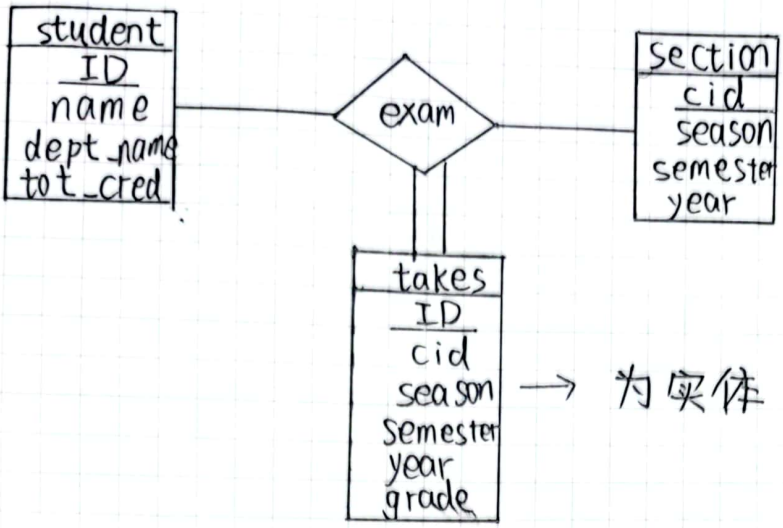
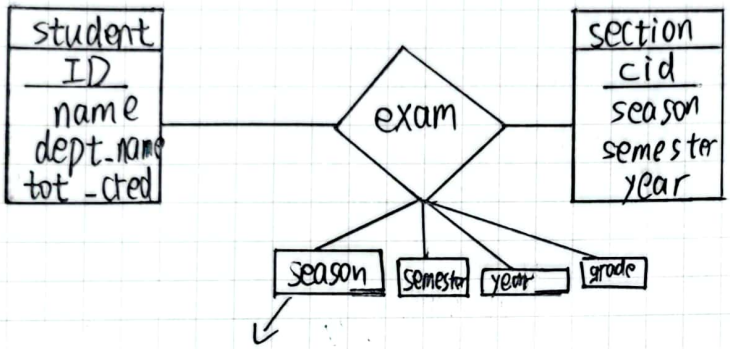
7.2 20.4 20200013019B

陈春雨

(1)

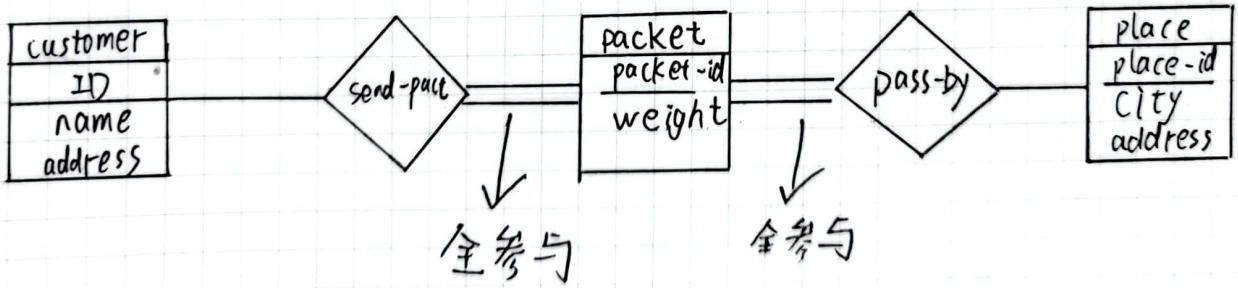


(2)

