



# MySQL RDBMS

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# Getting started *→ admin*

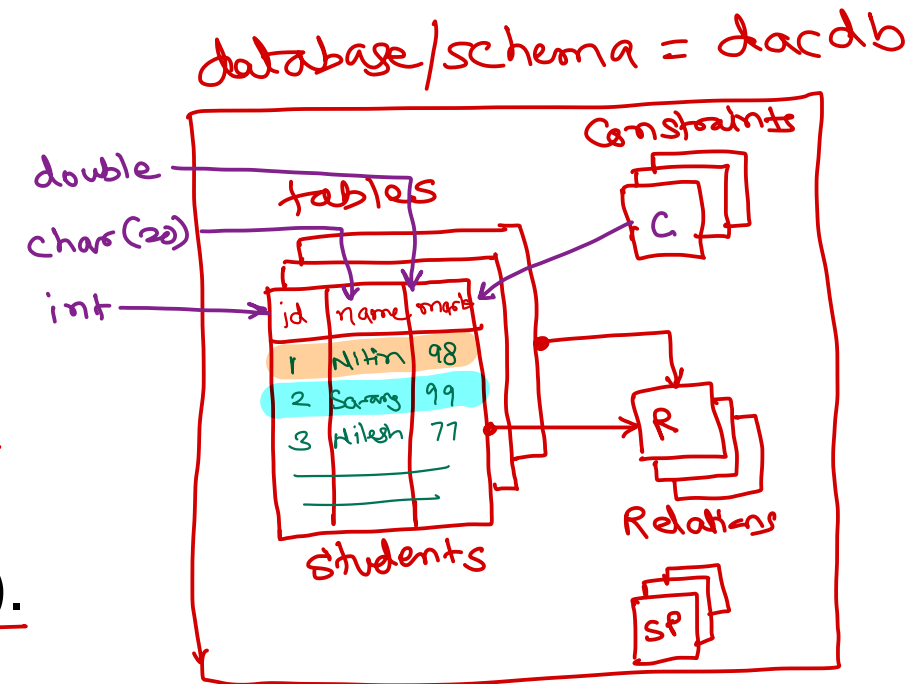
- root login can be used to perform CRUD as well as admin operations.
- It is recommended to create users for performing non-admin tasks. *der*
  - mysql> CREATE DATABASE db;
  - mysql> SHOW DATABASES;
  - mysql> CREATE USER dbuser@localhost IDENTIFIED BY 'dbpass';
  - mysql> SELECT user, host FROM mysql.user;
  - mysql> GRANT ALL PRIVILEGES ON db.\* TO dbuser@localhost;
  - mysql> FLUSH PRIVILEGES;
  - mysql> EXIT;
- terminal> mysql -u dbuser -pdbpass
  - mysql> SHOW DATABASES;
  - mysql> SELECT USER(), DATABASE();
  - mysql> USE db;
  - mysql> SHOW TABLES;
  - mysql> CREATE TABLE student(id INT, name VARCHAR(20), marks DOUBLE);
  - mysql> INSERT INTO student VALUES(1, 'Abc', 89.5);
  - mysql> SELECT \* FROM student;



# Database logical layout

DESCRIBE students; → Show table  
structure (metadata),

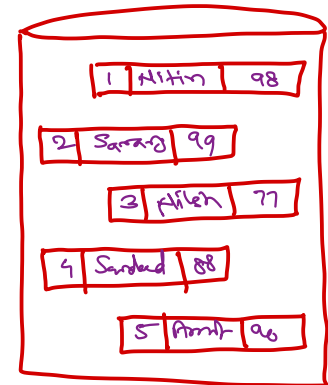
- Database/schema is like a namespace/container that stores all db objects related to a project.
- It contains tables, constraints, relations, stored procedures, functions, triggers, ...
- There are some system databases e.g. mysql, performance\_schema, information\_schema, sys, ... They contain db internal/system information.
  - e.g. `SELECT user, host FROM mysql.user;`
- A database contains one or more tables.
- Tables have multiple columns.
- Each column is associated with a data-type.
- Columns may have zero or more constraints.
- The data in table is in multiple rows.
- Each row has multiple values (as per columns).



# Database physical layout

As a db developer, we must understand logical layout of the database. Physical layout understanding is only for info/GK.

- In MySQL, the data is stored on disk in its data directory i.e. /var/lib/mysql (library)
- Each database/schema is a separate sub-directory in data dir.
- Each table in the db, is a file on disk.
- e.g. student table in current db is stored in file /var/lib/mysql/db/student.ibd.
- Data is stored in binary format.
- A file may not be contiguously stored on hard disk.
- Data rows are not contiguous. They are scattered in the hard disk.
- In one row, all fields are consecutive.
- When records are selected, they are selected in any order.



# SQL scripts

- SQL script is multiple SQL queries written into a .sql file.
- SQL scripts are mainly used while database backup and restore operations.
- SQL scripts can be executed from terminal as:
  - `terminal>mysql -u user -ppassword db < /path/to/sqlfile`
- SQL scripts can be executed from command line as:
  - `mysql> SOURCE /path/to/sqlfile`
- Note that SOURCE is MySQL CLI client command.
- It reads commands one by one from the script and execute them on server.





Thank you!

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