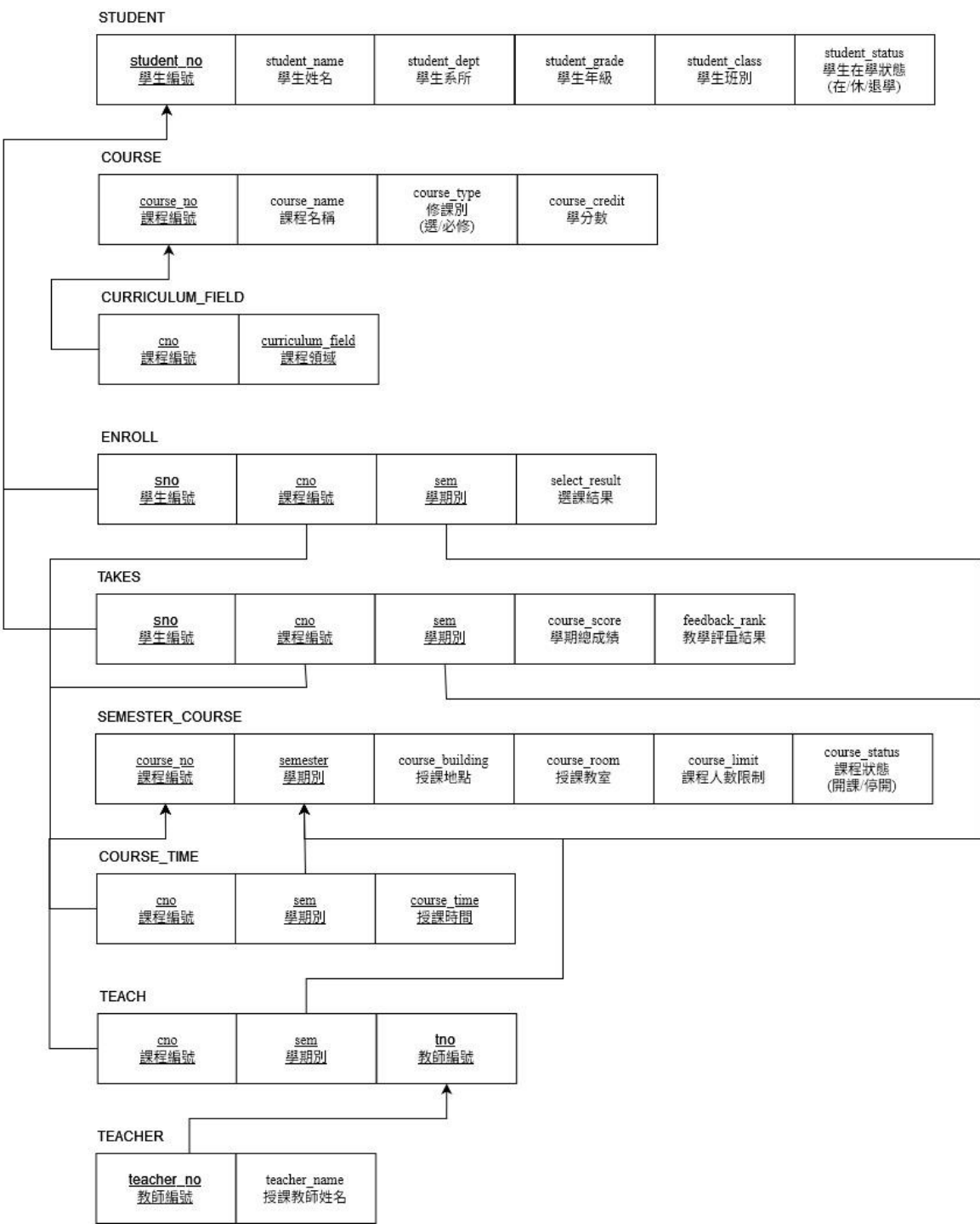
