Jobsheet 2 Data Warehouse

Sufyan Dwi Bagaskara / SIB 2B / 23

Tugas 1

1. Import data perusahaan tersebut pada DBMS MySQL!
2. Analisa struktur data dari database perusahaan tersebut, dalam bentuk tabel, analisa hubungan setiap tabel nya!

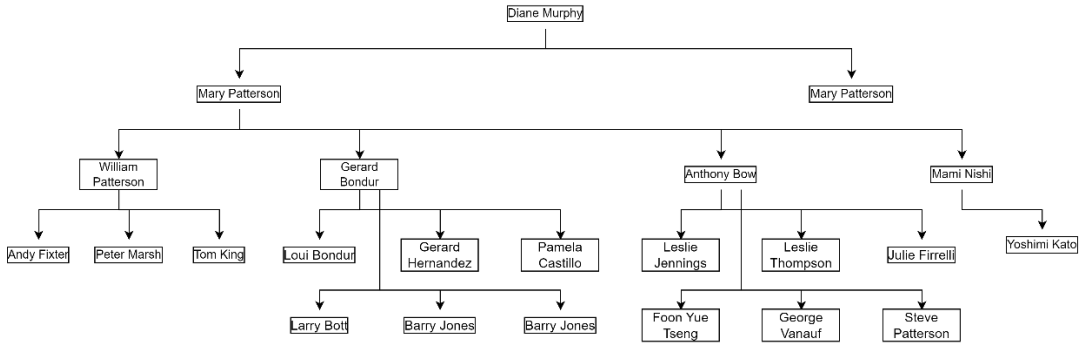
Tabel 1	Tabel 2	Jenis Relasi
customers	payments	One to Many
customers	orders	One to many
orders	orderdetails	One to many
orderdetails	products	Many to One
products	productlines	Many to One
customers	employees	Many to One
employees	employees	Self Join
employees	offices	Many to One

3. Analisa jumlah field pada setiap tabel!

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

Tugas 2

1. Gambarlah hirarki organisasi berdasarkan atasan dari setiap pegawai sesuai dengan hasil prkatikum 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.reportsTo = manager.employeeNumber
LEFT JOIN customers cust
    ON employee.employeeNumber = cust.salesRepEmployeeNumber
GROUP BY
    manager.employeeNumber,
    manager.firstName,
    manager.lastName,
    employee.employeeNumber,
    employee.firstName,
    employee.lastName
ORDER BY manager.firstName;
```

id_manager	Manager	id_staff	Staff	total_cust
1143	Anthony Bow	1165	Leslie Jennings	6
1143	Anthony Bow	1166	Leslie Thompson	6
1143	Anthony Bow	1188	Julie Firrelli	6
1143	Anthony Bow	1216	Steve Patterson	6
1143	Anthony Bow	1286	Foon Yue Tseng	7
1143	Anthony Bow	1323	George Vanauf	8
1002	Diane Murphy	1056	Mary Patterson	0
1002	Diane Murphy	1076	Jeff Firrelli	0
1102	Gerard Bondur	1337	Loui Bondur	6
1102	Gerard Bondur	1370	Gerard Hernandez	7
1102	Gerard Bondur	1401	Pamela Castillo	10
1102	Gerard Bondur	1501	Larry Bott	8
1102	Gerard Bondur	1504	Barry Jones	9
1102	Gerard Bondur	1702	Martin Gerard	6
1621	Mami Nishi	1625	Yoshimi Kato	0
1056	Mary Patterson	1088	William Patterson	0
1056	Mary Patterson	1102	Gerard Bondur	0
1056	Mary Patterson	1143	Anthony Bow	0
1056	Mary Patterson	1621	Mami Nishi	5
1088	William Patterson	1611	Andy Fixter	5
1088	William Patterson	1612	Peter Marsh	5
1088	William Patterson	1619	Tom King	0

Dari query tersebut menghasilkan jumlah **customer** dari setiap **staff**.

Jika perusahaan tersebut memiliki **KPI (Key Performances Indicator) "Jumlah customer yang bertransaksi"** maka jawablah pertanyaan-pertanyaan berikut!

Tugas 3

1. Siapakah staff dengan hirarki paling bawah yang berprestasi dilihat dari jumlah customer terbanyak?
   Pamella 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!

