

DBMS Laboratory

Day 1:

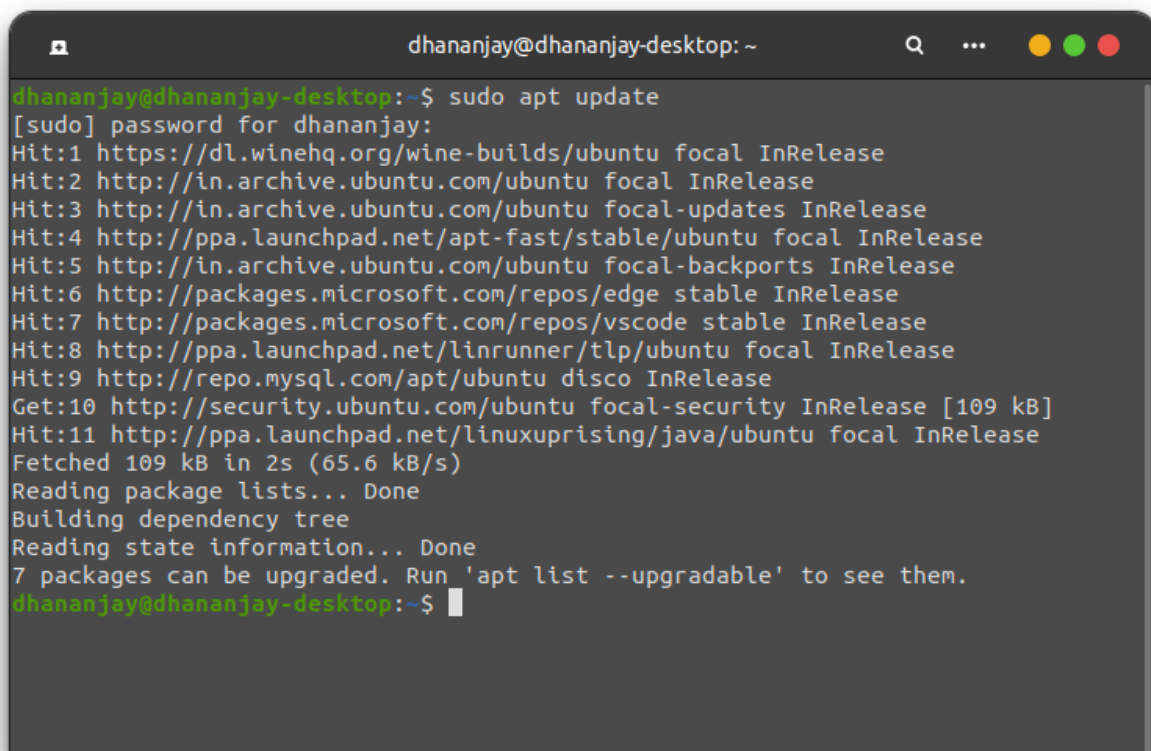
Date: 29 Jan 2021

Installation:

In **Ubuntu 20.04 LTS**

To install it, update the package index on your server if you've not done so recently:

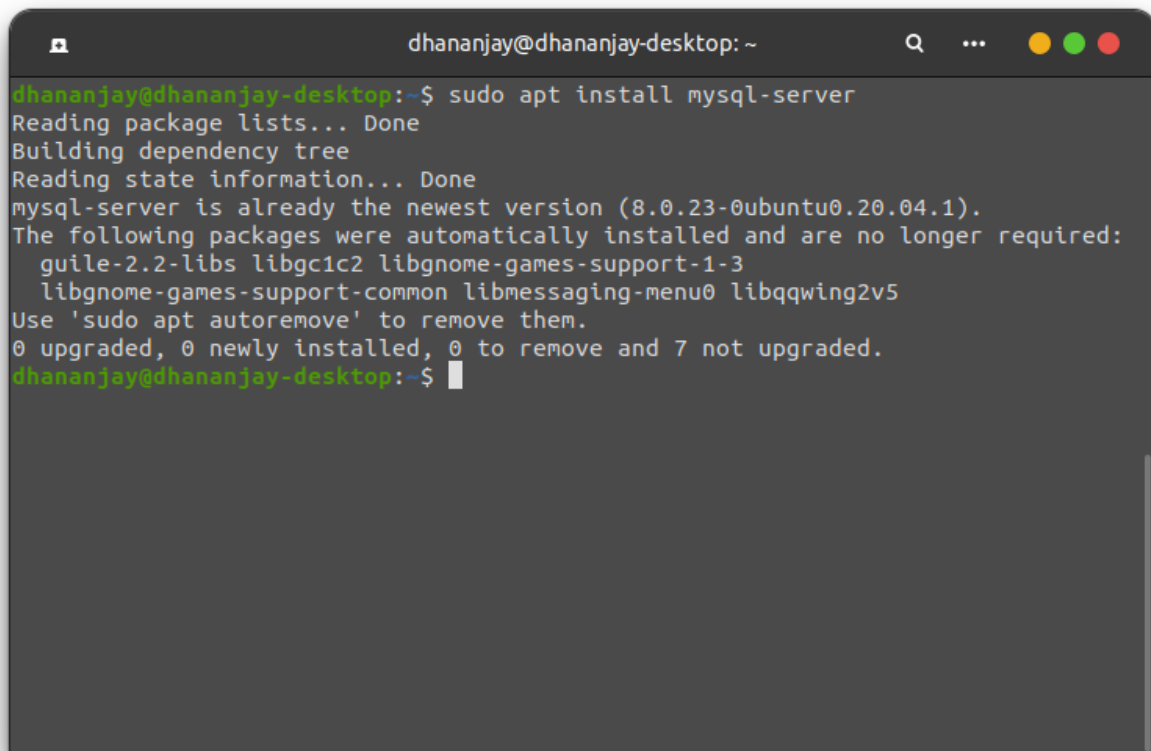
Command : `sudo apt update`

A terminal window titled 'dhananjay@dhananjay-desktop: ~' with standard Ubuntu window controls. The terminal shows the execution of 'sudo apt update'. It prompts for a password, then lists 11 package sources with 'Hit' status. It reports that 109 kB of security updates were fetched in 2 seconds at 65.6 kB/s. It then reads package lists and builds the dependency tree. Finally, it states that 7 packages can be upgraded and suggests running 'apt list --upgradable' to see them.

```
dhananjay@dhananjay-desktop:~$ sudo apt update
[sudo] password for dhananjay:
Hit:1 https://dl.winehq.org/wine-builds/ubuntu focal InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:4 http://ppa.launchpad.net/apt-fast/stable/ubuntu focal InRelease
Hit:5 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:6 http://packages.microsoft.com/repos/edge stable InRelease
Hit:7 http://packages.microsoft.com/repos/vscode stable InRelease
Hit:8 http://ppa.launchpad.net/linrunner/tlp/ubuntu focal InRelease
Hit:9 http://repo.mysql.com/apt/ubuntu disco InRelease
Get:10 http://security.ubuntu.com/ubuntu focal-security InRelease [109 kB]
Hit:11 http://ppa.launchpad.net/linuxuprising/java/ubuntu focal InRelease
Fetched 109 kB in 2s (65.6 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
7 packages can be upgraded. Run 'apt list --upgradable' to see them.
dhananjay@dhananjay-desktop:~$
```

Then install the `mysql - server` package:

Command : `sudo apt install mysql-server`

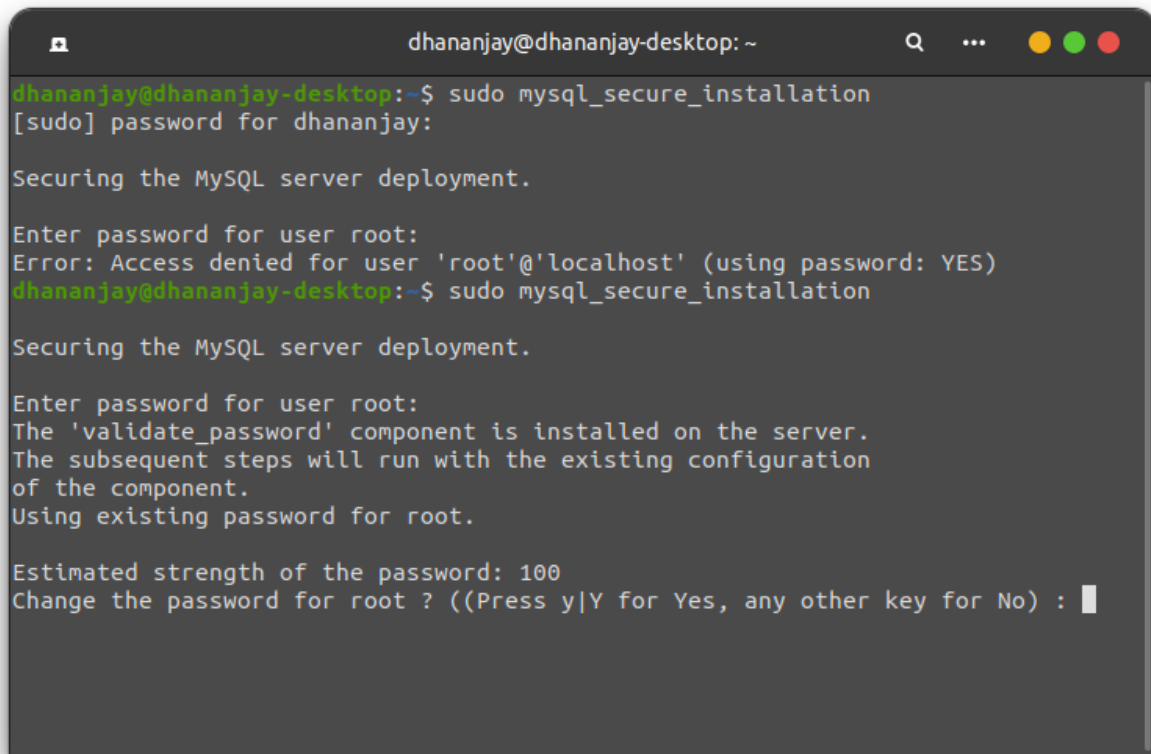
A terminal window titled 'dhananjay@dhananjay-desktop: ~' with standard Ubuntu window controls. The terminal shows the command 'sudo apt install mysql-server' being executed. The output indicates that the package is already installed at the latest version (8.0.23-0ubuntu0.20.04.1) and lists several packages that were automatically installed but are no longer required. It suggests using 'sudo apt autoremove' to remove them. The summary shows 0 upgraded, 0 newly installed, 0 to remove, and 7 not upgraded. The prompt returns to the user.

```
dhananjay@dhananjay-desktop:~$ sudo apt install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
mysql-server is already the newest version (8.0.23-0ubuntu0.20.04.1).
The following packages were automatically installed and are no longer required:
  guile-2.2-libs libgc1c2 libgnome-games-support-1-3
  libgnome-games-support-common libmessaging-menu0 libqqwing2v5
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 7 not upgraded.
dhananjay@dhananjay-desktop:~$
```

For fresh installations of MySQL, you'll want to run the DBMS's included security script. This script changes some of the less secure default options for things like remote root logins and sample users.

