DATA WAREHOUSE

JOBSHEET 2

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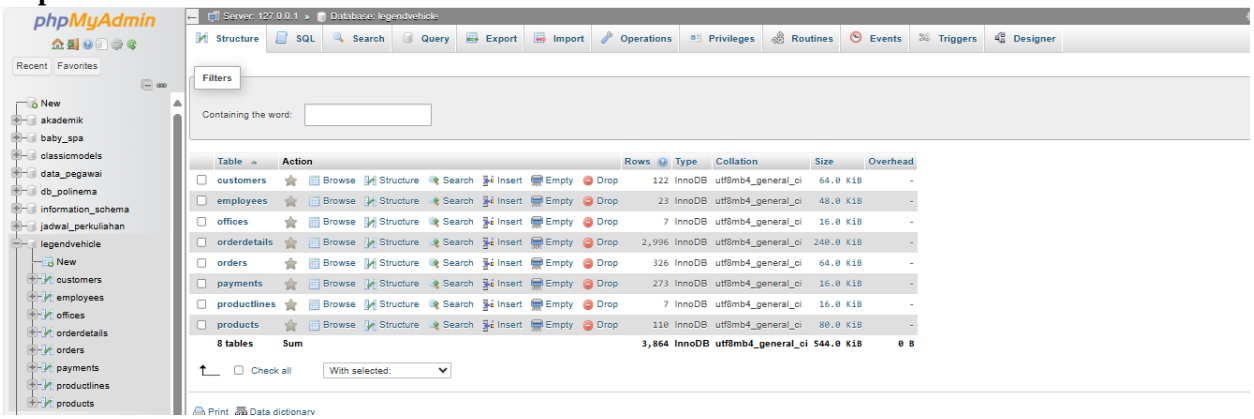
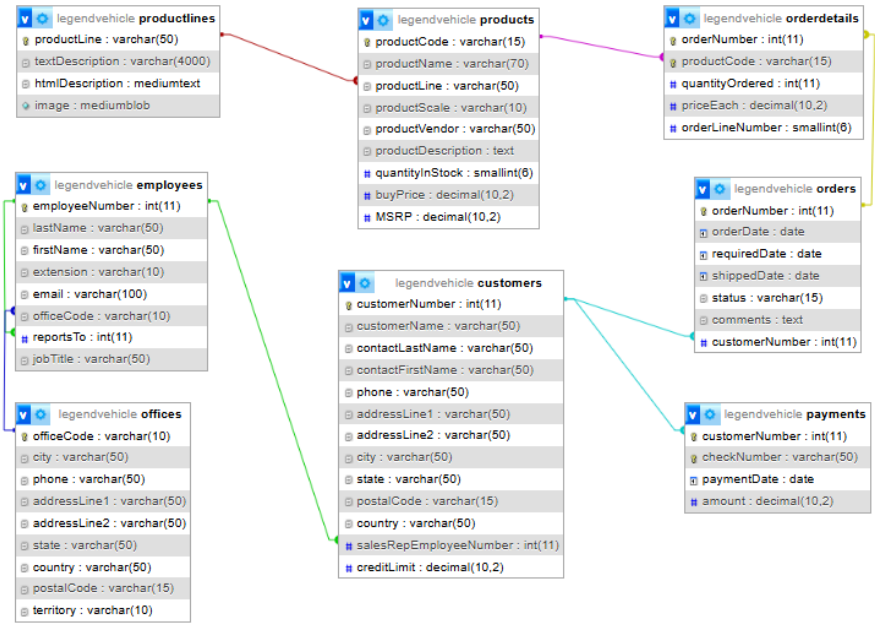
KELAS : 2A

PRODI: D-IV Sistem Informasi Bisnis

Tugas 1

1. Import data





2. Analisa struktur data dari database

Tabel 1	Tabel 2	Relasi
productlines	products	1:M
offices	employees	1:M
employees	employees	1:M
employees	customers	1:M
customers	orders	1:M
orders	orderdetails	1:M
products	orderdetails	1:M
customers	payments	1:M

