

Database Systems

Fall 2025

Homework #5 Even More SQL

This assignment uses the toyu database in MySQL or MariaDB. Please carefully study the documentation of [toyu](#).

Provide the MySQL commands for the following queries. Make sure that your queries produce the exact output as shown below (however, row orders can be different).

The solution should be put in an executable .sql file. Name the file h5.sql. If Canvas disallows the upload of .sql file, add .txt at the end.

[1] Write MySQL code to return the tables and their primary keys of the db 'mysql' in the following manner. Tips: you may use information_schema.KEY_COLUMN_USAGE.

TABLE	Primary key
columns_priv	{Host, Db, User, Table_name, Column_name}
column_stats	{db_name, table_name, column_name}
db	{Db, User, Host}
event	{db, name}
func	{name}
global_priv	{Host, User}
gtid_slave_pos	{domain_id, sub_id}
help_category	{help_category_id}
help_keyword	{help_keyword_id}
help_relation	{help_keyword_id, help_topic_id}
help_topic	{help_topic_id}
index_stats	{db_name, table_name, index_name, prefix_arity}
innodb_index_stats	{database_name, table_name, index_name, stat_name}
innodb_table_stats	{database_name, table_name}
plugin	{name}
proc	{db, name, type}
procs_priv	{Db, User, Routine_name, Routine_type, Host}
proxies_priv	{Host, User, Proxied_host, Proxied_user}
servers	{Server_name}
tables_priv	{Host, Db, User, Table_name}
table_stats	{db_name, table_name}
time_zone	{Time_zone_id}
time_zone_leap_second	{Transition_time}
time_zone_name	{Name}
time_zone_transition	{Time_zone_id, Transition_time}
time_zone_transition_type	{Time_zone_id, Transition_type_id}
transaction_registry	{transaction_id}

27 rows in set

[2] Write a MySQL procedure ShowForeignKeys(db_name, table_name) to list all foreign key of the table table_name in the schema db_name). The result table should have four columns in the following manner.

```
MariaDB [toyu]> CALL ShowForeignKeys('toyu', 'student');
```

FK constraint	FK column	parent table	referenced PK
Student_advisor_fk	advisor	faculty	facId
Student_major_fk	major	department	deptCode
Student_minor_fk	minor	department	deptCode

3 rows in set

```
MariaDB [toyu]> CALL ShowForeignKeys('swim', 'swimmer');
```

```

+-----+-----+-----+-----+
| FK constraint | FK column | parent table | referenced PK |
+-----+-----+-----+-----+
| swimmer_caretaker_fk | Main_CT_Id | caretaker | CT_Id |
| swimmer_level_fk | CurrentLevelId | level | LevelId |
+-----+-----+-----+-----+
2 rows in set

```

[3] Write a view deptInfo for departmental information. Its behavior can be illustrated by the execution of the following SQL statement.

```

MariaDB [toyu]> SELECT *
-> FROM toyu.deptInfo
-> WHERE numMajor >= 1
-> AND numMinor >= 1;
+-----+-----+-----+-----+-----+
| deptCode | deptName | schoolCode | numMajor | numMinor |
+-----+-----+-----+-----+-----+
| CINF | Computer Information Systems | CSE | 2 | 3 |
| CSCI | Computer Science | CSE | 3 | 1 |
| ITEC | Information Technology | CSE | 2 | 2 |
+-----+-----+-----+-----+-----+
3 rows in set

```

[4] Write a function WeightedStudentCount to return the weighted count of a department. A major has a weight of 3 and a minor has a count of 1. The behavior of the function can be illustrated by the results of the following calls. Your function must use the view deptInfo of question [3].

```

MariaDB [toyu]> SELECT WeightedStudentCount('CSCI');
+-----+
| WeightedStudentCount('CSCI') |
+-----+
| 10 |
+-----+
1 row in set (0.002 sec)

```

```

MariaDB [toyu]> SELECT WeightedStudentCount('CINF');
+-----+
| WeightedStudentCount('CINF') |
+-----+
| 9 |
+-----+
1 row in set

```