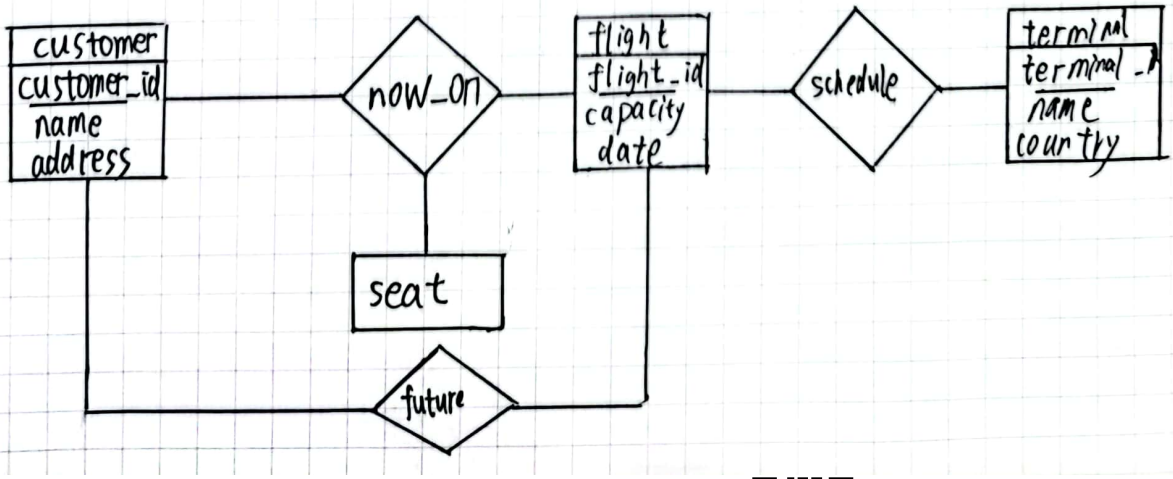


联系集属性

7.22.



7.23



7.25.

① teaches (foreign key ID references instructor,
foreign key (course_id, sec_id, semester, year)
references sec_course

② takes (foreign key ID references student,
foreign key (course_id, sec_id, semester, year)
references sec_course)

③ advisor (foreign key S_ID references student,
foreign key i_ID references instructor)

④ preq (foreign key course_ID references course,
foreign key preq_ID references course)

⑤ sec_course (foreign key course_ID references course,
foreign key (sec_id, semester, year) references
section).

⑥ sec_class (foreign key (sec_id, course_id, semester,
year) references sec_course,
foreign key (building, room_number)
references classroom)
)

⑦ inst_dept (foreign key ID references instructor
foreign key dept_name references departmat)

⑧ stud_dept (foreign key ID references student
foreign key dept_name references departname)

⑨ sec_time_slot (foreign key (course_id, sec_id, semester, year)
references sec_course)

8.1 解：∵ r 被分解为 r_1, r_2，且 $r_1 \cap r_2 = A$

且有 $F = \{A \to BC, CD \to E, B \to D, E \to A\}$

∴ $A_F^+ = ABCDE$

∴ $r_1 \in A_F^+$

∴ 为无损分解

8.6 解：

(1) ∵ $F = \{A \to BC, CD \to E, B \to D, E \to A\}$

∴ $F^+ = \{A \to BCDE, B \to D, AB \to CDE \cdots\}$

(2) ① $A_F^+ = ABCDE$

② $(CD)_F^+ = ABCDE$

且 $C_F^+ = C$

$D_F^+ = D$

∴ CD 为候选码

8.7 解：① 去掉 B 或 C 有 $(A)_F^+ = ABCDE$

∴ B、C 均不为无关属性

② 若去掉 C

则 $A_F^+ = ABCDE$

∴ C 为无关属性

∴ $F = \{A \to BC, D \to E, B \to D, E \to A\}$

8.19 $\{(AB, C, E), (B, D)\}$

8.20 ① 先求正则覆盖

② 对 $\forall\ a \to b \in R$，由转为 $R_i = ab$

③ 若 $\forall R_i$ < 包含候选码 ④ 若有一个被包含，则去掉

∴有 $R' = \{(A, B, C), (C, D, E), (B, D), (E, A)\}$

8.29

a. $B^+ = \{A, B, C, D, E\}$

b. $A \to BCD$

~~由分解律有~~

∴ $(A \cup A \to A \cup BCD) \Leftrightarrow A \to ABCD$

又∵ $BC \to DE$

∴ $ABCD \to ABCDE$

∴ $A \to ABCDE$ ($A \to ABCD \to ABCDE$)

∴ $AF \to ABCDEF$

∴ AF为超码

c. ① $A \to BCD$,

又∵ $B \to E$ 可以被推导出

∴ C是冗余的

∴ $B \to E$

又∵ $B \to D$

∴ $B \to DE$

∴ 正则覆盖：$A \to BC$, $B \to DE$, $D \to A$

d. 由c可得

$r_1(A, B, C)$ $r_2(B, D, E)$ $r_3(D, A)$

$r_4(A, F)$

e. $r_1(A, B, C, D)$ $r_2(A, F)$ $r_3(A, E)$

f. 利用正则覆盖，可以得到相同BCNF分解