

一 数据介绍

课程使用 微软的Northwind数据集, 零售业务, 包含了客户, 供应商和订单数据。原始数据集可以在 [微软GitHub 仓库](#) 下载。为了满足课程需求, 数据库数据在原始数据基础上做了微调。

基于此份数据, 我们将通过SQL来创建数据报表, 满足业务需求。

数据已经保存成 `.sql` 文件随本文一起下发, 可快进至本章最后tips [数据导入navicat](#)

学习目标

- 了解项目使用的数据表结构及表关系

1 员工表(employees)

- 保存员工基本信息:
 - 唯一ID (`employee_id`).
 - 姓, 名(`first_name` and `last_name`).
 - 职务 (`title`).
- 需要注意的是 `reports_to` 这一列, 保存的是员工所对应的直属领导的员工ID (也在这张表中保存), 此外还有其它列包括入职时间, 生日... ..

练习1

- 选中 `employees` 表的所有数据

```
select * from employees
```

employee_id	last_name	first_name	title	birth_date	hire_date	address	city	region	postal_code	country	reports_to
1	Davolio	Nancy	Sales Representative	1968-12-08	2012-05-01	507 - 20th Ave. E. Apt. 2A	Seattle	WA	98122	USA	2
2	Fuller	Andrew	Vice President, Sales	1972-02-19	2012-08-14	908 W. Capital Way	Tacoma	WA	98401	USA	null
3	Smith	John	Sales Representative	1983-08-30	2012-04-01	722 Moss Bay Blvd.	Kirkland	WA	98033	USA	2
4	Peacock	Margaret	Sales Representative	1957-09-19	2013-05-03	4110 Old Redmond Rd.	Redmond	WA	98052	USA	2
5	Buchanan	Steven	Sales Manager	1975-03-04	2013-10-17	14 Garrett Hill	London	null	SW1 8JR	UK	2
6	Suyama	Michael	Sales Representative	1983-07-02	2013-10-17	Coventry House Miner Rd.	London	null	EC2 7JR	UK	5
7	King	Robert	Sales Representative	1980-05-29	2014-01-02	Edgeham Hollow Winchester Way	London	null	RG1 9SP	UK	5
8	Callahan	Laura	Inside Sales Coordinator	1978-01-09	2014-03-05	4726 - 11th Ave. N.E.	Seattle	WA	98105	USA	2
9	Dodsworth	Anne	Sales Representative	1986-01-27	2014-11-15	7 Houndstooth Rd.	London	null	WG2 7LT	UK	5
10	Smith	John	Sales Representative	1994-08-30	2017-03-21	22 Abbey Rd	London	null	NW6 5JG	UK	2

2 顾客表(customers)

- 每一个顾客都有唯一ID `customer_id` , 顾客的ID是公司全名的缩写, 用5个字母表示
- 公司全名在 `company_name` 列中保存
- `contact_name` 和 `contact_title` 两列代表了客户公司的联系人信息 (名字和职务)

- 除此之外还保存了顾客的地址信息和联系方式 `city` , `region` , `postal_code` , `country` , `fax`

customer_id	company_name	contact_name	contact_title	address	city	region	postal_code	country	fax
ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Obere Str. 57	Berlin	null	12209	Germany	030- 0076545
ANATR	Ana Trujillo Emparedados y helados	Ana Trujillo	Owner	Avda. de la Constitución 2222	México D.F.	null	05021	Mexico	(5) 555- 3745
ANTON	Antonio Moreno Taquería	Antonio Moreno	Owner	Mataderos 2312	México D.F.	null	05023	Mexico	null
AROUT	Around the Horn	Thomas Hardy	Sales Representative	120 Hanover Sq.	London	null	WA1 1DP	UK	(171) 555- 6750
BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator	Berguvsvägen 8	Luleå	null	S-958 22	Sweden	0921-12 34 67
BLAUS	Blauer See Delikatessen	Hanna Moos	Sales Representative	Forsterstr. 57	Mannheim	null	68306	Germany	0621-08924
BLONP	Blondesddl père et fils	Frédérique Citeaux	Marketing Manager	24, place Kléber	Strasbourg	null	67000	France	88.60.15.32
BOLID	Bólido Comidas preparadas	Martín Sommer	Owner	C/ Araquil, 67	Madrid	null	28023	Spain	(91) 555 91 99
BONAP	Bon app'	Laurence Lebihan	Owner	12, rue des Bouchers	Marseille	null	13008	France	91.24.45.41
BOTTM	Bottom-Dollar Markets	Elizabeth Lincoln	Accounting Manager	23 Tsawassen Blvd.	Tsawassen	BC	T2F 8M4	Canada	(604) 555- 3745
BSBEV	B's Beverages	Victoria Ashworth	Sales Representative	Fauntleroy Circus	London	null	EC2 5NT	UK	null
CACTU	Cactus Comidas para llevar	Patricio Simpson	Sales Agent	Cerrito 333	Buenos Aires	null	1010	Argentina	(1) 135- 4892
CENTC	Centro comercial Moctezuma	Francisco Chang	Marketing Manager	Sierras de Granada 9993	México D.F.	null	05022	Mexico	(5) 555- 7293
CHOPS	Chop-suey Chinese	Yang Wang	Owner	Hauptstr. 29	Bern	null	3012	Switzerland	null
COMMI	Comércio Mineiro	Pedro Afonso	Sales Associate	Av. dos Lusíadas, 23	Sao Paulo	SP	05432-043	Brazil	null

customer_id	company_name	contact_name	contact_title	address	city	region	postal_code	country	fax
CONSH	Consolidated Holdings	Elizabeth Brown	Sales Representative	Berkeley Gardens 12 Brewery	London	null	WX1 6LT	UK	(171) 555-9199
DRACD	Drachenblut Delikatessen	Sven Ottlieb	Order Administrator	Walserweg 21	Aachen	null	52066	Germany	0241-059428
DUMON	Du monde entier	Janine Labrune	Owner	67, rue des Cinquante Otages	Nantes	null	44000	France	40.67.89.89
EASTC	Eastern Connection	Ann Devon	Sales Agent	35 King George	London	null	WX3 6FW	UK	(171) 555-3373
ERNSH	Ernst Handel	Roland Mendel	Sales Manager	Kirchgasse 6	Graz	null	8010	Austria	7675-3426
FAMIA	Familia Arquibaldo	Aria Cruz	Marketing Assistant	Rua Orós, 92	Sao Paulo	SP	05442-030	Brazil	null
FISSA	FISSA Fabrica Inter. Salchichas S.A.	Diego Roel	Accounting Manager	C/ Morzarzal, 86	Madrid	null	28034	Spain	(91) 555 55 93
FOLIG	Folies gourmandes	Martine Rancé	Assistant Sales Agent	184, chaussée de Tournai	Lille	null	59000	France	20.16.10.17
FOLKO	Folk och få HB	Maria Larsson	Owner	Åkerгатan 24	Bräcke	null	S-844 67	Sweden	null
FRANK	Frankenversand	Peter Franken	Marketing Manager	Berliner Platz 43	München	null	80805	Germany	089-0877451
FRANR	France restauration	Carine Schmitt	Marketing Manager	54, rue Royale	Nantes	null	44000	France	40.32.21.20
FRANS	Franchi S.p.A.	Paolo Accorti	Sales Representative	Via Monte Bianco 34	Torino	null	10100	Italy	011-4988261
FURIB	Furia Bacalhau e Frutos do Mar	Lino Rodriguez	Sales Manager	Jardim das rosas n. 32	Lisboa	null	1675	Portugal	(1) 354-2535
GALED	Galería del gastrónomo	Eduardo Saavedra	Marketing Manager	Rambla de Cataluña, 23	Barcelona	null	08022	Spain	(93) 203 4561
GODOS	Godos Cocina Típica	José Pedro Freyre	Sales Manager	C/ Romero, 33	Sevilla	null	41101	Spain	null