```sql
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.reportsTo = manager.employeeNumber
LEFT JOIN customers cust
    ON employee.employeeNumber = cust.salesRepEmployeeNumber
GROUP BY
    manager.employeeNumber,
    manager.firstName,
    manager.lastName,
    employee.employeeNumber,
    employee.firstName,
    employee.lastName
ORDER BY manager.firstName;
```

id_manager	Manager	id_staff	Staff	total_cust
1143	Anthony Bow	1165	Leslie Jennings	6
1143	Anthony Bow	1166	Leslie Thompson	6
1143	Anthony Bow	1188	Julie Firrelli	6
1143	Anthony Bow	1216	Steve Patterson	6
1143	Anthony Bow	1286	Foon Yue Tseng	7
1143	Anthony Bow	1323	George Vanauf	8
1002	Diane Murphy	1056	Mary Patterson	0
1002	Diane Murphy	1076	Jeff Firrelli	0
1102	Gerard Bondur	1337	Loui Bondur	6
1102	Gerard Bondur	1370	Gerard Hernandez	7
1102	Gerard Bondur	1401	Pamela Castillo	10
1102	Gerard Bondur	1501	Larry Bott	8
1102	Gerard Bondur	1504	Barry Jones	9
1102	Gerard Bondur	1702	Martin Gerard	6
1621	Mami Nishi	1625	Yoshimi Kato	0
1056	Mary Patterson	1088	William Patterson	0
1056	Mary Patterson	1102	Gerard Bondur	0
1056	Mary Patterson	1143	Anthony Bow	0
1056	Mary Patterson	1621	Mami Nishi	5
1088	William Patterson	1611	Andy Fixter	5
1088	William Patterson	1612	Peter Marsh	5
1088	William Patterson	1619	Tom King	0

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

