	(514) 555-2921

29 rows in set (0.08 sec)

- *select * from orders;*

```
mysql> select * from orders;
```

	Id	OrderDate	OrderNumber	CustomerId	TotalAmount
1	1	2019-03-12 16:26:49	542378	85	440.00
2	2	2019-03-12 16:26:49	542379	79	1863.40
3	3	2019-03-12 16:26:49	542380	34	1813.00
4	4	2019-03-12 16:26:49	542381	84	670.80
5	5	2019-03-12 16:26:49	542382	76	3730.00
6	6	2019-03-12 16:26:49	542383	34	1444.80
7	7	2019-03-12 16:26:49	542384	14	625.20
8	8	2019-03-12 16:26:49	542385	68	2490.50
9	9	2019-03-12 16:26:49	542386	88	517.80
10	10	2019-03-12 16:26:49	542387	35	1119.90
11	11	2019-03-12 16:26:49	542388	20	2018.60
12	12	2019-03-12 16:26:49	542389	13	100.80
13	13	2019-03-12 16:26:49	542390	56	1746.20
14	14	2019-03-12 16:26:49	542391	61	448.00
15	15	2019-03-12 16:26:49	542392	65	624.80
16	16	2019-03-12 16:26:49	542393	20	2464.80
17	17	2019-03-12 16:26:49	542394	24	724.50
18	18	2019-03-12 16:26:49	542395	7	1176.00
19	19	2019-03-12 16:26:49	542396	87	364.80
20	20	2019-03-12 16:26:49	542397	25	4031.00
21	21	2019-03-12 16:26:49	542398	33	1101.20
22	22	2019-03-12 16:26:49	542399	89	676.00
23	23	2019-03-12 16:26:49	542400	87	1376.00
24	24	2019-03-12 16:26:49	542401	75	48.00
25	25	2019-03-12 16:26:49	542402	65	1456.00
26	26	2019-03-12 16:26:49	542403	63	2142.40
27	27	2019-03-12 16:26:49	542404	85	538.60
28	28	2019-03-12 16:26:49	542405	49	307.20
29	29	2019-03-12 16:26:49	542406	80	420.00
30	30	2019-03-12 16:26:49	542407	52	1200.80

- *select * from orderitem;*

```
mysql> select * from orderitem;
```

Id	OrderId	ProductId	UnitPrice	Quantity
1	1	11	14.00	12
2	1	42	9.80	10
3	1	72	34.80	5
4	2	14	18.60	9
5	2	51	42.40	40
6	3	41	7.70	10
7	3	51	42.40	35
8	3	65	16.80	15
9	4	22	16.80	6
10	4	57	15.60	15
11	4	65	16.80	20
12	5	20	64.80	40
13	5	33	2.00	25
14	5	60	27.20	40
15	6	31	10.00	20
16	6	39	14.40	42
17	6	49	16.00	40
18	7	24	3.60	15
19	7	55	19.20	21
20	7	74	8.00	21
21	8	2	15.20	20
22	8	16	13.90	35
23	8	36	15.20	25
24	8	59	44.00	30
25	9	53	26.20	15

- b. Tampilkan daftar nama dan kota dari customer beserta produk yang dipesan dan nomor serta tgl pesanan.

SELECT

CONCAT(customer.FirstName, ' ', customer.LastName) AS nama,

customer.city AS kota, orders.OrderNumber, orders.OrderDate, product.ProductName

FROM customer

INNER JOIN orders ON customer.Id=orders.CustomerId

INNER JOIN orderitem ON orders.Id=orderitem.OrderId

INNER JOIN product ON product.Id=orderitem.ProductId;

```
mysql> SELECT
-> CONCAT(customer.FirstName, ' ', customer.LastName) AS nama,
-> customer.city AS kota, orders.OrderNumber, orders.OrderDate, product.ProductName
-> FROM customer
-> INNER JOIN orders ON customer.Id=orders.CustomerId
-> INNER JOIN orderitem ON orders.Id=orderitem.OrderId
-> INNER JOIN product ON product.Id=orderitem.ProductId;
```

nama	kota	OrderNumber	OrderDate	ProductName
Maria Anders	Berlin	542773	2019-03-12 16:26:51	Rossle Sauerkraut
Maria Anders	Berlin	542773	2019-03-12 16:26:51	Chantreuse verte
Maria Anders	Berlin	542773	2019-03-12 16:26:51	Spegesild
Maria Anders	Berlin	542822	2019-03-12 16:26:51	Veggie-spread
Maria Anders	Berlin	542832	2019-03-12 16:26:51	Aniseed Syrup
Maria Anders	Berlin	542832	2019-03-12 16:26:51	Lakkalikoori
Maria Anders	Berlin	542965	2019-03-12 16:26:51	Raclette Courdavault
Maria Anders	Berlin	542965	2019-03-12 16:26:51	Original Frankfurter grune Se
Maria Anders	Berlin	543082	2019-03-12 16:26:52	Grandma's Boysenberry Spread
Maria Anders	Berlin	543082	2019-03-12 16:26:52	Rossle Sauerkraut
Maria Anders	Berlin	543141	2019-03-12 16:26:52	Escargots de Bourgogne
Maria Anders	Berlin	543141	2019-03-12 16:26:52	Flotemysost
Ana Trujillo	Mexico D.F.	542438	2019-03-12 16:26:49	Gudbrandsdalsost
Ana Trujillo	Mexico D.F.	542438	2019-03-12 16:26:49	Outback Lager
Ana Trujillo	Mexico D.F.	542755	2019-03-12 16:26:50	Tofu
Ana Trujillo	Mexico D.F.	542755	2019-03-12 16:26:50	Singaporean Hokkien Fried Mee
Ana Trujillo	Mexico D.F.	542755	2019-03-12 16:26:50	Camembert Pierrot
Ana Trujillo	Mexico D.F.	542889	2019-03-12 16:26:51	Mascarpone Fabioli
Ana Trujillo	Mexico D.F.	543056	2019-03-12 16:26:52	Queso Cabrales
Ana Trujillo	Mexico D.F.	543056	2019-03-12 16:26:52	Konbu
Ana Trujillo	Mexico D.F.	543056	2019-03-12 16:26:52	Teatime Chocolate Biscuits
Ana Trujillo	Mexico D.F.	543056	2019-03-12 16:26:52	Mozzarella di Giovanni