customer_id	company_name	contact_name	contact_title	address	city	region	postal_code	country	fax
GOURL	Gourmet Lanchonetes	André Fonseca	Sales Associate	Av. Brasil, 442	Campinas	SP	04876-786	Brazil	null
GREAL	Great Lakes Food Market	Howard Snyder	Marketing Manager	2732 Baker Blvd.	Eugene	OR	97403	USA	null
GROSR	GROSELLA-Restaurante	Manuel Pereira	Owner	5ª Ave. Los Palos Grandes	Caracas	DF	1081	Venezuela	(2) 283-3397
HANAR	Hanari Carnes	Mario Pontes	Accounting Manager	Rua do Paço, 67	Rio de Janeiro	RJ	05454-876	Brazil	(21) 555-8765
HILAA	HILARION-Abastos	Carlos Hernández	Sales Representative	Carrera 22 con Ave. Carlos Soublette #8-35	San Cristóbal	Táchira	5022	Venezuela	(5) 555-1948
HUNGC	Hungry Coyote Import Store	Yoshi Latimer	Sales Representative	City Center Plaza 516 Main St.	Elgin	OR	97827	USA	(503) 555-2376
HUNGO	Hungry Owl All-Night Grocers	Patricia McKenna	Sales Associate	8 Johnstown Road	Cork	Co. Cork	null	Ireland	2967 3333
ISLAT	Island Trading	Helen Bennett	Marketing Manager	Garden House Crowther Way	Cowes	Isle of Wight	PO31 7PJ	UK	null
KOENE	Königlich Essen	Philip Cramer	Sales Associate	Maubelstr. 90	Brandenburg	null	14776	Germany	null
LACOR	La corne d'abondance	Daniel Tonini	Sales Representative	67, avenue de l'Europe	Versailles	null	78000	France	30.59.85.11
LAMAI	La maison d'Asie	Annette Roulet	Sales Manager	1 rue Alsace-Lorraine	Toulouse	null	31000	France	61.77.61.11
LAUGB	Laughing Bacchus Wine Cellars	Yoshi Tannamuri	Marketing Assistant	1900 Oak St.	Vancouver	BC	V3F 2K1	Canada	(604) 555-7293
LAZYK	Lazy K Kountry Store	John Steel	Marketing Manager	12 Orchestra Terrace	Walla Walla	WA	99362	USA	(509) 555-6221
LEHMS	Lehmanns Marktstand	Renate Messner	Sales Representative	Magazinweg 7	Frankfurt a.M.	null	60528	Germany	069-0245874

customer_id	company_name	contact_name	contact_title	address	city	region	postal_code	country	fax
LETSS	Let's Stop N Shop	Jaime Yorres	Owner	87 Polk St. Suite 5	San Francisco	CA	94117	USA	null
LILAS	LILA-Supermercado	Carlos González	Accounting Manager	Carrera 52 con Ave. Bolívar #65-98 Llano Largo	Barquisimeto	Lara	3508	Venezuela	(9) 331-7256
LINOD	LINO-Delicatesses	Felipe Izquierdo	Owner	Ave. 5 de Mayo Porlamar	I. de Margarita	Nueva Esparta	4980	Venezuela	(8) 34-93-93
LONEP	Lonesome Pine Restaurant	Fran Wilson	Sales Manager	89 Chiaroscuro Rd.	Portland	OR	97219	USA	(503) 555-9646
MAGAA	Magazzini Alimentari Riuniti	Giovanni Rovelli	Marketing Manager	Via Ludovico il Moro 22	Bergamo	null	24100	Italy	035-640231
MAISD	Maison Dewey	Catherine Dewey	Sales Agent	Rue Joseph-Bens 532	Bruxelles	null	B-1180	Belgium	(02) 201 24 68
MEREP	Mère Paillarde	Jean Fresnière	Marketing Assistant	43 rue St. Laurent	Montréal	Québec	H1J 1C3	Canada	(514) 555-8055
MORGK	Morgenstern Gesundkost	Alexander Feuer	Marketing Assistant	Heerstr. 22	Leipzig	null	04179	Germany	null
NORTS	North/South	Simon Crowther	Sales Associate	South House 300 Queensbridge	London	null	SW7 1RZ	UK	(171) 555-2530
OCEAN	Océano Atlántico Ltda.	Yvonne Moncada	Sales Agent	Ing. Gustavo Moncada 8585 Piso 20-A	Buenos Aires	null	1010	Argentina	(1) 135-5535
OLDWO	Old World Delicatessen	Rene Phillips	Sales Representative	2743 Bering St.	Anchorage	AK	99508	USA	(907) 555-2880
OTTIK	Ottilies Käseladen	Henriette Pfalzheim	Owner	Mehrheimerstr. 369	Köln	null	50739	Germany	0221-0765721
PARIS	Paris spécialités	Marie Bertrand	Owner	265, boulevard Charonne	Paris	null	75012	France	(1) 42.34.22.77

customer_id	company_name	contact_name	contact_title	address	city	region	postal_code	country	fax
PERIC	Pericles Comidas clásicas	Guillermo Fernández	Sales Representative	Calle Dr. Jorge Cash 321	México D.F.	null	05033	Mexico	(5) 545- 3745
PICCO	Piccolo und mehr	Georg Pipp	Sales Manager	Geislweg 14	Salzburg	null	5020	Austria	6562-9723
PRINI	Princesa Isabel Vinhos	Isabel de Castro	Sales Representative	Estrada da saúde n. 58	Lisboa	null	1756	Portugal	null
QUEDE	Que Delícia	Bernardo Batista	Accounting Manager	Rua da Panificadora, 12	Rio de Janeiro	RJ	02389-673	Brazil	(21) 555- 4545
QUEEN	Queen Cozinha	Lúcia Carvalho	Marketing Assistant	Alameda dos Canários, 891	Sao Paulo	SP	05487-020	Brazil	null
QUICK	QUICK-Stop	Horst Kloss	Accounting Manager	Taucherstraße 10	Cunewalde	null	01307	Germany	null
RANCH	Rancho grande	Sergio Gutiérrez	Sales Representative	Av. del Libertador 900	Buenos Aires	null	1010	Argentina	(1) 123- 5556
RATTC	Rattlesnake Canyon Grocery	Paula Wilson	Assistant Sales Representative	2817 Milton Dr.	Albuquerque	NM	87110	USA	(505) 555- 3620
REGGC	Reggiani Caseifici	Maurizio Moroni	Sales Associate	Strada Provinciale 124	Reggio Emilia	null	42100	Italy	0522- 556722
RICAR	Ricardo Adocidados	Janete Limeira	Assistant Sales Agent	Av. Copacabana, 267	Rio de Janeiro	RJ	02389-890	Brazil	null
RICSU	Richter Supermarkt	Michael Holz	Sales Manager	Grenzacherweg 237	Genève	null	1203	Switzerland	null
ROMEY	Romero y tomillo	Alejandra Camino	Accounting Manager	Gran Vía, 1	Madrid	null	28001	Spain	(91) 745 6210
SANTG	Santé Gourmet	Jonas Bergulfsen	Owner	Erling Skakkes gate 78	Stavern	null	4110	Norway	07-98 92 47
SAVEA	Save-a-lot Markets	Jose Pavarotti	Sales Representative	187 Suffolk Ln.	Boise	ID	83720	USA	null

