

# 数据库系统 2011-2012 A 卷

## 一. 选择题

1	2	3	4	5
A	A	C	D	C

## 二. ( $\Delta$ 代表自然连接)

(1)

A.

$\Pi v\_id, name (\delta title = "care for animals" ((Service \Delta Participation) \Delta Volunteer)).$

B.

$\Pi v\_id, age, name (\delta v\_id(volunteer) - \delta v\_id(Service \Delta Participation)).$

(2)

A.

```
SELECT V.[v-id], V.name
FROM V, S, P
WHERE V.[v-id] = P.[v-id] AND P.[s-id] = S.[s-id] AND S.title = 'Care for animals'
```

B.

```
(SELECT V.[v-id], V.name
FROM V, S, P
WHERE V.[v-id] = P.[v-id] AND P.[s-id] = S.[s-id] AND S.title = 'Care for animals'
)
Intersect
(SELECT V.[v-id], V.name
FROM V, S, P
WHERE V.[v-id] = P.[v-id] AND P.[s-id] = S.[s-id] AND S.title = 'To help children in
remote areas'
)
```

C.

```
select V.[v-id]
from V
where V.[v-id] NOT IN (
    select [v-id]
    from P, S
    where P.[s-id] = S.[s-id]);
```

D.

```
SELECT V.[v-id], V.name
FROM V, S, P
WHERE V.[v-id] = P.[v-id] AND P.[s-id] = S.[s-id] AND S.location = 'sicuan
UNIVERSITY'
```

E.

```
SELECT distinct [v-id]
FROM P
group by P.[v-id]
having COUNT([s-id]) >= all (
    select COUNT([s-id])
    from P
    GROUP BY P.[v-id])
```

F.

```
Create table Participation {
    Volunteer_id char(5) foreign key reference Volunteer
    Service_id char(5) foreign key reference Service
    Primary key (Volunteer_id, Service_id);
    Date int
}
```

三.

1.

A. (title, author)

B. 是第一范式，满足行列关系。不是第二范式，因为存在非主属性的部分函数依赖：  
(title, author)  $\rightarrow$  type 而 title  $\rightarrow$  type. 不满足第二范式，当然不是第三范式也不是 BCNF。

C. R1(title, author)

R2(title, publisher, type) foreign key title, title  $\rightarrow$  R1.title

R3(type, listprice)

R4(author, affiliation) foreign key author, author  $\rightarrow$  R1.author

2.

(1)

(Teacher\_id, Name)  $\rightarrow$  Gender

(Teacher\_id, Gender)  $\rightarrow$  Name

Teacher\_id  $\rightarrow$  (Gender, Name)

Course\_id  $\rightarrow$  Course\_name

(Teacher\_id, Course\_id)  $\rightarrow$  (Name, Gender, Course\_name)

(2)

$(Teacher\_id, Course\_id)$

(3)

属于第一范式，由于存在非主属性部分函数依赖： $(Teacher\_id, Course\_id) \rightarrow Course\_name$  而  $Course\_id \rightarrow Course\_name$ .

(4)

$R1(Teacher\_id, Course\_id)$

$R2(Teacher\_id, Name)$  foreign key  $Teacher\_id, Teacher\_id \rightarrow R1.Teacher\_id$

$R3(Course\_id, Name)$  foreign key  $Course\_id, Course\_id \rightarrow R1.Course\_id$

四.

$Customer(\underline{driver\_id}, phone, name)$

$Car(\underline{license}, year, model)$

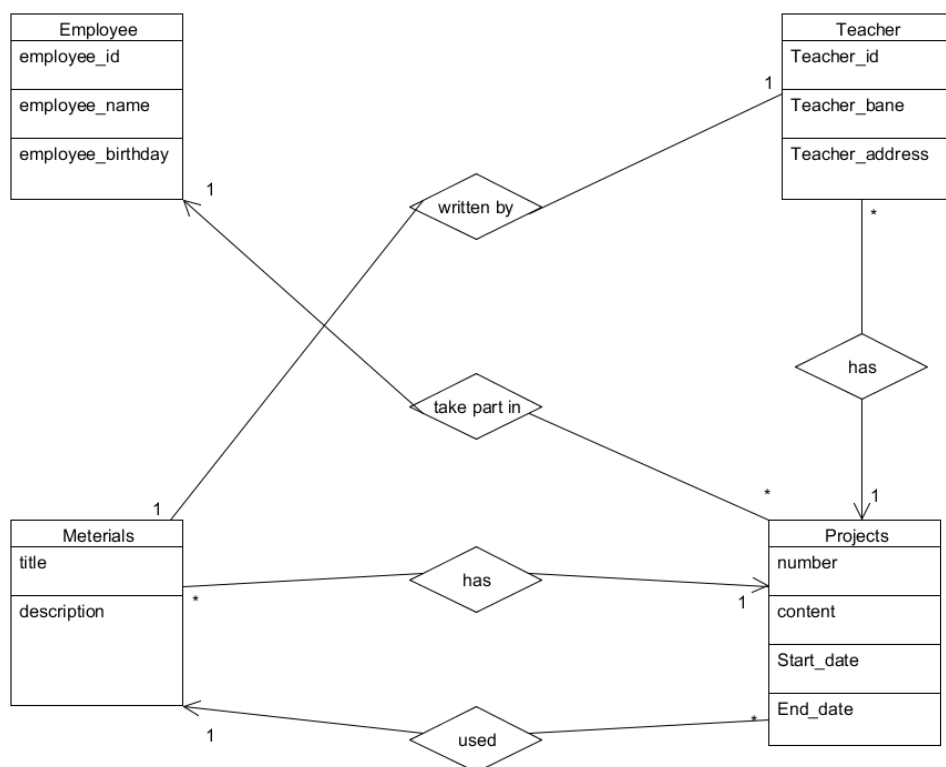
$Accident(\underline{report\_to}, location, date)$

$Own(\underline{license}, \underline{driver\_id})$

$Participation1(\underline{report\_to}, \underline{driver\_id})$

$Participation2(\underline{report\_to}, \underline{driver\_id})$

五.



PS: 由于个人水平不高，如果你有不同的意见，欢迎和我讨论

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