

**LAPORAN PRAKTIKUM DATA WAREHOUSE**  
**JOB SHEET 2: Database Operasional**



OLEH:

LOVELYTA SEKARAYU KRISDIYANTI

KELAS 2B SIB / 11 (2341760081)

**PROGRAM STUDI D-IV SISTEM INFORMASI BISNIS**

**JURUSAN TEKNOLOGI INFORMASI**

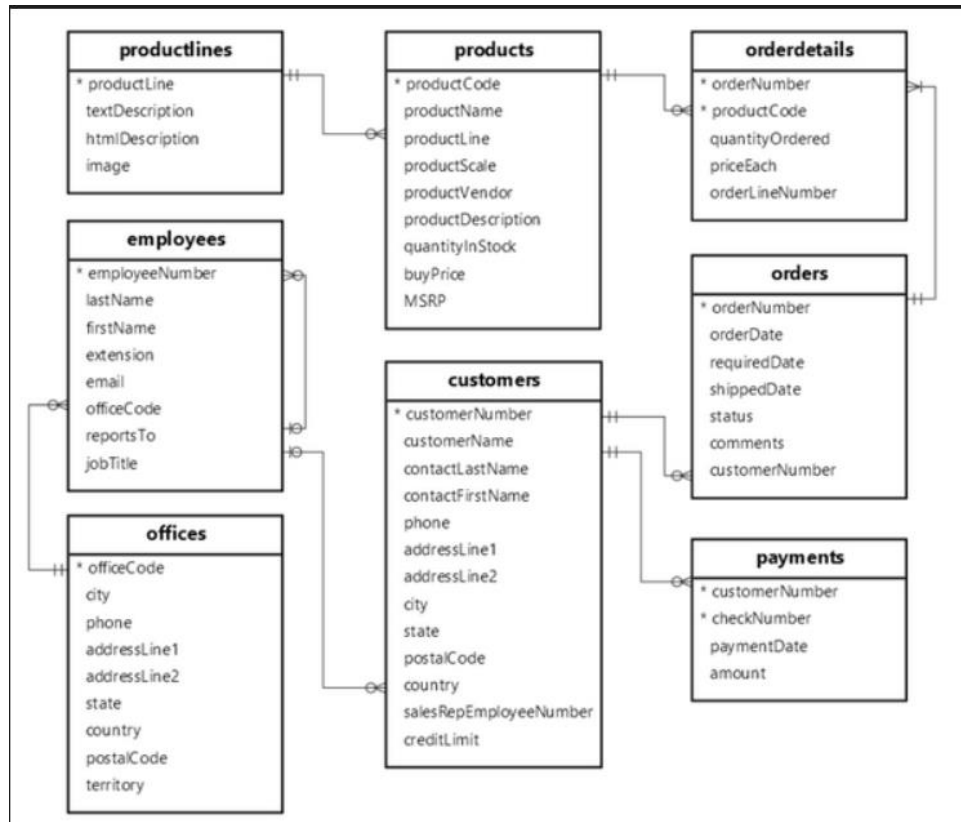
**POLITEKNIK NEGERI MALANG**

Jl. Soekarno Hatta No. 9 Jatimulyo, Kec. Lowokwaru, Kota Malang, Jawa Timur

65141

## Studi Kasus

LegendVehicle merupakan perusahaan jual-beli tukar-tambah kendaraan klasik. Perusahaan ini memiliki cabang di berbagai negara. LegendVehicle memiliki sistem informasi ERP sendiri. Salah satu modul dari sistem ERP tersebut adalah modul penjualan. Desain database dari modul tersebut adalah sebagai berikut:



Selain itu proses penjualan kendaraan pada perusahaan tersebut bukan hanya melalui showroom cabang, melainkan reseller-reseller bebas lainnya.