- c. Tunjukkan hasil pemesanan setiap bulan pada tahun 2019 dikelompokkan dari nomor order.

```
SELECT month(orders.OrderDate) AS bulan,
year(orders.OrderDate) AS tahun, orders.OrderNumber, orders.OrderDate,
sum(orders.TotalAmount) AS totalorder
FROM orders
INNER JOIN orderitem ON orders.Id=orderitem.OrderId
INNER JOIN product ON product.Id=orderitem.ProductId
GROUP BY orders.OrderNumber
ORDER BY orders.OrderNumber ASC;
```

```
mysql> SELECT month(orders.OrderDate) AS bulan,
-> year(orders.OrderDate) AS tahun, orders.OrderNumber, orders.OrderDate,
-> sum(orders.TotalAmount) AS totalorder
-> FROM orders
-> INNER JOIN orderitem ON orders.Id=orderitem.OrderId
-> INNER JOIN product ON product.Id=orderitem.ProductId
-> GROUP BY orders.OrderNumber
-> ORDER BY orders.OrderNumber ASC;
```

bulan	tahun	OrderNumber	OrderDate	totalorder
3	2019	542378	2019-03-12 16:26:49	1320.00
3	2019	542379	2019-03-12 16:26:49	3726.80
3	2019	542380	2019-03-12 16:26:49	5439.00
3	2019	542381	2019-03-12 16:26:49	2012.40
3	2019	542382	2019-03-12 16:26:49	11190.00
3	2019	542383	2019-03-12 16:26:49	4334.40
3	2019	542384	2019-03-12 16:26:49	1875.60
3	2019	542385	2019-03-12 16:26:49	9962.00
3	2019	542386	2019-03-12 16:26:49	1035.60
3	2019	542387	2019-03-12 16:26:49	3359.70
3	2019	542388	2019-03-12 16:26:49	6055.80
3	2019	542389	2019-03-12 16:26:49	201.60
3	2019	542390	2019-03-12 16:26:49	6984.80
3	2019	542391	2019-03-12 16:26:49	896.00
3	2019	542392	2019-03-12 16:26:49	1874.40
3	2019	542393	2019-03-12 16:26:49	9859.20
3	2019	542394	2019-03-12 16:26:49	1449.00
3	2019	542395	2019-03-12 16:26:49	2352.00
3	2019	542396	2019-03-12 16:26:49	364.80
3	2019	542397	2019-03-12 16:26:49	12003.00
3	2019	542398	2019-03-12 16:26:49	2202.40
3	2019	542399	2019-03-12 16:26:49	1352.00
3	2019	542400	2019-03-12 16:26:49	2752.00

- d. Dimana lokasi negara pemesan tertinggi.

```
SELECT customer.Country as negara,
SUM(orders.TotalAmount) as totalorder
FROM customer INNER JOIN orders ON customer.Id=orders.CustomerId
GROUP BY customer.Country
ORDER BY totalorder desc
```

```
mysql> SELECT customer.Country as negara,
->         SUM(orders.TotalAmount) as totalorder
-> FROM customer INNER JOIN orders ON customer.Id=orders.CustomerId
-> GROUP BY customer.Country
-> ORDER BY totalorder desc
-> ;
```

negara	totalorder
USA	263566.98
Germany	244640.63
Austria	139496.63
Brazil	114968.48
France	85498.76
Venezuela	60814.89
UK	60616.51
Sweden	59523.70
Ireland	57317.39
Canada	55334.10
Belgium	35134.98
Denmark	34782.25
Switzerland	32919.50
Mexico	24073.45
Finland	19778.45
Spain	19431.89
Italy	16705.15
Portugal	12468.65
Argentina	8119.10
Norway	5735.15
Poland	3531.95

21 rows in set (0.00 sec)

- e. Selanjutnya kalian dapat telusuri lebih lanjut mengenai perintah-perintah query SQL dengan beberapa sintaks yang bisa digunakan seperti join table, order, limit, group dan lain sebagainya untuk mendapatkan informasi dari database dengan star schema. Misalnya : Produk apa yang paling banyak dipesan, Berapa jumlah total order dari customer pada negara tertentu, dan lain-lain.

Referensi

- <https://www.mysql.com/>
- <https://www.mysqltutorial.org/>

