

LAPORAN PRAKTIKUM JOBSHEET 2
DATA WAREHOUSE



Disusun Oleh:
Niriza Lailaumi Hidayat (2341760072)
SIB 2B

SISTEM INFORMASI BISNIS
JURUSAN TEKNOLOGI INFORMASI
POLITEKNIK NEGERI MALANG

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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
productlines	products	One to many
products	orderdetails	One to many
orders	orderdetails	One to many
orders	customers	Many to one
employees	orders	One to many
employees	offices	Many to one
customers	payments	One to many

3. Analisa jumlah field pada setiap tabel!

Nama Tabel	Jumlah Field
productlines	4
products	9
orderdetails	5
orders	7
employees	7
customers	11
offices	7
payments	4

Praktikum 1

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

```

1 SELECT *
2 FROM employees employee
3 JOIN employees manager ON employee.reportsTo = manager.employeeNumber
4 JOIN customers cust ON employee.employeeNumber = cust.salesRepEmployeeNumber;

```

employeeNumber	lastName	firstName	extension	email	officeCode	reportsTo	jobTitle	employeeNumber	lastName	firstName	extension	email	officeCode	reportsTo	jobTitle
1165	Jennings	Leslie	x3291	ljennings@classicmodelcars.com	1	1143	Sales Rep	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	1056	Sales Manager (NA)
1165	Jennings	Leslie	x3291	ljennings@classicmodelcars.com	1	1143	Sales Rep	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	1056	Sales Manager (NA)
1165	Jennings	Leslie	x3291	ljennings@classicmodelcars.com	1	1143	Sales Rep	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	1056	Sales Manager (NA)
1165	Jennings	Leslie	x3291	ljennings@classicmodelcars.com	1	1143	Sales Rep	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	1056	Sales Manager (NA)
1165	Jennings	Leslie	x3291	ljennings@classicmodelcars.com	1	1143	Sales Rep	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	1056	Sales Manager (NA)
1165	Jennings	Leslie	x3291	ljennings@classicmodelcars.com	1	1143	Sales Rep	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	1056	Sales Manager (NA)
1166	Thompson	Leslie	x4065	lthompson@classicmodelcars.com	1	1143	Sales Rep	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	1056	Sales Manager (NA)
1166	Thompson	Leslie	x4065	lthompson@classicmodelcars.com	1	1143	Sales Rep	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	1056	Sales Manager (NA)
1166	Thompson	Leslie	x4065	lthompson@classicmodelcars.com	1	1143	Sales Rep	1143	Bow	Anthony	x5428	abow@classicmodelcars.com	1	1056	Sales Manager (NA)

Maka hasil dari query tersebut adalah data Employee beserta Manajernya dan Customer yang ia miliki.

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

```

1 SELECT
2     manager.employeeNumber AS id_manager,
3     CONCAT(manager.firstName, " ", manager.lastName) AS Manager,
4     employee.employeeNumber AS id_staff,
5     CONCAT(employee.firstName, " ", employee.lastName) AS Staff
6 FROM employees employee
7 JOIN employees manager ON employee.reportsTo = manager.employeeNumber
8 ORDER BY manager.firstName;

