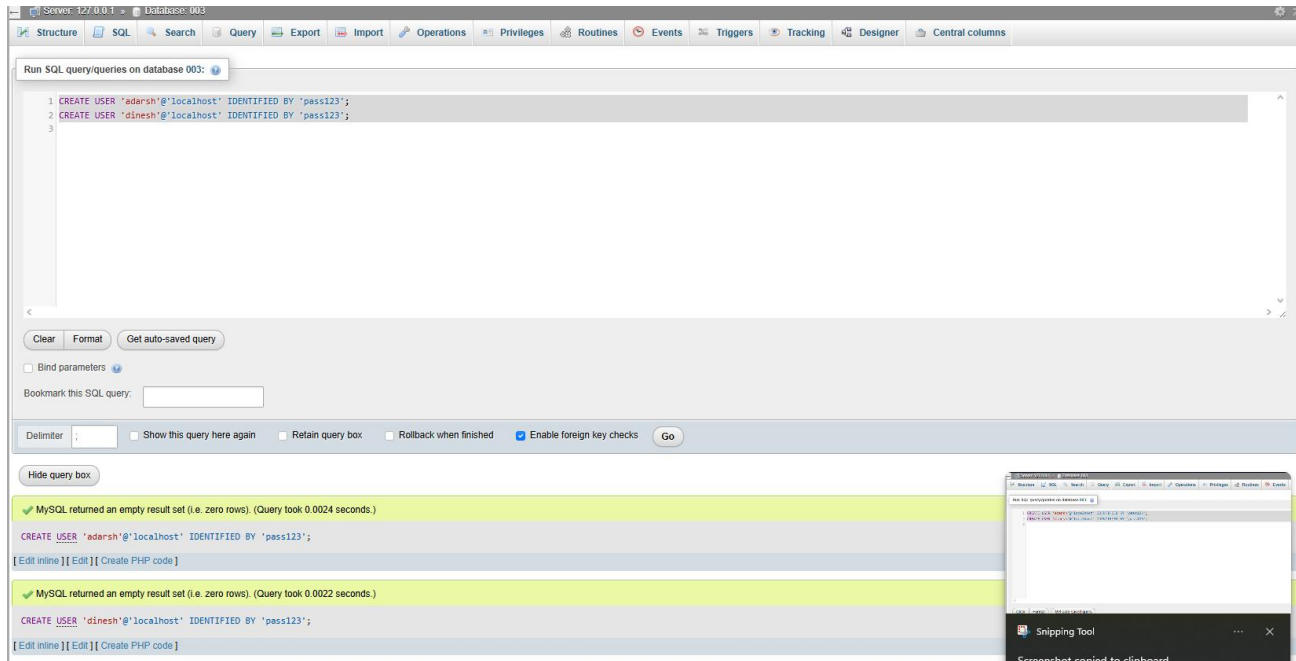


Experiment 1 — User Management with GRANT & REVOKE

Command:

```
CREATE USER 'adarsh'@'localhost' IDENTIFIED BY 'pass123';  
CREATE USER 'dinesh'@'localhost' IDENTIFIED BY 'pass123';
```

