

# **Lab Project 2 - MySQL**

**Name: kushal patel**

**Date: 25-10-2024**

**Course: Database application**

**Course ID: 10329809**

- MySQL/MariaDB code for the creation of the required tables.

```
CREATE TABLE employee (  
    employee_ID INT PRIMARY KEY AUTO_INCREMENT,  
    first_name VARCHAR(50) NOT NULL,  
    last_name VARCHAR(50) NOT NULL,  
    email VARCHAR(100) UNIQUE NOT NULL,  
    phone VARCHAR(15) UNIQUE,  
    status VARCHAR(20) NOT NULL  
);
```

```
CREATE TABLE manager (  
    manager_ID INT PRIMARY KEY AUTO_INCREMENT,  
    first_name VARCHAR(50) NOT NULL,  
    last_name VARCHAR(50) NOT NULL,  
    mail VARCHAR(100) UNIQUE NOT NULL,  
    number VARCHAR(15) UNIQUE  
);
```

```
CREATE TABLE role (  
    role_ID INT PRIMARY KEY AUTO_INCREMENT,  
    role VARCHAR(50) NOT NULL,  
    role_name VARCHAR(100) NOT NULL  
);
```

```
CREATE TABLE shift_schedule (  
    shift_ID INT PRIMARY KEY AUTO_INCREMENT,  
    employee_ID INT NOT NULL,  
    date DATE NOT NULL,  
    start_time TIME NOT NULL,  
    end_time TIME NOT NULL,  
    FOREIGN KEY (employee_ID) REFERENCES employee(employee_ID) ON DELETE CASCADE  
);
```

```
CREATE TABLE payroll (  
    payroll_ID INT PRIMARY KEY AUTO_INCREMENT,  
    employee_ID INT NOT NULL,  
    payment_date DATE NOT NULL,  
    hours_worked DECIMAL(5, 2) NOT NULL,  
    total_pay DECIMAL(10, 2) NOT NULL,  
    FOREIGN KEY (employee_ID) REFERENCES employee(employee_ID) ON DELETE CASCADE  
);
```

```
CREATE TABLE attendance (  
    attendance_ID INT PRIMARY KEY AUTO_INCREMENT,  
    employee_ID INT NOT NULL,  
    date DATE NOT NULL,  
    clock_intime TIME NOT NULL,  
    clock_outtime TIME NOT NULL,  
    FOREIGN KEY (employee_ID) REFERENCES employee(employee_ID) ON DELETE CASCADE  
);
```

```
CREATE TABLE audit (  
    record_ID INT PRIMARY KEY AUTO_INCREMENT,  
    username VARCHAR(50) NOT NULL,  
    action VARCHAR(100) NOT NULL,  
    record_changed VARCHAR(100),  
    record_deleted BOOLEAN NOT NULL DEFAULT 0  
);
```

```
INSERT INTO manager (first_name, last_name, mail, number) VALUES ('Adam', 'Clark',  
'adam.clark@example.com', '5566778899'), ('Sophia', 'Lee', 'sophia.lee@example.com',  
'8899001122'), ('James', 'White', 'james.white@example.com', '9900112233');
```

```
INSERT INTO role (role, role_name) VALUES ('Admin', 'System Administrator'), ('Manager', 'Team  
Manager'), ('HR', 'Human Resources'), ('Developer', 'Software Developer'), ('Accountant', 'Finance  
Manager');
```

```
INSERT INTO shift_schedule (employee_ID, date, start_time, end_time) VALUES (1, '2024-10-25',  
'09:00:00', '17:00:00'), (2, '2024-10-25', '10:00:00', '18:00:00'), (3, '2024-10-25', '08:00:00',  
'16:00:00'), (4, '2024-10-25', '12:00:00', '20:00:00'), (5, '2024-10-25', '09:30:00', '17:30:00');
```

```
INSERT INTO payroll (employee_ID, payment_date, hours_worked, total_pay) VALUES (1, '2024-10-  
25', 40, 800.00), (2, '2024-10-25', 38, 760.00), (3, '2024-10-25', 42, 840.00), (4, '2024-10-25', 35,  
700.00), (5, '2024-10-25', 37, 740.00);
```