customer_id	company_name	contact_name	contact_title	address	city	region	postal_code	country	fax
SEVES	Seven Seas Imports	Hari Kumar	Sales Manager	90 Wadhurst Rd.	London	null	OX15 4NB	UK	(171) 555-5646
SIMOB	Simons bistro	Jytte Petersen	Owner	Vinbæltet 34	Kobenhavn	null	1734	Denmark	31 13 35 57
SPECD	Spécialités du monde	Dominique Perrier	Marketing Manager	25, rue Lauriston	Paris	null	75016	France	(1) 47.55.60.20
SPLIR	Split Rail Beer & Ale	Art Braunschweiger	Sales Manager	P.O. Box 555	Lander	WY	82520	USA	(307) 555-6525
SUPRD	Suprêmes délices	Pascale Cartrain	Accounting Manager	Boulevard Tirou, 255	Charleroi	null	B-6000	Belgium	(071) 23 67 22 21
THEBI	The Big Cheese	Liz Nixon	Marketing Manager	89 Jefferson Way Suite 2	Portland	OR	97201	USA	null
THECR	The Cracker Box	Liu Wong	Marketing Assistant	55 Grizzly Peak Rd.	Butte	MT	59801	USA	(406) 555-8083
TOMSP	Toms Spezialitäten	Karin Josephs	Marketing Manager	Luisenstr. 48	Münster	null	44087	Germany	0251-035695
TORTU	Tortuga Restaurante	Miguel Angel Paolino	Owner	Avda. Azteca 123	México D.F.	null	05033	Mexico	null
TRADH	Tradição Hipermercados	Anabela Domingues	Sales Representative	Av. Inês de Castro, 414	Sao Paulo	SP	05634-030	Brazil	(11) 555-2168
TRAIH	Trail's Head Gourmet Provisioners	Helvetius Nagy	Sales Associate	722 DaVinci Blvd.	Kirkland	WA	98034	USA	(206) 555-2174
VAFFE	Vaffeljernet	Palle Ibsen	Sales Manager	Smagsloget 45	Århus	null	8200	Denmark	86 22 33 44
VICTE	Victuailles en stock	Mary Saveley	Sales Agent	2, rue du Commerce	Lyon	null	69004	France	78.32.54.87
VINET	Vins et alcools Chevalier	Paul Henriot	Accounting Manager	59 rue de l'Abbaye	Reims	null	51100	France	26.47.15.11
WANDK	Die Wandernde Kuh	Rita Müller	Sales Representative	Adenauerallee 900	Stuttgart	null	70563	Germany	0711-035428
WARTH	Wartian Herkku	Pirkko Koskitalo	Accounting Manager	Torikatu 38	Oulu	null	90110	Finland	981-443655

customer_id	company_name	contact_name	contact_title	address	city	region	postal_code	country	fax
WELLI	Wellington Importadora	Paula Parente	Sales Manager	Rua do Mercado, 12	Resende	SP	08737-363	Brazil	null
WHITC	White Clover Markets	Karl Jablonski	Owner	305 - 14th Ave. S. Suite 3B	Seattle	WA	98128	USA	(206) 555-4115
WILMK	Wilman Kala	Matti Karttunen	Owner/Marketing Assistant	Keskuskatu 45	Helsinki	null	21240	Finland	90-224 8858
WOLZA	Wolski Zajazd	Zbyszek Piestrzeniewicz	Owner	ul. Filtrowa 68	Warszawa	null	01-012	Poland	(26) 642-7012

练习2

- 查询每个客户的 ID , company name , contact name , contact title , city ,和 country .并按照国家名字排序

```
select customer_id,
       company_name,
       contact_name,
       contact_title,
       city,
       country from customers
order by country
```

- 显示结果

customer_id	company_name	contact_name	contact_title	city	country
OCEAN	Océano Atlántico Ltda.	Yvonne Moncada	Sales Agent	Buenos Aires	Argentina
CACTU	Cactus Comidas para llevar	Patricio Simpson	Sales Agent	Buenos Aires	Argentina
RANCH	Rancho grande	Sergio Gutiérrez	Sales Representative	Buenos Aires	Argentina
ERNSH	Ernst Handel	Roland Mendel	Sales Manager	Graz	Austria
PICCO	Piccolo und mehr	Georg Pipp	Sales Manager	Salzburg	Austria
MAISD	Maison Dewey	Catherine Dewey	Sales Agent	Bruxelles	Belgium
SUPRD	Suprêmes délices	Pascale Cartrain	Accounting Manager	Charleroi	Belgium
WELLI	Wellington Importadora	Paula Parente	Sales Manager	Resende	Brazil
HANAR	Hanari Carnes	Mario Pontes	Accounting Manager	Rio de Janeiro	Brazil
GOURL	Gourmet Lanchonetes	André Fonseca	Sales Associate	Campinas	Brazil
QUEDE	Que Delícia	Bernardo Batista	Accounting Manager	Rio de Janeiro	Brazil
QUEEN	Queen Cozinha	Lúcia Carvalho	Marketing Assistant	Sao Paulo	Brazil
COMMI	Comércio Mineiro	Pedro Afonso	Sales Associate	Sao Paulo	Brazil
TRADH	Tradição Hipermercados	Anabela Domingues	Sales Representative	Sao Paulo	Brazil
FAMIA	Familia Arquibaldo	Aria Cruz	Marketing Assistant	Sao Paulo	Brazil

customer_id	company_name	contact_name	contact_title	city	country
RICAR	Ricardo Adocicados	Janete Limeira	Assistant Sales Agent	Rio de Janeiro	Brazil
BOTTM	Bottom-Dollar Markets	Elizabeth Lincoln	Accounting Manager	Tsawassen	Canada
LAUGB	Laughing Bacchus Wine Cellars	Yoshi Tannamuri	Marketing Assistant	Vancouver	Canada
MEREP	Mère Paillarde	Jean Fresnière	Marketing Assistant	Montréal	Canada
SIMOB	Simons bistro	Jytte Petersen	Owner	Kobenhavn	Denmark

3 商品(products)和商品类别(categories)表

- 商品表中保存了在Northwind商店中出售的商品信息
 - 每一种商品都有唯一的 `product_id` 和商品名字 `product_name` .
 - 每一种商品都有一个供应商 (`supplier_id`)
 - 每一种商品都有一个商品类别 (`category_id`).
 - 每一种商品都有确定的单价 `unit_price` .
 - 字段 `discontinued` 代表商品是否缺货, `false` (有货) `true` (缺货)
- 商品类别表 `categories` , 保存了所有商品的类别
 - 每个类别都有唯一的id
 - 每个类别都有自己的名称 `category_name`
 - 字段 `description` 存储了类别的简短描述信息
- 商品表中包含了 `category_id` 字段, 所以可以使用join 将商品表中的信息与商品类别表中的信息进行关联查询

商品类别

category_id	category_name	description
1	Beverages	Soft drinks, coffees, teas, beers, and ales
2	Condiments	Sweet and savory sauces, relishes, spreads, and seasonings
3	Confections	Desserts, candies, and sweet breads
4	Dairy Products	Cheeses
5	Grains/Cereals	Breads, crackers, pasta, and cereal
6	Meat/Poultry	Prepared meats
7	Produce	Dried fruit and bean curd
8	Seafood	Seaweed and fish

产品表

product_id	product_name	supplier_id	category_id	quantity_per_unit	unit_price	units_in_stock	units_on_order	discontinued
1	Chai	1	1	10 boxes x 20 bags	18.00	39	0	f
2	Chang	1	1	24 - 12 oz bottles	19.00	17	40	f
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10.00	13	70	f
4	Chef Anton's Cajun Seasoning	2	2	48 - 6 oz jars	22.00	53	0	f
5	Chef Anton's Gumbo Mix	2	2	36 boxes	21.35	0	0	t
6	Grandma's Boysenberry Spread	3	2	12 - 8 oz jars	25.00	120	0	f
7	Uncle Bob's Organic Dried Pears	3	7	12 - 1 lb pkgs.	30.00	15	0	f
8	Northwoods Cranberry Sauce	3	2	12 - 12 oz jars	40.00	6	0	f
9	Mishi Kobe Niku	4	6	18 - 500 g pkgs.	97.00	29	0	t
10	Ikura	4	8	12 - 200 ml jars	31.00	31	0	f
11	Queso Cabrales	5	4	1 kg pkg.	21.00	22	30	f
12	Queso Manchego La Pastora	5	4	10 - 500 g pkgs.	38.00	86	0	f
13	Konbu	6	8	2 kg box	6.00	24	0	f
14	Tofu	6	7	40 - 100 g pkgs.	23.25	35	0	f
15	Genen Shouyu	6	2	24 - 250 ml bottles	15.50	39	0	f
16	Pavlova	7	3	32 - 500 g boxes	17.45	29	0	f
17	Alice Mutton	7	6	20 - 1 kg tins	39.00	0	0	t
18	Carnarvon Tigers	7	8	16 kg pkg.	62.50	42	0	f
19	Teatime Chocolate Biscuits	8	3	10 boxes x 12 pieces	9.20	25	0	f
20	Sir Rodney's Marmalade	8	3	30 gift boxes	81.00	40	0	f