Nama Tabel	Jumlah Field
productlines	4
products	9
offices	9
employees	8
customers	13
payments	4
orders	7
orderdetails	5

A. Analisa Data

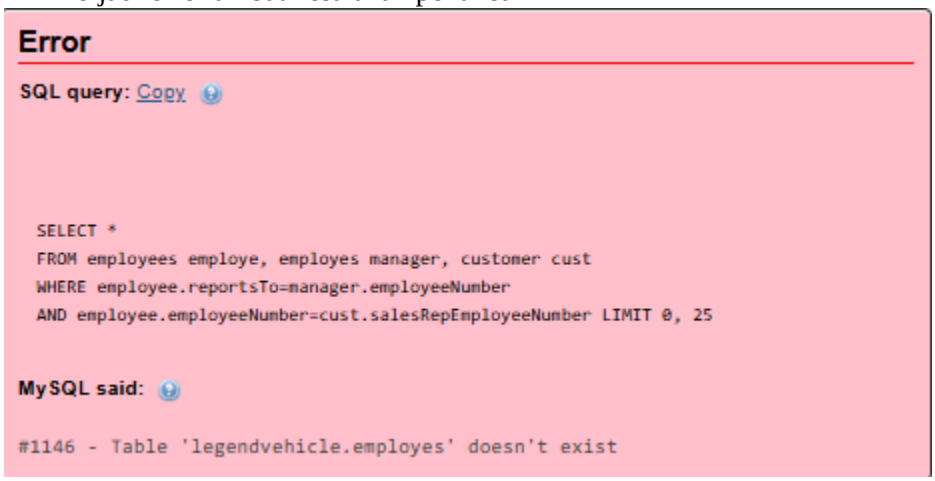
Praktikum 1

a. Jalankan query berikut pada DBMS MySql yang telah tersedia data Perusahaan LegendVehicle.

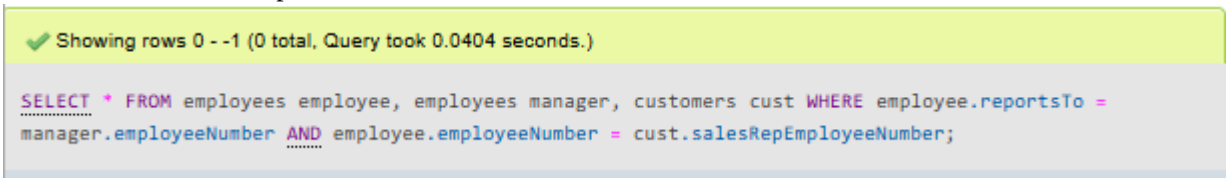
```
SELECT *
FROM employees employe, employes manager, customer cust
WHERE employee.reportsTo=manager.employeeNumber
AND employee.employeeNumber=cust.salesRepEmployeeNumber;
```

Hasil :

- Terjadi error akibat kesalahan penulisan



- Setelah dilakukan perbaikan



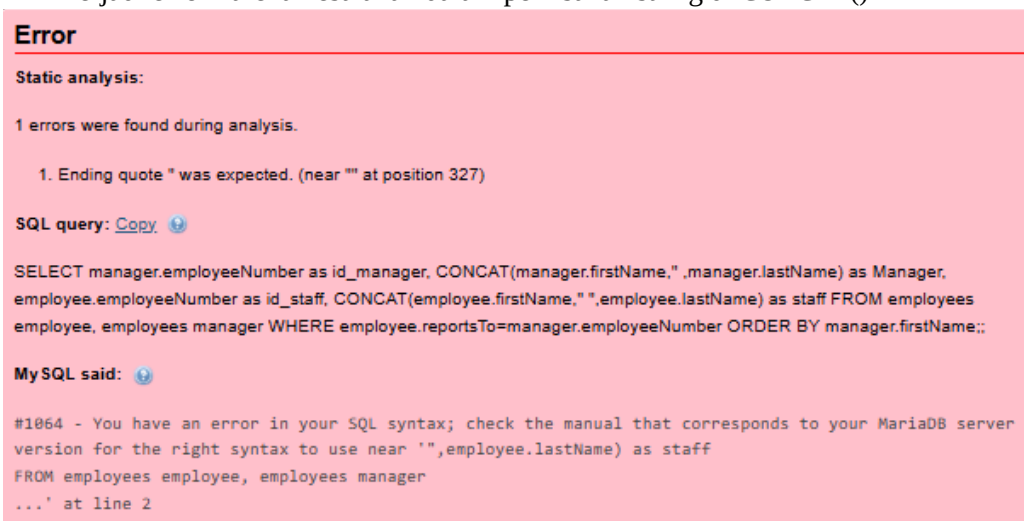
b. Buka tab baru pada browser untuk melakukan eksekusi query berikut:

```
SELECT manager.employeeNumber as id_manager,
CONCAT(manager.firstName," ,manager.lastName) as Manager,
employee.employeeNumber as id_staff,
CONCAT(employee.firstName," ",employee.lastName) as staff
FROM employees employee, employees manager
WHERE employee.reportsTo=manager.employeeNumber
ORDER BY manager.firstName;
```