```

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

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

3. Buka tab baru pada browser untuk melakukan eksekusi query berikut

```

1 SELECT
2     manager.employeeNumber AS id_manager,
3     CONCAT(manager.firstName, " ", manager.lastName) AS Manager,
4     employee.employeeNumber AS id_staff,
5     CONCAT(employee.firstName, " ", employee.lastName) AS Staff,
6     COUNT(cust.customerNumber) AS total_cust
7 FROM employees employee
8 JOIN employees manager ON employee.reportsTo = manager.employeeNumber
9 LEFT JOIN customers cust ON employee.employeeNumber = cust.salesRepEmployeeNumber
10 GROUP BY manager.employeeNumber, manager.firstName, manager.lastName,
11           employee.employeeNumber, employee.firstName, employee.lastName
12 ORDER BY manager.firstName;

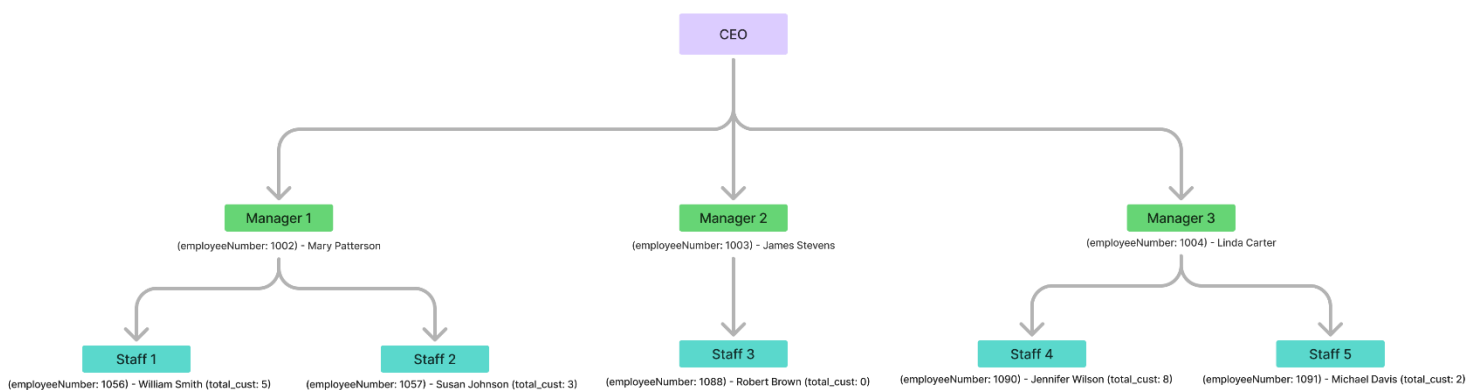
```

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.

Tugas 2

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



Tugas 3

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

```

1 SELECT
2     e.employeeNumber AS id_staff,
3     CONCAT(e.firstName, ' ', e.lastName) AS staff_name,
4     COUNT(c.customerNumber) AS total_customers
5 FROM employees e
6 LEFT JOIN customers c ON e.employeeNumber = c.salesRepEmployeeNumber
7 WHERE e.employeeNumber NOT IN (SELECT DISTINCT reportsTo FROM employees WHERE reportsTo IS
8 NOT NULL)
9 GROUP BY e.employeeNumber
10 ORDER BY total_customers DESC
11 LIMIT 1;

```

id_staff	staff_name	total_customers
1401	Pamela Castillo	10

Jadi staff dengan hirarki paling bawah yang berprestasi dilihat dari jumlah cust terbanyak adalah Pamela Castillo dengan total customer 10.

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!

```

1 SELECT
2     manager.employeeNumber AS id_manager,
3     CONCAT(manager.firstName, ' ', manager.lastName) AS Manager,
4     COUNT(DISTINCT cust1.customerNumber) AS direct_customers,
5     COUNT(DISTINCT cust2.customerNumber) AS total_customers,
6     (COUNT(DISTINCT cust1.customerNumber) + COUNT(DISTINCT cust2.customerNumber)) AS KPI
7 FROM employees manager
8 LEFT JOIN customers cust1 ON manager.employeeNumber = cust1.salesRepEmployeeNumber
9 LEFT JOIN employees staff ON staff.reportsTo = manager.employeeNumber
10 LEFT JOIN customers cust2 ON staff.employeeNumber = cust2.salesRepEmployeeNumber
11 GROUP BY manager.employeeNumber
12 ORDER BY KPI DESC;

