

Mini Project – MySQL Demonstration

By
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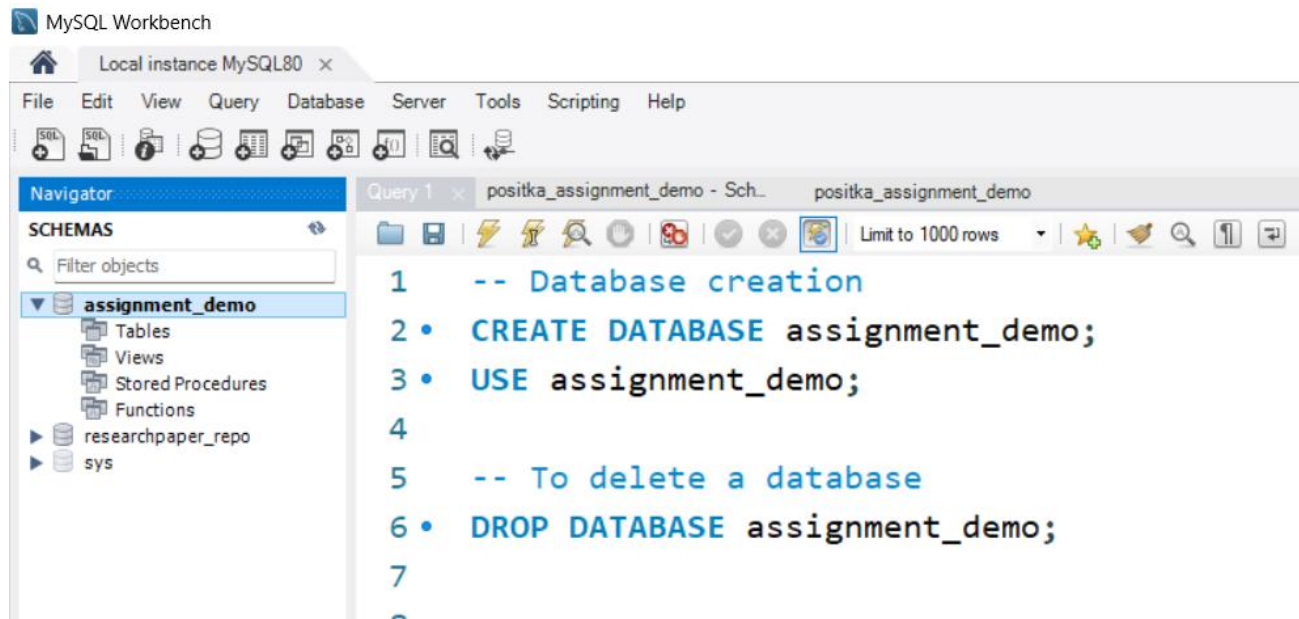
What is MySQL?

- MySQL is an open-source relational database management system (RDBMS).
- Uses SQL (Structured Query Language) for managing and querying data.
- Popular for web applications, data storage, and analytics.



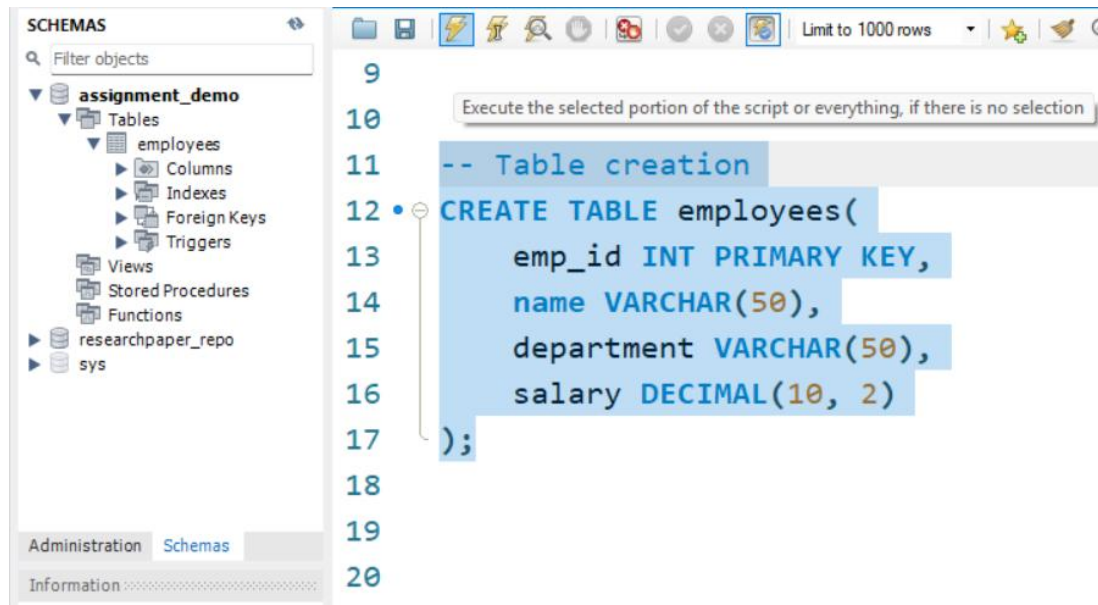
Creating a Database

- Command: `CREATE DATABASE database_name;`
- Creates a new database named `assignment_demo`.