Run the security script with `sudo` :

Command : `sudo mysql_secure_installation`

A terminal window titled 'dhananjay@dhananjay-desktop: ~' with standard macOS window controls. The terminal shows the execution of the 'mysql_secure_installation' script. The first run prompts for a password for the 'root' user, but an 'Access denied' error occurs. The second run proceeds with the existing configuration, showing the password strength (100) and asking to change the password for 'root'.

```
dhananjay@dhananjay-desktop:~$ sudo mysql_secure_installation
[sudo] password for dhananjay:

Securing the MySQL server deployment.

Enter password for user root:
Error: Access denied for user 'root'@'localhost' (using password: YES)
dhananjay@dhananjay-desktop:~$ sudo mysql_secure_installation

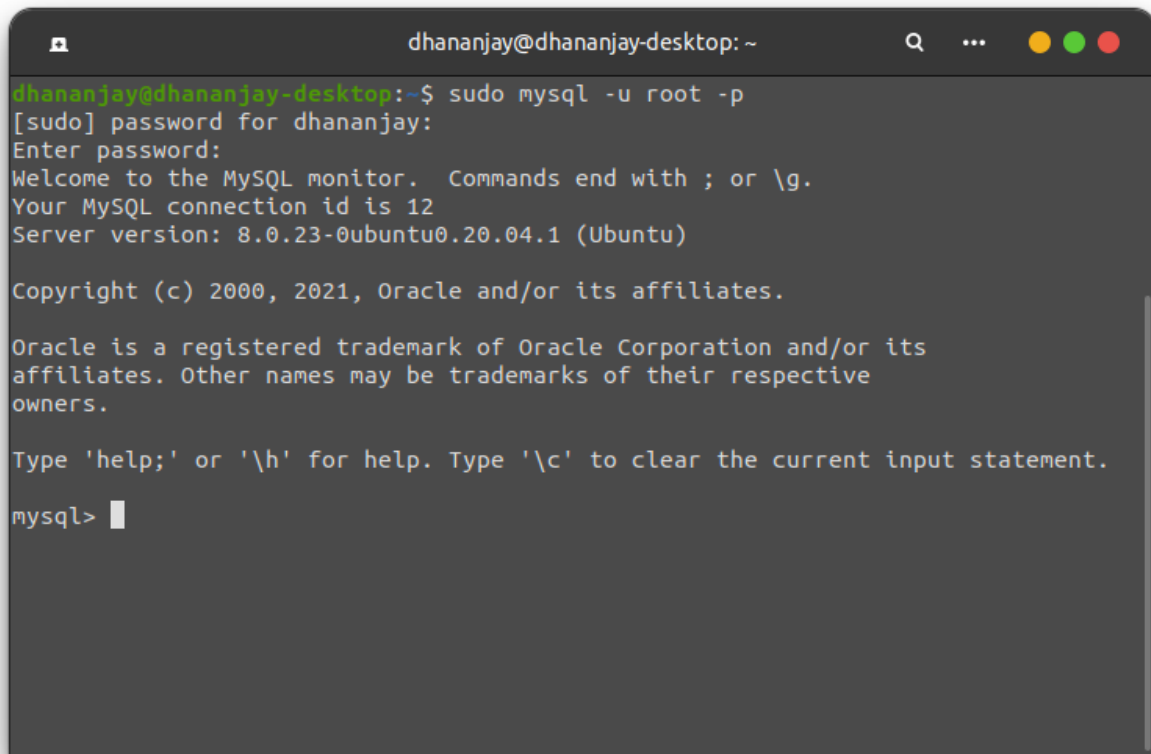
Securing the MySQL server deployment.

Enter password for user root:
The 'validate_password' component is installed on the server.
The subsequent steps will run with the existing configuration
of the component.
Using existing password for root.

Estimated strength of the password: 100
Change the password for root ? ((Press y|Y for Yes, any other key for No) : 
```

Run the security script with `sudo` :