product_id	product_name	supplier_id	category_id	quantity_per_unit	unit_price	units_in_stock	units_on_order	discontinued
21	Sir Rodney's Scones	8	3	24 pkgs. x 4 pieces	10.00	3	40	f
22	Gustaf's Knäckebröd	9	5	24 - 500 g pkgs.	21.00	104	0	f
23	Tunnbröd	9	5	12 - 250 g pkgs.	9.00	61	0	f
24	Guaraná Fantástica	10	1	12 - 355 ml cans	4.50	20	0	t
25	NuNuCa Nuß- Nougat-Creme	11	3	20 - 450 g glasses	14.00	76	0	f
26	Gumbär Gummibärchen	11	3	100 - 250 g bags	31.23	15	0	f
27	Schoggi Schokolade	11	3	100 - 100 g pieces	43.90	49	0	f
28	Rössle Sauerkraut	12	7	25 - 825 g cans	45.60	26	0	t
29	Thüringer Rostbratwurst	12	6	50 bags x 30 sausgs.	123.79	0	0	t
30	Nord-Ost Matjeshering	13	8	10 - 200 g glasses	25.89	10	0	f
31	Gorgonzola Telino	14	4	12 - 100 g pkgs	12.50	0	70	f
32	Mascarpone Fabioli	14	4	24 - 200 g pkgs.	32.00	9	40	f
33	Geitost	16	4	500 g	2.50	112	0	f
34	Sasquatch Ale	16	1	24 - 12 oz bottles	14.00	111	0	f
35	Steeleye Stout	16	1	24 - 12 oz bottles	18.00	20	0	f
36	Inlagd Sill	17	8	24 - 250 g jars	19.00	112	0	f
37	Gravad lax	17	8	12 - 500 g pkgs.	26.00	11	50	f
38	Côte de Blaye	18	1	12 - 75 cl bottles	263.50	17	0	f
39	Chartreuse verte	18	1	750 cc per bottle	18.00	69	0	f
40	Boston Crab Meat	19	8	24 - 4 oz tins	18.40	123	0	f

product_id	product_name	supplier_id	category_id	quantity_per_unit	unit_price	units_in_stock	units_on_order	discontinued
41	Jack's New England Clam Chowder	19	8	12 - 12 oz cans	9.65	85	0	f
42	Singaporean Hokkien Fried Mee	20	5	32 - 1 kg pkgs.	14.00	26	0	t
43	Ipoh Coffee	20	1	16 - 500 g tins	46.00	17	10	f
44	Gula Malacca	20	2	20 - 2 kg bags	19.45	27	0	f
45	Rogede sild	21	8	1k pkg.	9.50	5	70	f
46	Spegesild	21	8	4 - 450 g glasses	12.00	95	0	f
47	Zaanse koeken	22	3	10 - 4 oz boxes	9.50	36	0	f
48	Chocolade	22	3	10 pkgs.	12.75	15	70	f
49	Maxilaku	23	3	24 - 50 g pkgs.	20.00	10	60	f
50	Valkoinen suklaa	23	3	12 - 100 g bars	16.25	65	0	f
51	Manjimup Dried Apples	24	7	50 - 300 g pkgs.	53.00	20	0	f
52	Filo Mix	24	5	16 - 2 kg boxes	7.00	38	0	f
53	Perth Pasties	24	6	48 pieces	32.80	0	0	t
54	Tourtière	25	6	16 pies	7.45	21	0	f
55	Pâté chinois	25	6	24 boxes x 2 pies	24.00	115	0	f
56	Gnocchi di nonna Alice	26	5	24 - 250 g pkgs.	38.00	21	10	f
57	Ravioli Angelo	26	5	24 - 250 g pkgs.	19.50	36	0	f
58	Escargots de Bourgogne	27	8	24 pieces	13.25	62	0	f
59	Raclette Courdavault	28	4	5 kg pkg.	55.00	79	0	f
60	Camembert Pierrot	28	4	15 - 300 g rounds	34.00	19	0	f
61	Sirop d'érable	29	2	24 - 500 ml bottles	28.50	113	0	f
62	Tarte au sucre	29	3	48 pies	49.30	17	0	f

product_id	product_name	supplier_id	category_id	quantity_per_unit	unit_price	units_in_stock	units_on_order	discontinued
63	Vegie-spread	7	2	15 - 625 g jars	43.90	24	0	f
64	Wimmers gute Semmelknödel	12	5	20 bags x 4 pieces	33.25	22	80	f
65	Louisiana Fiery Hot Pepper Sauce	2	2	32 - 8 oz bottles	21.05	76	0	f
66	Louisiana Hot Spiced Okra	2	2	24 - 8 oz jars	17.00	4	100	f
67	Laughing Lumberjack Lager	16	1	24 - 12 oz bottles	14.00	52	0	f
68	Scottish Longbreads	8	3	10 boxes x 8 pieces	12.50	6	10	f
69	Gudbrandsdalsost	16	4	10 kg pkg.	36.00	26	0	f
70	Outback Lager	7	1	24 - 355 ml bottles	15.00	15	10	f
71	Flotemysost	16	4	10 - 500 g pkgs.	21.50	26	0	f
72	Mozzarella di Giovanni	14	4	24 - 200 g pkgs.	34.80	14	0	f
73	Röd Kaviar	17	8	24 - 150 g jars	15.00	101	0	f
74	Longlife Tofu	4	7	5 kg pkg.	10.00	4	20	f
75	Rhönbräu Klosterbier	12	1	24 - 0.5 l bottles	7.75	125	0	f
76	Lakkalikööri	23	1	500 ml	18.00	57	0	f
77	Original Frankfurter grüne Soße	12	2	12 boxes	13.00	32	0	f

练习3

- 查询每一个商品的 `product_name` , `category_name` , `quantity_per_unit` , `unit_price` , `units_in_stock` 并且通过 `unit_price` 字段排序

```
SELECT
    product_name,
    category_name,
    quantity_per_unit,
    unit_price,
    units_in_stock
FROM products
JOIN categories
    ON products.category_id = categories.category_id
ORDER BY unit_price;
```

- 查询结果

product_name	category_name	quantity_per_unit	unit_price	units_in_stock
Geitost	Dairy Products	500 g	2.50	112
Guaraná Fantástica	Beverages	12 - 355 ml cans	4.50	20
Konbu	Seafood	2 kg box	6.00	24
Filo Mix	Grains/Cereals	16 - 2 kg boxes	7.00	38
Tourtière	Meat/Poultry	16 pies	7.45	21
Rhönbräu Klosterbier	Beverages	24 - 0.5 l bottles	7.75	125
Tunnbröd	Grains/Cereals	12 - 250 g pkgs.	9.00	61
Teatime Chocolate Biscuits	Confections	10 boxes x 12 pieces	9.20	25
Zaanse koeken	Confections	10 - 4 oz boxes	9.50	36
Rogede sild	Seafood	1k pkg.	9.50	5
Jack's New England Clam Chowder	Seafood	12 - 12 oz cans	9.65	85
Longlife Tofu	Produce	5 kg pkg.	10.00	4
Aniseed Syrup	Condiments	12 - 550 ml bottles	10.00	13
Sir Rodney's Scones	Confections	24 pkgs. x 4 pieces	10.00	3
Spegesild	Seafood	4 - 450 g glasses	12.00	95
Gorgonzola Telino	Dairy Products	12 - 100 g pkgs	12.50	0
Scottish Longbreads	Confections	10 boxes x 8 pieces	12.50	6
Chocolade	Confections	10 pkgs.	12.75	15

product_name	category_name	quantity_per_unit	unit_price	units_in_stock
Original Frankfurter grüne Soße	Condiments	12 boxes	13.00	32
Escargots de Bourgogne	Seafood	24 pieces	13.25	62

4 供应商表 (supplier)