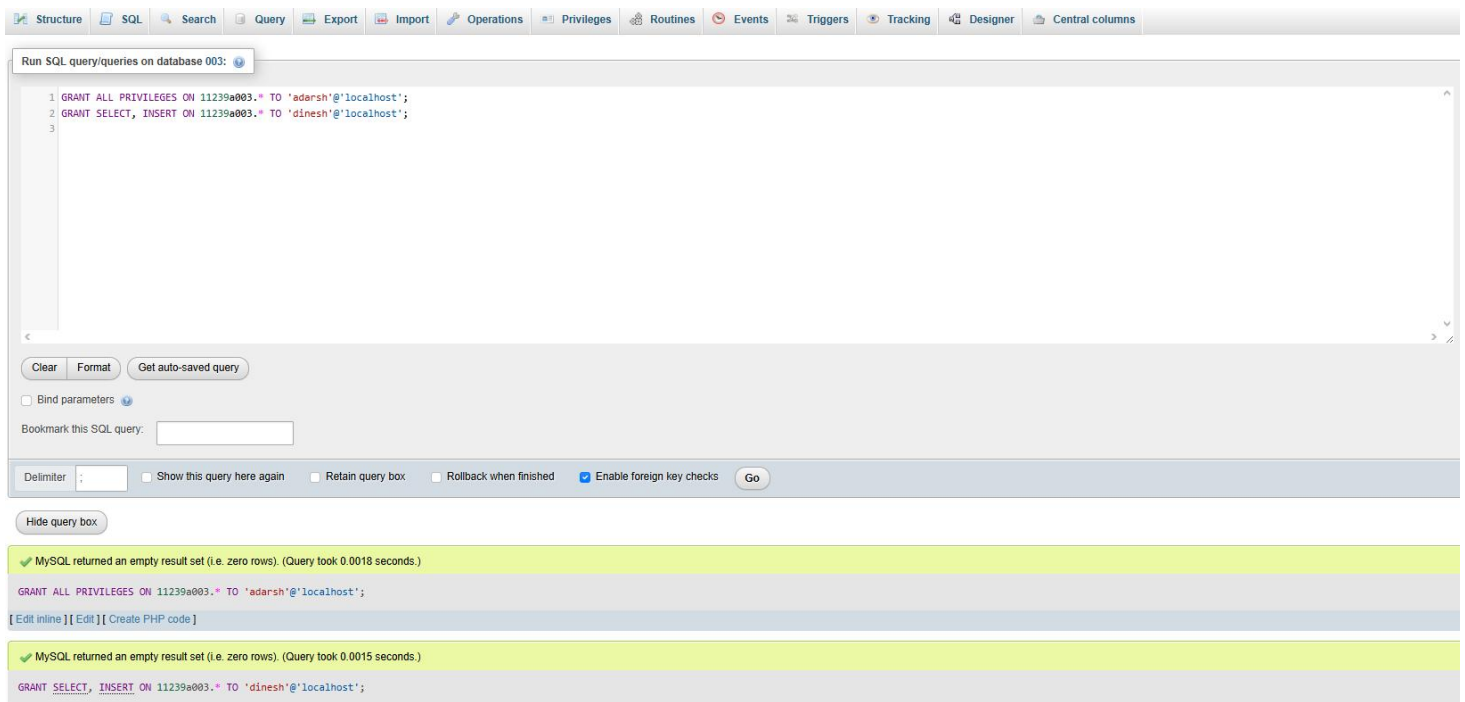
Output:



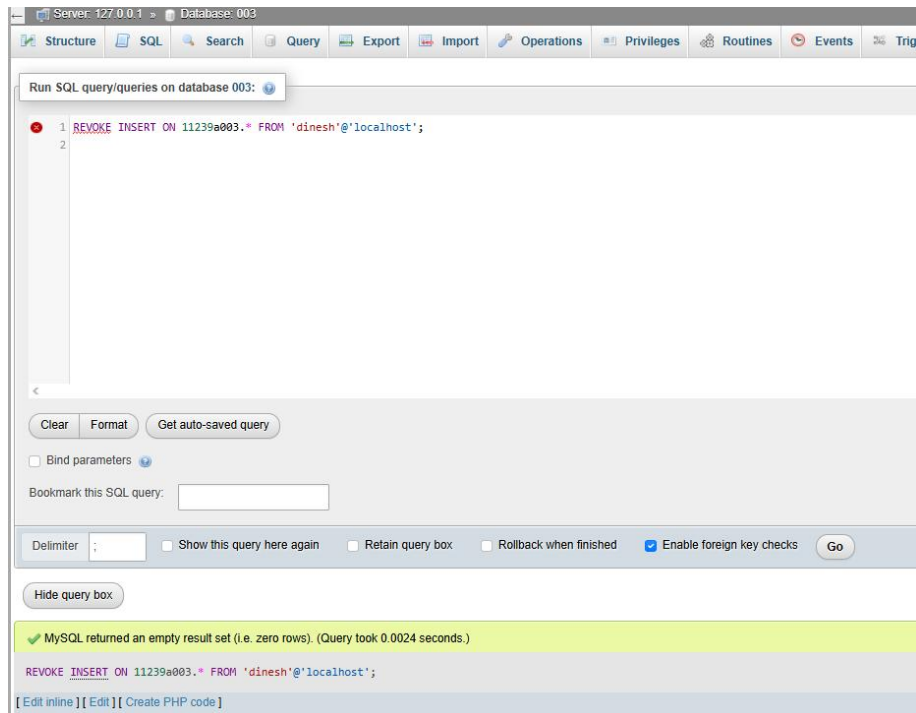
Command:

```
GRANT ALL PRIVILEGES ON 11239a003.* TO 'adarsh'@'localhost';  
GRANT SELECT, INSERT ON 11239a003.* TO 'dinesh'@'localhost';
```