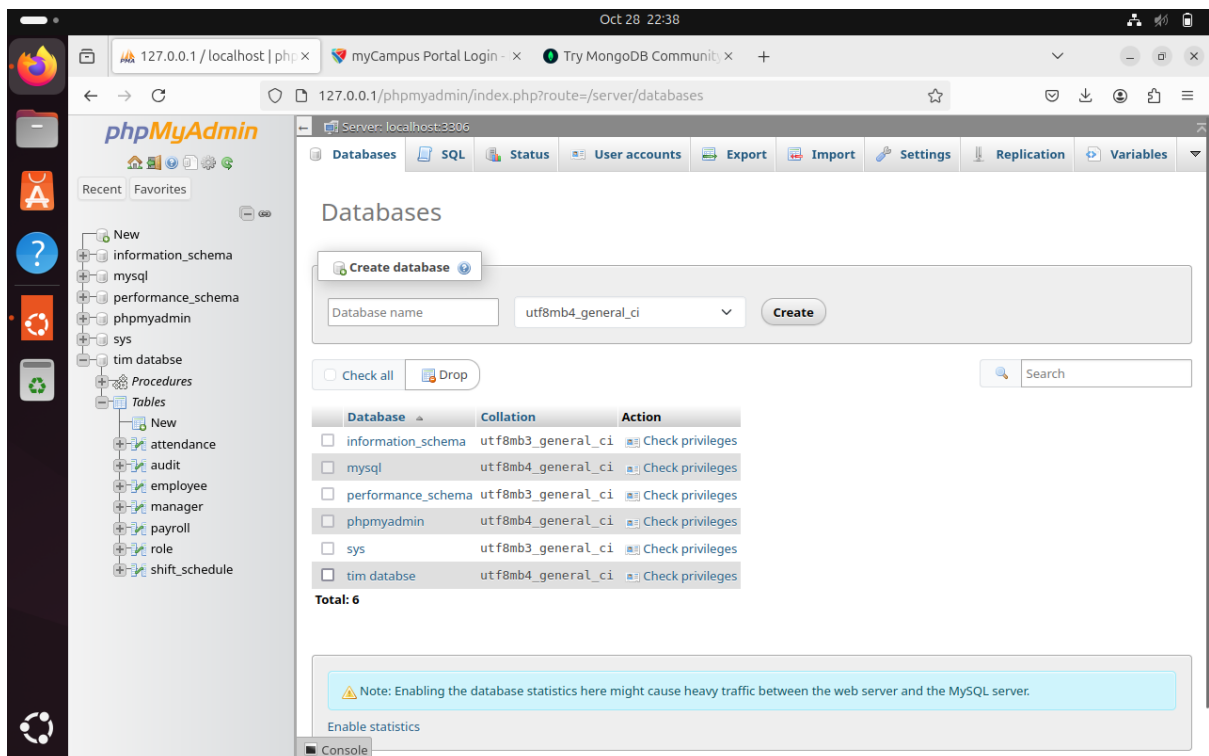
```
INSERT INTO attendance (employee_ID, date, clock_intime, clock_outtime) VALUES (1, '2024-10-25',  
'09:00:00', '17:00:00'), (2, '2024-10-25', '10:00:00', '18:00:00'), (3, '2024-10-25', '08:00:00',  
'16:00:00'), (4, '2024-10-25', '12:00:00', '20:00:00'), (5, '2024-10-25', '09:30:00', '17:30:00');
```

```
INSERT INTO audit (username, action, record_changed, record_deleted) VALUES ('admin', 'INSERT', 'employee', 0), ('ayushp', 'UPDATE', 'payroll', 0), ('mannp', 'DELETE', 'attendance', 1), ('abhyp', 'UPDATE', 'shift_schedule', 0), ('omp', 'INSERT', 'manager', 0);
```

```
INSERT INTO `employee` (`employee_ID`, `first_name`, `last_name`, `email`, `phone`, `status`) VALUES
```

```
(1, 'ayush', 'patel', a.p@example.com, 1254785463, 'Active'),  
(2, 'mann', 'patel', m.n@example.com, 7419632587, 'Active'),  
(3, 'om', 'patel', o.m@example.com, 4523657896, 'Inactive'),  
(4, 'abhay', 'nom', a.n@example.com, 5217854521, 'Active');
```