- 供应商表与用户表类似
- 每个供应商都有唯一ID `supplier_id`
- 每个供应商都有公司名字 `company_name`
- 表中还记录了供应商的地址信息 `address` , `city` , `region` , `postal_code` , `country`

supplier_id	company_name	address	city	region	postal_code	country
1	Exotic Liquids	49 Gilbert St.	London	null	EC1 4SD	UK
2	New Orleans Cajun Delights	P.O. Box 78934	New Orleans	LA	70117	USA
3	Grandma Kelly's Homestead	707 Oxford Rd.	Ann Arbor	MI	48104	USA
4	Tokyo Traders	9-8 Sekimai Musashino-shi	Tokyo	null	100	Japan
5	Cooperativa de Quesos 'Las Cabras'	Calle del Rosal 4	Oviedo	Asturias	33007	Spain
6	Mayumi's	92 Setsuko Chuo-ku	Osaka	null	545	Japan
7	Pavlova, Ltd.	74 Rose St. Moonie Ponds	Melbourne	Victoria	3058	Australia
8	Specialty Biscuits, Ltd.	29 King's Way	Manchester	null	M14 GSD	UK
9	PB Knäckebröd AB	Kaloadagatan 13	Göteborg	null	S-345 67	Sweden
10	Refrescos Americanas LTDA	Av. das Americanas 12.890	Sao Paulo	null	5442	Brazil
11	Heli Süßwaren GmbH & Co. KG	Tiergartenstraße 5	Berlin	null	10785	Germany
12	Plutzer Lebensmittelgroßmärkte AG	Bogenallee 51	Frankfurt	null	60439	Germany
13	Nord-Ost-Fisch Handelsgesellschaft mbH	Frahmredder 112a	Cuxhaven	null	27478	Germany
14	Formaggi Fortini s.r.l.	Viale Dante, 75	Ravenna	null	48100	Italy
15	Norske Meierier	Hatlevegen 5	Sandvika	null	1320	Norway
16	Bigfoot Breweries	3400 - 8th Avenue Suite 210	Bend	OR	97101	USA

supplier_id	company_name	address	city	region	postal_code	country
17	Svensk Sjöföda AB	Brovallavägen 231	Stockholm	null	S-123 45	Sweden
18	Aux joyeux ecclésiastiques	203, Rue des Francs- Bourgeois	Paris	null	75004	France
19	New England Seafood Cannery	Order Processing Dept. 2100 Paul Revere Blvd.	Boston	MA	02134	USA
20	Leka Trading	471 Serangoon Loop, Suite #402	Singapore	null	0512	Singapore
21	Lyngbysild	Lyngbysild Fiskebakken 10	Lyngby	null	2800	Denmark
22	Zaanse Snoepfabriek	Verkoop Rijnweg 22	Zaandam	null	9999 ZZ	Netherlands
23	Karkki Oy	Valtakatu 12	Lappeenranta	null	53120	Finland
24	G'day, Mate	170 Prince Edward Parade Hunter's Hill	Sydney	NSW	2042	Australia
25	Ma Maison	2960 Rue St. Laurent	Montréal	Québec	H1J 1C3	Canada
26	Pasta Buttini s.r.l.	Via dei Gelsomini, 153	Salerno	null	84100	Italy
27	Escargots Nouveaux	22, rue H. Voiron	Montceau	null	71300	France
28	Gai pâturage	Bat. B 3, rue des Alpes	Annecy	null	74000	France
29	Forêts d'érables	148 rue Chasseur	Ste-Hyacinthe	Québec	J2S 7S8	Canada

练习4

- 列出所有提供了4种以上不同商品的供应商列表
- 所需字段: `supplier_id` , `company_name` , and `products_count` (提供的商品种类数量).

```
SELECT
  s.supplier_id,
  s.company_name,
  COUNT(*) AS products_count
FROM products p
JOIN suppliers s
  ON p.supplier_id = s.supplier_id
GROUP BY s.supplier_id,
  s.company_name
HAVING COUNT(*) > 3;
```

- 查询结果

supplier_id	company_name	products_count
2	New Orleans Cajun Delights	4
16	Bigfoot Breweries	6
7	Pavlova, Ltd.	5
12	Plutzer Lebensmittelgroßmärkte AG	5
8	Specialty Biscuits, Ltd.	4

5 订单和订单明细表

- 订单表 `orders` 中的每一条数据包含了一个订单的基本信息:
 - 订单ID `order_id` , 顾客ID `customer_id` , 销售员的员工ID `employee_id`
 - 订单相关的时间信息 (下单日期 `order_date` 和配送日期 `shipped_date`) 和其他配送相关信息
 - `ship_via` 运输方式
 - `freight` 运费
 - `ship_address` 收货地址

- ship_city 收货城市
- ship_region 收货地区
- ship_postal_code 收货地址邮编
- ship_country 收货国家

订单表

order_id	customer_id	employee_id	order_date	shipped_date	ship_via	freight	ship_address	ship_city	ship_region	ship_postal_code	ship_country
10248	VINET	5	2016-07-04	2016-07-16	3	32.38	59 rue de l'Abbaye	Reims	null	51100	France
10249	TOMSP	6	2016-07-05	2016-07-10	1	11.61	Luisenstr. 48	Münster	null	44087	Germany
10250	HANAR	4	2016-07-08	2016-07-12	2	65.83	Rua do Paço, 67	Rio de Janeiro	RJ	05454-876	Brazil
10251	VICTE	3	2016-07-08	2016-07-15	1	41.34	2, rue du Commerce	Lyon	null	69004	France
10252	SUPRD	4	2016-07-09	2016-07-11	2	51.30	Boulevard Tirou, 255	Charleroi	null	B-6000	Belgium
10253	HANAR	3	2016-07-10	2016-07-16	2	58.17	Rua do Paço, 67	Rio de Janeiro	RJ	05454-876	Brazil
10254	CHOPS	5	2016-07-11	2016-07-23	2	22.98	Hauptstr. 31	Bern	null	3012	Switzerland
10255	RICSU	9	2016-07-12	2016-07-15	3	148.33	Starenweg 5	Genève	null	1204	Switzerland
10256	WELLI	3	2016-07-15	2016-07-17	2	13.97	Rua do Mercado, 12	Resende	SP	08737-363	Brazil
10257	HILAA	10	2016-07-16	2016-07-22	3	81.91	Carrera 22 con Ave. Carlos Soublette #8- 35	San Cristóbal	Táchira	5022	Venezuela
10258	ERNSH	1	2016-07-17	2016-07-23	1	140.51	Kirchgasse 6	Graz	null	8010	Austria
10259	CENTC	4	2016-07-18	2016-07-25	3	3.25	Sierras de Granada 9993	México D.F.	null	05022	Mexico
10260	OTTIK	4	2016-07-19	2016-07-29	1	55.09	Mehrheimerstr. 369	Köln	null	50739	Germany
10261	QUEDE	4	2016-07-19	2016-07-30	2	3.05	Rua da Panificadora, 12	Rio de Janeiro	RJ	02389-673	Brazil
10262	RATTC	8	2016-07-22	2016-07-25	3	48.29	2817 Milton Dr.	Albuquerque	NM	87110	USA
10263	ERNSH	9	2016-07-23	2016-07-31	3	146.06	Kirchgasse 6	Graz	null	8010	Austria
10264	FOLKO	6	2016-07-24	2016-08-23	3	3.67	Åkergatan 24	Bräcke	null	S-844 67	Sweden
10265	BLONP	2	2016-07-25	2016-08-12	1	55.28	24, place Kléber	Strasbourg	null	67000	France
10266	WARTH	3	2016-07-26	2016-07-31	3	25.73	Torikatu 38	Oulu	null	90110	Finland