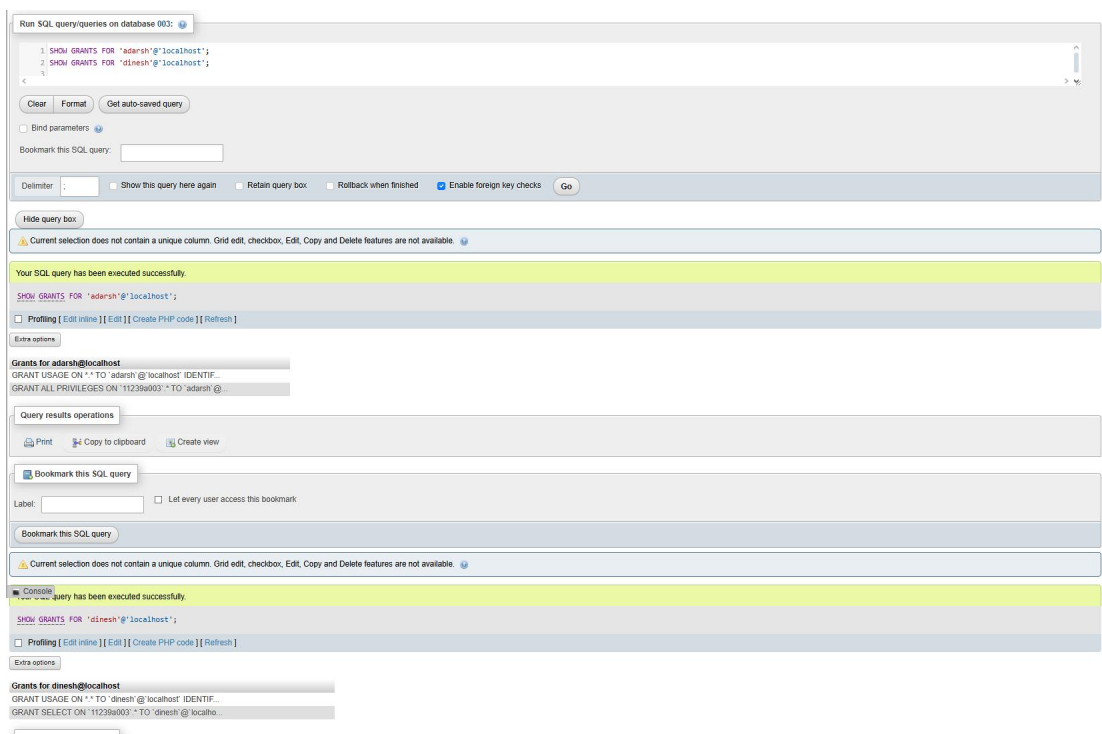
Output:



Output:



Output:

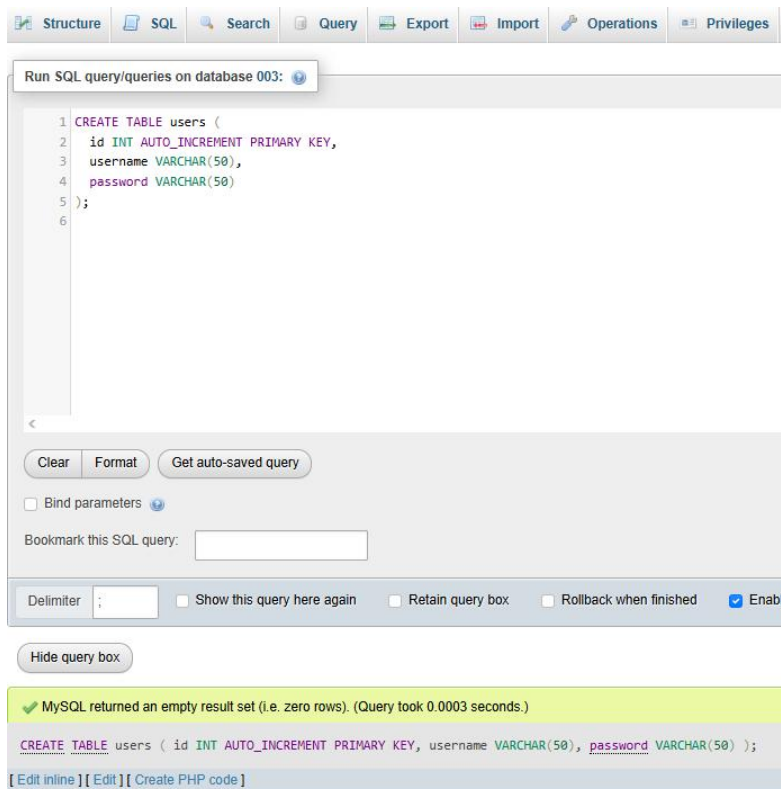


Experiment 2 — SQL Injection Demonstration

Command:

```
CREATE TABLE users (  
  id INT AUTO_INCREMENT PRIMARY KEY,  
  username VARCHAR(50),  
  password VARCHAR(50)  
);
```

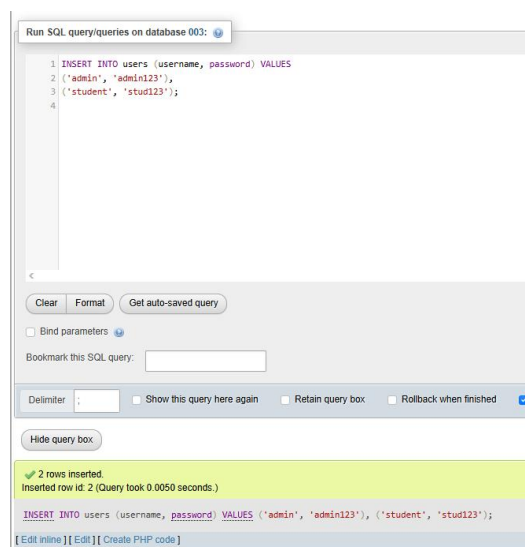
Output :



Command :

```
INSERT INTO users (username, password) VALUES  
( 'admin', 'admin123' ),  
( 'student', 'stud123' );
```

Output :



Command:

```
SELECT * FROM users  
WHERE username='admin' AND password='admin123';
```

Output:

Run SQL query/queries on table 003.users: ⓘ

```
1 SELECT * FROM users  
2 WHERE username='admin' AND password='admin123';  
3
```

SELECT * | SELECT | INSERT | UPDATE | DELETE | Clear | Format | Get auto-saved query

☐ Bind parameters ⓘ

Bookmark this SQL query:

Delimiter: ; ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks

Hide query box

✓ Showing rows 0 - 0 (1 total, Query took 0.0002 seconds.)

```
SELECT * FROM users WHERE username='admin' AND password='admin123';
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 | Filter rows:

Extra options

	id	username	password
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	admin	admin123

↑ ☐ Check all | With selected: ☐ Edit ☐ Copy ☐ Delete ☐ Export

☐ Show all | Number of rows: 25 | Filter rows:

Command:

```
SELECT * FROM users  
WHERE username='admin'  
AND password="" OR '1'='1';
```

Output:

Run SQL query/queries on table 003.users: ⓘ

```
1 SELECT * FROM users  
2 WHERE username='admin'  
3 AND password="" OR '1'='1';  
4
```

SELECT * | SELECT | INSERT | UPDATE | DELETE | Clear | Format | Get auto-saved query

☐ Bind parameters ⓘ

Bookmark this SQL query:

Delimiter: ; ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks

Hide query box

✓ Showing rows 0 - 1 (2 total, Query took 0.0003 seconds.)

```
SELECT * FROM users WHERE username='admin' AND password="" OR '1'='1';
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all | Number of rows: 25 | Filter rows: Sort by key: None

Extra options

	id	username	password
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	admin	admin123
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2	student	stud123

Experiment 3 — Database Auditing (General Log)

Command:

```
SET GLOBAL general_log = 'ON';
```

Output:

The screenshot shows a web-based SQL query runner interface. At the top, a tab indicates the current context is 'Run SQL query/queries on table 003.users:'. Below this is a text area containing the SQL command: `1 SET GLOBAL general_log = 'ON';`. The interface includes a toolbar with buttons for 'SELECT *', 'SELECT', 'INSERT', 'UPDATE', 'DELETE', 'Clear', 'Format', and 'Get auto-saved query'. There are also checkboxes for 'Bind parameters', 'Bookmark this SQL query:', 'Show this query here again', 'Retain query box', and 'Rollback when finished'. A 'Hide query box' button is located below the toolbar. The output area at the bottom shows a green success message: 'MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)'. Below the message is the executed SQL command: `SET GLOBAL general_log = 'ON';`, followed by links for 'Edit inline', 'Edit', and 'Create PHP code'.