- Here is my screenshot of “phpMyAdmin”



- Screenshots of the tables create

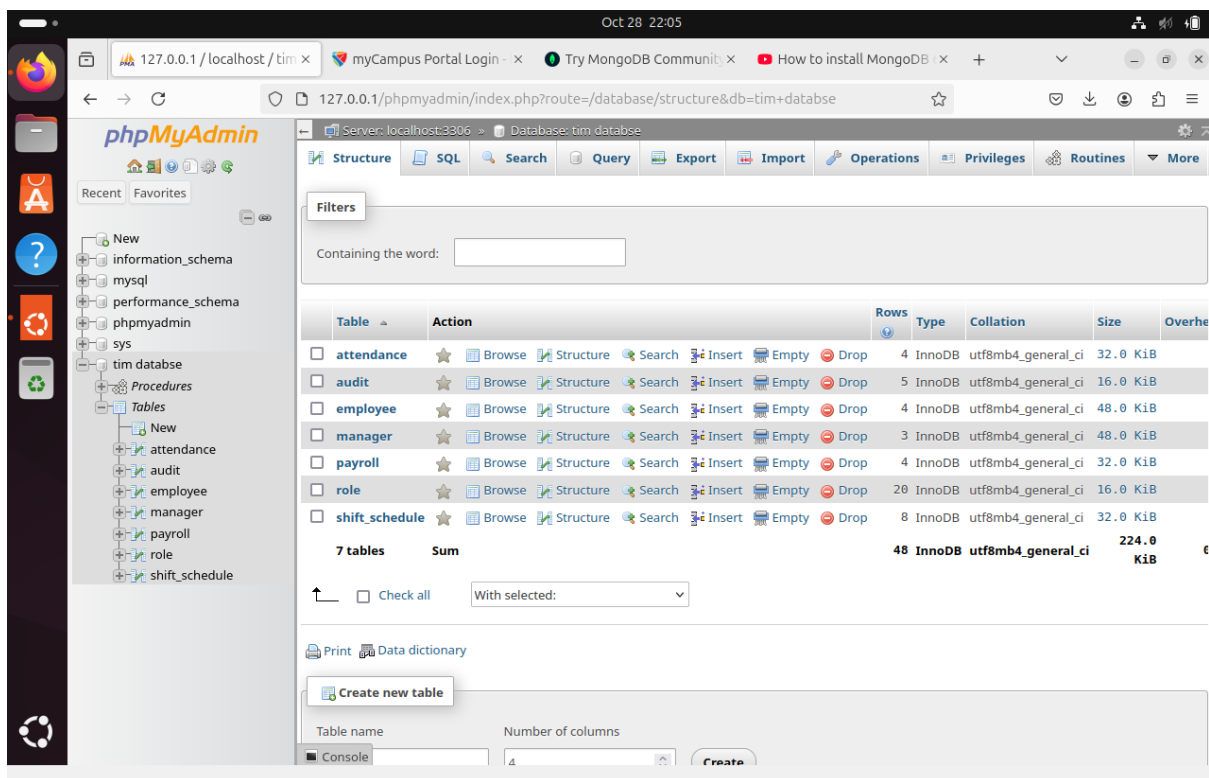
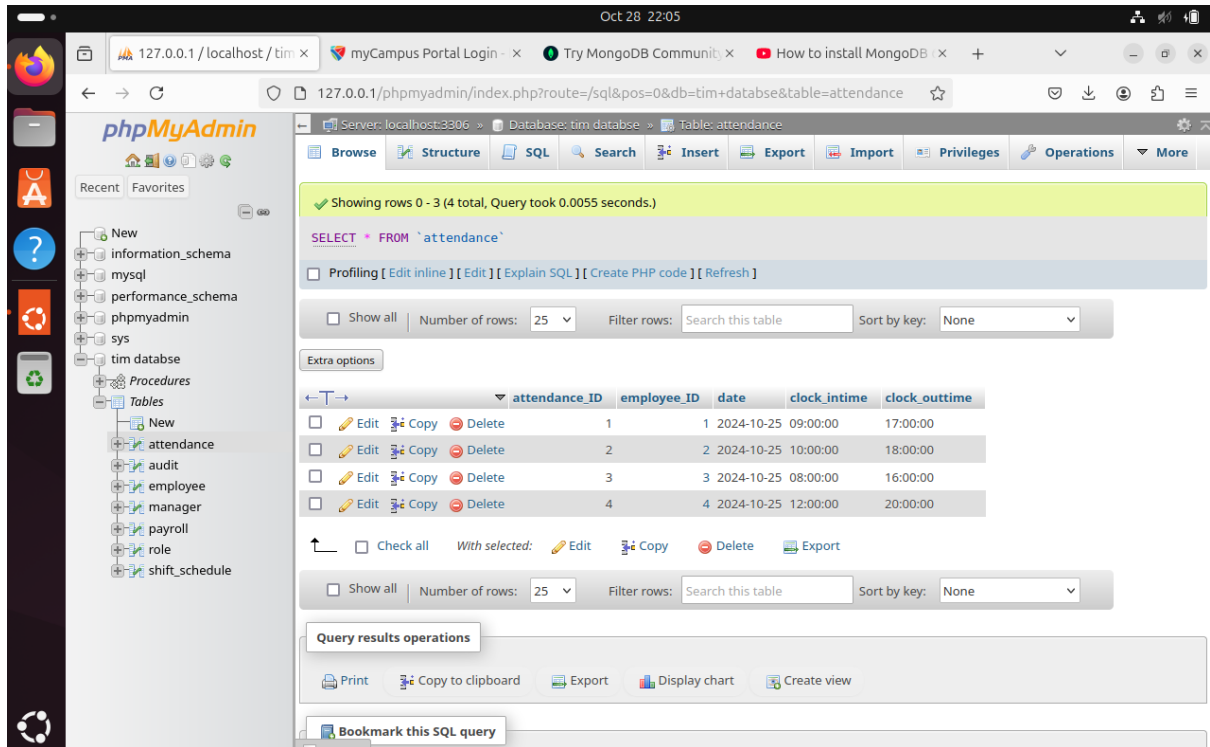