order_id	customer_id	employee_id	order_date	shipped_date	ship_via	freight	ship_address	ship_city	ship_region	ship_postal_code	ship_country
10267	FRANK	4	2016-07-29	2016-08-06	1	208.58	Berliner Platz 43	München	null	80805	Germany
10268	GROSR	8	2016-07-30	2016-08-02	3	66.29	5ª Ave. Los Palos Grandes	Caracas	DF	1081	Venezuela
10269	WHITC	5	2016-07-31	2016-08-09	1	4.56	1029 - 12th Ave. S.	Seattle	WA	98124	USA
10270	WARTH	1	2016-08-01	2016-08-02	1	136.54	Torikatu 38	Oulu	null	90110	Finland
10271	SPLIR	6	2016-08-01	2016-08-30	2	4.54	P.O. Box 555	Lander	WY	82520	USA
10272	RATTC	6	2016-08-02	2016-08-06	2	98.03	2817 Milton Dr.	Albuquerque	NM	87110	USA
10273	QUICK	3	2016-08-05	2016-08-12	3	76.07	Taucherstraße 10	Cunewalde	null	01307	Germany
10274	VINET	6	2016-08-06	2016-08-16	1	6.01	59 rue de l'Abbaye	Reims	null	51100	France
10275	MAGAA	1	2016-08-07	2016-08-09	1	26.93	Via Ludovico il Moro 22	Bergamo	null	24100	Italy
10276	TORTU	8	2016-08-08	2016-08-14	3	13.84	Avda. Azteca 123	México D.F.	null	05033	Mexico
10277	MORGK	2	2016-08-09	2016-08-13	3	125.77	Heerstr. 22	Leipzig	null	04179	Germany
10278	BERGS	8	2016-08-12	2016-08-16	2	92.69	Berguvsvägen 8	Luleå	null	S-958 22	Sweden
10279	LEHMS	8	2016-08-13	2016-08-16	2	25.83	Magazinweg 7	Frankfurt a.M.	null	60528	Germany
10280	BERGS	2	2016-08-14	2016-09-12	1	8.98	Berguvsvägen 8	Luleå	null	S-958 22	Sweden
10281	ROMEY	4	2016-08-14	2016-08-21	1	2.94	Gran Vía, 1	Madrid	null	28001	Spain
10282	ROMEY	4	2016-08-15	2016-08-21	1	12.69	Gran Vía, 1	Madrid	null	28001	Spain
10283	LILAS	3	2016-08-16	2016-08-23	3	84.81	Carrera 52 con Ave. Bolívar #65-98 Llano Largo	Barquisimeto	Lara	3508	Venezuela
10284	LEHMS	4	2016-08-19	2016-08-27	1	76.56	Magazinweg 7	Frankfurt a.M.	null	60528	Germany

order_id	customer_id	employee_id	order_date	shipped_date	ship_via	freight	ship_address	ship_city	ship_region	ship_postal_code	ship_country
10285	QUICK	1	2016-08-20	2016-08-26	2	76.83	Taucherstraße 10	Cunewalde	null	01307	Germany
10286	QUICK	8	2016-08-21	2016-08-30	3	229.24	Taucherstraße 10	Cunewalde	null	01307	Germany
10287	RICAR	8	2016-08-22	2016-08-28	3	12.76	Av. Copacabana, 267	Rio de Janeiro	RJ	02389-890	Brazil
10288	REGGC	4	2016-08-23	2016-09-03	1	7.45	Strada Provinciale 124	Reggio Emilia	null	42100	Italy
10289	BSBEV	7	2016-08-26	2016-08-28	3	22.77	Fauntleroy Circus	London	null	EC2 5NT	UK
10290	COMMI	8	2016-08-27	2016-09-03	1	79.70	Av. dos Lusíadas, 23	Sao Paulo	SP	05432-043	Brazil
10291	QUEDE	6	2016-08-27	2016-09-04	2	6.40	Rua da Panificadora, 12	Rio de Janeiro	RJ	02389-673	Brazil
10292	TRADH	1	2016-08-28	2016-09-02	2	1.35	Av. Inês de Castro, 414	Sao Paulo	SP	05634-030	Brazil
10293	TORTU	1	2016-08-29	2016-09-11	3	21.18	Avda. Azteca 123	México D.F.	null	05033	Mexico
10294	RATTC	4	2016-08-30	2016-09-05	2	147.26	2817 Milton Dr.	Albuquerque	NM	87110	USA
10295	VINET	2	2016-09-02	2016-09-10	2	1.15	59 rue de l'Abbaye	Reims	null	51100	France
10296	LILAS	6	2016-09-03	2016-09-11	1	0.12	Carrera 52 con Ave. Bolívar #65-98 Llano Largo	Barquisimeto	Lara	3508	Venezuela
10297	BLONP	5	2016-09-04	2016-09-10	2	5.74	24, place Kléber	Strasbourg	null	67000	France
10298	HUNGO	6	2016-09-05	2016-09-11	2	168.22	8 Johnstown Road	Cork	Co. Cork	null	Ireland

order_id	customer_id	employee_id	order_date	shipped_date	ship_via	freight	ship_address	ship_city	ship_region	ship_postal_code	ship_country
10299	RICAR	4	2016-09-06	2016-09-13	2	29.76	Av. Copacabana, 267	Rio de Janeiro	RJ	02389-890	Brazil
10300	MAGAA	2	2016-09-09	2016-09-18	2	17.68	Via Ludovico il Moro 22	Bergamo	null	24100	Italy
10301	WANDK	8	2016-09-09	2016-09-17	2	45.08	Adenauerallee 900	Stuttgart	null	70563	Germany
10302	SUPRD	4	2016-09-10	2016-10-09	2	6.27	Boulevard Tirou, 255	Charleroi	null	B-6000	Belgium
10303	GODOS	7	2016-09-11	2016-09-18	2	107.83	C/ Romero, 33	Sevilla	null	41101	Spain
10304	TORTU	1	2016-09-12	2016-09-17	2	63.79	Avda. Azteca 123	México D.F.	null	05033	Mexico
10305	OLDWO	8	2016-09-13	2016-10-09	3	257.62	2743 Bering St.	Anchorage	AK	99508	USA
10306	ROMEY	1	2016-09-16	2016-09-23	3	7.56	Gran Vía, 1	Madrid	null	28001	Spain
10307	LONEP	2	2016-09-17	2016-09-25	2	0.56	89 Chiaroscuro Rd.	Portland	OR	97219	USA
10308	ANATR	7	2016-09-18	2016-09-24	3	1.61	Avda. de la Constitución 2222	México D.F.	null	05021	Mexico
10309	HUNGO	3	2016-09-19	2016-10-23	1	47.30	8 Johnstown Road	Cork	Co. Cork	null	Ireland
10310	THEBI	8	2016-09-20	2016-09-27	2	17.52	89 Jefferson Way Suite 2	Portland	OR	97201	USA
10311	DUMON	1	2016-09-20	2016-09-26	3	24.69	67, rue des Cinquante Otages	Nantes	null	44000	France
10312	WANDK	2	2016-09-23	2016-10-03	2	40.26	Adenauerallee 900	Stuttgart	null	70563	Germany
10313	QUICK	2	2016-09-24	2016-10-04	2	1.96	Taucherstraße 10	Cunewalde	null	01307	Germany
10314	RATTC	1	2016-09-25	2016-10-04	2	74.16	2817 Milton Dr.	Albuquerque	NM	87110	USA
10315	ISLAT	4	2016-09-26	2016-10-03	2	41.76	Garden House Crowther Way	Cowes	Isle of Wight	PO31 7PJ	UK

order_id	customer_id	employee_id	order_date	shipped_date	ship_via	freight	ship_address	ship_city	ship_region	ship_postal_code	ship_country
10316	RATTC	1	2016-09-27	2016-10-08	3	150.15	2817 Milton Dr.	Albuquerque	NM	87110	USA
10317	LONEP	6	2016-09-30	2016-10-10	1	12.69	89 Chiaroscuro Rd.	Portland	OR	97219	USA
10318	ISLAT	8	2016-10-01	2016-10-04	2	4.73	Garden House Crowther Way	Cowes	Isle of Wight	PO31 7PJ	UK
10319	TORTU	7	2016-10-02	2016-10-11	3	64.50	Avda. Azteca 123	México D.F.	null	05033	Mexico
10320	WARTH	5	2016-10-03	2016-10-18	3	34.57	Torikatu 38	Oulu	null	90110	Finland
10321	ISLAT	3	2016-10-03	2016-10-11	2	3.43	Garden House Crowther Way	Cowes	Isle of Wight	PO31 7PJ	UK
10322	PERIC	7	2016-10-04	2016-10-23	3	0.40	Calle Dr. Jorge Cash 321	México D.F.	null	05033	Mexico
10323	KOENE	4	2016-10-07	2016-10-14	1	4.88	Maubelstr. 90	Brandenburg	null	14776	Germany
10324	SAVEA	9	2016-10-08	2016-10-10	1	214.27	187 Suffolk Ln.	Boise	ID	83720	USA
10325	KOENE	1	2016-10-09	2016-10-14	3	64.86	Maubelstr. 90	Brandenburg	null	14776	Germany
10326	BOLID	4	2016-10-10	2016-10-14	2	77.92	C/ Araquil, 67	Madrid	null	28023	Spain
10327	FOLKO	2	2016-10-11	2016-10-14	1	63.36	Åkergatan 24	Bräcke	null	S-844 67	Sweden
10328	FURIB	4	2016-10-14	2016-10-17	3	87.03	Jardim das rosas n. 32	Lisboa	null	1675	Portugal
10329	SPLIR	4	2016-10-15	2016-10-23	2	191.67	P.O. Box 555	Lander	WY	82520	USA
10330	LILAS	3	2016-10-16	2016-10-28	1	12.75	Carrera 52 con Ave. Bolívar #65-98 Llano Largo	Barquisimeto	Lara	3508	Venezuela
10331	BONAP	9	2016-10-16	2016-10-21	1	10.19	12, rue des Bouchers	Marseille	null	13008	France
10332	MEREP	3	2016-10-17	2016-10-21	2	52.84	43 rue St. Laurent	Montréal	Québec	H1J 1C3	Canada
10333	WARTH	5	2016-10-18	2016-10-25	3	0.59	Torikatu 38	Oulu	null	90110	Finland
10334	VICTE	8	2016-10-21	2016-10-28	2	8.56	2, rue du Commerce	Lyon	null	69004	France
10335	HUNGO	7	2016-10-22	2016-10-24	2	42.11	8 Johnstown Road	Cork	Co. Cork	null	Ireland

