1.

(1)

n

m

销售

商品

商店

1

聘用

m

职工

(2)

Shop(Sid,Sname,Saddr) Sid

Item(Iid,Iname,Isize,Iprice) Iid

Employee(Eid,Ename,Egender,Egrade) Eid

Sale(Sid,Iid,Salepermonth) (Sid,Iid)

Employ(Sid,Eid,Duration,Salary) (Sid,Eid)

2.

(1)

L: J, H

N: none

(JH)+­=(JHIFG)

(JH)为候选码

(2)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | F | G | H | I | J |
| FG | A1 | A2 | B13 | B14 | B15 |
| FJ | A1 | B22 | B23 | B24 | A5 |
| JH | B31 | B32 | A3 | B34 | A5 |
| IGH | B41 | A2 | A3 | A4 | B45 |
| FH | A1 | B52 | A3 | B54 | B55 |

F->I

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | F | G | H | I | J |
| FG | A1 | A2 | B13 | B14 | B15 |
| FJ | A1 | B22 | B23 | B14 | A5 |
| JH | B31 | B32 | A3 | B34 | A5 |
| IGH | B41 | A2 | A3 | A4 | B45 |
| FH | A1 | B52 | A3 | B14 | B55 |

J->I

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | F | G | H | I | J |
| FG | A1 | A2 | B13 | B14 | B15 |
| FJ | A1 | B22 | B23 | B14 | A5 |
| JH | B31 | B32 | A3 | B14 | A5 |
| IGH | B41 | A2 | A3 | A4 | B45 |
| FH | A1 | B52 | A3 | B14 | B55 |

I->G

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | F | G | H | I | J |
| FG | A1 | A2 | B13 | B14 | B15 |
| FJ | A1 | A2 | B23 | B14 | A5 |
| JH | B31 | A2 | A3 | B14 | A5 |
| IGH | B41 | A2 | A3 | A4 | B45 |
| FH | A1 | A2 | A3 | B14 | B55 |

GH->I

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | F | G | H | I | J |
| FG | A1 | A2 | B13 | B14 | B15 |
| FJ | A1 | A2 | B23 | B14 | A5 |
| JH | B31 | A2 | A3 | A4 | A5 |
| IGH | B41 | A2 | A3 | A4 | B45 |
| FH | A1 | A2 | A3 | A4 | B55 |

IH->F

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | F | G | H | I | J |
| FG | A1 | A2 | B13 | B14 | B15 |
| FJ | A1 | A2 | B23 | B14 | A5 |
| JH | A1 | A2 | A3 | A4 | A5 |
| IGH | A1 | A2 | A3 | A4 | B45 |
| FH | A1 | A2 | A3 | A4 | B55 |

是无损链接

(3)

最小依赖集F={F->I,J->I,I->G,GH->I,IH->F}

ρ={FI,JI,IG,GHI,IHF}

3.

(1)

一个学生只属于一个班，一个班有很多学生；

一个学生只属于一个系，一个系有很多学生；

一个学生可以参加很多社团，一个社团可以有很多学生；

班级里的同学不一定一个系；

班级：班号，班名，上课教室

学生：学号，姓名，性别，年龄，班号，系号

系：系号，系名

社团：社团号，社团名

1

m

m

1

系

属于

学生

组成

班级

m

参加

n

社团

(2)

Student(Sid,Cid,Did,Sname,Sgender,Sage)

Class(Cid,Cname,Croom)

Department(Did,Dname)

Organization(Oid,Sid,Oname)

4.

(1)

L:B,E

N:none

(BE)+=(BCEDA)

BE为候选码

(2)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| AD | A1 | B12 | B13 | A4 | B15 |
| AB | A1 | A2 | B23 | B24 | B25 |
| BC | B31 | A2 | A3 | B34 | B35 |
| CDE | B41 | B42 | A3 | A4 | A5 |
| AE | A1 | B52 | B53 | B54 | A5 |

A->C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| AD | A1 | B12 | B13 | A4 | B15 |
| AB | A1 | A2 | B13 | B24 | B25 |
| BC | B31 | A2 | A3 | B34 | B35 |
| CDE | B41 | B42 | A3 | A4 | A5 |
| AE | A1 | B52 | B13 | B54 | A5 |

C->D

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| AD | A1 | B12 | B13 | A4 | B15 |
| AB | A1 | A2 | B13 | A4 | B25 |
| BC | B31 | A2 | A3 | A4 | B35 |
| CDE | B41 | B42 | A3 | A4 | A5 |
| AE | A1 | B52 | B13 | A4 | A5 |

B->C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| AD | A1 | B12 | B13 | A4 | B15 |
| AB | A1 | A2 | A3 | A4 | B25 |
| BC | B31 | A2 | A3 | A4 | B35 |
| CDE | B41 | B42 | A3 | A4 | A5 |
| AE | A1 | B52 | B13 | A4 | A5 |

DE->C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| AD | A1 | B12 | B13 | A4 | B15 |
| AB | A1 | A2 | A3 | A4 | B25 |
| BC | B31 | A2 | A3 | A4 | B35 |
| CDE | B41 | B42 | A3 | A4 | A5 |
| AE | A1 | B52 | A3 | A4 | A5 |

CE->A

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| AD | A1 | B12 | B13 | A4 | B15 |
| AB | A1 | A2 | A3 | A4 | B25 |
| BC | B31 | A2 | A3 | A4 | B35 |
| CDE | A1 | B42 | A3 | A4 | A5 |
| AE | A1 | B52 | A3 | A4 | A5 |

不是无损连接

(3)

最小依赖集F={A->C,C->D,B->C,DE->C,CE->A}

ρ={AC,CD,BC,DEC,CEA}

5.

(1)

毕业生：编号，姓名，性别，年龄，专业号

专业：专业号，专业名，院号

院系：院号，院名

单位：单位号，名称，boss

合同：合同号，详细内容

m

构成

属于

毕业生

1

1

m

院系

专业

1

签订

m

1

m

签订

合同

单位

(2)

Graduate(Gno,Gname,Ggender,Gage,Mno)

Majority(Mno,Mname,Dno)

Department(Dno,Dname)

Workplace(Wno,Wname,Boss)

Contract(Cno,Cdetails)

Sign(Cno,Dno,Wno,Salary,date)

6.

(1)

(A,B)+={ABCEFD}=U

(2)

{AC->E,B->C,B->E,C->B,AB->D,E->F}

(3)

L:A

N:none

R:D,F

(AB),(AC),(ABC)

(4)

第一范式，非键属性对键属性的部分依赖（B->E）

(5)

最小依赖集F={B->E,C->B,AB->D,E->F}

ρ={BE,CB,ABD,EF}