Table 1



Showing rows 0 - 3 (4 total, Query took 0.0055 seconds.)

```
SELECT * FROM `attendance`
```

Number of rows: 25 | Filter rows: Search this table | Sort by key: None

	attendance_ID	employee_ID	date	clock_intime	clock_outtime
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	1	2024-10-25	09:00:00	17:00:00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2	2	2024-10-25	10:00:00	18:00:00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	3	2024-10-25	08:00:00	16:00:00
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	4	4	2024-10-25	12:00:00	20:00:00

Check all | With selected: Edit Copy Delete Export

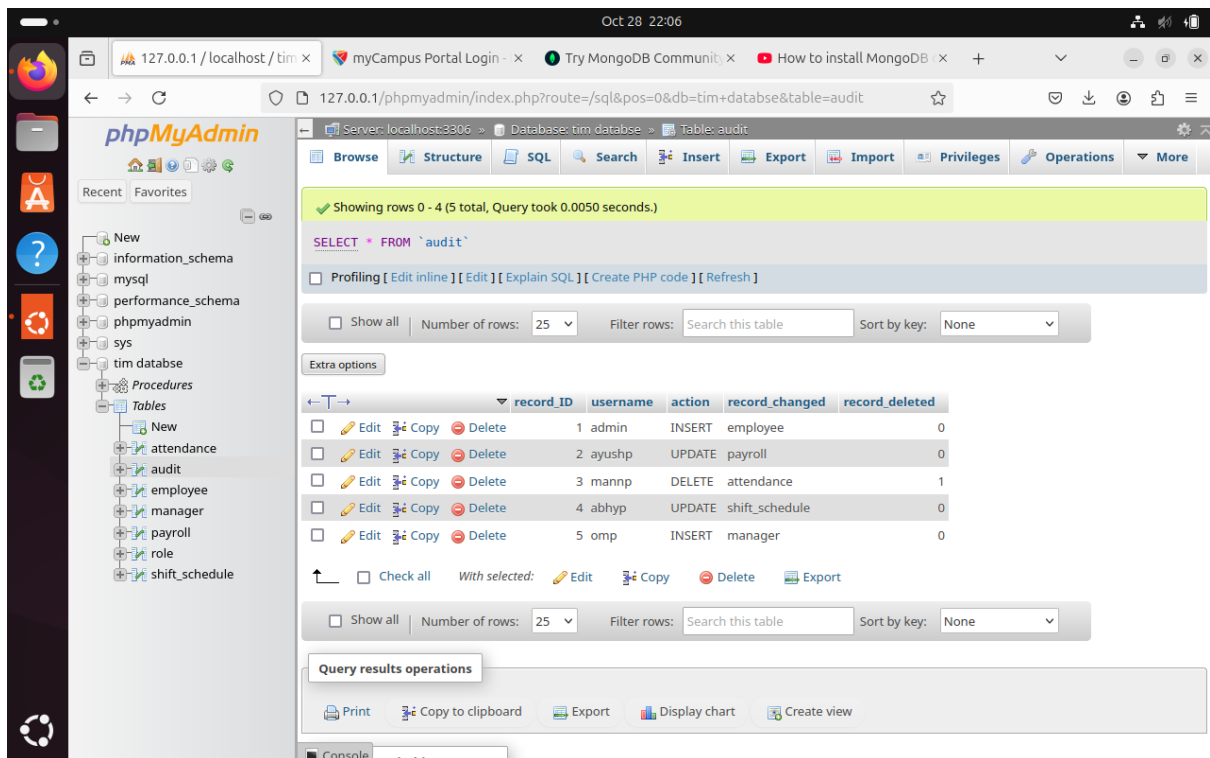
Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Table 2



Showing rows 0 - 4 (5 total, Query took 0.0050 seconds.)

```
SELECT * FROM `audit`
```

Number of rows: 25 | Filter rows: Search this table | Sort by key: None

	record_ID	username	action	record_changed	record_deleted
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	1	admin	INSERT	employee	0
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	2	ayushp	UPDATE	payroll	0
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	3	mannp	DELETE	attendance	1
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	4	abhyp	UPDATE	shift_schedule	0
<input type="checkbox"/> Edit <input type="checkbox"/> Copy <input type="checkbox"/> Delete	5	omp	INSERT	manager	0

Check all | With selected: Edit Copy Delete Export

Number of rows: 25 | Filter rows: Search this table | Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Console

Table 3

The screenshot shows the phpMyAdmin interface with the 'employee' table selected. The table has 4 rows. The SQL query shown is 'SELECT \* FROM `employee`'. The table structure is as follows:

employee_ID	first_name	last_name	email	phone
1	ayush	patel	0xb7ab8d51479ab00b63aabdeae6390c1656915a60883c4086...	0x88339bd...
2	mann	patel	0xf8a20dd9ef4737f25d6946eed77b6ae356915a60883c4086...	0x28d088b...
3	om	patel	0x7b4e34b7c55e77d9a893fc1ec303e8cf56915a60883c4086...	0xdb89e7d...
4	abhay	nom	0xd457fd3b1c6a3aab3c8083800c7bb62a56915a60883c4086...	0xe35a5ae...