## 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	product	One to many
product	orderdetails	One to many
orders	orderdetails	One to many
customers	orders	One to many
customers	payments	One to many
employees	customers	One to many
employees	offices	Many to one
employees	employees	Hierarchical
offices	employees	One to many

3. Analisa jumlah field pada setiap tabel!

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

### A. Analisa Data

## ❖ 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;
```

id	name	email	phone	address	city	state	postal_code	country	status													
108	Jessica Lewis	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	124	Mia Mills	Stevensburg VA	Nelson	Brian	610551445	8077 Shing St	WALL	San Rafael	CA	94162	USA
108	Jessica Lewis	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	128	Mia Mills	CA	Murphy	Julie	630551557	8077 Napa	WALL	San Francisco	CA	94217	USA
108	Jessica Lewis	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	161	Redwood Stores Inc	Hawthorne	Jer	630551558	8028 Ford	WALL	Burlingame	CA	94217	USA	
108	Jessica Lewis	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	221	Concrete GP Mills Co	Brown	Julie	630551580	7734 Shing St	WALL	San Francisco	CA	94217	USA	
108	Jessica Lewis	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	248	The Sherrills Golf Club	Tracy	Bur	430552859	3088 Lake Dr	WALL	San Jose	CA	94217	USA	
108	Jessica Lewis	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	262	Signal Hill	Twinsburg	Bur	610551557	2760 Ford	WALL	Indianola	CA	94217	USA	
108	Thompson Leslie	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	310	Signal Hill Sports	King	Jean	700551659	6088 Shing St	WALL	Las Vegas	NV	89100	USA	
108	Thompson Leslie	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	228	ThompsonGripco.com	CONTACT:LEAH	Julie	630551577	7804 Wilson Dr	WALL	Pasadena	CA	90053	USA	
108	Thompson Leslie	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	219	Burns & Tapp Co	Young	Mary	310551557	4897 Douglas	WALL	Glenaden	CA	90061	USA	
108	Thompson Leslie	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	226	Colletteville Mills	Thompson	Valerie	760551648	381 Ford	WALL	San Diego	CA	91217	USA	
108	Thompson Leslie	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	247	Mart 'N' US Restless, Ltd	Chandler	Brian	310551648	897 Douglas	WALL	Los Angeles	CA	90019	USA	
108	Thompson Leslie	alexis@jessicamobility.com	1	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	1	Sales Manager (NW)	475	Alene Court	Thompson	Brian	310551772	3875 Ford	WALL	Salt Lake	UT	84103	USA	
108	Franki Julia	franki@jessicamobility.com	2	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	2	Sales Manager (NW)	171	Cambridge	Cambridge	Theresa	Jerry	617055551	6000 Buses	WALL	Cambridge	MA	01307	USA
108	Franki Julia	franki@jessicamobility.com	2	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	2	Sales Manager (NW)	226	Orion Mills Collaborative	Bergen	Miguel	617057678	7608 Springer Dr	WALL	Brookhaven	MA	01520	USA	
108	Franki Julia	franki@jessicamobility.com	2	Sales Rep	1142	Bow	Anthony	alexis@jessicamobility.com	2	Sales Manager (NW)	220	Mia Creative Ltd	Huang	Wing	609055551	4075 Wilson Dr	WALL	New Bedford	MA	05053	USA	

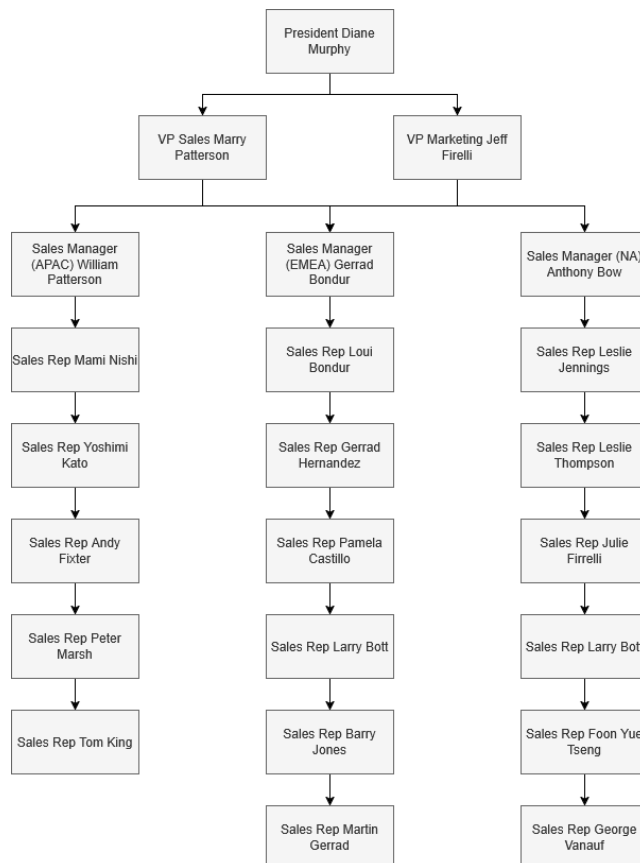
2. Buka tab baru pada browser untuk melakukan eksekusi query berikut.

