

Data Science On-Ramp Course: SQL

Assignment 2: Basics of MySQL

Problem: Answer each of the following questions briefly. The questions are based on the following relational schema:

Emp(eid: integer, *ename*: string, *age*: integer, *salary*: real)

Works(eid: integer, did: integer, *pcttime*: integer)

Dept(did: integer, *dname*: string, *budget*: real, *managerid*: integer)

- 1) Give an example of a foreign key constraint that involves the Dept relation. What are the options for enforcing this constraint when a user attempts to delete a Dept record?
- 2) Write the SQL statements required to create the preceding relations, including appropriate versions of all primary and foreign key integrity constraints.
- 3) Define the Dept relation in SQL so that every department is guaranteed to have a manager.
- 4) Write an SQL statement to add John Doe as an employee with *eid* = 101, *age* = 32 and *salary* = 15,000.
- 5) Write an SQL statement to give every employee a 10 percent raise.
- 6) Write an SQL statement to delete the Toy department. Given the referential integrity constraints you chose for this schema, explain what happens when this statement is executed.

Problem: First, take a brief look at the attached .txt files: [student.txt](#), [majorsin.txt](#), [book.txt](#), [cites.txt](#) and [buys.txt](#). They contain data as comma-separated records. It is better to have an idea what the fields look like before you create any table. Create a database with the name UNIVERSITY. Then create tables in UNIVERSITY according to the following schemas:

Student(Sid; Sname; GPA)
MajorsIn(Sid; Major)
Book(BookNo; Title; Price)
Cites(BookNo; CitedBookNo)
Buys(Sid; BookNo)

The relation *MajorsIn* stores students and their majors. A student can have multiple majors, but we also allow that a student can have no major. A tuple (b,c) in the relation *Cites* indicates that the book with book number b cites the book with book number c. Note that a book may cite multiple other books. Also, a book does not have to be cited. The keys of the relations are the underlined attributes.

Define data types for the various attributes as well as primary and foreign key constraints. Where appropriate, add "ON DELETE CASCADE" statements with the foreign key constraints.

Hint: As a feature, MySQL does not allow you to write foreign key constraints like *FOREIGN KEY (BookNo) REFERENCES Book* even if there is a field named 'BookNo' in Book. You must use: *FOREIGN KEY (BookNo) REFERENCES Book(BookNo)*.

Then use MySQL's LOAD statement to load data from the four .txt files. An example LOAD statement is like:

```
LOAD DATA INFILE '/path/to/student.txt' INTO TABLE Student FIELDS TERMINATED BY ',';
```

Validate the data in each table using the SELECT statement (Explanation of how SELECT works will be discussed in the next section, for now just run the below queries to ensure data is loaded correctly)

```
SELECT * FROM table_name;
```