

1.

(a) این کوئری نام دانشکده هایی که جمع حقوق استاد های آن از میانگین جمع حقوق استادان به تفکیک دانشکده ها بیشتر است را برمیگرداند

```
7 ---A
8 select instructor.dept_name
9 from instructor
10 group by dept_name
11 having sum(salary) >= (
12     select avg(dept_total.s) from(
13         select sum(salary) as s
14         from instructor
15         group by dept_name )as dept_total
16 );
17
```

dept_name
Pol. Sci.
Marketing
English
Cybernetics
Physics
Athletics
Statistics
Elec. Eng.

select instructor.dept_name from instructor group by dept_name having sum(salary) >= (select avg(dept_total.s) from(

(b) این کوئری نام استادانی را برمیگرداند که تعداد دروس تدریسشان در سال 2003، از میانگین تعداد دروس تدریس شده توسط استادان در آن سال بیشتر باشد

```
18 ---B
19 with teach_count (name,value) as (
20     select instructor."name",count(*)
21     from teaches, instructor
22     where teaches.id = instructor.id and "year"=2003
23     group by instructor.id),
24 avg_teach_count (value) as(
25     select avg(teach_count.value) from teach_count
26 )
27 select "name",teach_count."value" as "count"
28 from teach_count,avg_teach_count
29 where teach_count.value>avg_teach_count.value;
30
```

name	count
Ullman	2
Dale	3
DAgostino	2

---B with teach_count (name,value) as (select instructor."name",count(*) from teaches, instructor where teaches: Read Only Query time: 0.004s Record 1 of 3

.2

(a

```
32  ---- Q2
33  ---A
34  create table uni_data (
35      stu_id varchar(5),
36      stu_name varchar(20),
37      stu_dept_name varchar(20),
38      year numeric(4,0),
39      semester varchar(6),
40      course_name varchar(50),
41      score numeric(3,0),
42      is_rank numeric(1,0)
43  );
44
```

Message

```
score numeric(3,0),
is_rank numeric(1,0)
)
> OK
> Time: 0.013s
```

(b)

```

45 ---B
46 insert into uni_data(
47     select student.id,student."name",student.dept_name,takes."year",takes.semester,course.title,(
48         case
49             when takes.grade = 'A+' then 100
50             when takes.grade = 'A ' then 95
51             when takes.grade = 'A-' then 90
52             when takes.grade = 'B+' then 85
53             when takes.grade = 'B ' then 80
54             when takes.grade = 'B-' then 75
55             when takes.grade = 'C+' then 70
56             when takes.grade = 'C ' then 65
57             when takes.grade = 'C-' then 60
58             else 0
59         end),
60         (case
61             when takes.grade like 'A%' or takes.grade like 'B%' then 1
62             else 0
63         end)
64     from student,takes,course
65     where student."id"=takes."id" and
66           takes.course_id=course.course_id
67 );
68
69 ---C

```

Message

```

    where student."id"=takes."id" and
    takes.course_id=course.course_id
)
> Affected rows: 30000
> Time: 0.158s

```

(c)

```

69 ---C
70 update uni_data
71 set score = (
72     case
73         when score < 75 then score+10
74         else score+15
75     end
76 )
77 where uni_data.stu_dept_name = 'Physics';
78
79 ---D
80 delete from uni_data as U1

```

Message

```

---C
update uni_data
set score = (
    case
        when score < 75 then score+10
        else score+15
    end
)
where uni_data.stu_dept_name = 'Physics'
> Affected rows: 1416
> Time: 0.037s

```

(d

```
79  ---D
80  delete from uni_data as U1
81  where U1."stu_name" like 'T%' and
82  U1.score < (
83      select avg(U2.score)
84      from uni_data as U2
85      where U2.stu_dept_name = U1.stu_dept_name
86  );
87
```

Message

```
---D
delete from uni_data as U1
where U1."stu_name" like 'T%' and
U1.score < (
    select avg(U2.score)
    from uni_data as U2
    where U2.stu_dept_name = U1.stu_dept_name
)
> Affected rows: 564
> Time: 5.588s
```

.3

	کمترین تعداد خروجی حاصل	بیشترین تعداد خروجی حاصل
users INNER JOIN numbers	100	100
Users LEFT OUTER JOIN numbers	100	199
Users RIGHT OUTER JOIN numbers	100	100
users FULL OUTER JOIN numbers	100	199

