

Quiz2

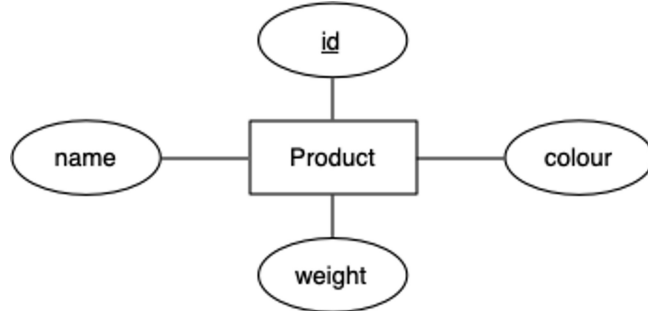
Wednesday, 30 September 2020 12:27 PM

本quiz重要课件:

<https://cgi.cse.unsw.edu.au/~cs3311/20T3/lectures/er-sql-mapping/slides.html#s10>

Question 1 (1 mark)

Consider the following ER entity design:



Assuming the existence of a domain for colours, called ColourType, and **assuming that every product has a name and colour, but we may not know its weight** (measured in whole milligrams), which of the following SQL table definitions most accurately represents the above design.

- (a)

```
create table Products (  
    id      integer,  
    name    text not null,  
    colour  ColourType not null,  
    weight  integer  
);
```
- (b)

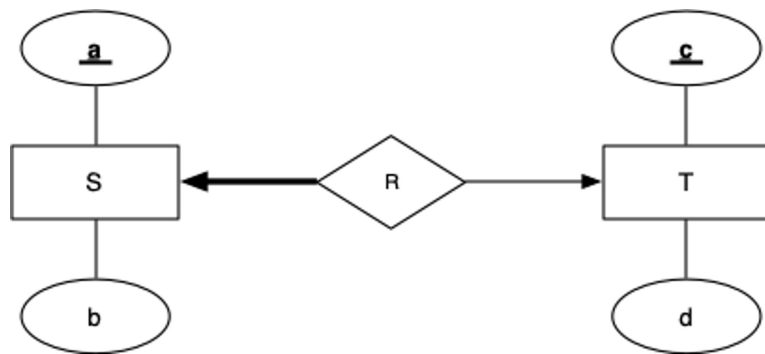
```
create table Products (  
    id      integer primary key,  
    name    text not null,  
    colour  ColourType,  
    weight  integer  
);
```
- (c)

```
create table Products (  
    id      integer primary key,  
    name    text not null,  
    colour  ColourType not null,  
    weight  integer not null  
);
```
- (d)

```
create table Products (  
    id      integer primary key,  
    name    text not null,  
    colour  ColourType not null,  
    weight  integer  
);
```
- (e) None of the above is accurate

Question 2 (1 mark)

Which of the SQL schemas below gives the most accurate and space efficient translation of the following ER diagram:



Assume that all attributes are of type integer.

- (a)

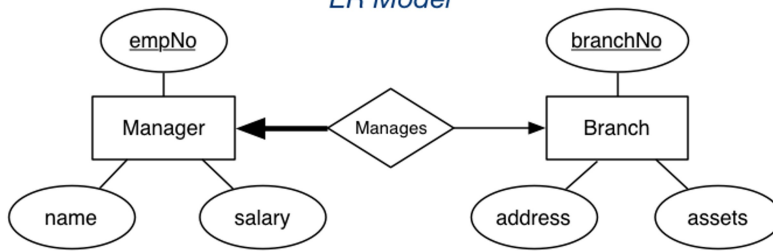
```
create table S (
    a integer primary key,
    b integer, R integer not null references T
);
create table T (
    c integer primary key,
    d integer,
    R integer references S(a)
);
```
- (b)

```
create table S (
    a integer primary key,
    b integer
);
create table T (
    c integer primary key,
    d integer,
    R integer references S(a)
);
```
- (c)