Command:

```
SET GLOBAL log_output = 'TABLE';
```

Output:

The screenshot shows the same web-based SQL query runner interface. The tab remains 'Run SQL query/queries on table 003.users:'. The text area now contains the SQL command: `1 SET GLOBAL log_output = 'TABLE';`. The toolbar and checkboxes are identical to the previous screenshot. The output area shows a green success message: 'MySQL returned an empty result set (i.e. zero rows). (Query took 0.0002 seconds.)'. Below the message is the executed SQL command: `SET GLOBAL log_output = 'TABLE';`, followed by links for 'Edit inline', 'Edit', and 'Create PHP code'.

Command:

```
SELECT * FROM mysql.general_log
ORDER BY event_time DESC
LIMIT 10;
```

Output

The screenshot shows a MySQL query execution interface. At the top, there's a toolbar with icons for Browse, Structure, SQL, Search, Insert, Export, Import, Privileges, Operations, and Tracking. Below the toolbar, a text box contains the SQL query: `SELECT * FROM mysql.general_log ORDER BY event_time DESC LIMIT 10;`. Below the query box, there are buttons for `SELECT *`, `SELECT`, `INSERT`, `UPDATE`, `DELETE`, `Clear`, `Format`, and `Get auto-saved query`. There's also a checkbox for `Bind parameters` and a text box for `Bookmark this SQL query:`. Below these, there's a `Delimiter` dropdown set to `;` and several checkboxes: `Show this query here again`, `Retain query box`, `Rollback when finished`, and `Enable foreign key checks`. A `Go` button is on the right. Below the query execution controls, there's a `Hide query box` button and a warning message: `Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available.` The main output area shows a green status bar: `Showing rows 0 - 9 (10 total, Query took 0.2352 seconds.) [event_time: 2025-11-14 16:12:55.172587... - 2025-11-14 16:12:55.153106...]`. Below this, the SQL query is repeated. There's a `Profiling` section with links for `Edit inline`, `Edit`, `Explain SQL`, `Create PHP code`, and `Refresh`. An `Extra options` button is also present. The output is a table with columns: `event_time`, `user_host`, `thread_id`, `server_id`, `command_type`, and `argument`. The table contains 10 rows of log data. The first row shows a `SELECT` query. The second row shows a `FROM` clause. The third row shows an `Init DB` command. The fourth row shows a `SELECT` query. The fifth row shows a `DATABASE` command. The sixth row shows a `SHOW` command. The seventh row shows a `SESSION` command. The eighth row shows a `VARIABLES` command. The ninth row shows a `SHOW` command. The tenth row shows a `SESSION` command. The eleventh row shows a `VARIABLES` command. The twelfth row shows a `SELECT` query. The thirteenth row shows a `FROM` clause. The fourteenth row shows a `SHOW` command. The fifteenth row shows a `SESSION` command. The sixteenth row shows a `VARIABLES` command. The seventeenth row shows a `SHOW` command. The eighteenth row shows a `SESSION` command. The nineteenth row shows a `VARIABLES` command. The twentieth row shows an `Init DB` command.

event_time	user_host	thread_id	server_id	command_type	argument
2025-11-14 16:12:55.172587	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Query	SELECT
2025-11-14 16:12:55.172284	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Init DB	mysql
2025-11-14 16:12:55.171754	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Query	SELECT
2025-11-14 16:12:55.164458	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Query	DATABASE
2025-11-14 16:12:55.163318	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Query	SHOW
2025-11-14 16:12:55.161859	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Query	SESSION
2025-11-14 16:12:55.158886	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Query	VARIABLES
2025-11-14 16:12:55.157065	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Query	SHOW
2025-11-14 16:12:55.155917	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Query	SESSION
2025-11-14 16:12:55.153106	11239A003[11239A003] @ localhost [127.0.0.1]	2871	1	Init DB	003

