**第3周（第五章：分解无损和保持FD）**

**一、实验课：** 同上

**二、研讨课：**

1. R(ABCDE), F={AB→C,AC→E,C→B,E→C,D→C},ρ={ABC,AD,AE,BE,DE}，求ρ的分解无损性

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| ABC | a1 | a2 | a3 | b14 | b15 |
| AD | a1 | b22 | b23 | a4 | b25 |
| AE | a1 | b32 | b33 | b34 | a5 |
| BE | b41 | a2 | b43 | b44 | a5 |
| DE | b51 | b52 | b53 | a4 | a5 |

E→C

D→C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| ABC | a1 | a2 | a3 | b14 | b15 |
| AD | a1 | b22 | b23 | a4 | b25 |
| AE | a1 | b32 | b33 | b34 | a5 |
| BE | b41 | a2 | b33 | b44 | a5 |
| DE | b51 | b22 | b33 | a4 | a5 |

C→B

D→C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| ABC | a1 | a2 | a3 | b14 | b15 |
| AD | a1 | b22 | b23 | a4 | b25 |
| AE | a1 | a2 | b33 | b34 | a5 |
| BE | b41 | a2 | b33 | b44 | a5 |
| DE | b51 | a2 | b23 | a4 | a5 |

AB→C

AC→E

C→B

E→C

D→C

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| ABC | a1 | a2 | b13 | b14 | a5 |
| AD | a1 | a2 | b13 | a4 | b25 |
| AE | a1 | a2 | b13 | b34 | a5 |
| BE | b41 | a2 | b13 | b44 | a5 |
| DE | b51 | a2 | b13 | a4 | a5 |

AC→E

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | A | B | C | D | E |
| ABC | a1 | a2 | b13 | b14 | a5 |
| AD | a1 | a2 | b13 | a4 | a5 |
| AE | a1 | a2 | b13 | b34 | a5 |
| BE | b41 | a2 | b13 | b44 | a5 |
| DE | b51 | a2 | b13 | a4 | a5 |

∵没有一行是全a

∴是有损联结分解

2. 关系模式R（U,F），其中U={W,X,Y,Z}，F={WX→Y,W→X,X→Z,Y→W }。关系模式R的候选键是 （1） ， （2） 是无损连接并保持函数依赖的分解。

3. 举出一个满足无损但不保持FD的分解例子，并说明分解的不合理? 举出一个保持FD但不满足无损的分解例子，并说明分解的不合理。

4．给定关系模式R<U,F>,其中：U=｛A,B,C,D｝,F={A->B,B->C,C->D,D->A},判断关系模式R的分解ρ=｛AB,BC,CD｝是否具有依赖保持性。

5. 已知R<U, F>，U= { A, B, C, D, E }，F={ AB→C , D→E, C→D}，R的一个分解ρ= {R1(A,B,C), R2(C,D), R3(D,E)}。判定分解ρ是否为无损连接的分解和保持函数依赖性。

6. 如下关系模式R表示某学校学生及宿舍的情况

R(学号，姓名，系，宿舍楼，宿舍房号，协会)

满足的函数依赖集合为

F={学号→姓名，学号→系，宿舍楼→系，学号→宿舍房号，宿舍房号→宿舍楼}

试将R规范化为满足BCNF的无损分解模式集。