EPAM University
Programs DevOps L1 course Database Administration TASK DB1
PART 1
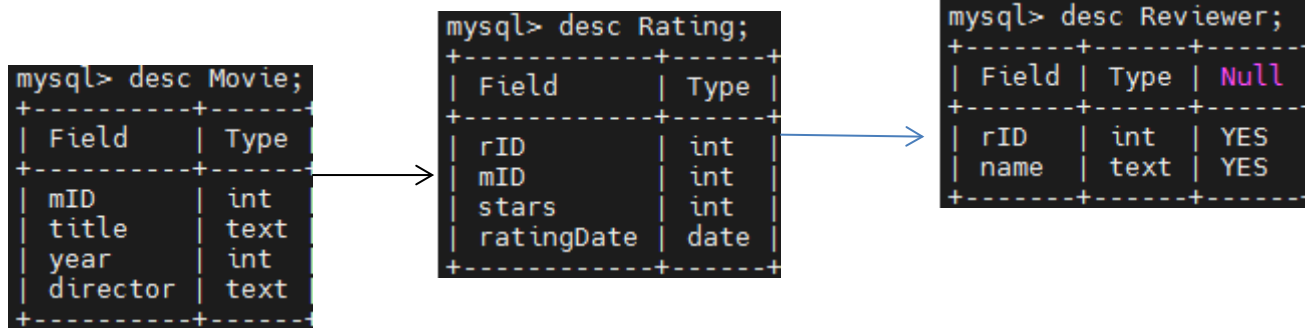1. Download MySQL server for your OS on VM.
- Install repo for MySql Percona and check availability

```
yum install https://repo.percona.com/yum/percona-release-latest.noarch.rpm

sudo percona-release setup ps80
yum list | grep percona | grep server
```

2. Install MySQL server on VM.

```
# yum install percona-server-server
```

3. Select a subject area and describe the database schema, (minimum 3 tables)

```
mysql> desc Movie;
+----------+------+
| Field    | Type |
+----------+------+
| mID      | int  |
| title    | text |
| year     | int  |
| director | text |
+----------+------+
```

```
mysql> desc Rating;
+------------+------+
| Field      | Type |
+------------+------+
| rID        | int  |
| mID        | int  |
| stars      | int  |
| ratingDate | date |
+------------+------+
```

```
mysql> desc Reviewer;
+-------+------+------+
| Field | Type | Null |
+-------+------+------+
| rID   | int  | YES  |
| name  | text | YES  |
+-------+------+------+
```

4. Create a database on the server through the console.

```
mysql> create database rating;
```

5. Fill in tables.

```
insert into Movie values(101, 'Gone with the Wind', 1939, 'Victor Fleming');
insert into Movie values(102, 'Star Wars', 1977, 'George Lucas');
insert into Movie values(103, 'The Sound of Music', 1965, 'Robert Wise');
insert into Movie values(104, 'E.T.', 1982, 'Steven Spielberg');
insert into Movie values(105, 'Titanic', 1997, 'James Cameron');
insert into Movie values(106, 'Snow White', 1937, null);
insert into Movie values(107, 'Avatar', 2009, 'James Cameron');
insert into Movie values(108, 'Raiders of the Lost Ark', 1981, 'Steven Spielberg');

insert into Reviewer values(201, 'Sarah Martinez');
insert into Reviewer values(202, 'Daniel Lewis');
insert into Reviewer values(203, 'Brittany Harris');
insert into Reviewer values(204, 'Mike Anderson');
insert into Reviewer values(205, 'Chris Jackson');
insert into Reviewer values(206, 'Elizabeth Thomas');
insert into Reviewer values(207, 'James Cameron');
insert into Reviewer values(208, 'Ashley White');

insert into Rating values(201, 101, 2, '2011-01-22');
insert into Rating values(201, 101, 4, '2011-01-27');
insert into Rating values(202, 106, 4, null);
insert into Rating values(203, 103, 2, '2011-01-20');
insert into Rating values(203, 108, 4, '2011-01-12');
insert into Rating values(203, 108, 2, '2011-01-30');
insert into Rating values(204, 101, 3, '2011-01-09');
insert into Rating values(205, 103, 3, '2011-01-27');
insert into Rating values(205, 104, 2, '2011-01-22');
insert into Rating values(205, 108, 4, null);
insert into Rating values(206, 107, 3, '2011-01-15');
insert into Rating values(206, 106, 5, '2011-01-19');
insert into Rating values(207, 107, 5, '2011-01-20');
insert into Rating values(208, 104, 3, '2011-01-02');
```