```

id_manager	Manager	direct_customers	total_customers	KPI
1102	Gerard Bondur	0	46	46
1143	Anthony Bow	0	39	39
1088	William Patterson	0	10	10
1401	Pamela Castillo	10	0	10
1504	Barry Jones	9	0	9
1323	George Vanauf	8	0	8
1501	Larry Bott	8	0	8
1286	Foon Yue Tseng	7	0	7
1370	Gerard Hernandez	7	0	7
1165	Leslie Jennings	6	0	6
1166	Leslie Thompson	6	0	6
1188	Julie Firrelli	6	0	6
1216	Steve Patterson	6	0	6
1337	Loui Bondur	6	0	6
1702	Martin Gerard	6	0	6
1056	Mary Patterson	0	5	5
1611	Andy Fixter	5	0	5
1612	Peter Marsh	5	0	5
1621	Mami Nishi	5	0	5
1002	Diane Murphy	0	0	0
1076	Jeff Firrelli	0	0	0
1619	Tom King	0	0	0
Yoshimi Kato		0	0	0

Output dari query di atas menunjukkan urutan ranking prestasi keseluruhan pegawai beserta keterangan jumlah customer yang dimilikinya.

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

```
1 SELECT
2     e.employeeNumber AS id_employee,
3     CONCAT(e.firstName, ' ', e.lastName) AS employee_name,
4     SUM(od.quantityOrdered * od.priceEach) AS total_revenue
5 FROM employees e
6 LEFT JOIN customers c ON e.employeeNumber = c.salesRepEmployeeNumber
7 LEFT JOIN orders o ON c.customerNumber = o.customerNumber
8 LEFT JOIN orderdetails od ON o.orderNumber = od.orderNumber
9 GROUP BY e.employeeNumber
10 ORDER BY total_revenue DESC;
```

id_employee	employee_name	total_revenue
1370	Gerard Hernandez	1258577.81
1165	Leslie Jennings	1081530.54
1401	Pamela Castillo	868220.55
1501	Larry Bott	732096.79
1504	Barry Jones	704853.91
1323	George Vanauf	669377.05
1612	Peter Marsh	584593.76
1337	Loui Bondur	569485.75
1611	Andy Fixter	562582.59
1216	Steve Patterson	505875.42
1286	Foon Yue Tseng	488212.67
1621	Mami Nishi	457110.07
1702	Martin Gerard	387477.47
1188	Julie Firrelli	386663.20
1166	Leslie Thompson	347533.03
1002	Diane Murphy	NULL
1056	Mary Patterson	NULL
1076	Jeff Firrelli	NULL
1088	William Patterson	NULL
1102	Gerard Bondur	NULL
1143	Anthony Bow	NULL
1619	Tom King	NULL
1625	Yoshimi Kato	NULL

Output dari query di atas menunjukkan urutan ranking pegawai beserta keterangan dana yang didapat.

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?