dari hasil **query** diatas maka akan ditemukan atasan dari setiap pegawai.

Hasil :

- Terjadi error karena kesalahan dalam pemisahan string di CONCAT()



Error

Static analysis:

1 errors were found during analysis.

1. Ending quote " was expected. (near "" at position 327)

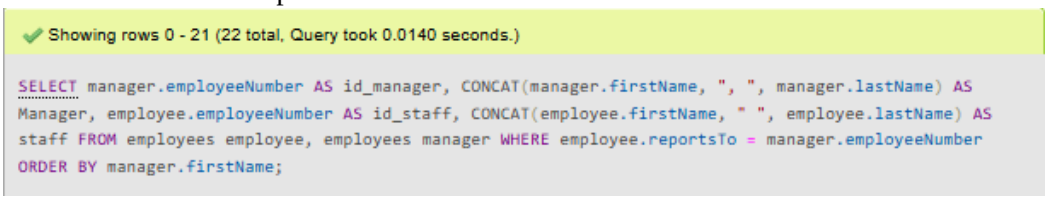
SQL query: Copy

SELECT manager.employeeNumber as id_manager, CONCAT(manager.firstName," ,manager.lastName) as Manager, employee.employeeNumber as id_staff, CONCAT(employee.firstName," ",employee.lastName) as staff FROM employees employee, employees manager WHERE employee.reportsTo=manager.employeeNumber ORDER BY manager.firstName;;

MySQL said:

```
#1064 - You have an error in your SQL syntax; check the manual that corresponds to your MariaDB server
version for the right syntax to use near '",employee.lastName) as staff
FROM employees employee, employees manager
...' at line 2
```

- Setelah dilakukan perbaikan



Showing rows 0 - 21 (22 total, Query took 0.0140 seconds.)

```
SELECT manager.employeeNumber AS id_manager, CONCAT(manager.firstName, ", ", manager.lastName) AS
Manager, employee.employeeNumber AS id_staff, CONCAT(employee.firstName, " ", employee.lastName) AS
staff FROM employees employee, employees manager WHERE employee.reportsTo = manager.employeeNumber
ORDER BY manager.firstName;
```

