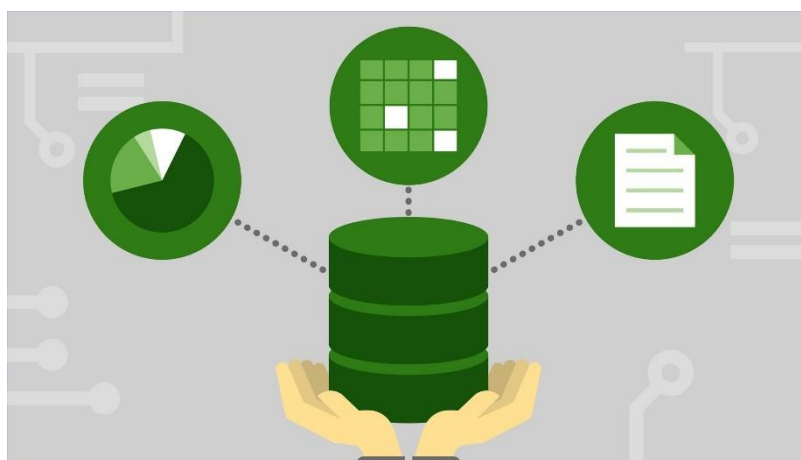


به نام خدا



دانشگاه تهران
پردیس دانشکده‌های فنی
دانشکده برق و کامپیوتر



آزمایشگاه پایگاه داده

دستور کار شماره ۴

نام و نام خانوادگی

۸۱۰۱۹۶۴۶۲

مهرماه ۱۴۰۰

گزارش دستورکار انجام شده

پس از اجرای همه دستورات اسکرینیت، جداول ساخته میشوند:

Northwind	
Schemas	
public	
Tables	
categories	32K
customer_customer_demo	16K
customer_demographics	16K
customers	64K
employee_territories	24K
employees	32K
order_details	192K
orders	184K
products	24K
region	32K
shippers	24K
suppliers	32K
territories	32K
us_states	24K

سوال ۱.

به ازای هر منطقه چه نواحی وجود دارد:

```
-- 1
select r.region_description , t.territory_description
from region r inner join territories t on r.region_id = t.region_id
```

		30	Northern	Southfield
		31	Northern	Troy
		32	Northern	Bloomfield Hills
		33	Northern	Racine
		34	Northern	Roseville
		35	Northern	Minneapolis
		36	Western	Hoffman Estates
		37	Western	Chicago
		38	Southern	Bentonville
		39	Southern	Dallas
		40	Southern	Austin
		41	Western	Denver
		42	Western	Colorado Springs
		43	Western	Phoenix
		44	Western	Scottsdale
		45	Western	Santa Monica
		46	Western	Menlo Park
		47	Western	San Francisco
		48	Western	Campbell
		49	Western	Santa Clara
		50	Western	Santa Cruz
		51	Western	Bellevue
		52	Western	Redmond
		53	Western	Seattle

سوال ۲:

تعداد کارمندان هر منطقه:

-- 2

```
select r.region_description, count(et.employee_id)
from region r inner join territories t on r.region_id = t.region_id
inner join employee_territories et on t.territory_id = et.territory_id
group by r.region_id
```

select r.region_description, count(et.employee

	region_description	count
1	Eastern	19
2	Northern	11
3	Western	15
4	Southern	4

سوال ۳.

-- 3

```
select od.order_id , od.unit_price * od.quantity * (1-od.discount )
from order_details od
```

	order_id	?column?
1	10,248	168
2	10,248	98.0000019073
3	10,248	173.9999961853
4	10,249	167.4000034332
5	10,249	1,696.0000610352
6	10,250	76.9999980927
7	10,250	1,261.4000365496
8	10,250	214.1999887705
9	10,251	95.7599955761
10	10,251	222.3000052616
11	10,251	335.9999847412
12	10,252	2,462.4001140356
13	10,252	47.4999999627
14	10,252	1,088.0000305176
15	10,253	200
16	10,253	604.7999839783
17	10,253	640
18	10,254	45.8999984622
19	10,254	342.7200112152
20	10,254	168
21	10,255	303.9999961853
22	10,255	486.4999866486
23	10,255	379.9999952316
24	10,255	1,320
25	10,256	393.0000114441
26	10,256	124.7999954224
27	10,257	877.499961853
28	10,257	86.3999977112
29	10,257	155.999994278
30	10,258	607.9999901056
31	10,258	883.9999967068
32	10,258	122.8800013733

۴. ده محصول با بیشترین تعداد خرید.

```
-- 4
select p.product_id, p.product_name, sum(od.quantity) as s
from products p inner join order_details od on p.product_id = od.product_id
group by p.product_id
order by s desc
limit 10
```

	product_id	product_name	s
1	60	Camembert Pierrot	1,577
2	59	Raclette Courdavault	1,496
3	31	Gorgonzola Telino	1,397
4	56	Gnocchi di nonna Alice	1,263
5	16	Pavlova	1,158
6	75	Rhönbräu Klosterbier	1,155
7	24	Guaraná Fantástica	1,125
8	40	Boston Crab Meat	1,103
9	62	Tarte au sucre	1,083
10	2	Chang	1,057

۵. محصولی که هنوز فروش نرفته باشد.

