数据库作业3

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4.7

4.7 Consider the employee database of Figure 4.12. Give an SQL DDL definition of this database. Identify referential-integrity constraints that should hold, and include them in the DDL definition.

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employee (*ID*, *person_name*, *street*, *city*)
works (*ID*, *company_name*, *salary*)
company (*company_name*, *city*)
manages (*ID*, *manager_id*)

Figure 4.12 Employee database.

employee

```
create table employee(
    ID char(10)
    person_name char(20),
    street char(30),
    city char(30),
    primary key (ID)
);
```

works

```
create table works(
    ID char(10),
    company_name char(15),
    salary_int,
    primary key (ID),
    foreign key (ID) references employee,
    foreign key (company_name) references company
);
```

company

```
create table company(
    company_name char(15),
    city char(30),
    primary key (company_name)
);
```
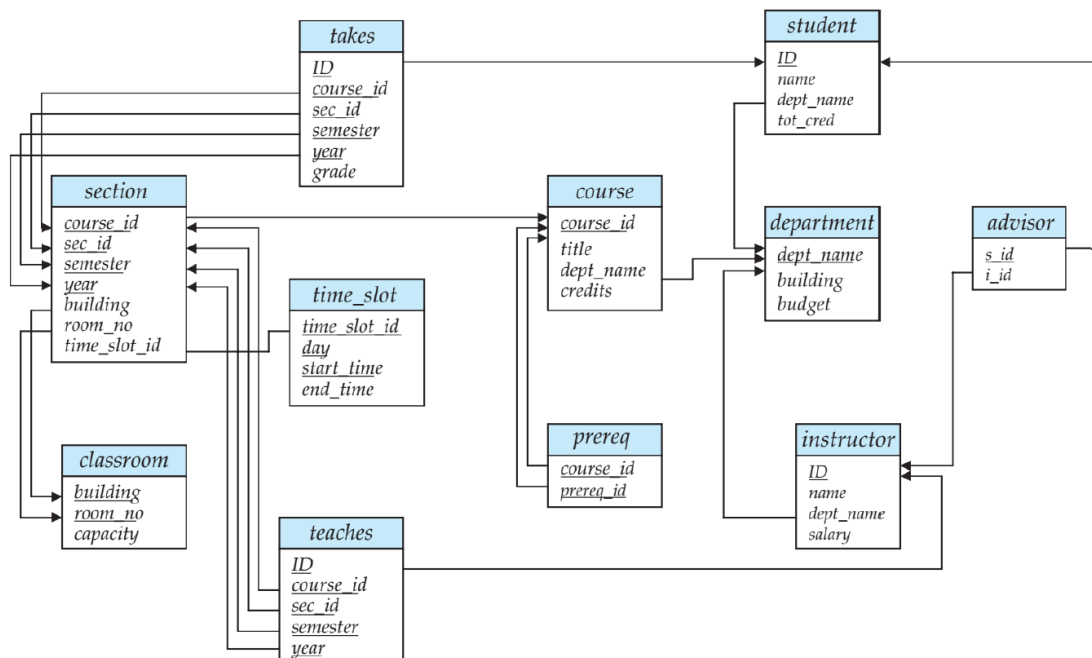
manages

```
create table manages(
    ID char(10),
    manager_id char(10),
    primary key (ID),
    foreign key (ID) references employee
);
```

4.16

4.16 Write an SQL query using the university schema to find the ID of each student who has never taken a course at the university. Do this using no subqueries and no set operations (use an outer join).


```
select s.ID
from student as s left join takes as t
where course_id is NULL;
```