KPI	Jumlah Field
Jumlah customer yang bertransaksi	5
Jumlah omset yang didapat	7

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

```

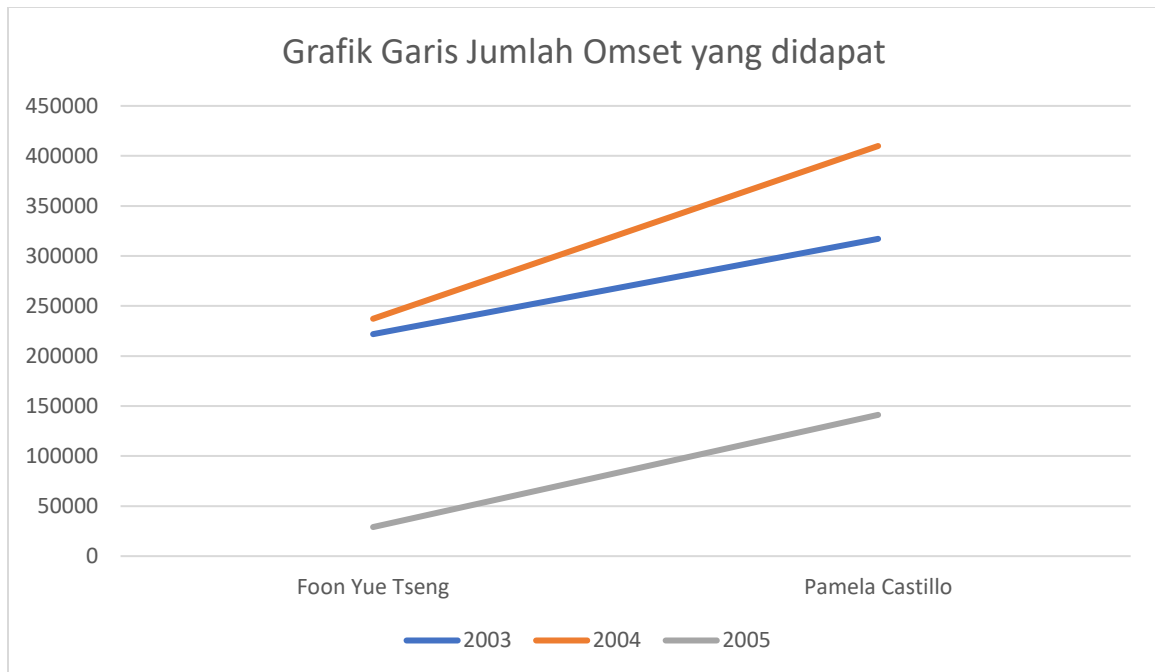
1 SELECT
2     e.firstName, e.lastName,
3     YEAR(o.orderDate) AS tahun,
4     SUM(od.quantityOrdered * od.priceEach) AS total_omset
5 FROM employees e
6 JOIN customers c ON e.employeeNumber = c.salesRepEmployeeNumber
7 JOIN orders o ON c.customerNumber = o.customerNumber
8 JOIN orderdetails od ON o.orderNumber = od.orderNumber
9 WHERE e.firstName IN ('Foon Yue', 'Pamela') AND e.lastName IN ('Tseng', 'Castillo')
10 GROUP BY e.firstName, e.lastName, tahun
11 ORDER BY e.firstName, e.lastName, tahun;

```

firstName	lastName	tahun	total_omset
Foon Yue	Tseng	2003	221887.03
Foon Yue	Tseng	2004	237255.26
Foon Yue	Tseng	2005	29070.38
Pamela	Castillo	2003	317104.78
Pamela	Castillo	2004	409910.07
Pamela	Castillo	2005	141205.70

Berdasarkan output dari query tersebut, maka tabel report pertahun untuk KPI "Jumlah omset yang didapat" pada Foon Yue Tseng dan Pamela Castillo adalah sebagai berikut:

Nama	2003	2004	2005
Foon Yue Tseng	221887.03	237255.26	29070.38
Pamela Castillo	317104.78	409910.07	141205.70



Studi Kasus

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

- Field yang dibutuhkan untuk menampilkan penjualan di setiap cabang adalah
 - Nama Cabang: untuk mengidentifikasi setiap cabang perusahaan
 - Tahun (orderDate): tahun transaksi dari setiap perusahaan
 - Total Omset: jumlah total omset yang diperoleh dari penjualan
- Query SQL untuk menampilkan omset per cabang per tahun

```
1 SELECT
2     o.city AS nama_cabang,
3     YEAR(ord.orderDate) AS tahun,
4     SUM(od.quantityOrdered * od.priceEach) AS total_omset
5 FROM offices o
6 JOIN employees e ON o.officeCode = e.officeCode
7 JOIN customers c ON e.employeeNumber = c.salesRepEmployeeNumber
8 JOIN orders ord ON c.customerNumber = ord.customerNumber
9 JOIN orderdetails od ON ord.orderNumber = od.orderNumber
10 GROUP BY o.city, tahun
11 ORDER BY o.city, tahun;
```


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

Berdasarkan output dari query di atas, maka tabel report adalah sebagai berikut

Nama Cabang	2003	2004	2005
Boston	301781.38	467177.07	123580.17
London	549551.94	706014.52	181384.24
NYC	391175.53	665317.99	101096.20
Paris	969959.90	1465229.84	684571.84
San Fransisco	532681.13	517408.62	378973.82
Sydney	304949.11	542996.02	299231.22
Tokyo	267249.40	1511761.45	38099.22