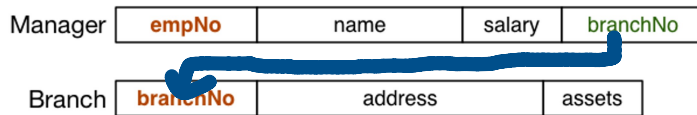
```
create table S (
    a integer primary key,
    b integer,
    R integer not null references T
);
create table T (
    c integer primary key,
    d integer
);
```
- (d)

```
create table S (
    a integer primary key,
    b integer
);
create table T (
    c integer primary key,
    d integer,
    R integer references S(a)
);
create table R (
    s integer not null references S(a),
    t integer references T(c),
    primary key (s,t)
);
```
- (e) None of the above is accurate *and* space efficient

ER Model



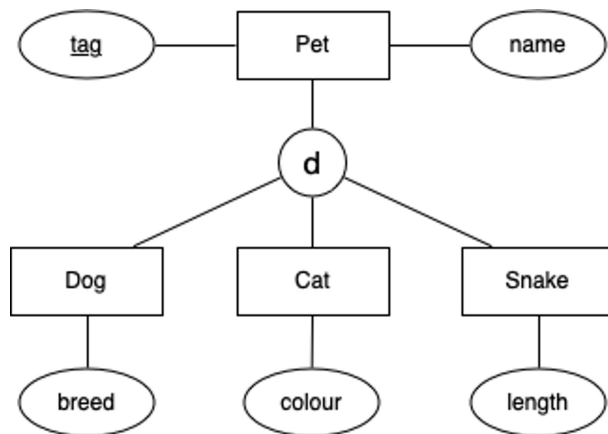
Relational Version



```
create table Branches (  
    branchNo serial primary key,  
    address text not null,  
    assets currency          -- a new branch  
);  
-- may have no accounts  
create table Managers (  
    empNo serial primary key,  
    name text not null,  
    salary currency not null, -- when first employed,  
                                -- must have a salary  
    manages integer not null, -- total participation  
    foreign key (manages) references Branches(branchNo)  
);
```

Question 3 (1 mark)

Consider the following ER class hierarchy:



Which of the following SQL schema most accurately represents an ER-style mapping of the class hierarchy into SQL?

- (a) `create table Pets(
tag integer primary key,
name text
);`
`create table Dogs(
tag integer primary key,
breed text
);`
`create table Cats(
tag integer primary key,
colour text
);`
`create table Snakes
(
tag integer primary key,
length float
);`
- (b) `create table Pets
(
tag integer primary key,
name text
);`
`create table Dogs
(
tag integer primary key,
breed text,
foreign key (tag) references Pets (tag)
);`
`create table Cats
(
tag integer primary key,
colour text,
foreign key (tag) references Pets (tag)
);`
`create table Snakes
(
tag integer primary key,
length float,
foreign key (tag) references Pets (tag)
);`
- (c) `create table Pets
(
tag integer primary key,
name text
);`
`create table Dogs`

```

(
    tag    integer primary key,
    name   text,
    breed  text
);
create table Cats
(
    tag    integer primary key,
    name   text,
    colour text
);
create table Snakes
(
    tag    integer primary key,
    name   text,
    length float
);