Tugas 2

1. Gambarlah hirarki organisasi berdasarkan atasan dari setiap pegawai sesuai dengan hasil praktikum diatas!

2. Buka tab baru pada browser untuk melakukan eksekusi query berikut:

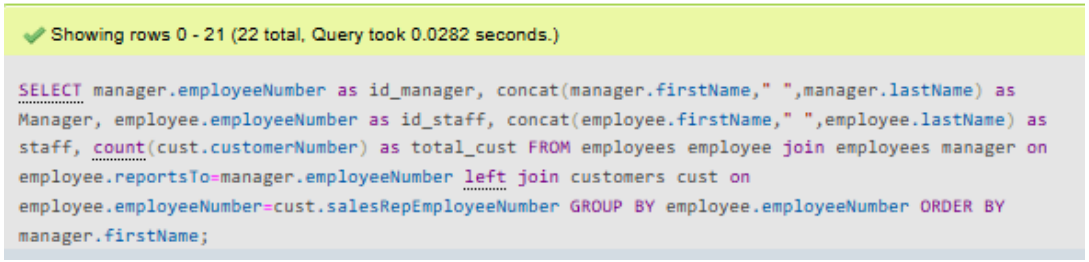
```
SELECT manager.employeeNumber as id_manager,
concat(manager.firstName," ",manager.lastName) as Manager,
employee.employeeNumber as id_staff, concat(employee.firstName,"
",employee.lastName) as staff,
count(cust.customerNumber) as total_cust
FROM employees employee join employees manager on
employee.reportsTomanager.employeeNumber
left join customers cust on
employee.employeeNumber=cust.salesRepEmployeeNumber
GROUP BY employee.employeeNumber
ORDER BY manager.firstName;
```

Dari query diatas menghasilkan jumlah customer dari setiap staff

Hasil :

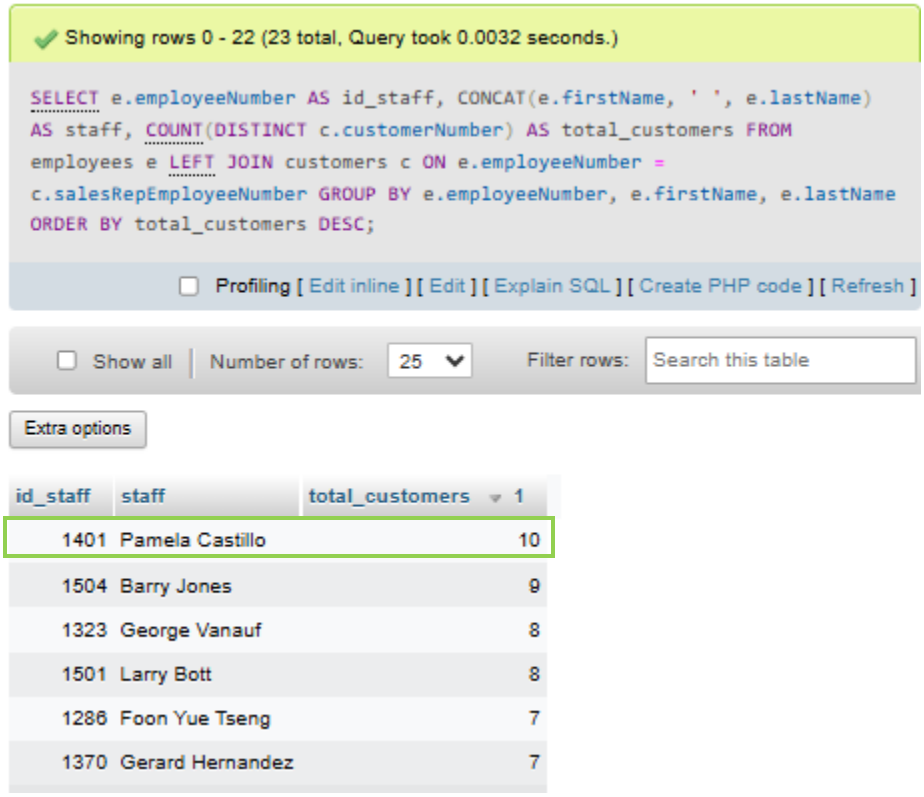
- Terjadi error karena kesalahan penulisan kolom dalam **ON clause** pada **JOIN**

- Setelah dilakukan perbaikan untuk penulisan employee.reportsTo = manager.employeeNumber



