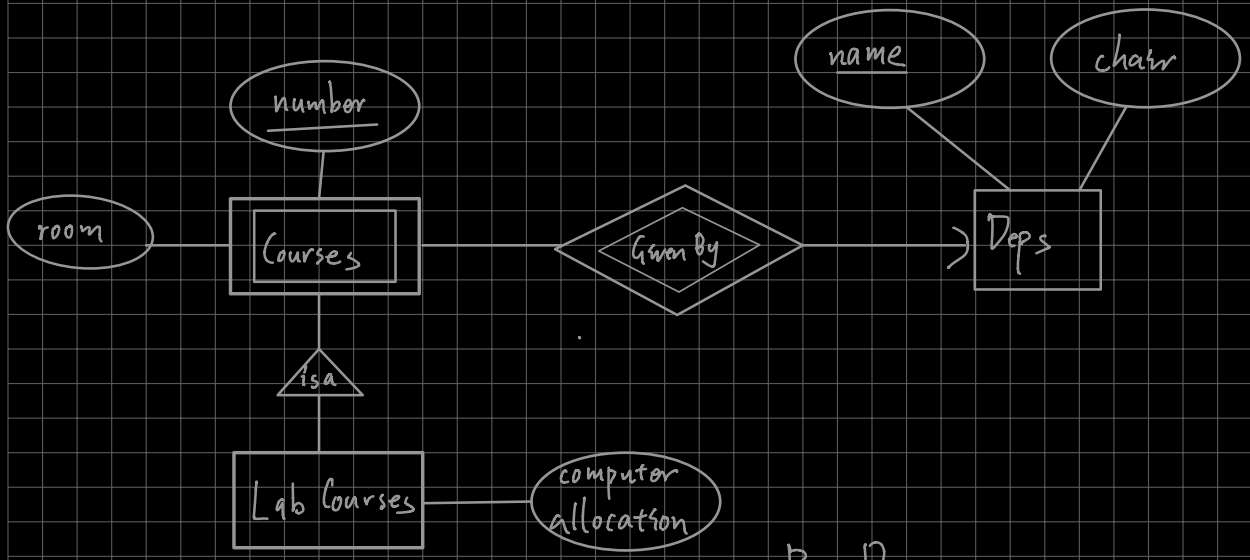
Assignment 4

4.6.1 使用下面的方法，将图 4-32 中的 E/R 图转化为关系数据库模式：

(a) "直接 E/R" 法

(b) "面向对象" 法

(c) "空值" 法



R_1: Courses

room	number	name

R_2: Deps

name	chair

R_3: Lab Courses

(1)

computer allocation	number	name

(2)

computer allocation	number	room	name

(3)

computer allocation	number	name	room

4.6.2 (附加)

Person (name , address)

ChildOf (name , address , childname , childaddress)

FatherOf (fathername , fatheraddress, childname , childaddress)

MotherOf (mothername , motheraddress, childname , childaddress)

Married (fathername , fatheraddress, mothername , motheraddress)

no need ⇒ FatherOf . MotherOf 是 many_one relationship from child. 因此有 child 就行. Married 是 one-one relationship 因此 只写 有 Father 就行.

Child (name , address , mothername , motheraddress , fathername , fatheraddress)

Father (name , address , wifename , wifeaddress)

Mother (name , address)

4.9.3 用ODL实现习题4.1.3中的球队、一队员一球迷数据库系统，包括合适的键说明。为何原先习题中很复杂的球队颜色集问题在ODL中不出现？

Reason: Color set can be an attribute of Teams, for the fact that collections are allowed in ODL.

```
class Teams (key(name)) {
    attribute string name;
    relationship set<Colors> Displays inverse Colors::DisplayedBy;
    relationship set<Players> PlayedBy inverse Players::Plays;
    relationship Players CaptainedBy inverse Players::Captains;
    relationship Set<Fans> RootedBy inverse Fans::Roots;
};

class Players (key(name)) {
    attribute string name;
    relationship Set<Teams> Plays inverse Teams::PlayedBy;
    relationship Teams Captains inverse Teams::CaptainedBy;
    relationship Set<Fans> AdmiredBy inverse Fans::Admires;
};
```

```
class Fans ( key (name) ) {
        attribute string name;
        relationship Colors Favors inverse Colors :: FavoredBy;
        relationship Set < Teams > RootedBy inverse Team :: Roots;
        relationship Set < Players > Admires inverse Players :: Admired By;
    };
class Colors ( key (colorname) ) {
        attribute string colorname;
        relationship Set < Fans > FavoredBy inverse Fans :: Favors;
    relationship Set < Teams > DisplayedBy inverse Teams :: Displays;
    };
```

4.10.1 将以下习题中ODL设计转化为关系数据库模式。

(c) 习题 4.9.3

Fans(name, colors)

Players(name, teamname, is-captain)

Teams(name)

Colors(colorname)

RootedBy(fan-name, teamname)

Admires(fan-name, playername)

Teamcolors(name, colorname)