Experiment 4 — Encryption in the Database (AES_ENCRYPT / AES_DECRYPT)

Command:

```
CREATE TABLE secure_data (  
  id INT AUTO_INCREMENT PRIMARY KEY,  
  secret VARBINARY(255)  
);
```

Output:

Run SQL query/queries on table 003.users: ⓘ

```
1 CREATE TABLE secure_data (  
2   id INT AUTO_INCREMENT PRIMARY KEY,  
3   secret VARBINARY(255)  
4 );  
5
```

SELECT * | SELECT | INSERT | UPDATE | DELETE | Clear | Format | Get auto-saved query

☐ Bind parameters ⓘ

Bookmark this SQL query:

Delimiter: ; ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ⓘ

Hide query box

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)

```
CREATE TABLE secure_data ( id INT AUTO_INCREMENT PRIMARY KEY, secret VARBINARY(255) );
```

[Edit inline](#) | [Edit](#) | [Create PHP code](#)

Command:

```
INSERT INTO secure_data(secret)  
VALUES (AES_ENCRYPT('mysecretpassword', 'key123'));
```

Output:

Run SQL query/queries on table 003.users: ⓘ

```
1 INSERT INTO secure_data(secret)  
2 VALUES (AES_ENCRYPT('mysecretpassword', 'key123'));  
3
```

SELECT * | SELECT | INSERT | UPDATE | DELETE | Clear | Format | Get auto-saved

☐ Bind parameters ⓘ

Bookmark this SQL query:

Delimiter: ; ☐ Show this query here again ☐ Retain query box ☐ Rollback when fir

Hide query box

✓ 1 row inserted.
Inserted row id: 1 (Query took 0.0003 seconds.)


```
INSERT INTO secure_data(secret) VALUES (AES_ENCRYPT('mysecretpassword', 'key123'));
```

[Edit inline](#) | [Edit](#) | [Create PHP code](#)

Command:


```
SELECT
    AES_DECRYPT(secret, 'key123') AS decrypted_value
FROM secure_data;
```

Ouput:

Run SQL query/queries on table 003.users: 

```
1 SELECT
2     AES_DECRYPT(secret, 'key123') AS decrypted_value
3 FROM secure_data;
4
```



SELECT *SELECTINSERTUPDATEDELETEClearFormatGet auto-saved query


☐ Bind parameters 

Bookmark this SQL query:

Delimiter ;☐ Show this query here again☐ Retain query box☐ Rollback when finished☒ Enable


Hide query box

 Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete features are not available. 

 Showing rows 0 - 0 (1 total, Query took 0.0004 seconds.)

```
SELECT AES_DECRYPT(secret, 'key123') AS decrypted_value FROM secure_data;
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Explain SQL](#)] [[Create PHP code](#)] [[Refresh](#)]

☐ Show all | Number of rows: 25  Filter rows:

Extra options

decrypted_value

mysecretpassword

Experiment 5 — Role-Based Access Control (RBAC)

Command:

```
CREATE ROLE 'headmanager';
```

Ouptut:

Run SQL query/queries on table 003.users: ⓘ

```
1 CREATE ROLE 'headmanager';
2
```

<

SELECT * SELECT INSERT UPDATE DELETE Clear Format

☐ Bind parameters ⓘ

Bookmark this SQL query:

Delimiter ; ☐ Show this query here again ☐ Retain query box ☐

Hide query box

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0024 seconds.)

```
CREATE ROLE 'headmanager';
```

[Edit inline] [Edit] [Create PHP code]

Command:

```
GRANT SELECT, UPDATE ON 11239a003.* TO 'headmanager';
```

Ouput:

Run SQL query/queries on table 003.users: ⓘ

```
1 GRANT SELECT, UPDATE ON 11239a003.* TO 'headmanager';
2
```

<

SELECT * SELECT INSERT UPDATE DELETE Clear Format Get auto-saved query

☐ Bind parameters ⓘ

Bookmark this SQL query:

Delimiter ; ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished

Hide query box

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0019 seconds.)