```sql
SELECT
    emp.employeeNumber AS id_pegawai,
    CONCAT(emp.firstName, ' ', emp.lastName) AS nama_pegawai,
    FORMAT(COALESCE(SUM(pay.amount), 0), 2) AS total_omset
FROM employees emp
LEFT JOIN customers cust
    ON emp.employeeNumber = cust.salesRepEmployeeNumber
LEFT JOIN payments pay
    ON cust.customerNumber = pay.customerNumber
GROUP BY emp.employeeNumber, emp.firstName, emp.lastName
ORDER BY total_omset DESC;
```

id_pegawai	nama_pegawai	total_omset ▼ 1
1165	Leslie Jennings	989,906.55
1401	Pamela Castillo	750,201.87
1501	Larry Bott	686,653.25
1504	Barry Jones	637,672.65
1323	George Vanauf	584,406.80
1337	Loui Bondur	569,485.75
1611	Andy Fixter	509,385.82
1612	Peter Marsh	497,907.16
1286	Foon Yue Tseng	488,212.67
1621	Mami Nishi	457,110.07
1216	Steve Patterson	449,219.13
1702	Martin Gerard	387,477.47
1188	Julie Firrelli	386,663.20
1166	Leslie Thompson	347,533.03
1370	Gerard Hernandez	1,112,003.81
1002	Diane Murphy	0.00
1056	Mary Patterson	0.00
1076	Jeff Firrelli	0.00
1088	William Patterson	0.00
1102	Gerard Bondur	0.00
1143	Anthony Bow	0.00
1619	Tom King	0.00
1625	Yoshimi Kato	0.00

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?

   Jumlah Customer yang Bertransaksi (3 field):
   - employees.employeeNumber → Untuk mengidentifikasi pegawai
   - customers.customerNumber → Untuk menghubungkan pegawai dengan pelanggan
   - payments.customerNumber → Untuk mengecek apakah pelanggan telah melakukan transaksi

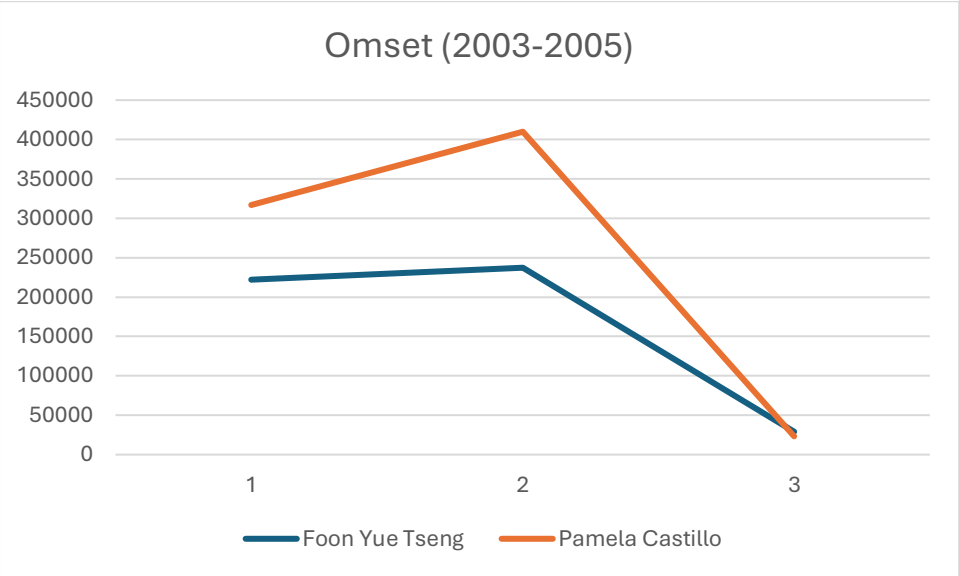
   Jumlah Omset yang Didapat (2 field):
   - employees.employeeNumber → Untuk mengidentifikasi pegawai
   - payments.amount → Untuk menghitung total omset yang diperoleh

KPI	Jumlah Field
Jumlah customer yang bertransaksi	3
Jumlah omset yang didapat	2

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

employeeNumber	nama_pegawai ▲ 1	tahun ▲ 2	total_omset
1286	Foon Yue Tseng	2003	221887.03
1286	Foon Yue Tseng	2004	237255.26
1286	Foon Yue Tseng	2005	29070.38
1401	Pamela Castillo	2003	317104.78
1401	Pamela Castillo	2004	409910.07
1401	Pamela Castillo	2005	23187.02

Nama	2003	2004	2005
Foon Yue Tseng	221887	237255	29070
Pamela Castillo	317104	409910	23187



Studi Kasus

1. Field apa saja yang diperlukan untuk menampilkan penjualan di setiap cabang.

   Tabel offices

   - offices.officeCode → ID unik cabang
   - offices.city → Nama cabang

   Tabel employees

   - employees.officeCode → Relasi ke tabel offices
   - employees.employeeNumber → ID unik pegawai

Tabel customers

- customers.salesRepEmployeeNumber → Relasi ke employees.employeeNumber
- customers.customerNumber → ID unik pelanggan

Tabel payments

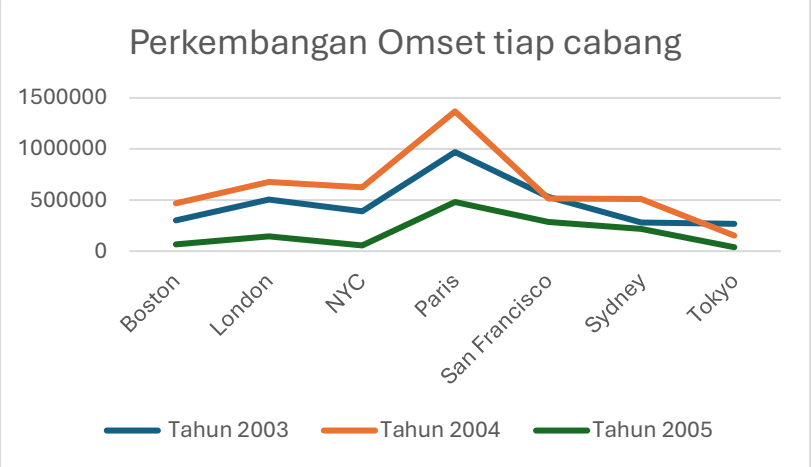
- payments.customerNumber → Relasi ke customers.customerNumber
- payments.amount → Jumlah pembayaran (omset)
- payments.paymentDate → Tanggal pembayaran untuk pengelompokan per tahun

2. Bentuk query dengan memperhatikan relasi antar tabel.