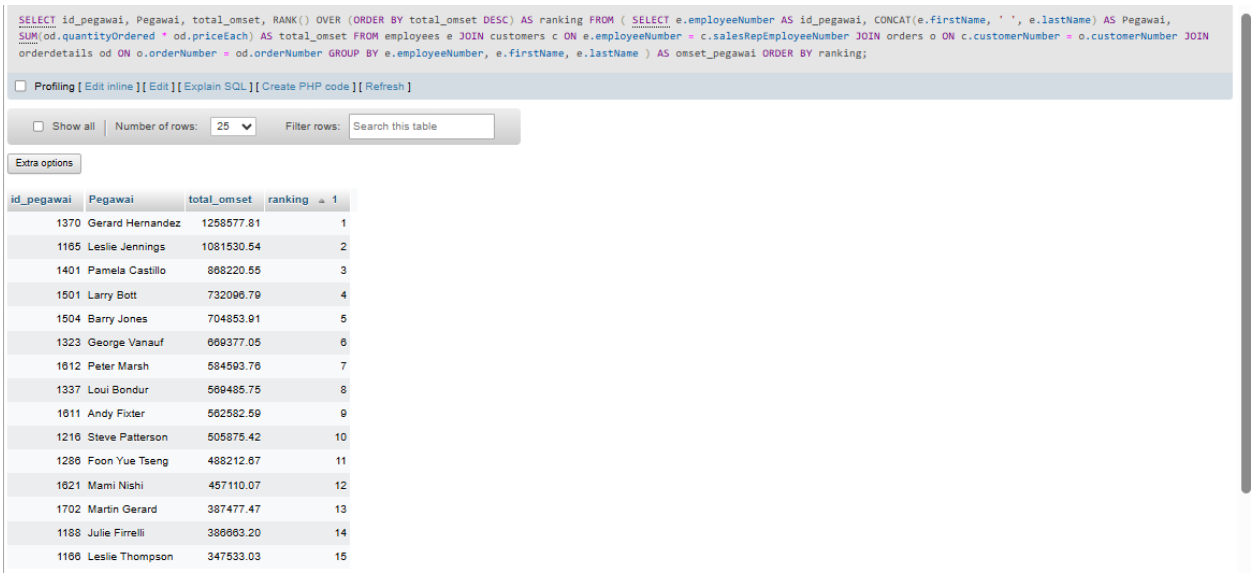
Tugas 3

1. Siapakah staff dengan hirarki paling bawah yang berprestasi dilihat dari jumlah customer terbanyak?
   Jawaban : Pamela Castillo



2. Jika KPI atasan dihitung dari customer yang dimilikinya dijumlah dengan customer dari staff dibawahnya, urutkan ranking prestasi keseluruhan pegawai beserta keterangan jumlah customer yang dimilikinya!
   Jawaban : Gerand Bondur, total customers sebanyak 46 orang

3. Analisa kembali data LegendVehicle untuk mendapatkan ranking pegawai berdasarkan KPI "Jumlah omset yang didapat". Urutkan ranking pegawai beserta keterangan dana yang didapat!
   Jawaban :



```
SELECT id_pegawai, Pegawai, total_omset, RANK() OVER (ORDER BY total_omset DESC) AS ranking FROM ( SELECT e.employeeNumber AS id_pegawai, CONCAT(e.firstName, ' ', e.lastName) AS Pegawai,
SUM(od.quantityOrdered * od.priceEach) AS total_omset FROM employees e JOIN customers c ON e.employeeNumber = c.salesRepEmployeeNumber JOIN orders o ON c.customerNumber = o.customerNumber JOIN
orderdetails od ON o.orderNumber = od.orderNumber GROUP BY e.employeeNumber, e.firstName, e.lastName ) AS omset_pegawai ORDER BY ranking;
```

Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

Show all | Number of rows: 25 Filter rows: Search this table

Extra options

id_pegawai	Pegawai	total_omset	ranking ▲ 1
1370	Gerard Hernandez	1258577.81	1
1165	Leslie Jennings	1081530.54	2
1401	Pamela Castillo	868220.55	3
1501	Larry Bott	732096.79	4
1504	Barry Jones	704853.91	5
1323	George Vanauf	669377.05	6
1612	Peter Marsh	584593.76	7
1337	Loui Bondur	569485.75	8
1611	Andy Fixter	562582.59	9
1216	Steve Patterson	505875.42	10
1286	Foon Yue Tseng	488212.67	11
1621	Mami Nishi	457110.07	12
1702	Martin Gerard	387477.47	13
1188	Julie Firrelli	386663.20	14
1166	Leslie Thompson	347533.03	15

4. Jika KPI yang pertama merupakan "Jumlah customer yang bertransaksi" sedangkan KPI yang kedua "Jumlah omset yang didapat". Maka, berapakah jumlah field yang dibutuhkan untuk mendapatkan informasi tersebut?