Command : `sudo mysql -u root -p`

A terminal window titled 'dhananjay@dhananjay-desktop: ~' with standard Ubuntu window controls. The terminal shows the command 'sudo mysql -u root -p' being executed. It prompts for a password, then displays the MySQL welcome message, connection ID (12), and server version (8.0.23-0ubuntu0.20.04.1). It also shows the copyright notice and help instructions. The prompt 'mysql>' is visible at the bottom.

```
dhananjay@dhananjay-desktop:~$ sudo mysql -u root -p
[sudo] password for dhananjay:
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 12
Server version: 8.0.23-0ubuntu0.20.04.1 (Ubuntu)

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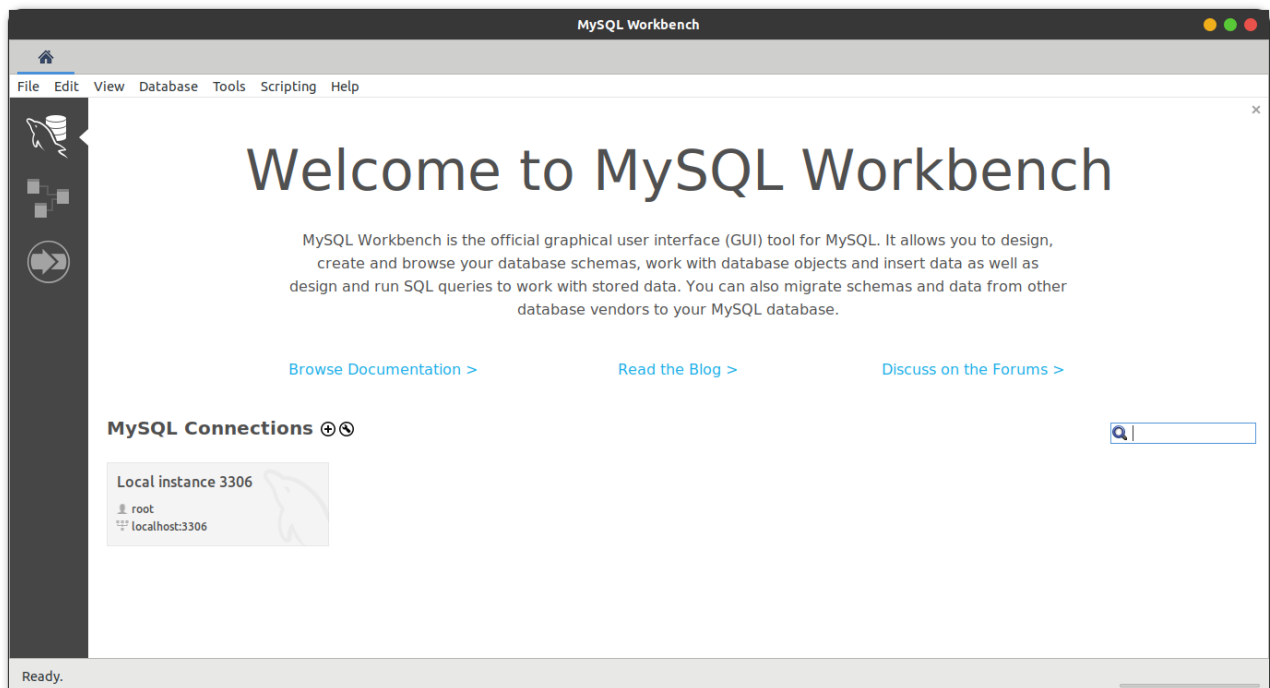
Oracle is a registered trademark of Oracle Corporation and/or its
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owners.

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

mysql> 
```

Then install the `mysql-workbench` package:

Command : `sudo apt install mysql-workbench-community`

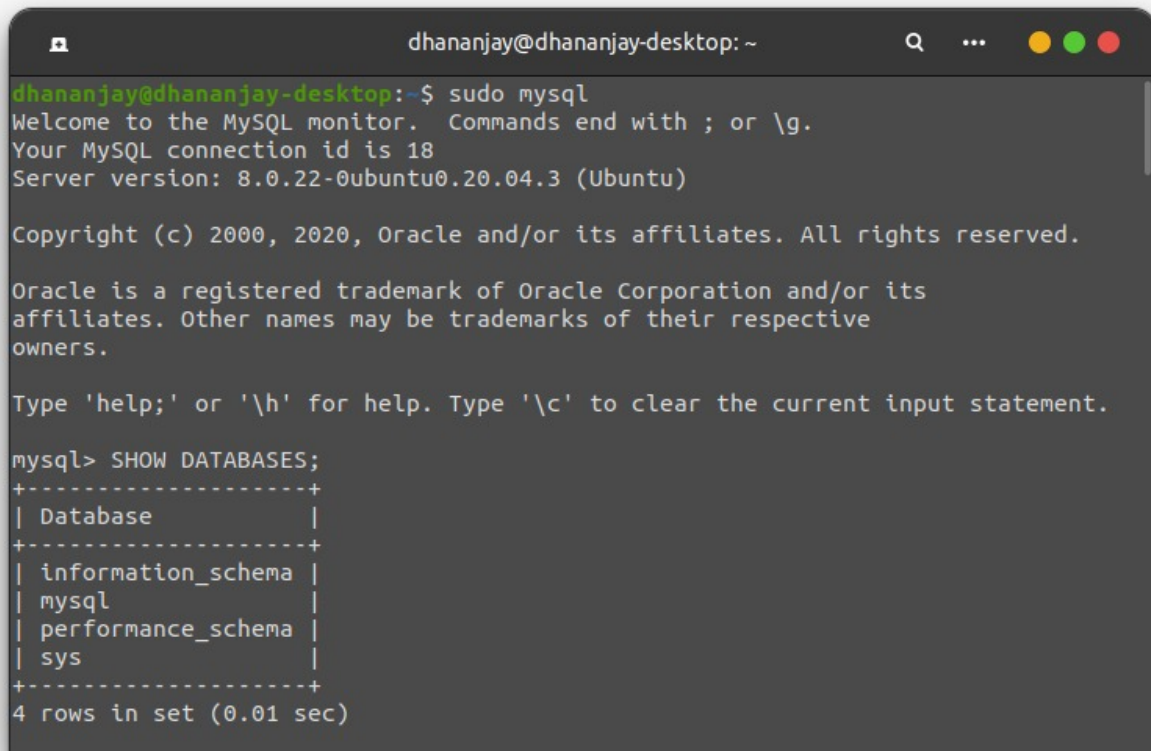


Then, Using MYSQL

Command : `sudo mysql`

Commands Used:

SHOW DATABASES;