.4

(a)

```
90 ---A
91 select cs.course_id,title,dept_name,credits,sec_id,semester,year,building,
92 room_number,time_slot_id from course as cs,"section" as se
93 where cs.course_id = "se".course_id
94 union
95 select *,null,null,null,null,null,null from course
96 where course_id not in (select course_id from course,"section" where
97 course_id = "section".course_id);
98
99 ---B
```

course_id	title	dept_name	credits	sec_id	semester	year	building	room_number	time_sl
857	UNIX System Programn	Geology	4	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
969	The Monkeys	Astronomy	4	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
808	Organic Chemistry	English	4	1	Fall	2003	Polya	808	M
341	Quantum Mechanics	Cybernetics	3	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
278	Greek Tragedy	Statistics	4	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
762	The Monkeys	History	4	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
274	Corporate Law	Comp. Sci.	4	1	Fall	2002	Main	425	N

---A select cs.course_id,title,dept_name,credits,sec_id,semester,year,building,room_number,time_slot_id from course as cs,"section" Read Only Query time: 0.011s Record 1 of 215

(b)

```
97 ---B
98 select cs.course_id,title,dept_name,credits,sec_id,semester,year,building,
99 room_number,time_slot_id from course as cs,"section" as se
100 where cs.course_id = "se".course_id
101 union
102 select course_id,null,null,null,sec_id,semester,"year",building,room_number,
103 time_slot_id from "section"
104 where course_id not in (select course_id from course,"section" where
105 course_id = "section".course_id);
106
107 ---C
```

course_id	title	dept_name	credits	sec_id	semester	year	building	room_number	time_sl
599	Mechanics	Psychology	4	1	Spring	2003	Chandler	804	D
991	Transaction Processing	Psychology	3	1	Spring	2008	Lamberton	134	J
735	Greek Tragedy	Geology	3	1	Spring	2003	Drown	757	D
852	World History	Athletics	4	1	Spring	2008	Gates	707	F
445	Biostatistics	Finance	3	1	Spring	2001	Alumni	547	J
476	International Communi	Astronomy	4	1	Fall	2010	Drown	757	C
313	International Trade	Marketing	3	1	Fall	2010	Chandler	804	N
612	Mobile Computing	Physics	3	1	Fall	2007	Lamberton	143	G
748	Tort Law	Cybernetics	4	1	Fall	2003	Saucon	180	L

---B select cs.course_id,title,dept_name,credits,sec_id,semester,year,building,room_number,time_slot_id from course as cs,"section" Read Only Query time: 0.005s Record 1 of 100

(C)

```

104 ---C
105 select cs.course_id,title,dept_name,credits,sec_id,semester,year,building,room_number,time_slot_id from course as cs,
"section" as se
106 where cs.course_id = "se".course_id
107 union
108 select *,null,null,null,null,null,null from course
109 where course_id not in (select course.course_id from course,"section" where course.course_id = "section".course_id)
110 union
111 select course_id,null,null,null,sec_id,semester,"year",building,room_number,time_slot_id from "section"
112 where course_id not in (select course.course_id from course,"section" where course.course_id = "section".course_id);

```

course_id	title	dept_name	credits	sec_id	semester	year	building	room_number	time_sl
887	Latin	Mech. Eng.	3	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
599	Mechanics	Psychology	4	1	Spring	2003	Chandler	804	D
991	Transaction Processing	Psychology	3	1	Spring	2008	Lamberton	134	J
254	Security	Cybernetics	3	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
436	Stream Processing	Physics	4	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
558	Environmental Law	Psychology	3	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
445	Biostatistics	Finance	3	1	Spring	2001	Alumni	547	J
292	Electron Microscopy	English	4	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)
476	International Communi	Astronomy	4	1	Fall	2010	Drown	757	C
313	International Trade	Marketing	3	1	Fall	2010	Chandler	804	N
630	Religion	English	3	(Null)	(Null)	(Null)	(Null)	(Null)	(Null)

select cs.course_id,title,dept_name,credits,sec_id,semester,year,building,room_number,time_slot_id from course as cs,"section" as s Read Only Query time: 0.009s Record 1 of 215

.5

(a)

```

118 ---A
119 select product.name,salesorderdetail.salesorderid from
120 production.product left join sales.salesorderdetail using(productid);

```

name	salesorderid
Mountain-100 Bl	43659
Mountain-100 Bl	43659
Mountain-100 Bl	43659
Mountain-100 Sil	43659
Mountain-100 Sil	43659
Mountain-100 Sil	43659
Mountain-100 Sil	43659
Mountain-100 Sil	43659
Long-Sleeve Log	43659
Long-Sleeve Log	43659
Mountain Bike Sc	43659
AWC Logo Cap	43659
Sport-100 Helme	43659
Road-650 Red, 44	43660
Road-450 Red, 52	43660
HL Mountain Fra	43661
HL Mountain Fra	43661