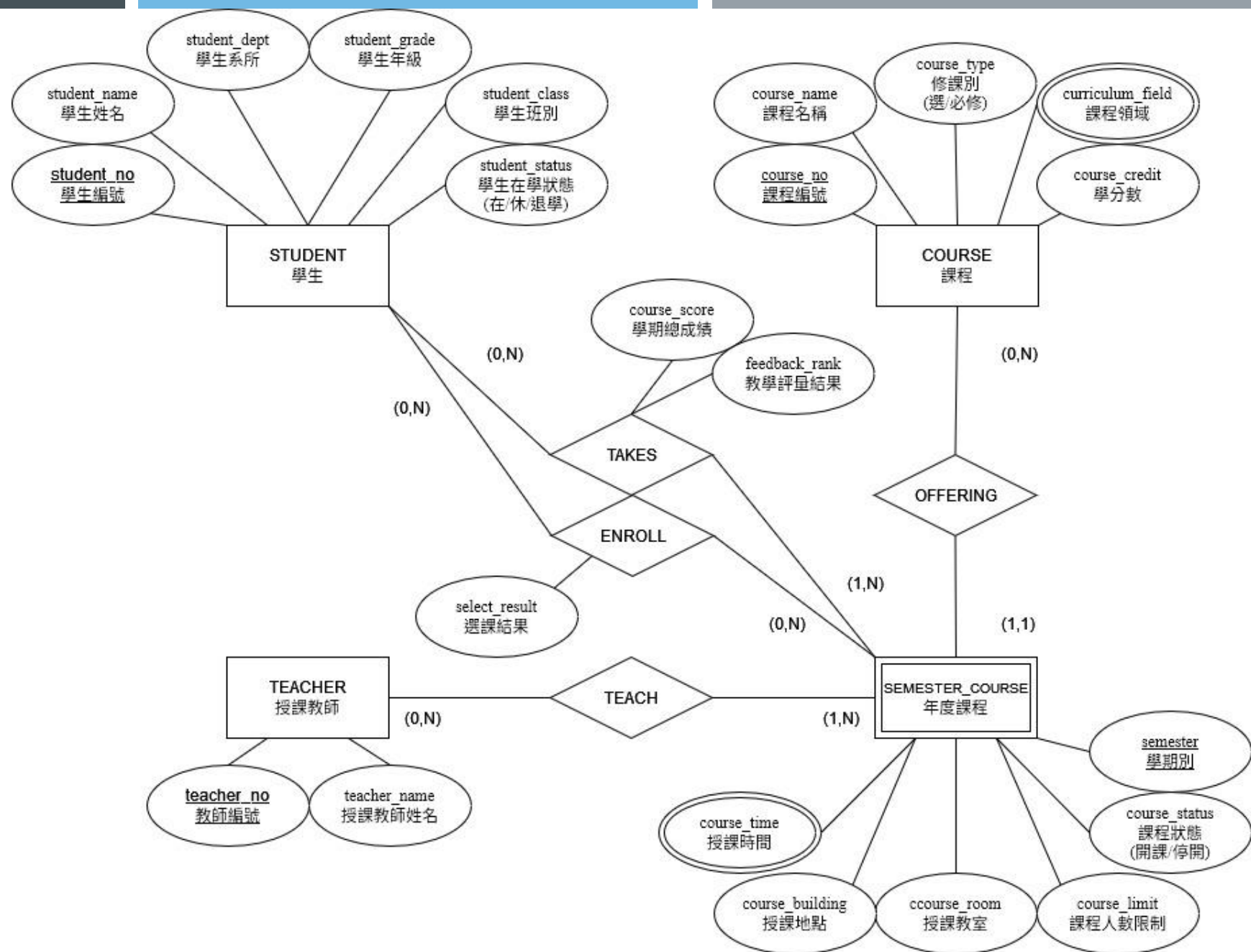