Creating Tables

- Example Table: Employees
- CREATE TABLE Employees (columns);



Inserting Sample Data

- INSERT INTO Employees VALUES (rows)

The screenshot displays the MySQL Workbench interface. On the left, the 'SCHEMAS' pane shows a tree view with 'assignment_demo' expanded, containing 'employees' table with columns 'emp_id', 'name', 'department', and 'salary'. The 'Information' pane at the bottom left shows the primary index definition for 'emp_id'.

The main query editor shows the following SQL code:

```
12 • CREATE TABLE employees(  
13     emp_id INT PRIMARY KEY,  
14     name VARCHAR(50),  
15     department VARCHAR(50),  
16     salary DECIMAL(10, 2)  
17 );  
18  
19 • INSERT INTO employees VALUES  
20 (1, 'John Doe', 'IT', 55000.00),  
21 (2, 'Jane Smith', 'HR', 45000.00),  
22 (3, 'Sam Wilson', 'Finance', 60000.00);  
23  
24  
25  
26  
27  
28
```

The 'Output' pane at the bottom shows the execution results:

#	Time	Action	Message	Duration / Fetch
8	15:49:07	CREATE TABLE employees (emp_id INT PRIMARY KEY, name VARCHAR(50), department VARCHAR(50)...	0 row(s) affected	0.031 sec
9	15:52:55	INSERT INTO employees VALUES (1, 'John Doe', 'IT', 55000.00), (2, 'Jane Smith', 'HR', 45000.00), (3, 'Sam ...	3 row(s) affected Records: 3 Duplicates: 0 Warnings: 0	0.015 sec

Querying Data

- Retrieve all employees: `SELECT * FROM Employees;`
- Retrieve employees from IT department:
`SELECT * FROM Employees WHERE Department = 'IT';`

```
25 -- Retrive data
26 • SELECT * FROM employees;
27
28
29
```

emp_id	name	department	salary
1	John Doe	IT	55000.00
2	Jane Smith	HR	45000.00
3	Sam Wilson	Finance	60000.00
*	NULL	NULL	NULL

employees 1 x

Output

#	Time	Action	Message
9	15:52:55	INSERT INTO employees VALUES (1, 'John Doe', 'IT', 55000.00), (2, 'Jane Smith', 'HR', 45000.00), (3, 'Sa...	3 row(s) affected Rec...
10	15:55:09	SELECT * FROM employees LIMIT 0, 1000	Error Code: 1146. Tab
11	15:55:17	SELECT * FROM employees LIMIT 0, 1000	3 row(s) returned

```
28 -- Retrieve employees from IT department
29 • SELECT * FROM employees
30 WHERE department = 'IT';
31
```

emp_id	name	department	salary
1	John Doe	IT	55000.00
*	NULL	NULL	NULL

employees 2 x

Output

#	Time	Action	Message
10	15:55:09	SELECT * FROM employees LIMIT 0, 1000	Error Code: 1146. Table
11	15:55:17	SELECT * FROM employees LIMIT 0, 1000	3 row(s) returned
12	15:58:05	SELECT * FROM employees WHERE department = 'IT' LIMIT 0, 1000	1 row(s) returned

Insert More Employees

- Query: INSERT INTO employees (...) VALUES (...)

```
33  -- Adding/inserting employees
34 • INSERT INTO employees (emp_id, name, department, salary) VALUES
35 (4, 'Ravi Kumar', 'IT', 55000.00),
36 (5, 'Priya Sharma', 'HR', 45000.00),
37 (6, 'Arjun Verma', 'IT', 58000.00),
38 (7, 'Vikram Das', 'Finance', 58000.00);
39
40 • SELECT * FROM employees;
41
42
```

Result Grid

Filter Rows:

Edit:

Export/Import:

Wrap Cell Content:

	emp_id	name	department	salary
▶	1	John Doe	IT	55000.00
	2	Jane Smith	HR	45000.00
	3	Sam Wilson	Finance	60000.00
	4	Ravi Kumar	IT	55000.00
	5	Priya Sharma	HR	45000.00
	6	Arjun Verma	IT	58000.00
	7	Vikram Das	Finance	58000.00
✱	NULL	NULL	NULL	NULL