6. Construct and execute SELECT operator with WHERE, GROUP BY and ORDER BY.

```
mysql> select * from Movie where year>(select year from Movie where title='Star Wars');
+------+---------+------+---------------+
| mID  | title   | year | director      |
+------+---------+------+---------------+
|  105 | Titanic | 2022 | James Cameron |
|  107 | Avatar  | 2034 | James Cameron |
+------+---------+------+---------------+
2 rows in set (0.00 sec)

mysql> select Movie.title  'Movie Name', max(Rating.stars)  Rating from Movie join Rating ON Movie.mID=Rating.mID group by rating.Movie.title;
+------------------------+--------+
| Movie Name             | Rating |
+------------------------+--------+
| Gone with the Wind     |      5 |
| Snow White             |      5 |
| The Sound of Music     |      5 |
| Raiders of the Lost Ark|      5 |
| E.T.                   |      5 |
| Avatar                 |      5 |
| Star Wars              |      5 |
| Titanic                |      5 |
+------------------------+--------+
8 rows in set (0.01 sec)

mysql> select title, max(stars) from Movie M join  Rating R ON R.mID=M.mID group by title order by title;
+------------------------+------------+
| title                  | max(stars) |
+------------------------+------------+
| Avatar                 |          5 |
| E.T.                   |          5 |
| Gone with the Wind     |          5 |
| Raiders of the Lost Ark|          5 |
| Snow White             |          5 |
| Star Wars              |          5 |
| The Sound of Music     |          5 |
| Titanic                |          5 |
+------------------------+------------+
```

7. Execute other different SQL queries :

DDL,

```
mysql> ALTER TABLE accounts ALTER COLUMN email varchar (300);
```

DML,

```
mysql> INSERT INTO Persons VALUES (4, 'Nilsen', 'Johan', 'Bakken 2', 'Stavanger');
```

DCL.

```
mysql> REVOKE DELETE, UPDATE ON voice.* FROM 'neyasity'@'localhost';
```

8. Create a database of new users with different privileges. Connect to the database as a new user and verify that the privileges allow or deny certain actions.

```
mysql>  CREATE USER 'some_user'@'localhost' identified by 'password';
Query OK, 0 rows affected (0.04 sec)

mysql> GRANT SELECT, UPDATE ON rating.* TO 'some_user'@'localhost';
Query OK, 0 rows affected (2.16 sec)

mysql> show grants for 'some_user'@'localhost';
+----------------------------------------------------------------+
| Grants for some_user@localhost                                 |
+----------------------------------------------------------------+
| GRANT USAGE ON *.* TO `some_user`@`localhost`                  |
| GRANT SELECT, UPDATE ON `rating`.* TO `some_user`@`localhost`  |
+----------------------------------------------------------------+
2 rows in set (0.00 sec)

mysql> exit
Bye
[davig@oracle mysql]$ mysql -u some_user -p rating
Enter password:
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 18
Server version: 8.0.29-21 Percona Server (GPL), Release 21, Revision c59f87d2854

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

9. Make a selection from the main table DB MySQL.

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| rating             |
+--------------------+
2 rows in set (0.01 sec)

mysql> use mysql;
ERROR 1044 (42000): Access denied for user 'some_user'@'localhost' to database 'mysql'
mysql>
```

PART 2

10. Make backup of your database.

```
[davig@oracle mysql]$ mysqldump -u root -p --databases rating  >rating_dump.sql
Enter password:
[davig@oracle mysql]$
```

11. Delete the table and/or part of the data in the table.

```
mysql> use rating;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> drop table Movie;
Query OK, 0 rows affected (0.12 sec)

mysql> show tables;
+------------------+
| Tables_in_rating |
+------------------+
| Rating           |
| Reviewer         |
+------------------+
2 rows in set (0.01 sec)
```

12. Restore your database.

```
mysql> source rating_dump.sql;
Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.01 sec)

Query OK, 0 rows affected (0.00 sec)

Query OK, 0 rows affected (0.00 sec)
```
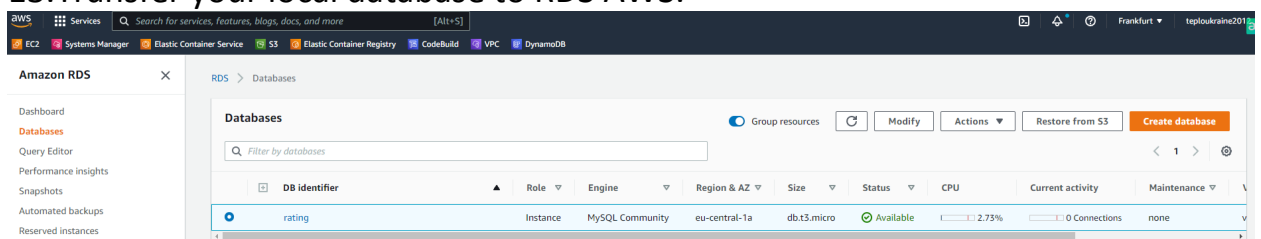
13. Transfer your local database to RDS AWS.