```
1 SELECT manager.employeeNumber as id_manager,  
2 CONCAT(manager.firstName," ",manager.lastName) as Manager,  
3 employee.employeeNumber as id_staff,  
4 CONCAT(employee.firstName," ",employee.lastName) as staff  
5 FROM employees employee, employees manager  
6 WHERE employee.reportsTo=manager.employeeNumber  
7 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

## 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:

```
1 SELECT manager.employeeNumber as id_manager,  
2 concat(manager.firstName, " ",manager.lastName) as Manager,  
3 employee.employeeNumber as id_staff,  
4 concat(employee.firstName, " ",employee.lastName) as staff,  
5 count(cust.customerNumber) as total_cust  
6 FROM employees employee  
7 join employees manager on employee.reportsTo = manager.employeeNumber  
8 left join customers cust on employee.employeeNumber = cust.salesRepEmployeeNumber  
9 GROUP BY employee.employeeNumber  
10 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

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

### TUGAS 3

- Siapakah staff dengan hirarki paling bawah yang berprestasi dilihat dari jumlah customer terbanyak?
  - Pamela Castillo, employee number : 1401, with 10 total customers
- 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!
  - Rank KPI atasan

1. Gerrard Bondur : 6 bawahan ( $6+7+10+8+9+6$ ) = 46
  2. Anthony Bow : 6 bawahan ( $6+6+0+6+7+8$ ) = 33
  3. William Patterson : 5 bawahan ( $5+0+5+5+0$ ) = 15
3. 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,
3     concat(e.firstName," ",e.lastName) as employee_name,
4     SUM(od.quantityOrdered * od.priceEach) AS total_sales
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 GROUP BY e.employeeNumber
10 ORDER BY total_sales DESC;

```

employeeNumber	employee_name	total_sales
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

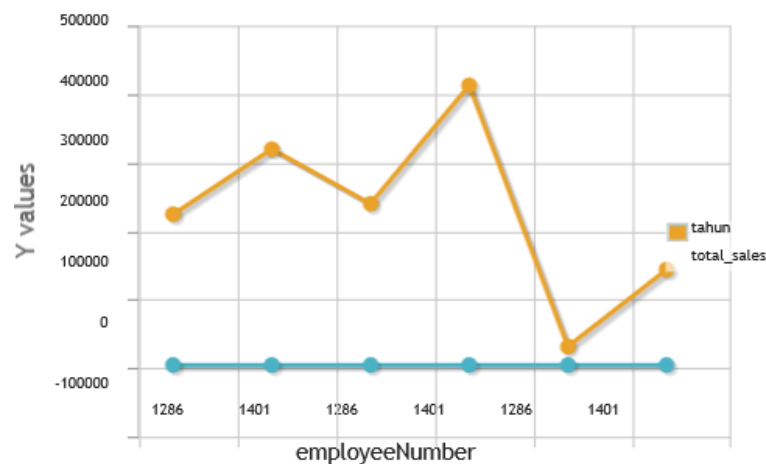
4. Jika KPI yang pertama merupakan "Jumlah customer yang bertransaksi" sedangkan KPI yang kedua "Jumlah omset yang didapat". Maka, berapakah jumlah field yang dibutuhkan untuk mendapatkan informasi tersebut?
  - KPI 1 (Jumlah Customer): cukup menggunakan nomor customer (1 field)
  - KPI 2 (Jumlah Omset):
    - Berapa barang yang dibeli? (quantityOrdered)
    - Berapa harga per barang? (priceEach)
  - Total: 3 Field yaitu customerNumber, quantityOrdered, priceEach
5. Buatlah report pertahun untuk KPI "Jumlah omset yang didapat" pada Foon Yue Tseng dan Pamela Castillo. Serta gambarkan grafiknya (grafik garis).

```

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

```

employeeNumber	firstName	lastName	tahun	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 melalui 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.