   Jawaban :

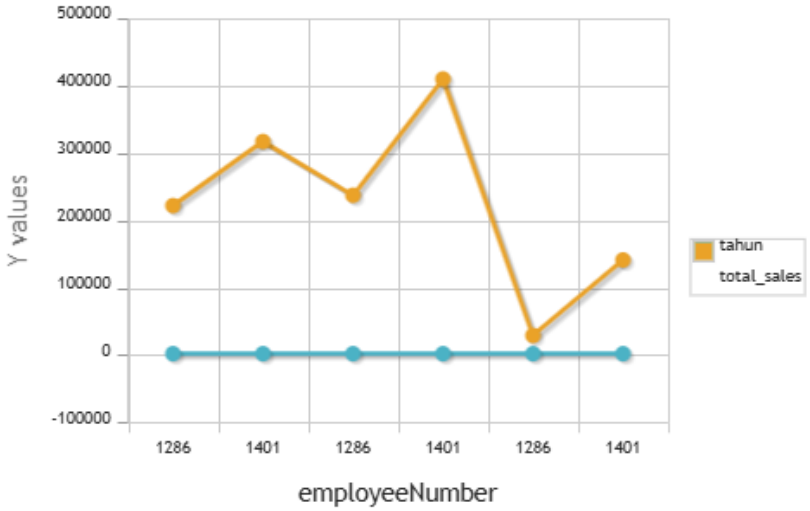
   - KPI (Jumlah customer) : 1 field (nomor customer)
   - KPI 2 (Jumlah omset): 3 field (customersNumber, quantityOrdered,priceBach)

5. Buatlah report pertahun untuk KPI "Jumlah omset yang didapat" pada Foon Yue Tseng dan Pamela Castillo. Serta gambarkan grafiknya (grafik garis).

   Jawaban :

```sql
SELECT
    e.employeeNumber,
    e.firstName,
    e.lastName,
    YEAR(o.orderDate) AS tahun,
    SUM(od.quantityOrdered * od.priceEach) AS total_sales
FROM
    employees e
JOIN
    customers c ON e.employeeNumber = c.salesRepEmployeeNumber
JOIN
    orders o ON c.customerNumber = o.customerNumber
JOIN
    orderdetails od ON o.orderNumber = od.orderNumber
WHERE
    e.firstName IN ('Foon Yue', 'Pamela')
    AND e.lastName IN ('Tseng', 'Castillo')
GROUP BY
    e.employeeNumber, tahun
ORDER BY
    tahun, e.firstName;
```

employeeNumber	firstName	lastName	tahun ▲ 1	total_sales
1286	Foon Yue	Tseng	2003	221887.03
1401	Pamela	Castillo	2003	317104.78
1286	Foon Yue	Tseng	2004	237255.26
1401	Pamela	Castillo	2004	409910.07
1286	Foon Yue	Tseng	2005	29070.38
1401	Pamela	Castillo	2005	141205.70



Studi Kasus

Pak Huhut merupakan pemegang saham LegendVehicle. dia membutuhkan dashboard untuk melihat perkembangan penjualan (omset) disetiap cabang di tiap tahunnya. Dikarenakan perusahaan tersebut belum merekrut Data Engineer maka, penarikan informasi hanya bisa dilakukan melaluai OLTP yang ada.

Hasil report yang diinginkan adalah grafik berdasarkan tabel berikut:

Nama Cabang	2003	2004	2005
...			
...			