Table 4

The screenshot shows the phpMyAdmin interface with the 'manager' table selected. The table has 3 rows. The SQL query shown is 'SELECT \* FROM `manager`'. The table structure is as follows:

manager_ID	first_name	last_name	mail	number
1	Adam	Clark	adam.clark@example.com	5566778899
2	Sophia	Lee	sophia.lee@example.com	8899001122
3	James	White	james.white@example.com	9900112233

Table 5

The screenshot shows the phpMyAdmin interface with the 'payroll' table selected. The table contains 4 rows of data. The SQL query 'SELECT \* FROM `payroll`' is entered in the SQL tab. The table structure shows columns: payroll\_ID, employee\_ID, payment\_date, hours\_worked, and total\_pay.

payroll_ID	employee_ID	payment_date	hours_worked	total_pay
6	1	2024-10-25	40.00	800.00
7	2	2024-10-25	38.00	760.00
8	3	2024-10-25	42.00	840.00
9	4	2024-10-25	35.00	700.00

Table 6

The screenshot shows the phpMyAdmin interface with the 'role' table selected. The table contains 17 rows of data. The SQL query 'SELECT \* FROM `role`' is entered in the SQL tab. The table structure shows columns: role\_ID, role, and role\_name.

role_ID	role	role_name
1	Admin	System Administrator
2	Manager	Team Manager
3	HR	Human Resources
4	Developer	Software Developer
5	Accountant	Finance Manager
6	Admin	System Administrator
7	Manager	Team Manager
8	HR	Human Resources
9	Developer	Software Developer
10	Accountant	Finance Manager
11	Admin	System Administrator
12	Manager	Team Manager
13	HR	Human Resources
14	Developer	Software Developer
15	Accountant	Finance Manager
16	Admin	System Administrator
17	Manager	Team Manager



Table 7

The screenshot shows the phpMyAdmin web interface. The left sidebar displays a database structure tree with the following items: New, information\_schema, mysql, performance\_schema, phpmyadmin, sys, tim database, Procedures, and Tables. Under the 'Tables' section, the following tables are listed: New, attendance, audit, employee, manager, payroll, role, and shift\_schedule. The main panel shows the 'shift\_schedule' table selected. The top navigation bar includes links for Browse, Structure, SQL, Search, Insert, Export, Import, Privileges, and Operations. The SQL query bar contains the query: `SELECT * FROM `shift_schedule``. Below the query bar, there are options for Profiling, Edit inline, Edit, Explain SQL, Create PHP code, and Refresh. The table data is displayed in a grid with columns: shift\_ID, employee\_ID, date, start\_time, and end\_time. The table contains 8 rows of data. At the bottom, there are options for Check all, With selected, Edit, Copy, Delete, and Export.

shift_ID	employee_ID	date	start_time	end_time
11	1	2024-10-25	09:00:00	17:00:00
12	2	2024-10-25	10:00:00	18:00:00
13	3	2024-10-25	08:00:00	16:00:00
14	4	2024-10-25	12:00:00	20:00:00
15	1	2024-10-25	09:00:00	17:00:00
16	2	2024-10-25	10:00:00	18:00:00
17	3	2024-10-25	08:00:00	16:00:00
18	4	2024-10-25	12:00:00	20:00:00

- Screenshots of the relationships (keys/foreign keys).