14.Connect to your database.

```
[davig@oracle mysql]$ mysql -u admin -p -h rating.cj6owco845jc.eu-central-1.rds.amazonaws.com
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 21
Server version: 8.0.28 Source distribution

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.04 sec)

mysql> source rating_dump.sql;
Query OK, 0 rows affected (0.03 sec)

Query OK, 0 rows affected (0.04 sec)
```

15.Execute SELECT operator similar step 6.

```
mysql> select *  from Movie where year>(select year from Movie where title='Star Wars');
+------+---------+------+---------------+
| mID  | title   | year | director      |
+------+---------+------+---------------+
|  105 | Titanic | 2022 | James Cameron |
|  107 | Avatar  | 2034 | James Cameron |
+------+---------+------+---------------+
2 rows in set (0.03 sec)

mysql> select Movie.title  'Movie Name', max(Rating.stars)  Rating from Movie join Rating ON Movie.mID=Rating.mID group by rating.Movie.title;
+-----------------------+--------+
| Movie Name            | Rating |
+-----------------------+--------+
| Gone with the Wind    |      5 |
| Snow White            |      5 |
| The Sound of Music    |      5 |
| Raiders of the Lost Ark |    5 |
| E.T.                  |      5 |
| Avatar                |      5 |
| Star Wars             |      5 |
| Titanic               |      5 |
+-----------------------+--------+
8 rows in set (0.04 sec)

mysql>
```

16.Create the dump of your database.

```
[davig@oracle mysql]$ mysqldump -u admin -p --databases rating -h rating.cj6owco845jc.eu-central-1.rds.amazonaws.com  >rating_dump_aws.sql
Enter password:
Warning: A partial dump from a server that has GTIDs will by default include the GTIDs of all transactions, even those that changed suppressed
s, pass --set-gtid-purged=OFF. To make a complete dump, pass --all-databases --triggers --routines --events.
[davig@oracle mysql]$ less rating_dump_aws.sql
-- MySQL dump 10.13  Distrib 8.0.29-21, for Linux (x86_64)
--
-- Host: rating.cj6owco845jc.eu-central-1.rds.amazonaws.com    Database: rating
-- ------------------------------------------------------
-- Server version       8.0.28

/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
/*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
/*!50503 SET NAMES utf8mb4 */;
/*!40103 SET @OLD_TIME_ZONE=@@TIME_ZONE */;
/*!40103 SET TIME_ZONE='+00:00' */;
/*!40014 SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0 */;
/*!40014 SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0 */;
/*!40101 SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='NO_AUTO_VALUE_ON_ZERO' */;
/*!40111 SET @OLD_SQL_NOTES=@@SQL_NOTES, SQL_NOTES=0 */;
/*!50717 SELECT COUNT(*) INTO @rocksdb_has_p_s_session_variables FROM INFORMATION_SCHEMA.TABLES WHERE TABLE_SCHEMA = 'performance_schema' AND
/*!50717 SET @rocksdb_get_is_supported = IF (@rocksdb_has_p_s_session_variables, 'SELECT COUNT(*) INTO @rocksdb_is_supported FROM performance_
lk_load\'', 'SELECT 0') */;
/*!50717 PREPARE s FROM @rocksdb_get_is_supported */;
/*!50717 EXECUTE s */;
/*!50717 DEALLOCATE PREPARE s */;
/*!50717 SET @rocksdb_enable_bulk_load = IF (@rocksdb_is_supported, 'SET SESSION rocksdb_bulk_load = 1', 'SET @rocksdb_dummy_bulk_load = 0') *
/*!50717 PREPARE s FROM @rocksdb_enable_bulk_load */;
/*!50717 EXECUTE s */;
/*!50717 DEALLOCATE PREPARE s */;
SET @MYSQLDUMP_TEMP_LOG_BIN = @@SESSION.SQL_LOG_BIN;
SET @@SESSION.SQL_LOG_BIN= 0;
```

PART 3 – MongoDB

17. Create a database. Use the use command to connect to a new database (If it doesn't exist, Mongo will create it when you write to it).

```
> use rating
switched to db rating
> db
rating
```

18. Create a collection. Use db.createCollection to create a collection. I'll leave the subject up to you. Run show dbs and show collections to view your database and collections.

```
> db.createCollection('movies')
{ "ok" : 1 }
> show dbs
admin    0.000GB
config   0.000GB
local    0.000GB
rating   0.000GB
> show collections
movies
>
```

19. Create some documents. Insert a couple of documents into your collection. I'll leave the subject matter up to you, perhaps cars or hats.

```
> db.createCollection('movies')
{ "ok" : 1 }
> show dbs
admin    0.000GB
config   0.000GB
local    0.000GB
rating   0.000GB
> show collections
movies
> db.movies.insert({name: "Avatar"})
WriteResult({ "nInserted" : 1 })
> db.movies.insert({name: "Terminator"})
WriteResult({ "nInserted" : 1 })
>
```

20. Use find() to list documents out.

```
> db.movies.find()
{ "_id" : ObjectId("634ad782aebfa0831fdb08f6"), "name" : "Avatar" }
{ "_id" : ObjectId("634ad793aebfa0831fdb08f7"), "name" : "Terminator" }
>
```