

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  (sid),
CHECK       ());
```

```
➤ 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
ON DELETE CASCADE,
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));