```
GRANT SELECT, UPDATE ON 11239a003.* TO 'headmanager';
```

[Edit inline] [Edit] [Create PHP code]

Command:

```
CREATE USER 'alice'@'localhost' IDENTIFIED BY 'alice123';
```

Output:

Run SQL query/queries on table 003.users: ⓘ

```
1 CREATE USER 'alice'@'localhost' IDENTIFIED BY 'alice123';
2
```

SELECT * | SELECT | INSERT | UPDATE | DELETE | Clear | Format | Get auto-save

☐ Bind parameters ⓘ

Bookmark this SQL query:

Delimiter ; ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished

Hide query box

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0028 seconds.)

```
CREATE USER 'alice'@'localhost' IDENTIFIED BY 'alice123';
```

[Edit inline] [Edit] [Create PHP code]

Command:

```
GRANT 'headmanager' TO 'alice'@'localhost';
```

Output:

Run SQL query/queries on table 003.users: ⓘ

```
1 GRANT 'headmanager' TO 'alice'@'localhost';
2
```

SELECT * | SELECT | INSERT | UPDATE | DELETE | Clear | Format | Get auto-saved query

☐ Bind parameters ⓘ

Bookmark this SQL query:

Delimiter ; ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable for

Hide query box

✓ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0023 seconds.)


```
GRANT 'headmanager' TO 'alice'@'localhost';
```

[Edit inline] [Edit] [Create PHP code]

Command:


SHOW GRANTS FOR 'alice'@'localhost';

Ouput:

Run SQL query/queries on table 003.users: 

```
1 SHOW GRANTS FOR 'alice'@'localhost';
2
```


SELECT *SELECTINSERTUPDATEDELETEClearFormatGet auto-save

☐ Bind parameters 

Bookmark this SQL query:

Delimiter ☐ Show this query here again☐ Retain query box☐ Rollback when

Hide query box

 Current selection does not contain a unique column. Grid edit, checkbox, Edit, Copy and Delete feature

Your SQL query has been executed successfully.

```
SHOW GRANTS FOR 'alice'@'localhost';
```

☐ Profiling [[Edit inline](#)] [[Edit](#)] [[Create PHP code](#)] [[Refresh](#)]

Extra options

Grants for alice@localhost

GRANT `headmanager` TO `alice`@`localhost`

GRANT USAGE ON *.* TO `alice`@`localhost` IDENTIFI...

Experiment 6 — Backup & Recovery (using XAMPP)

Backup:

Command:

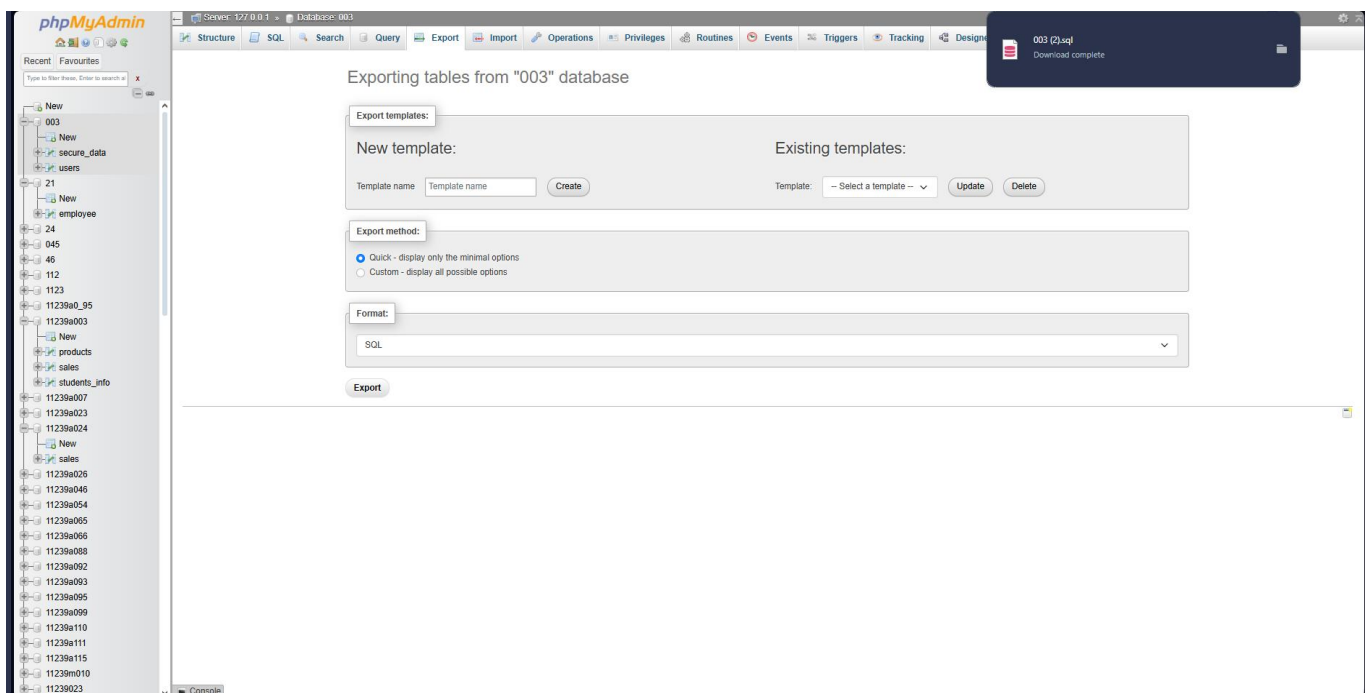
At the top menu in phpMyAdmin, click Export.

Choose Quick export method.

Choose SQL format.

Click Go.

Output:



Restore:

Command:

Click Databases at the top.

In “Create database” box → type:.

003_restore.

Click Create.

Ouput:

restore database created.

Command:

On the left side in phpMyAdmin, click the database: 003_restore

At the top, click Import

Click Choose File

Select your backup file (example: 003.sql)

Scroll down and click Go

Ouput:

Database is restored this is the ouput.

P.T.O

StructureSQLSearchQueryExportImportOperationsPrivilegesRoutinesEventsTriggersTrackingDesignerCentral columns

Import has been successfully finished, 19 queries executed. (003.sq)

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
-- phpMyAdmin SQL Dump -- version 5.2.1 -- https://www.phpmyadmin.net/ -- -- Host: 127.0.0.1 -- Generation Time: Nov 14, 2025 at 12:01 PM -- Server version: 10.4.32-MariaDB -- PHP Version: 8.2.12 SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO";
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
START TRANSACTION;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
SET time_zone = "+00:00";
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@CHARACTER_SET_CLIENT */;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0000 seconds.)