order_id	customer_id	employee_id	order_date	shipped_date	ship_via	freight	ship_address	ship_city	ship_region	ship_postal_code	ship_country
10336	PRINI	7	2016-10-23	2016-10-25	2	15.51	Estrada da saúde n. 58	Lisboa	null	1756	Portugal
10337	FRANK	4	2016-10-24	2016-10-29	3	108.26	Berliner Platz 43	München	null	80805	Germany
10338	OLDWO	4	2016-10-25	2016-10-29	3	84.21	2743 Bering St.	Anchorage	AK	99508	USA
10339	MEREP	2	2016-10-28	2016-11-04	2	15.66	43 rue St. Laurent	Montréal	Québec	H1J 1C3	Canada
10340	BONAP	1	2016-10-29	2016-11-08	3	166.31	12, rue des Bouchers	Marseille	null	13008	France
10341	SIMOB	7	2016-10-29	2016-11-05	3	26.78	Vinbæltet 34	Kobenhavn	null	1734	Denmark
10342	FRANK	4	2016-10-30	2016-11-04	2	54.83	Berliner Platz 43	München	null	80805	Germany
10343	LEHMS	4	2016-10-31	2016-11-06	1	110.37	Magazinweg 7	Frankfurt a.M.	null	60528	Germany
10344	WHITC	4	2016-11-01	2016-11-05	2	23.29	1029 - 12th Ave. S.	Seattle	WA	98124	USA
10345	QUICK	2	2016-11-04	2016-11-11	2	249.06	Taucherstraße 10	Cunewalde	null	01307	Germany
10346	RATTC	3	2016-11-05	2016-11-08	3	142.08	2817 Milton Dr.	Albuquerque	NM	87110	USA
10347	FAMIA	4	2016-11-06	2016-11-08	3	3.10	Rua Orós, 92	Sao Paulo	SP	05442-030	Brazil

订单明细表

- 订单明细表 `order_items` 中的每一条记录代表了订单中的一件商品，记录了订单中每件商品的
 - 订单ID `order_id`
 - 商品ID `product_id`
 - 商品单价 `unit_price`
 - 购买数量 `quantity`
 - 折扣 `discount` .

order_id	product_id	unit_price	quantity	discount
10248	11	14.00	12	0.00
10248	42	9.80	10	0.00
10248	72	34.80	5	0.00
10249	14	18.60	9	0.00
10249	51	42.40	40	0.00
10250	41	7.70	10	0.00
10250	51	42.40	35	0.15
10250	65	16.80	15	0.15
10251	22	16.80	6	0.05
10251	57	15.60	15	0.05
10251	65	16.80	20	0.00
10252	20	64.80	40	0.05
10252	33	2.00	25	0.05
10252	60	27.20	40	0.00
10253	31	10.00	20	0.00
10253	39	14.40	42	0.00
10253	49	16.00	40	0.00
10254	24	3.60	15	0.15
10254	55	19.20	21	0.15
10254	74	8.00	21	0.00
10255	2	15.20	20	0.00
10255	16	13.90	35	0.00
10255	36	15.20	25	0.00
10255	59	44.00	30	0.00

order_id	product_id	unit_price	quantity	discount
10256	53	26.20	15	0.00
10256	77	10.40	12	0.00
10257	27	35.10	25	0.00
10257	39	14.40	6	0.00
10257	77	10.40	15	0.00
10258	2	15.20	50	0.20
10258	5	17.00	65	0.20
10258	32	25.60	6	0.20
10259	21	8.00	10	0.00
10259	37	20.80	1	0.00
10260	41	7.70	16	0.25
10260	57	15.60	50	0.00
10260	62	39.40	15	0.25
10260	70	12.00	21	0.25
10261	21	8.00	20	0.00
10261	35	14.40	20	0.00
10262	5	17.00	12	0.20
10262	7	24.00	15	0.00
10262	56	30.40	2	0.00
10263	16	13.90	60	0.25
10263	24	3.60	28	0.00
10263	30	20.70	60	0.25
10263	74	8.00	36	0.25
10264	2	15.20	35	0.00

order_id	product_id	unit_price	quantity	discount
10264	41	7.70	25	0.15
10265	17	31.20	30	0.00
10265	70	12.00	20	0.00
10266	12	30.40	12	0.05
10267	40	14.70	50	0.00
10267	59	44.00	70	0.15
10267	76	14.40	15	0.15
10268	29	99.00	10	0.00
10268	72	27.80	4	0.00
10269	33	2.00	60	0.05
10269	72	27.80	20	0.05
10270	36	15.20	30	0.00
10270	43	36.80	25	0.00
10271	33	2.00	24	0.00
10272	20	64.80	6	0.00
10272	31	10.00	40	0.00
10272	72	27.80	24	0.00
10273	10	24.80	24	0.05
10273	31	10.00	15	0.05
10273	33	2.00	20	0.00
10273	40	14.70	60	0.05
10273	76	14.40	33	0.05
10274	71	17.20	20	0.00
10274	72	27.80	7	0.00

order_id	product_id	unit_price	quantity	discount
10275	24	3.60	12	0.05
10275	59	44.00	6	0.05
10276	10	24.80	15	0.00
10276	13	4.80	10	0.00
10277	28	36.40	20	0.00
10277	62	39.40	12	0.00
10278	44	15.50	16	0.00
10278	59	44.00	15	0.00
10278	63	35.10	8	0.00
10278	73	12.00	25	0.00
10279	17	31.20	15	0.25
10280	24	3.60	12	0.00
10280	55	19.20	20	0.00
10280	75	6.20	30	0.00
10281	19	7.30	1	0.00
10281	24	3.60	6	0.00
10281	35	14.40	4	0.00
10282	30	20.70	6	0.00
10282	57	15.60	2	0.00
10283	15	12.40	20	0.00
10283	19	7.30	18	0.00
10283	60	27.20	35	0.00
10283	72	27.80	3	0.00
10284	27	35.10	15	0.25

order_id	product_id	unit_price	quantity	discount
10284	44	15.50	21	0.00
10284	60	27.20	20	0.25
10284	67	11.20	5	0.25
10285	1	14.40	45	0.20