employees 3

Output

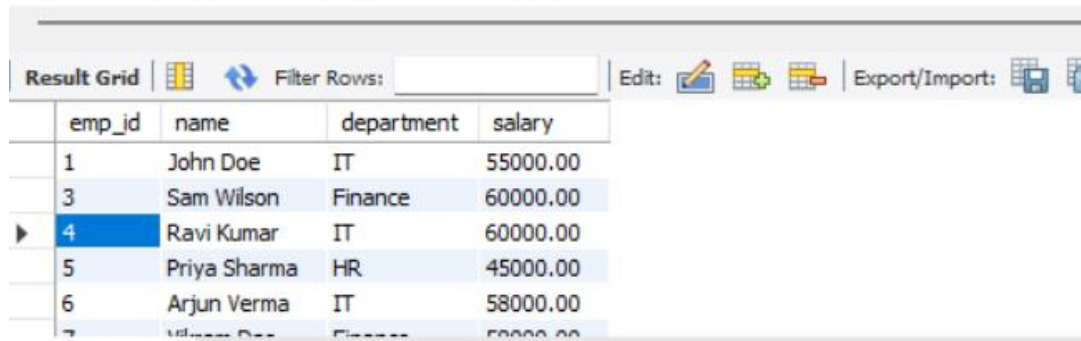
Action Output

#	Time	Action	Message
✓ 13	16:22:53	INSERT INTO employees (emp_id, name, department, salary) VALUES (4, 'Ravi Kumar', 'IT', 55000.00), (5, 'Pri...	4 row(s) affected Records: 4 Duplicates: 0 Warnings:
✓ 14	16:23:14	SELECT * FROM employees LIMIT 0, 1000	7 row(s) returned

Update Query

- Query: UPDATE employees SET salary = ...
WHERE emp_id = ...;

```
--  
40  -- Updating/modifying an existing row  
41 • UPDATE employees  
42  SET salary = 60000.00  
43  WHERE emp_id = 4; -- Updates Ravi Kumar's salary  
44 • SELECT * FROM employees;
```



emp_id	name	department	salary
1	John Doe	IT	55000.00
3	Sam Wilson	Finance	60000.00
4	Ravi Kumar	IT	60000.00
5	Priya Sharma	HR	45000.00
6	Arjun Verma	IT	58000.00
7	Vikram Singh	Finance	50000.00

Group By

- Query: SELECT department, COUNT(*) FROM employees GROUP BY department;

```
43  -- Group by department employees
44  • SELECT department, COUNT(*) AS total_employees
45  FROM employees
46  GROUP BY department;
```

Result Grid		
Filter Rows: <input type="text"/>		
Export: Wrap Cell Content:		
	department	total_employees
▶	IT	3
	HR	2
	Finance	2

Result 6 ×			
Output			
Action Output			
#	Time	Action	Message
✓ 16	16:31:12	SELECT * FROM employees ORDER BY salary DESC LIMIT 0, 1000	7 row(s) returned
✓ 17	16:41:51	SELECT department, COUNT(*) AS total_employees FROM employees GROUP BY department LIMIT 0, 1000	3 row(s) returned

Order By

- Query: SELECT * FROM employees ORDER BY salary DESC;

>>

56 -- Order by Salary

57 • SELECT * FROM employees

58 ORDER BY salary DESC;

<<

Result Grid	Filter Rows:	Edit:	Export/Import:	Wrap Cell Content:
emp_id	name	department	salary	
3	Sam Wilson	Finance	60000.00	
6	Arjun Verma	IT	58000.00	
7	Vikram Das	Finance	58000.00	
1	John Doe	IT	55000.00	
4	Ravi Kumar	IT	55000.00	
2	Jane Smith	HR	45000.00	
5	Priya Sharma	HR	45000.00	
* NULL	NULL	NULL	NULL	

employees 5 x

Output







Action Output

#	Time	Action	Message
✓ 15	16:29:40	SELECT department, COUNT(*) AS Total_IT_Emp FROM employees GROUP BY department LIMIT 0, 1000	3 row(s) returned
✓ 16	16:31:12	SELECT * FROM employees ORDER BY salary DESC LIMIT 0, 1000	7 row(s) returned

Delete Employee

- Query: DELETE FROM employees WHERE emp_id = ...;

```
59  -- Delete an employee
60 • DELETE FROM employees WHERE emp_id = 2;
61 • SELECT * FROM employees;
62
```

Result Grid				
Filter Rows: <input type="text"/>				
Edit:    				
Export/Import:  				
Write				
	emp_id	name	department	salary
▶	1	John Doe	IT	55000.00
	3	Sam Wilson	Finance	60000.00
	4	Ravi Kumar	IT	55000.00
	5	Priya Sharma	HR	45000.00
	6	Arjun Verma	IT	58000.00
	7	Vikram Das	Finance	58000.00
*	NULL	NULL	NULL	NULL

employees 8 x

Output

Action Output

#	Time	Action
✓ 19	16:51:17	DELETE FROM employees WHERE emp_id = 2
✓ 20	16:51:21	SELECT * FROM employees LIMIT 0, 1000

Backup/Save file

- Command: `mysqldump -u root -p CompanyDB > companydb_backup.sql`

This creates a backup file of the database

- Or Save manually by file -> save

Real-life Applications of MySQL

- Used in web applications like WordPress, Facebook, Twitter.
- Helps manage user data, posts, and interactions.
- Common in enterprise applications for HR, Sales, and Finance data.

Conclusion

- MySQL is widely used for managing relational databases.
- Easy to use, efficient, and reliable.
- Supports data backup, retrieval, and secure storage.
- Created and managed a MySQL database (assignment_demo).
- Demonstrated SQL operations: Create, Insert, Update, Delete, Group By, and Order By.
- Showed how to back up the database using mysqldump.
- Highlighted practical knowledge of relational databases.
- This project demonstrates my foundational database skills and problem-solving approach.

Thank You

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