```
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@CHARACTER_SET_RESULTS */;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
/*!40101 SET @OLD_COLLATION_CONNECTION=@COLLATION_CONNECTION */;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
/*!40101 SET NAMES utf8mb4 */;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 seconds.)

```
-- -- Database: '003' -- -- Table structure for table 'secure_data' -- CREATE TABLE `secure_data` ( `id` int(11) NOT NULL, `secret` varbinary(255) DEFAULT NULL ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
```

ConsoleEdit inlineEditCreate PHP code

1 row inserted. (Query took 0.0003 seconds.)

```
-- -- Dumping data for table 'secure_data' -- INSERT INTO `secure_data` (`id`, `secret`) VALUES (1, 0x96caac82f52dcc88b2d20c468eb9abbba084145302654d9d6b81879e7802d610);
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0006 seconds.)

```
-- -- Table structure for table 'users' -- CREATE TABLE `users` ( `id` int(11) NOT NULL, `username` varchar(50) DEFAULT NULL, `password` varchar(50) DEFAULT NULL ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
```

Edit inlineEditCreate PHP code

2 rows inserted. (Query took 0.0033 seconds.)

```
-- -- Dumping data for table 'users' -- INSERT INTO `users` (`id`, `username`, `password`) VALUES (1, 'admin', 'admin123'), (2, 'student', 'stud123');
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 seconds.)

```
-- -- Indexes for dumped tables -- -- Indexes for table 'secure_data' -- ALTER TABLE `secure_data` ADD PRIMARY KEY (`id`);
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0004 seconds.)

```
-- -- Indexes for table 'users' -- ALTER TABLE `users` ADD PRIMARY KEY (`id`);
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)

```
-- -- AUTO_INCREMENT for dumped tables -- -- AUTO_INCREMENT for table 'secure_data' -- ALTER TABLE `secure_data` MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=2;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0003 seconds.)

```
-- -- AUTO_INCREMENT for table 'users' -- ALTER TABLE `users` MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=3;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
COMMIT;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
/*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
/*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */;
```

Edit inlineEditCreate PHP code

MySQL returned an empty result set (i.e. zero rows). (Query took 0.0001 seconds.)

```
/*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;
```

Edit inlineEditCreate PHP code