In-class Exercise 3

❑ Question:

❑ Create three tables using SQL: Students, Courses, and Enrolled. In table definitions, you must enforce the following constraints:

  ➢ Students: sid, sname, major, year_of_study, gpa

  ➢ Courses: cid, cname, enroll_count, lecturer

  ➢ Enrolled: sid, cid, score

  ➢ A student can be enrolled into a course only if he/she exists in Students table.

  ➢ If a student is removed from Students table, his/her enrollment record(s) should also be deleted from Enrolled table.

  ➢ Only the courses available in Courses table can be enrolled.

  ➢ gpa must be between 0 and 4.

  ➢ score must be between 0 and 100 if not NULL.

❑ Answer:
- ➤ CREATE TABLE Students
  ```
  (sid                CHAR(8),
   sname              CHAR(20),
   major              CHAR(10),
   year_of_study      INTEGER,
   gpa                REAL,
   PRIMARY KEY        (      ),
   CHECK              (                              ));
  ```

- ➤ CREATE TABLE Courses
  ```
  (cid                CHAR(8),
   cname              CHAR(20),
   enroll_count       INTEGER,
   lecturer           CHAR(20),
   PRIMARY KEY        (      ));
  ```

- ➤ CREATE TABLE Enrolled
  ```
  (sid                CHAR(8),
   cid                CHAR(8),
   score              REAL,
   PRIMARY KEY        (      ),
   FOREIGN KEY        (sid)   REFERENCES Students
                      ON DELETE                    ,
   FOREIGN KEY        (cid)   REFERENCES Courses,
   CHECK              (                              );
  ```

❑ Answer:

➢ CREATE TABLE Students

```
(sid               CHAR(8),
 sname             CHAR(20),
 major             CHAR(10),
 year_of_study     INTEGER,
 gpa               REAL,
 PRIMARY KEY       (sid),
 CHECK             (gpa >= 0 AND gpa <= 4));
```

➢ CREATE TABLE Courses

```
(cid               CHAR(8),
 cname             CHAR(20),
 enroll_count      INTEGER,
 lecturer          CHAR(20),
 PRIMARY KEY       (cid));
```

➢ CREATE TABLE Enrolled

```
(sid               CHAR(8),
 cid               CHAR(8),
 score             REAL,
 PRIMARY KEY       (sid, cid),
 FOREIGN KEY       (sid)   REFERENCES Students(sid)
                   ON DELETE CASCADE,
 FOREIGN KEY       (cid)   REFERENCES Courses(cid),
 CHECK             (score IS NULL OR score BETWEEN 0 AND 100));
```