-- 5

```
select p.product_id, p.product_name
from products p
where p.product_id not in (select product_id from order_details od)
```

select p.product_id, p.product_name from proc

	product_id	product_name

سوال ۶.

-- 6

```
select p.product_id, count(p.product_id)
from products p left join order_details od on p.product_id = od.product_id
group by p.product_id
order by count(p.product_id) asc
```

	product_id	count
1	9	5
2	37	6
3	15	6
4	48	6
5	66	8
6	27	9
7	5	10
8	50	10
9	67	10
10	6	12
11	3	12
12	74	13
13	8	13
14	73	14
15	22	14
16	45	14
17	12	14
18	32	15
19	20	16
20	63	17
21	58	18
22	25	18
23	34	19
24	4	20

سوال ۷. سال ۱۹۹۶ را در نظر میگیریم و میخواهیم کارمند با بیشترین فروش در این سال را پیدا کنیم.

-- 7

```
with order_sell as (
select od.order_id, o.employee_id, o.order_date, od.unit_price * od.quantity * (1-od.discount) as sell
from order_details od inner join orders o on o.order_id = od.order_id
)
select e.employee_id, e.first_name, e.last_name, sum(oa.sell) as ss
from employees e inner join order_sell oa on e.employee_id = oa.employee_id
where extract (year from oa.order_date) = '1996'
group by e.employee_id
order by ss desc
limit 1
```

with order_sell as (select od.order_id, o.employee_id | Enter a SQL expression to filter

	123 employee_id	ABC first_name	ABC last_name	123 ss
1	4	Margaret	Peacock	49,945.1153284936

سوال ۸.

-- 8

```
select o.order_id,
       case when o.order_date = o.shipped_date then 'Excelent'
            when o.shipped_date - o.order_date < 3 then 'Good'
            else 'Inappropriate'
       end
from orders o
```

- select o.order_id, case when o.order_d

	123 order_id	ABC case
1	10,248	Inappropriate
2	10,249	Inappropriate
3	10,250	Inappropriate
4	10,251	Inappropriate
5	10,252	Good
6	10,253	Inappropriate
7	10,254	Inappropriate
8	10,255	Inappropriate
9	10,256	Good
10	10,257	Inappropriate

Save Cancel Script

سوال ۹. امتیازی

سوال ۱۰.

در کوئری صورت سوال، در بخش b، به ازای هر سفارش (order)، شماره سفارش و مبلغ آن را نمایش میدهد. که جدول حاصل از این دستور b در نظر گرفته شده. حال در بازه خاصی از زمان (1996-12-24 تا 1997-09-30)،

تاریخ تحویل سفارش، آی دی سفارش، مبلغ سفارش و سال تحویل سفارش را مشخص میکنند. برای به دست آوردن مجموع فروش هر سال، به این شکل عمل میکنیم:

-- 10

```
select extract (year from a.shipped_date) as shipped_year,
sum(b.subtotal)
from orders a
inner join
(
    select distinct od.order_id, sum(od.unit_price * od.quantity) as subtotal
    from order_details od
    group by order_id
) b on a.order_id = b.order_id
where a.shipped_date is not null
group by shipped_year
order by shipped_year;
```

	123 shipped_year	123 sum
1	1,996	210,112.3011622429
2	1,997	649,038.8097105026
3	1,998	467,863.7197151184

در b مانند حالت قبل مبلغ هر سفارشش را حساب میکنیم. سپس بر اساس سال سفارش گروه بندی کرده و مجموع مبالغ سفارش ها را نیز نشان میدهیم.

سوال ۱۱.