A terminal window titled 'dhananjay@dhananjay-desktop: ~' with standard Ubuntu window controls. The terminal shows the execution of 'sudo mysql', which opens the MySQL monitor. The prompt changes from '\$' to 'mysql>'. The user enters 'SHOW DATABASES;', and the terminal displays a table of databases: information_schema, mysql, performance_schema, and sys. The output is formatted with a header row and a table of rows, with a final summary line '4 rows in set (0.01 sec)'.

```
dhananjay@dhananjay-desktop:~$ sudo mysql
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 18
Server version: 8.0.22-0ubuntu0.20.04.3 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

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

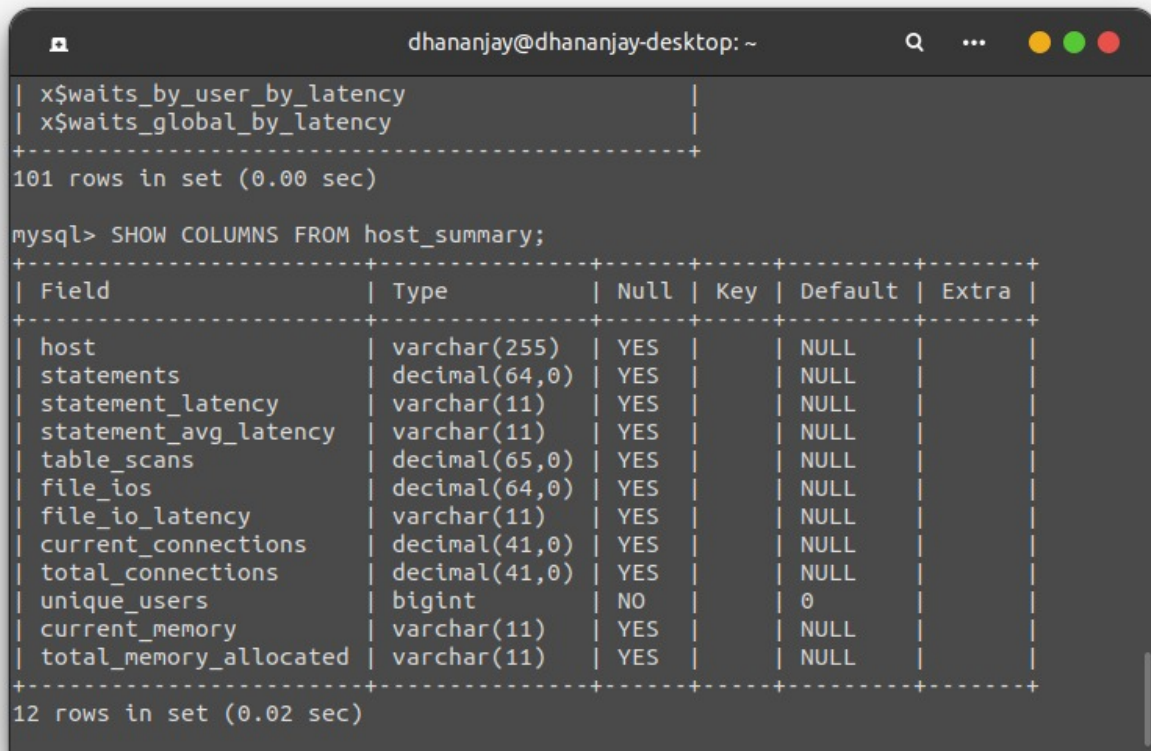
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
4 rows in set (0.01 sec)
```

USE DBNAME*;
SHOW TABLES;

```
mysql> USE sys;
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> SHOW TABLES;
+-----+
| Tables_in_sys |
+-----+
| host_summary |
| host_summary_by_file_io |
| host_summary_by_file_io_type |
| host_summary_by_stages |
| host_summary_by_statement_latency |
| host_summary_by_statement_type |
| innodb_buffer_stats_by_schema |
| innodb_buffer_stats_by_table |
| innodb_lock_waits |
| io_by_thread_by_latency |
| io_global_by_file_by_bytes |
| io_global_by_file_by_latency |
| io_global_by_wait_by_bytes |
| io_global_by_wait_by_latency |
| latest_file_io |
+-----+
```

SHOW COLUMNS FORM LIST*;