练习5

- 提取订单编号为10250的订单详情，显示如下信息：
 - `product_name` , `quantity` , `unit_price` (`order_items` 表)
 - `discount` , `order_date` 按商品名字排序

```

SELECT
    product_name,
    quantity,
    order_items.unit_price,
    discount,
    order_date
FROM order_items
JOIN products
    ON order_items.product_id = products.product_id
JOIN orders
    ON orders.order_id = order_items.order_id
WHERE orders.order_id = 10250
ORDER BY product_name;

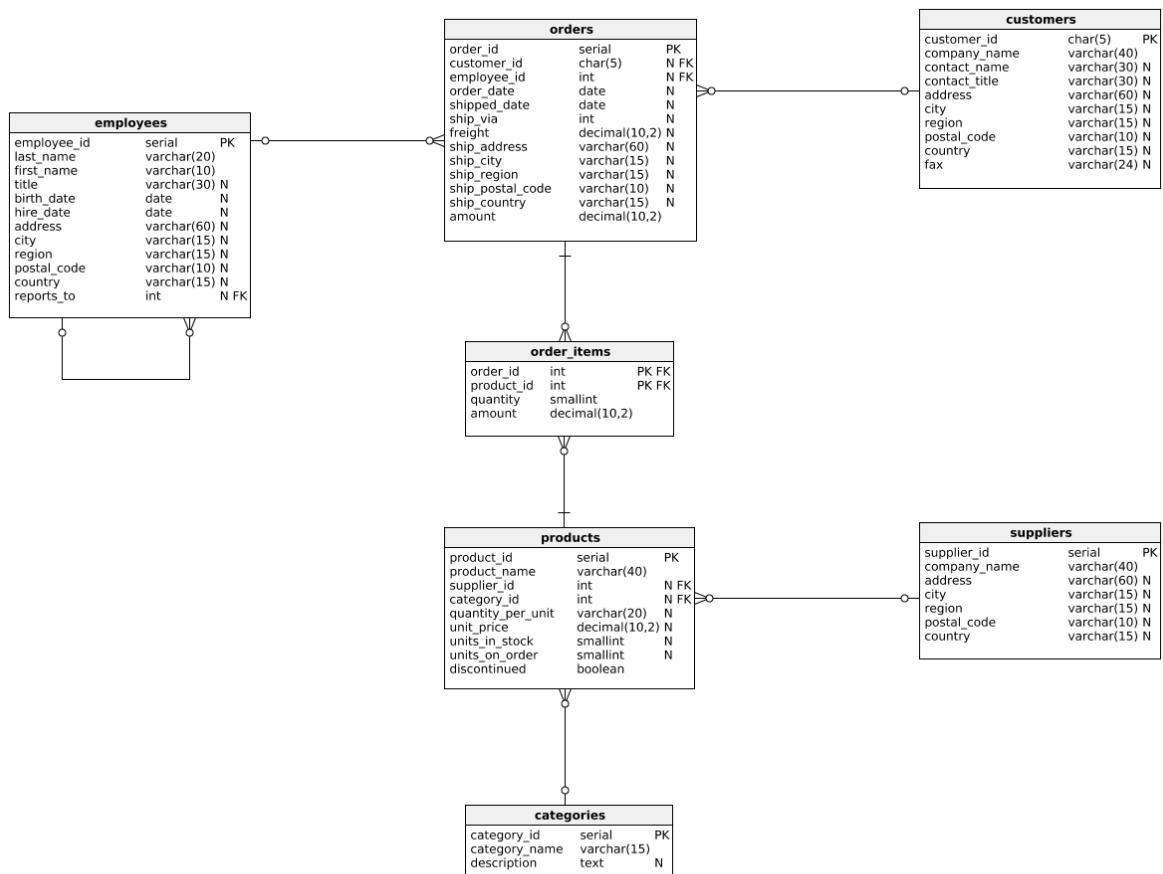
```

product_name	quantity	unit_price	discount	order_date
Jack's New England Clam Chowder	10	7.70	0.00	2016-07-08
Louisiana Fiery Hot Pepper Sauce	15	16.80	0.15	2016-07-08
Manjimup Dried Apples	35	42.40	0.15	2016-07-08

6 小结

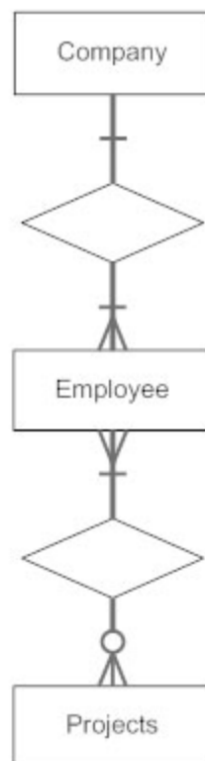
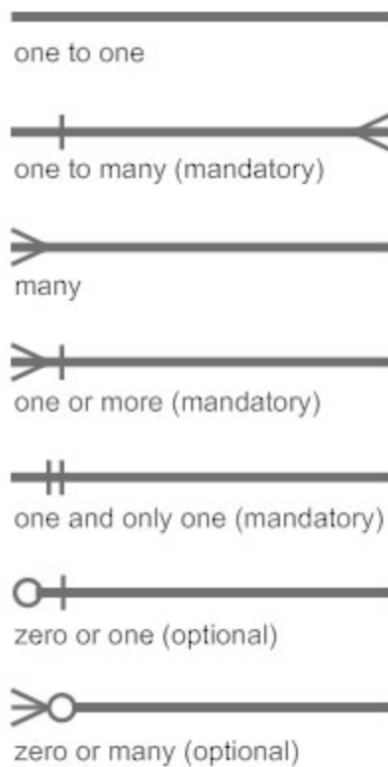
本项目中一共用到7张表

1. **employees** 员工表 记录了Northwind所有员工信息.
2. **customers** 客户表, 记录了客户相关信息.
3. **products** 记录了商品信息.
4. **categories** 记录了商品类别信息.
5. **suppliers** 记录了商品供应商信息.
6. **orders** 记录了Northwind的顾客下的订单.
7. **order_items** 记录了订单中的每一件商品明细.



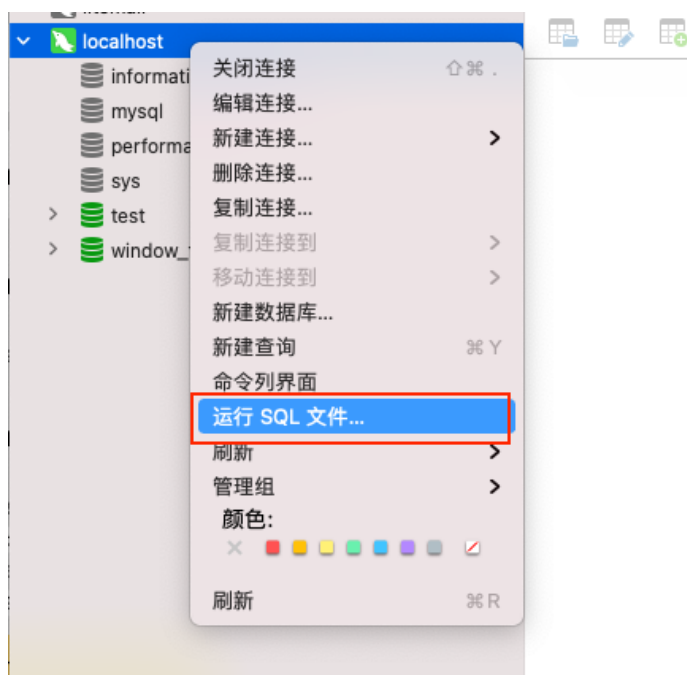
• ER图 图例

Information Engineering Style



Tip-数据导入NAVICAT

- 数据已经保存成.sql文件随资料下发，下面介绍如何导入数据
- 打开Navicat选中本地连接，右键单击选中运行SQL文件



- 弹出如下对话框，在对话框中操作选中.SQL文件

运行 SQL 文件

常规 信息日志

服务器: localhost

数据库: N/A

文件: ...

编码: utf-8

☒ 遇到错误时继续

☒ 在每个运行中运行多个查询

☒ SET AUTOCOMMIT=0

关闭 开始

点击选则 SQL 文件

运行 SQL 文件

常规 信息日志

服务器: localhost

数据库: N/A

文件: .../报表项目数据...

编码: utf-8

☒ 遇到错误时继续

☒ 在每个运行中运行多个查询

☒ SET AUTOCOMMIT=0

关闭 开始

- 点击开始，看到如下信息说明导入成功

运行 SQL 文件

常规

信息日志

查询: 3231

已处理: 3231

错误: 0

时间: 0.52s

[SQL] Query 报表项目数据 start

[SQL] Finished successfully

关闭

开始

• 在Navicat中查看数据

localhost

information_schema

mysql

performance_schema

sys

test

表

categories

customers

employees

order_items

orders

products

suppliers

视图

名

行

数据长度

引擎

categories

8

16.00 KB

InnoDB

customers

91

16.00 KB

InnoDB

employees

10

16.00 KB

InnoDB

order_items

2,155

128.00 KB

InnoDB

orders

830

112.00 KB

InnoDB

products

77

16.00 KB

InnoDB

suppliers

29

16.00 KB

InnoDB