目錄

- 3NF OR BCNF
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- SQL語法題目

3NF OR BCNF



ER MODEL



SQL PROBLEM – 1

- 「A0001微積分」上課地點要由K205修改到K210 大教室，該怎麼做？

- Ans:

```
1 UPDATE semester_course
2 SET course_room = "K210"
3 WHERE course_no = "A0001" AND semester = 1112
```

SQL PROBLEM – 2

- 請列出「A0002 計算機概」的修課名單 (點名表)

- Ans:

```
1 SELECT student_no, student_name
2 FROM
3     semester_course AS SC
4     JOIN enroll AS E ON SC.course_no = E.cno
5                        AND SC.semester = E.sem
6     JOIN student AS S ON E.sno = S.student_no
7 WHERE course_no == "A0003"
8        AND semester == 1112
9        AND select_result IN ('中選', '人工加選')
10        AND student_status = '在學'
```

SQL PROBLEM – 3

- 請列出課程成績不及格的學生比例資料 (大學部：低於60分、碩博：70分)

課名	授課教師	不及格人次	修課人次	不及格比例
----	------	-------	------	-------

- Ans:

```

1 WITH
2 course_info (course_no, course_name, teacher_name) AS (
3     SELECT
4         SC.course_no,
5         course_name,
6         GROUP_CONCAT(teacher_name, ',') AS teacher_name
7     FROM
8         course AS C
9     JOIN semester_course AS SC ON C.course_no = SC.course_no
10    JOIN teach ON SC.course_no = teach.cno
11                AND SC.semester = teach.sem
12    JOIN teacher AS T ON teach.tno = T.teacher_no
13 WHERE SC.semester = 1112
14 GROUP BY SC.course_no
15 ),
16 num_stu (course_no, student_num) AS (
17     SELECT SC.course_no, COUNT(T.sno)
18     FROM
19         semester_course AS SC
20     JOIN takes AS T ON SC.course_no = T.cno
21                AND SC.semester = T.sem
22     JOIN student AS S ON T.sno = S.student_no
23 WHERE SC.semester = 1112 AND S.student_status = '在學'
24 GROUP BY SC.course_no
25 ),
26 num_failed (course_no, failed_num) AS (
27     SELECT SC.course_no, COUNT(T.sno)
28     FROM
29         semester_course AS SC
30     JOIN takes AS T ON SC.course_no = T.cno
31                AND SC.semester = T.sem
32     JOIN student AS S ON T.sno = S.student_no
33 WHERE SC.semester = 1112 AND
34         T.course_score < CASE WHEN (S.student_dept LIKE '%研究所'
35 OR S.student_dept LIKE '%碩士班') THEN 70 ELSE 60 END
36 GROUP BY SC.course_no
37 )

```

```

38 SELECT
39     course_name AS 課名,
40     teacher_name AS 授課老師,
41     failed_num AS 不及格人次,
42     student_num AS 修課人次,
43     ROUND(CAST(failed_num AS REAL)/student_num, 2) AS 不及格比例
44 FROM
45     course_info AS CI
46 JOIN num_stu AS NS ON CI.course_no = NS.course_no
47 JOIN num_failed AS NF ON NS.course_no = NF.course_no

```

SQL PROBLEM – 3(CONT.)

SQL PROBLEM – 4

- 請列出各系學生修課領域分佈情況

學生系所	課程領域	人次	佔比
------	------	----	----

- Ans:


```

1 SELECT
2     dept AS 學生系所,
3     cfield AS 課程領域,
4     COUNT(student_no) AS 人次,
5     ROUND(CAST(COUNT(student_no) AS REAL)/(COUNT(student_no)
6         OVER (PARTITION BY dept)), 2) AS 佔比

```

```

7 FROM (
8     SELECT
9         CASE WHEN S.student_dept LIKE '%研究所%'
10             THEN SUBSTR(S.student_dept, 1,
11                 INSTR(S.student_dept, '研究所')-1) || '系'
12         WHEN S.student_dept LIKE '%碩士班%'
13             THEN SUBSTR(S.student_dept, 1,
14                 INSTR(S.student_dept, '碩士班')-1)
15         ELSE SUBSTR(S.student_dept, 1, LENGTH(S.student_dept)) END
16     AS dept,
17     curriculum_field AS cfield,
18     student_no
19 FROM
20     student AS S
21     JOIN takes AS T ON S.student_no = T.sno
22     JOIN semester_course AS SC ON T.cno = SC.course_no
23                                     AND T.sem = SC.semester
24     JOIN curriculum_field AS CF ON SC.course_no = CF.cno
25 WHERE S.student_status = '在學'
26 )
27 GROUP BY
28     dept,
29     cfield

```

SQL PROBLEM – 4 (CONT.)

SQL PROBLEM – 5

- 請列出教學評量平均分數及總分

課名	授課教師	教學評量總分	教學評量平均分數
----	------	--------	----------

- Ans:

```

1 WITH
2 course_info (course_no, course_name, teacher_name) AS (
3     SELECT
4         SC.course_no,
5         course_name,
6         GROUP_CONCAT(teacher_name, ',') AS teacher_name
7     FROM
8         course AS C
9         JOIN semester_course AS SC ON C.course_no = SC.course_no
10        JOIN teach ON SC.course_no = teach.cno
11                AND SC.semester = teach.sem
12        JOIN teacher AS T ON teach.tno = T.teacher_no
13     WHERE SC.semester = 1112
14     GROUP BY SC.course_no
15 ),
16 feedback (course_no, sum_feedback, avg_feedback) AS (
17     SELECT
18         SC.course_no,
19         SUM(T.feedback_rank),
20         ROUND(AVG(T.feedback_rank), 2)
21     FROM
22         semester_course AS SC
23         JOIN takes AS T ON SC.course_no = T.cno
24                AND SC.semester = T.sem
25     WHERE SC.semester = 1112
26     GROUP BY SC.course_no
27 )

```

```

29 SELECT
30     course_name AS 課名,
31     teacher_name AS 授課教師,
32     sum_feedback AS 教學評量總分,
33     avg_feedback AS 教學評量平均分數
34 FROM course_info
35     JOIN feedback ON course_info.course_no = feedback.course_no

```

SQL PROBLEM – 5 (CONT.)