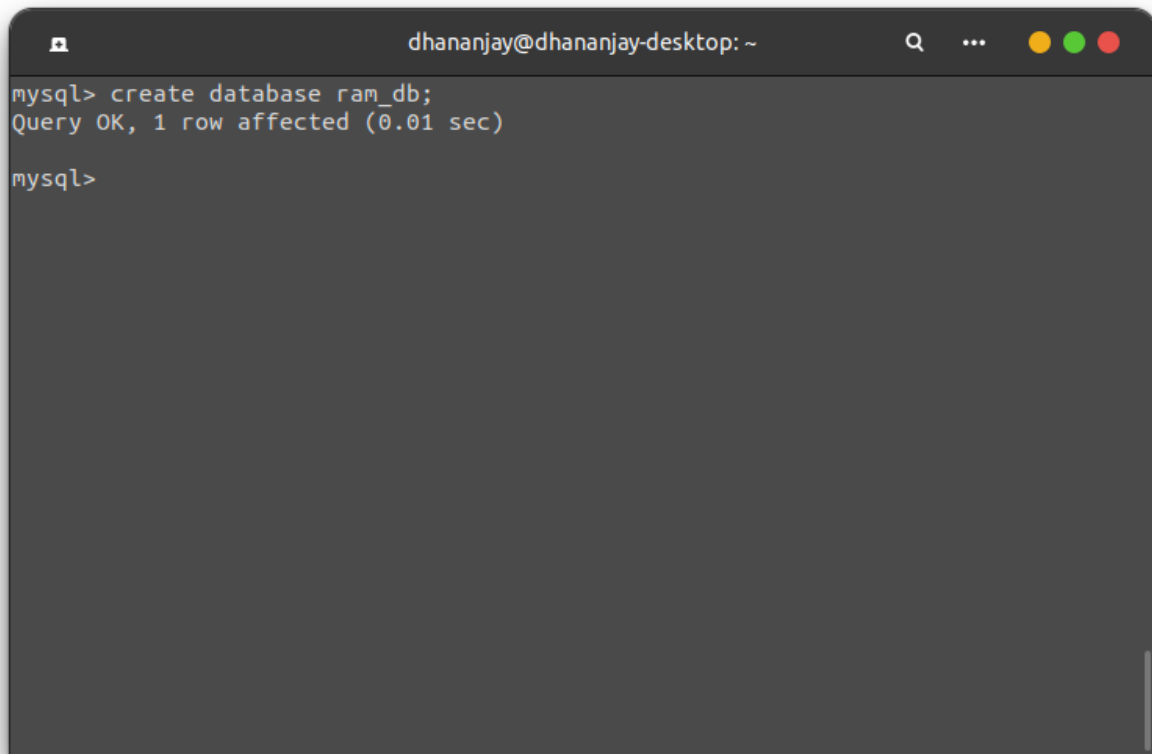


A terminal window titled 'dhananjay@dhananjay-desktop: ~' showing MySQL commands and output. The output includes a table of 101 rows and a 'SHOW COLUMNS' command for a table named 'host_summary'.

```
| x$waits_by_user_by_latency |
| x$waits_global_by_latency |
+-----+
101 rows in set (0.00 sec)

mysql> SHOW COLUMNS FROM host_summary;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| host | varchar(255) | YES | | NULL | |
| statements | decimal(64,0) | YES | | NULL | |
| statement_latency | varchar(11) | YES | | NULL | |
| statement_avg_latency | varchar(11) | YES | | NULL | |
| table_scans | decimal(65,0) | YES | | NULL | |
| file_ios | decimal(64,0) | YES | | NULL | |
| file_io_latency | varchar(11) | YES | | NULL | |
| current_connections | decimal(41,0) | YES | | NULL | |
| total_connections | decimal(41,0) | YES | | NULL | |
| unique_users | bigint | NO | | 0 | |
| current_memory | varchar(11) | YES | | NULL | |
| total_memory_allocated | varchar(11) | YES | | NULL | |
+-----+-----+-----+-----+-----+-----+
12 rows in set (0.02 sec)
```

CREATE DATABASE DBNAME*;

A terminal window with a dark background and light text. The title bar at the top reads 'dhananjay@dhananjay-desktop: ~'. The terminal shows a MySQL prompt 'mysql>' followed by the command 'create database ram_db;'. The output is 'Query OK, 1 row affected (0.01 sec)'. The prompt 'mysql>' appears again on the next line.

```
dhananjay@dhananjay-desktop: ~  
mysql> create database ram_db;  
Query OK, 1 row affected (0.01 sec)  
  
mysql>
```

Day 1:

Date: 5 Feb 2021

Commands Used:

```
CREATE DATABASE TESTING;  
USE TESTING;  
CREATE TABLE SHOP1 (  
    article INT (4) ,  
    dealer CHAR (20) NOT NULL,  
    price DOUBLE (16, 2 ) NOT NULL,  
  
PRIMARY KEY (article));  
  
INSERT INTO SHOP1 VALUES
```

```
(1, 'A', 3.45), (2, 'B', 3.99), (3, 'A', 10.99), (4, 'B', 1.45), (5, 'C', 1.69),  
(6, 'D', 1.25), (7, 'D', 19.95);  
SELECT * FROM shop1;
```

