

Tutorial 2: Introduction to MySQL

DDL(Data Definition Language) : DDL or Data Definition Language actually consists of the SQL commands that can be used to define the database schema.

Eg : CREATE, ALTER, DROP, TRUNCATE, RENAME, COMMENT etc

DML(Data Manipulation Language) : The SQL commands that deals with the manipulation of data present in database belong to DML or Data Manipulation Language and this includes most of the SQL statements.

Eg : SELECT, INSERT, UPDATE, DELETE, MERGE, CALL, EXPLAIN-PLAN, LOCK TABLE

DCL(Data Control Language) : DCL includes commands such as GRANT and REVOKE which mainly deals with the rights, permissions and other controls of the database system.

TCL(TRANSACTION CONTROL) :These are used to manage the changes made to the data in a table by DML statements. COMMIT, ROLLBACK, SAVEPOINT

Source : <https://www.geeksforgeeks.org/sql-ddl-dml-dcl-tcl-commands/amp/>

- By default the **storage engine** is InnoDB (version 5 above), it's **transaction** safe and **ACID** (Atomicity, Consistency, Isolation, Durability) compliant. Lacks hash indexing capabilities.

Other examples of storage engine are memory, archive, blackhole, NDB, MariaDB etc.

- 1) Log into mysql
- 2) Create new users.
- 3) Show databases.
- 4) Tutorials on basics : <https://www.w3schools.com/sql/>

Questions:

Given the following schema:

```
Student(snum: integer, sname: string, major: string, level: string,  
age: integer)
```

```
Class(name: string, meets at: string, room: string, fid: integer)
Enrolled(snum: integer, cname: string) - Enrolled has one record per
student-class pair such that the student is enrolled in the class.
Faculty(fid: integer, fname: string, deptid: integer)
```

Note : The data has initial zeros in many IDs, that is the reason we use varchar instead of integer for snum,fid.

1. Create Tables with foreign key constraints wherever the attribute is common. Populate with given data.
2. Find the names of the youngest students
3. Find the names of students not enrolled in any class.
4. Find the names of faculty members who teach in every room in which some class is taught.

***** For Windows users you will have to login to your MySQL like *****

mysql -u root -p --local-infile

and after logging in please do

SET GLOBAL local_infile = 1;

Commands:

1. create table student(snum varchar (25) primary key, sname varchar(25), major varchar(25), level varchar(20), age integer);
2. load data local infile "/home/rsk/Downloads/Student.txt" into table student columns terminated by ',';

1. create table faculty(fid varchar (20) primary key, fname varchar(25), deptid integer);
2. load data local infile "/home/rsk/Downloads/Faculty.txt" into table student columns terminated by ',';

1. create table class(cname varchar(50) primary key, meets_at varchar(50), room varchar(25), fid varchar (20), foreign key (fid) references faculty(fid));
 2. load data local infile "/home/rsk/Downloads/Class.txt" into table class columns terminated by ',' lines terminated by '\r\n';
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1. create table enrolled(snum varchar (25), cname varchar(50), foreign key (snum) references student(snum), foreign key (cname) references Class(cname), primary key (snum,cname));
 2. load data local infile "/home/rsk/Downloads/Enrolled.txt" into table enrolled columns terminated by ',' lines terminated by '\r\n';

2>

mysql> select sname from student where age in (select min(age) from student);

```
+-----+
| sname      |
+-----+
| 'Daniel Lee' |
| 'Lisa Walker' |
| 'Luis Hernandez' |
+-----+
```

3 rows in set (0.01 sec)

3>

mysql> select sname from student where snum not in (select snum from enrolled);

```
+-----+
| sname      |
+-----+
| 'Maria White' |
| 'Charles Harris' |
| 'Angela Martinez' |
| 'Thomas Robinson' |
| 'Margaret Clark' |
| 'Dorthy Lewis' |
| 'Daniel Lee' |
| 'Nancy Allen' |
| 'Mark Young' |
```

'Donald King'
'George Wright'
'Steven Green'
'Edward Baker'

+-----+

13 rows in set (0.00 sec)