Field	Keterangan
branchName	Nama cabang
orderDate	Tanggal / Waktu transaksi
orderAmount	Nilai total transaksi
branchID	Id tiap cabang

2. Bentuk query dengan memperhatikan relasi antar tabel.

```

1 SELECT o.city AS branchName,
2 YEAR(p.paymentDate) AS Tahun,
3 SUM(p.amount) AS Total_Omset
4 FROM payments p JOIN customers c
5 ON p.customerNumber = c.customerNumber
6 JOIN employees e
7 ON c.salesRepEmployeeNumber = e.employeeNumber
8 JOIN offices o
9 ON e.officeCode = o.officeCode
10 GROUP BY o.city, YEAR(p.paymentDate)
11 ORDER BY o.city, YEAR(p.paymentDate);

```

branchName	Tahun	Total_Omset
Boston	2003	301781.38
Boston	2004	467177.07
Boston	2005	66923.88
London	2003	505384.85
London	2004	674815.75
London	2005	144125.30
NYC	2003	391175.53
NYC	2004	623872.78
NYC	2005	57571.16
Paris	2003	969959.90
Paris	2004	1368458.96
Paris	2005	480750.04
San Francisco	2003	532681.13
San Francisco	2004	517408.62
San Francisco	2005	287349.83
Sydney	2003	281985.51
Sydney	2004	509833.62
Sydney	2005	215473.85
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.



Field	Table	Kegunaan
officeCode	Offices	Identitas cabang
city	Offices	Nama cabang
employeeNumber	employees	Karyawan penanggung jawab customer
SalesRepEmployeeNumber	customers	Karyawan yang handle customer
customerNumber	customers	Identitas customer
orderNumber	orders	Kunci transaksi
Orderdate	orders	Tanggal Transaksi
Productcode	orderdetails	Produk yang dipesan
Quantityordered	Orderdetails	Berapa unit produk yang dipesan
Productname	Products	Nama produk
productline	products	Kategori produk

## Query:

```

1 SELECT o.officeCode AS Kode_Cabang,
2 o.city AS Nama_Cabang,
3 YEAR(od.orderDate) AS Tahun,
4 p.productName AS Produk,
5 SUM(odd.quantityOrdered) AS Total_Unit_Terjual
6 FROM offices o
7 JOIN employees e ON o.officeCode = e.officeCode
8 JOIN customers c ON e.employeeNumber = c.salesRepEmployeeNumber
9 JOIN orders od ON c.customerNumber = od.customerNumber
10 JOIN orderdetails odd ON od.orderNumber = odd.orderNumber
11 JOIN products p ON odd.productCode = p.productCode
12 GROUP BY o.officeCode, o.city, Tahun, Produk
13 ORDER BY o.officeCode, Tahun, Total_Unit_Terjual DESC;

```

Kode_Cabang	Nama_Cabang	Tahun	Produk	Total_Unit_Terjual
1	San Francisco	2003	1997 BMW R 1100 S	176
1	San Francisco	2003	1939 Chevrolet Deluxe Coupe	157
1	San Francisco	2003	1937 Lincoln Berline	156
1	San Francisco	2003	1936 Mercedes-Benz 500K Special Roadster	155
1	San Francisco	2003	1969 Harley Davidson Ultimate Chopper	152
1	San Francisco	2003	1936 Harley Davidson El Knucklehead	148
1	San Francisco	2003	1938 Cadillac V-16 Presidential Limousine	145
1	San Francisco	2003	2002 Suzuki XREO	140
1	San Francisco	2003	1932 Model A Ford J-Coupe	133
1	San Francisco	2003	1936 Mercedes Benz 500k Roadster	132
1	San Francisco	2003	1911 Ford Town Car	131
1	San Francisco	2003	1917 Grand Touring Sedan	128
1	San Francisco	2003	1996 Moto Guzzi 1100i	125
1	San Francisco	2003	2003 Harley-Davidson Eagle Drag Bike	124
1	San Francisco	2003	1917 Maxwell Touring Car	114
1	San Francisco	2003	2002 Yamaha YZR M1	113
1	San Francisco	2003	1932 Alfa Romeo 8C2300 Spider Sport	111
1	San Francisco	2003	1960 BSA Gold Star DBD34	101
1	San Francisco	2003	1982 Ducati 996 R	99
1	San Francisco	2003	1968 Dodge Charger	94
1	San Francisco	2003	1928 Mercedes-Benz SSK	92
1	San Francisco	2003	2002 Chevy Corvette	92
1	San Francisco	2003	1928 British Royal Navy Airplane	89
1	San Francisco	2003	F/A 18 Hornet 1/72	86
1	San Francisco	2003	1948 Porsche 356-A Roadster	86