-- 11

```
create view should_buy as
select p.product_id, p.product_name, p.units_in_stock
from products p
where p.units_in_stock < p.reorder_level
order by p.units_in_stock;

select * from should_buy;
```

should_buy 1 ×

select * from should_buy | Enter a SQL expression to filter results (use Ctrl+Enter)

	product_id	product_name	units_in_stock
1	31	Gorgonzola Telino	0
2	21	Sir Rodney's Scones	3
3	74	Longlife Tofu	4
4	66	Louisiana Hot Spiced Okra	4
5	45	Rogede sild	5
6	68	Scottish Longbreads	6
7	32	Mascarpone Fabioli	9
8	30	Nord-Ost Matjeshering	10
9	49	Maxilaku	10
10	37	Gravad lax	11
11	3	Aniseed Syrup	13
12	48	Chocolate	15
13	70	Outback Lager	15
14	2	Chang	17
15	43	Ipoh Coffee	17
16	56	Gnocchi di nonna Alice	21
17	64	Wimmers gute Semmelknö	22
18	11	Queso Cabrales	22

سوال ۱۲.

-- 12

```

with categories_sent_to_france as (
select distinct c.category_name
from categories c inner join products p on p.category_id = c.category_id
inner join order_details od on od.product_id = p.product_id
inner join orders o on o.order_id = od.order_id
where o.ship_country = 'France'
)
select c2.category_name
from categories c2
where c2.category_name not in (
select * from categories_sent_to_france
)

```

categories 1 ×

with categories_sent_to_france a

	category_name

سوال ۱۳. تکراری

سوال ۱۴.

-- 14

```
select *
from customers c
where c.fax is null;
```

select * from customers c where c.fax is null Enter a SQL expression to filter results (use Ctrl+Space)

	customer_id	company_name	contact_name	contact_title	address	city	region	postal_code	country	phone	fax
1	ANTON	Antonio Moreno Taquería	Antonio Moreno	Owner	Mataderos 2312	México D.F.	[NULL]	05023	Mexico	(5) 555-3932	[NULL]
2	BSBEV	B's Beverages	Victoria Ashworth	Sales Representative	Fauntleroy Circus	London	[NULL]	EC2 5NT	UK	(171) 555-1212	[NULL]
3	CHOPS	Chop-suey Chinese	Yang Wang	Owner	Hauptstr. 29	Bern	[NULL]	3012	Switzerland	0452-076545	[NULL]
4	COMMI	Comércio Mineiro	Pedro Afonso	Sales Associate	Av. dos Lusíadas, 23	Sao Paulo	SP	05432-043	Brazil	(11) 555-7647	[NULL]
5	FAMIA	Familia Arquibaldo	Aria Cruz	Marketing Assistant	Rua Orós, 92	Sao Paulo	SP	05442-030	Brazil	(11) 555-9857	[NULL]
6	FOLKO	Folk och få HB	Maria Larsson	Owner	Åkergatan 24	Bräcke	[NULL]	S-844 67	Sweden	0695-34 67 21	[NULL]
7	GODOS	Godos Cocina Típica	José Pedro Freyre	Sales Manager	C/ Romero, 33	Sevilla	[NULL]	41101	Spain	(95) 555 82 82	[NULL]
8	GOURL	Gourmet Lanchonetes	André Fonseca	Sales Associate	Av. Brasil, 442	Campinas	SP	04876-786	Brazil	(11) 555-9482	[NULL]
9	GREAL	Great Lakes Food Market	Howard Snyder	Marketing Manager	2732 Baker Blvd.	Eugene	OR	97403	USA	(503) 555-7555	[NULL]
10	ISLAT	Island Trading	Helen Bennett	Marketing Manager	Garden House Crowther Way	Cowes	Isle of Wight	PO31 7PJ	UK	(198) 555-8888	[NULL]
11	KOENE	Königlich Essen	Philip Cramer	Sales Associate	Maubelstr. 90	Brandenburg	[NULL]	14776	Germany	0555-09876	[NULL]
12	LETSS	Let's Stop N Shop	Jaime Yorres	Owner	87 Polk St. Suite 5	San Francisco	CA	94117	USA	(415) 555-5938	[NULL]
13	MORGK	Morgenstern Gesundkost	Alexander Feuer	Marketing Assistant	Heerstr. 22	Leipzig	[NULL]	04179	Germany	0342-023176	[NULL]
14	PRINI	Princesa Isabel Vinhos	Isabel de Castro	Sales Representative	Estrada da saúde n. 58	Lisboa	[NULL]	1756	Portugal	(1) 356-5634	[NULL]
15	QUEEN	Queen Cozinha	Lúcia Carvalho	Marketing Assistant	Alameda dos Canários, 891	Sao Paulo	SP	05487-020	Brazil	(11) 555-1189	[NULL]
16	QUICK	QUICK-Stop	Horst Kloss	Accounting Manager	Taucherstraße 10	Cunewalde	[NULL]	01307	Germany	0372-035188	[NULL]
17	RICAR	Ricardo Adocicados	Janete Limeira	Assistant Sales Agent	Av. Copacabana, 267	Rio de Janeiro	RJ	02389-890	Brazil	(21) 555-3412	[NULL]
18	RICSU	Richter Supermarket	Michael Holz	Sales Manager	Grenzacherweg 237	Genève	[NULL]	1203	Switzerland	0897-034214	[NULL]
19	SAVEA	Save-a-lot Markets	Jose Pavarotti	Sales Representative	187 Suffolk Ln.	Boise	ID	83720	USA	(208) 555-8097	[NULL]
20	THEBI	The Big Cheese	Liz Nixon	Marketing Manager	89 Jefferson Way Suite 2	Portland	OR	97201	USA	(503) 555-3612	[NULL]
21	TORTU	Tortuga Restaurante	Miguel Angel Paolino	Owner	Avda. Azteca 123	México D.F.	[NULL]	05033	Mexico	(5) 555-2933	[NULL]
22	WELLI	Wellington Importadora	Paula Parente	Sales Manager	Rua do Mercado, 12	Resende	SP	08737-363	Brazil	(14) 555-8122	[NULL]