Analisalah terlebih dahulu:

1. Field apa saja yang diperlukan untuk menampilkan penjualan di setiap cabang.
    - **Orders** = berisikan informasi transaksi beserta tanggal (orderdate)
    - **Orderdetails** = berisikan jumlah produk yang dibeli(quantityOrdered) dan harga per unit (priceEach)
    - **Customers** = menghubungkan pesanan dengan sales representative(salesRepEmployeeNumber)
    - **Employees** = menghubungkan sales representative dengan kantor (officeCode)
    - **Offices** = berisikan data kantor cabang(officeCode, city)

2. Bentuk query dengan memperhatikan relasi antar tabel.
   - Query

```
SELECT o.city AS Nama_Cabang, YEAR(ord.orderDate) AS Tahun,
SUM(od.quantityOrdered * od.priceEach) AS Total_Omset
FROM orders ord
JOIN orderdetails od ON ord.orderNumber = od.orderNumber
JOIN customers c ON ord.customerNumber = c.customerNumber
JOIN employees e ON c.salesRepEmployeeNumber = e.employeeNumber
JOIN offices o ON e.officeCode = o.officeCode
GROUP BY o.city, YEAR(ord.orderDate)
ORDER BY o.city, Tahun;
```

   - Hasil

Nama_Cabang	Tahun ▲ 2	Total_Omset
Boston	2003	301781.38
Boston	2004	467177.07
Boston	2005	123580.17
London	2003	549551.94
London	2004	706014.52
London	2005	181384.24
NYC	2003	391175.53
NYC	2004	665317.99
NYC	2005	101096.20
Paris	2003	969959.90
Paris	2004	1465229.84
Paris	2005	648571.84
San Francisco	2003	532681.13
San Francisco	2004	517408.62
San Francisco	2005	378973.82
Sydney	2003	304949.11
Sydney	2004	542996.02
Sydney	2005	299231.22
Tokyo	2003	267249.40
Tokyo	2004	151761.45
Tokyo	2005	38099.22

SOAL BONUS: buatlah report lain dengan sumber data OLTP yang sama, analisa field yang digunakan, bentuk struktur query dan tuliskan dalam tabel serta grafiknya.

Jawab : trend penjulaan produk paling laris tiap tahun

- Field

Tabel	Field	Keterangan
products	productName	Nama produk
orderdetails	productCode	ID produk yang dipesan
orderdetails	quantityOrdered	Jumlah unit yang dipesan
orders	orderDate	Tanggal pesanan

orders	orderNumber	ID pesanan

- Query

```
SELECT p.productName, YEAR(ord.orderDate) AS Tahun,
SUM(od.quantityOrdered) AS Total_Unit_Terjual
FROM orders ord
JOIN orderdetails od ON ord.orderNumber = od.orderNumber
JOIN products p ON od.productCode = p.productCode
GROUP BY p.productName, YEAR(ord.orderDate)
ORDER BY Tahun, Total_Unit_Terjual DESC;
```

- Hasil

productName	Tahun ▲ 1	Total_Unit_Terjual ▼ 2
1992 Ferrari 360 Spider red	2003	672
1936 Mercedes-Benz 500K Special Roadster	2003	429
1964 Mercedes Tour Bus	2003	427
1940s Ford truck	2003	408
1926 Ford Fire Engine	2003	393
1956 Porsche 356A Coupe	2003	389
1948 Porsche Type 356 Roadster	2003	382
1965 Aston Martin DB5	2003	382
1996 Peterbilt 379 Stake Bed with Outrigger	2003	373
1950's Chicago Surface Lines Streetcar	2003	372
1968 Dodge Charger	2003	371
Diamond T620 Semi-Skirted Tanker	2003	369
1939 Cadillac Limousine	2003	369
1948 Porsche 356-A Roadster	2003	366
1995 Honda Civic	2003	366
1937 Lincoln Berline	2003	365
1954 Greyhound Scenicruiser	2003	363
1928 British Royal Navy Airplane	2003	363
1969 Ford Falcon	2003	363
1998 Chrysler Plymouth Prowler	2003	363
1917 Maxwell Touring Car	2003	360
1966 Shelby Cobra 427 S/C	2003	357
1999 Yamaha Speed Boat	2003	357
18th century schooner	2003	356
1932 Alfa Romeo 8C2300 Spider Sport	2003	354