---A select product.name,salesorderdetail.salesorderid from production.product left join sales.salesorderdetail using(productid) Read Only Query time: 0.273s Record 1 of 121555

(b)

```
122 ---B
123 select product.name from
124 production.product left join sales.salesorderdetail using(productid)
125 where salesorderdetail.salesorderid is null;
```

Message	Result 1																
	<table><tr><th>name</th></tr><tr><td>Pinch Bolt</td></tr><tr><td>Lock Nut 2</td></tr><tr><td>Paint - Yellow</td></tr><tr><td>Lock Nut 3</td></tr><tr><td>Hex Nut 12</td></tr><tr><td>Head Tube</td></tr><tr><td>Thin-Jam Lock N</td></tr><tr><td>ML Road Seat As</td></tr><tr><td>Hex Nut 19</td></tr><tr><td>Metal Sheet 5</td></tr><tr><td>Touring End Cap</td></tr><tr><td>Headlights - Dua</td></tr><tr><td>Thin-Jam Hex Nu</td></tr><tr><td>External Lock Wa</td></tr><tr><td>Hex Nut 7</td></tr></table>	name	Pinch Bolt	Lock Nut 2	Paint - Yellow	Lock Nut 3	Hex Nut 12	Head Tube	Thin-Jam Lock N	ML Road Seat As	Hex Nut 19	Metal Sheet 5	Touring End Cap	Headlights - Dua	Thin-Jam Hex Nu	External Lock Wa	Hex Nut 7
name																	
Pinch Bolt																	
Lock Nut 2																	
Paint - Yellow																	
Lock Nut 3																	
Hex Nut 12																	
Head Tube																	
Thin-Jam Lock N																	
ML Road Seat As																	
Hex Nut 19																	
Metal Sheet 5																	
Touring End Cap																	
Headlights - Dua																	
Thin-Jam Hex Nu																	
External Lock Wa																	
Hex Nut 7																	

---B select product.name from production.product left join sales.salesorderdetail using(productid) where salesorderdetail.salesorde

Read Only

Query time: 0.139s

Record 1 of 238

(c)

```
126 ---C
127 select salesorderheader.customerid,product.name from
128 sales.salesorderheader inner join sales.salesorderdetail using(salesorderid)
129 inner join production.product using(productid);
```

Message	Result 1																	
	<table><tr><th>customer name</th></tr><tr><td>29825 Mountain-100 Black, 42</td></tr><tr><td>29825 Mountain-100 Black, 44</td></tr><tr><td>29825 Mountain-100 Black, 48</td></tr><tr><td>29825 Mountain-100 Silver, 38</td></tr><tr><td>29825 Mountain-100 Silver, 42</td></tr><tr><td>29825 Mountain-100 Silver, 44</td></tr><tr><td>29825 Mountain-100 Silver, 48</td></tr><tr><td>29825 Long-Sleeve Logo Jersey, M</td></tr><tr><td>29825 Long-Sleeve Logo Jersey, XL</td></tr><tr><td>29825 Mountain Bike Socks, M</td></tr><tr><td>29825 AWC Logo Cap</td></tr><tr><td>29825 Sport-100 Helmet, Blue</td></tr><tr><td>29672 Road-650 Red, 44</td></tr><tr><td>29672 Road-450 Red, 52</td></tr><tr><td>29734 HL Mountain Frame - Black, 48</td></tr><tr><td>29734 HL Mountain Frame - Black, 42</td></tr></table>	customer name	29825 Mountain-100 Black, 42	29825 Mountain-100 Black, 44	29825 Mountain-100 Black, 48	29825 Mountain-100 Silver, 38	29825 Mountain-100 Silver, 42	29825 Mountain-100 Silver, 44	29825 Mountain-100 Silver, 48	29825 Long-Sleeve Logo Jersey, M	29825 Long-Sleeve Logo Jersey, XL	29825 Mountain Bike Socks, M	29825 AWC Logo Cap	29825 Sport-100 Helmet, Blue	29672 Road-650 Red, 44	29672 Road-450 Red, 52	29734 HL Mountain Frame - Black, 48	29734 HL Mountain Frame - Black, 42
customer name																		
29825 Mountain-100 Black, 42																		
29825 Mountain-100 Black, 44																		
29825 Mountain-100 Black, 48																		
29825 Mountain-100 Silver, 38																		
29825 Mountain-100 Silver, 42																		
29825 Mountain-100 Silver, 44																		
29825 Mountain-100 Silver, 48																		
29825 Long-Sleeve Logo Jersey, M																		
29825 Long-Sleeve Logo Jersey, XL																		
29825 Mountain Bike Socks, M																		
29825 AWC Logo Cap																		
29825 Sport-100 Helmet, Blue																		
29672 Road-650 Red, 44																		
29672 Road-450 Red, 52																		
29734 HL Mountain Frame - Black, 48																		
29734 HL Mountain Frame - Black, 42																		