```

(d) create table Pets

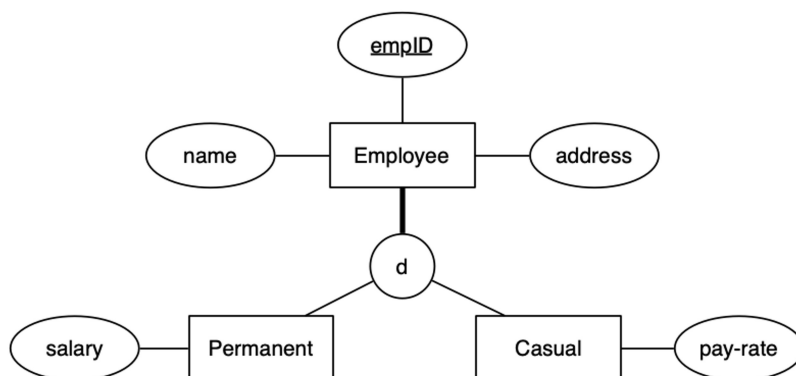
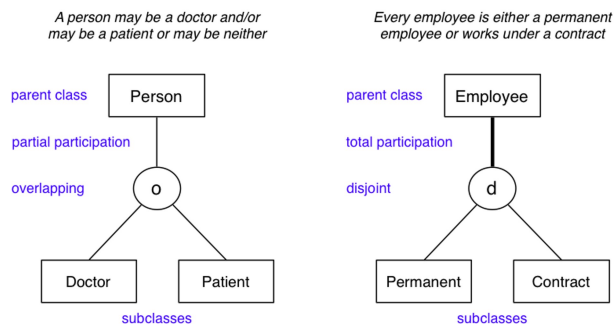
```

(
    tag    integer primary key,
    name   text,
    breed  text,
    colour text,
    length float
);

```

❖ Subclasses and Inheritance (cont)

Example:



❖ Mapping Subclasses (cont)

ER-style mapping to SQL schema:

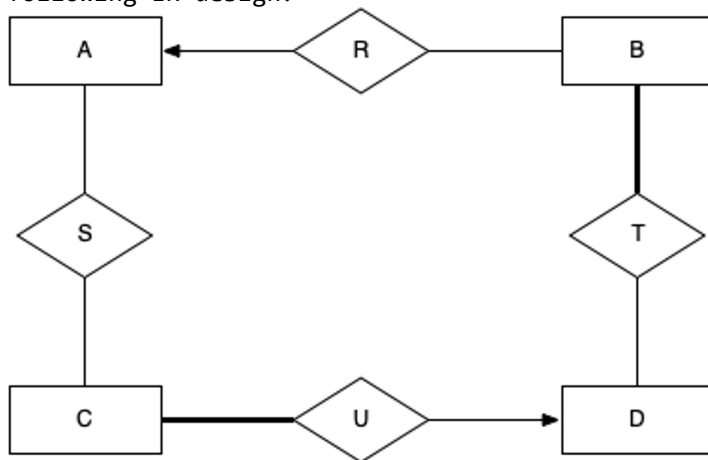
```
create table Employees (  
    empID    serial primary key,  
    name     text not null,  
    address  text not null  
);  
create table Permanents (  
    employee_id integer primary key,  
    salary      currency not null,  
    foreign key (employee_id) references Employees(empID)  
);  
create table Casuals (  
    employee_id integer primary key,  
    pay_rate    currency not null,  
    foreign key (employee_id) references Employees(empID)  
);
```

Does *not* capture either participation or disjoint-ness constraints!

Would need to program a solution to this e.g web-form that requires user to enter both Employee and subclass info

Question 4 (1 mark)

What is the minimum number of SQL tables that would be needed to accurately represent the following ER design?



- (a) 10
- (b) 8
- (c) 6
- (d) 4
- (e) None of the above

解析:

ER -> RDM 七步法:

- 第一步, 把所有的强实体转换
- 第二步, 把所有的弱实体转换
- 第三步, 1对1 关系 转换
- 第四步, 1对N 关系 转换
- 第五步, N对M关系 转换
- 第六步, 多值属性转换
- 第七步, 多元关系转换, 同第五步

A

<u>A_id</u>		
-------------	--	--

B

<u>B_id</u>	A	
-------------	---	--

C

<u>C_id</u>	D	
-------------	---	--

D

<u>D_id</u>		
-------------	--	--

S

<u>A</u>	<u>C</u>
----------	----------

T

<u>B</u>	<u>D</u>
----------	----------