سوال ۱۵.

ساخت view:

-- 15

```
create view find_age as
select *, age(e.birth_date) as employee_age
from employees e
```

	home_phone	extension	photo	notes	reports_to	photo_path	employee_age
1	(206) 555-9857	5467		Education includes a BA in psychology from Colorado State Univ	2	http://accweb/emmployees/davolio.bmp	72 years 11 mons 18 days
2	(206) 555-9482	3457		Andrew received his BTS commercial in 1974 and a Ph.D. in intern	[NULL]	http://accweb/emmployees/fuller.bmp	69 years 9 mons 7 days
3	(206) 555-3412	3355		Janet has a BS degree in chemistry from Boston College (1984). S	2	http://accweb/emmployees/leverling.bmp	58 years 2 mons 27 days
4	(206) 555-8122	5176		Margaret holds a BA in English literature from Concordia College	2	http://accweb/emmployees/peacock.bmp	84 years 2 mons 7 days
5	(71) 555-4848	3453		Steven Buchanan graduated from St. Andrews University, Scotlan	2	http://accweb/emmployees/buchanan.bmp	66 years 8 mons 22 days
6	(71) 555-7773	428		Michael is a graduate of Sussex University (MA, economics, 1983)	5	http://accweb/emmployees/davolio.bmp	58 years 4 mons 24 days
7	(71) 555-5598	465		Robert King served in the Peace Corps and traveled extensively br	5	http://accweb/emmployees/davolio.bmp	61 years 5 mons 28 days
8	(206) 555-1189	2344		Laura received a BA in psychology from the University of Washing	2	http://accweb/emmployees/davolio.bmp	63 years 10 mons 17 days
9	(71) 555-4444	452		Anne has a BA degree in English from St. Lawrence College. She	5	http://accweb/emmployees/davolio.bmp	55 years 9 mons 30 days

محاسبه میانگین سن هر منطقه:

```

select r.region_description, avg(fa.employee_age)
from employee_territories et inner join public.find_age fa on fa.employee_id = et.employee_id
inner join territories t on t.territory_id = et.territory_id
inner join region r on t.region_id = r.region_id
group by r.region_id

```

Session 1 ×

Enter a SQL expression to filter results (use Ctrl+Space)

region_description	avg
Eastern	71 years 2 mons 34 days 05:03:09.491874
Northern	58 years 8 mons 33 days 10:54:32.711564
Western	60 years 4 mons 46 days 16:00:00
Southern	58 years 2 mons 27 days

مشکلات و توضیحات تکمیلی

اگر در کار با نرم افزار دچار مشکل شده بودید و وقت زیادی از شما گرفته شد و یا توضیحات دستورالعمل، ناقص و یا مبهم بود در این قسمت، آنها را ذکر کنید که هم در تصحیح گزارش کار مد نظر قرار گیرد و هم برای ادامه کار، تا حد امکان، این مسایل جانبی به حداقل برسد.

این بخش، اختیاری است و در صورت لزوم، آنرا پر کنید.

آنچه آموختم / پیشنهادات

در این بخش که البته مانند بخش قبل، اختیاری است مهم‌ترین مطلبی که از دستورکار جاری یاد گرفته اید را می‌توانید ذکر کنید.

این مساله باعث میشود که فیدبک مناسبی از کیفیت و کارایی دستورالعمل‌ها داشته باشیم. اگر پیشنهادی هم برای ارائه بهتر این بخش از آزمایشگاه داده در سالیان آتی دارید، در این قسمت آنرا ذکر نمایید.