---由唐钰葆、许勤坤整理，有问题欢迎指正

数据库系统　　2012-2013-1 B 闭

1.选择题

1	2	3	4	5	6	7	8	9	10
D	B	D	B	B	A	D	C	A	D

部分题解析：

1.ACID（数据库事务正确执行的 4 个基本要素）：原子性（Atomicity）、一致性（Consistency）、隔离性（Isolation）、持久性（Durability）。

2.Logical data independence refers to the ability to change:the conceptual schema without changing the external schemas,or the application programs.

Physical data independence refers to the ability to change:the physical schema of the data without changing the external schemas,the conceptual schemas,or the application programs.

5. DML 的主要语句：insert，delete，update

DDL 的主要语句：create，drop，alter

DCL 的主要语句：grant，revoke

10.the process of database design:

Conceptual database design,logical database design,physical database design

2.write sql statements

1）select SSN,name
From Student,Course,Enroll
Where SSN=studentSSN
AND ID=courseID
AND instructorName='Smith'

2) select *
From Student
Where not exists(
Select *
From Enroll,Course
Where ID=courseID
AND instructorName='Smith')

3) select distinct title
From Course
Where instructorName like 'Li%'
OR classroom='4-456'
Order by title

4) select name
From Student
Where SSN in(
Select studntSSN
From Course,Enroll
Where ID=courseID

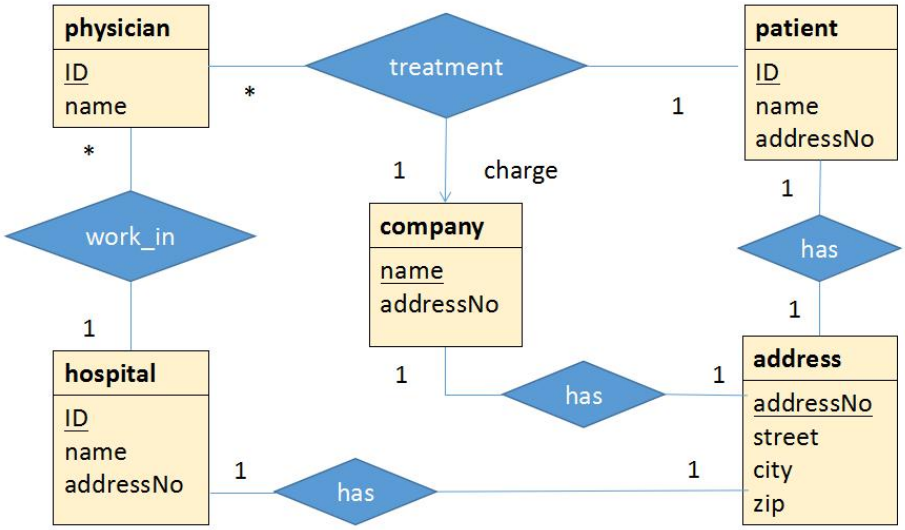
```
        AND title='Database'
        AND score=(Select Max(score)
                   From Enroll, Course
                   Where title='Database'
                   AND ID=courseID ))
```

```
5)  select name,AVG(score)
    From Student,Enroll
    Where SSN=studentSSN
    Group by name,SSN
6)  select SSN,name
    From Student
    Where not exists(
    Select courseID
    From Enroll,Student
    Where name='John'
    AND SSN=studentSSN)
  Except(Select courseID
    From Enroll,Student
    Where SSN=studentSSN)
```

分析：上述语句：选出一个学生，即假设 john 选的课为集合 A，这个学生的课是集合 B，则 A-B 为空集。

3.Database design

ER 图：



关系表：

Physician(ID,name,hospital_ID)->FK(hospital_ID) references(Hospital)

Patient(ID,addressNo)->FK(addressNo) references(Address)

Hospital(ID,addressNo)->FK(addressNo) references(Address)

In_Company(name,addressNo)->FK(addressNo) references(Address)

Address(addressNo,name,street,city,zip)

Treat(phy_ID,pat_ID,start_date,end_date,cost,inC_Name)->FK(inC_Name)references(In_Company)

4.Normalization

1)Fd1:student-id->name, Department-id,Department-name
Fd2:Department-id->Department-name,
Fd3:Book-id->ISBN,title
Fd4:ISBN->title,
Fd5:Book-id,borrow_date->Student-id

2)Book-id,borrow_date

3)1NF,因为存在部分函数依赖，如 Fd3:Book-id->ISBN，title

4)Student(student-id,name,Department-id)
Book(Book-id,ISBN,title)
Department(Department-id,Department-name)
Borrow(Book-id,borrow_date,student-id)