```
SELECT
    o.city AS nama_cabang,
    SUM(CASE WHEN YEAR(p.paymentDate) = 2003 THEN p.amount ELSE 0 END) AS `2003`,
    SUM(CASE WHEN YEAR(p.paymentDate) = 2004 THEN p.amount ELSE 0 END) AS `2004`,
    SUM(CASE WHEN YEAR(p.paymentDate) = 2005 THEN p.amount ELSE 0 END) AS `2005`
FROM offices o
JOIN employees e ON o.officeCode = e.officeCode
JOIN customers c ON e.employeeNumber = c.salesRepEmployeeNumber
JOIN payments p ON c.customerNumber = p.customerNumber
GROUP BY o.city
ORDER BY o.city;
```

nama_cabang	2003	2004	2005
Boston	301781.38	467177.07	66923.88
London	505384.85	674815.75	144125.30
NYC	391175.53	623872.78	57571.16
Paris	969959.90	1368458.96	480750.04
San Francisco	532681.13	517408.62	287349.83
Sydney	281985.51	509833.62	215473.85
Tokyo	267249.40	151761.45	38099.22

Nama Cabang	Tahun 2003	Tahun 2004	Tahun 2005
Boston	301781.38	467177.07	66923.88
London	505384.85	674815.75	144125.3
NYC	391175.53	623872.78	57571.16
Paris	969959.9	1368458.96	480750.04
San Francisco	532681.13	517408.62	287349.83
Sydney	281985.51	509833.62	215473.85
Tokyo	267249.4	151761.45	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.

Analisis Field yang Dibutuhkan

Tabel	Field yang Dibutuhkan
offices	officeCode, city
employees	officeCode, employeeNumber
customers	salesRepEmployeeNumber, customerNumber
payments	customerNumber, paymentDate, amount

Query :

```
SELECT
    o.city AS nama_cabang,
    COUNT(CASE WHEN YEAR(p.paymentDate) = 2003 THEN p.customerNumber ELSE NULL END) AS `2003`,
    COUNT(CASE WHEN YEAR(p.paymentDate) = 2004 THEN p.customerNumber ELSE NULL END) AS `2004`,
    COUNT(CASE WHEN YEAR(p.paymentDate) = 2005 THEN p.customerNumber ELSE NULL END) AS `2005`
FROM offices o
JOIN employees e ON o.officeCode = e.officeCode
JOIN customers c ON e.employeeNumber = c.salesRepEmployeeNumber
JOIN payments p ON c.customerNumber = p.customerNumber
GROUP BY o.city
ORDER BY o.city;
```

Tabel Hasil

Nama Cabang	Tahun 2003	Tahun 2004	Tahun 2005
Boston	9	17	3
London	16	22	4
NYC	14	21	2
Paris	30	44	13
San Francisco	15	13	6
Sydney	11	13	6
Tokyo	5	6	3

Grafik Hasil