---C select salesorderheader.customerid,product.name from sales.salesorderheader inner join sales.salesorderdetail using(salesorde

Read Only

Query time: 0.336s

Record 1 of 121317

(d)

```
131 ---D
132 select customer.customerid,salesterritory.name,salesorderheader.salesorderid from
133 sales.salesorderheader right join (sales.customer inner join sales.salesterritory using(
territoryid)) using (customerid)
```

Message		
Result 1		
customerid	name	salesorder
29825	Southeast	43659
29672	Southeast	43660
29734	Canada	43661
29994	Canada	43662
29565	Southwest	43663
29898	Northwest	43664
29580	Northwest	43665
30052	Southwest	43666
29974	Central	43667
29614	Canada	43668
29747	Northwest	43669
29566	Central	43670
29890	Northwest	43671
30067	Canada	43672
29844	Northeast	43673
29596	Canada	43674

---D select customer.customerid,salesterritory.name,salesorderheader.salesorderid from sales.salesorderheader right join (sales.cust Read Only Query time: 0.173s Record 1 of 32166

.6

```
---- Q6
create view subcategory_quantity as(
with workorders1000 as (select * from production.workorder
order by workorder.enddate desc limit 1000)
select prosub.productssubcategoryid as subcategory_id,prosub.name as subcategory_name,
sum(orderqty) as sum_product_quantity
from workorders1000 inner join production.product using (productid)
inner join production.productssubcategory as prosub using(productssubcategoryid)
where workorders1000.workorderid not in (select distinct(workorderid) from production.
workorderrouting where operationsequence = 7)
group by prosub.productssubcategoryid
order by sum_product_quantity desc);
```

subcategory_id	subcategory_name	sum_product_quantity
9	Derailleurs	956
17	Wheels	943
5	Bottom Brackets	478
8	Cranksets	478
10	Forks	478
4	Handlebars	452
11	Headsets	448
14	Road Frames	95
12	Mountain Frames	61
16	Touring Frames	51


```

---- Q7
create view stu_ins(id,name,dept_type,person_type) as(
select id,name,(case when dept_name like '%Eng%' then 'Engineer' else 'Scientist' end),'STU' from student
union
select id,name,(case when dept_name like '%Eng%' then 'Engineer' else 'Scientist' end),'INS' from instructor);

```

id	name	dept_type	person_type
33201	Macias	Engineer	STU
33401	Campbell	Engineer	STU
33460	Leonard	Scientist	STU
7123	Holn	Scientist	STU
82580	Wyes	Engineer	STU
17676	Michel	Scientist	STU
88140	Stanko	Scientist	STU
89140	Fabregas	Scientist	STU
41827	Chriso	Scientist	STU
75928	Yoshimoto	Scientist	STU
1827	Westbrook	Engineer	STU
18675	Araya	Scientist	STU
40178	Greene	Engineer	STU
91132	Sud	Scientist	STU
35588	John	Engineer	STU
2133	Nardi	Scientist	STU
73411	Schulz	Scientist	STU
40682	Rowe	Scientist	STU
86753	Leister	Scientist	STU
90082	Esparza	Scientist	STU
95366	Isogai	Scientist	STU
81896	Feldman	Scientist	STU
67024	Aufr	Engineer	STU
45300	Kambayashi	Scientist	STU

```
153 ---- Q8
154 select stu_ins.name, person_type,
155 budget/(select count(*) from student where dept_name=department.dept_name) as calc_number
156 from stu_ins inner join student using(id)
157 inner join department using (dept_name)
158 where stu_ins.person_type='STU'
159 union
160 select stu_ins.name, person_type, salary/budget*100
161 from stu_ins inner join instructor using(id)
162 inner join department using (dept_name)
163 where stu_ins.person_type='INS'
```

Message	Result 1
name	person_ty calc_number
Kahs	STU 4647.6675294117647059
Shuming	INS 11.46424106170360628600
Jordan	STU 8545.1110989010989011
Stylian	STU 5052.8033613445378151
Yoshimoto	STU 9238.8541860465116279
Gleit	STU 5975.5629059829059829
Papakir	STU 5975.5629059829059829
Benkov	STU 4463.0395959595959596
Morton	STU 984.9878703703703704