Server: localhost:3306 - Database: tim database - Table: attendance

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	attendance_ID	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	employee_ID	int(11)			No	None			Change Drop More
3	date	date			No	None			Change Drop More
4	clock_intime	time			No	None			Change Drop More
5	clock_outtime	time			No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	attendance_ID	4	A	No	
Edit Rename Drop	employee_ID	BTREE	No	No	employee_ID	4	A	No	

Server: localhost:3306 - Database: tim database - Table: audit

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	record_ID	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	username	varchar(50)	utf8mb4_general_ci		No	None			Change Drop More
3	action	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
4	record_changed	varchar(100)	utf8mb4_general_ci		Yes	NULL			Change Drop More
5	record_deleted	tinyint(1)			No	0			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	record_ID	5	A	No	

Server: localhost:3306 - Database: tim database - Table: employee

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	employee_ID	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	first_name	varchar(50)	utf8mb4_general_ci		No	None			Change Drop More
3	last_name	varchar(50)	utf8mb4_general_ci		No	None			Change Drop More
4	email	varbinary(255)			Yes	NULL			Change Drop More
5	phone	varbinary(255)			Yes	NULL			Change Drop More
6	status	varchar(20)	utf8mb4_general_ci		No	None			Change Drop More

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	employee_ID	5	A	No	

Oct 28 22:11

127.0.0.1 / localhost / tim x myCampus Portal Login x Try MongoDB Communit x How to install MongoDB x

127.0.0.1/phpmyadmin/index.php?route=/table/structure&db=tim+database&table=manager

Server: localhost:3306 Database: tim database Table: manager

Browse Structure SQL Search Insert Export Import Privileges Operations More

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	manager_ID	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	first_name	varchar(50)	utf8mb4_general_ci		No	None			Change Drop More
3	last_name	varchar(50)	utf8mb4_general_ci		No	None			Change Drop More
4	mail	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More
5	number	varchar(15)	utf8mb4_general_ci		Yes	NULL			Change Drop More

Check all With selected: Browse Change Drop Primary Unique Index Spatial

Fulltext Add to central columns Remove from central columns

Print Propose table structure Track table Move columns Normalize

Oct 28 22:11

127.0.0.1 / localhost / tim x myCampus Portal Login x Try MongoDB Communit x How to install MongoDB x

127.0.0.1/phpmyadmin/index.php?route=/table/structure&db=tim+database&table=payroll

Server: localhost:3306 Database: tim database Table: payroll

Browse Structure SQL Search Insert Export Import Privileges Operations More

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	payroll_ID	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	employee_ID	int(11)			No	None			Change Drop More
3	payment_date	date			No	None			Change Drop More
4	hours_worked	decimal(5,2)			No	None			Change Drop More
5	total_pay	decimal(10,2)			No	None			Change Drop More

Check all With selected: Browse Change Drop Primary Unique Index Spatial

Fulltext Add to central columns Remove from central columns

Oct 28 22:11

127.0.0.1 / localhost / tim x myCampus Portal Login x Try MongoDB Communit x How to install MongoDB x

127.0.0.1/phpmyadmin/index.php?route=/table/structure&db=tim+database&table=role

Server: localhost:3306 Database: tim database Table: role

Browse Structure SQL Search Insert Export Import Privileges Operations More

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	role_ID	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	role	varchar(50)	utf8mb4_general_ci		No	None			Change Drop More
3	role_name	varchar(100)	utf8mb4_general_ci		No	None			Change Drop More

Check all With selected: Browse Change Drop Primary Unique Index Spatial

Fulltext Add to central columns Remove from central columns

Print Propose table structure Track table Move columns Normalize

Add 1 column(s) after role\_name Go

Indexes

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	role_ID	20	A	No	

Oct 28 22:12

127.0.0.1 / localhost / tim x myCampus Portal Login x Try MongoDB Communit x How to install MongoDB x +

127.0.0.1/phpmyadmin/index.php?route=/table/structure&db=tim+database&table=shift\_sche

Server: localhost:3306 Database: tim database Table: shift.schedule

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	shift_ID	int(11)			No	None		AUTO_INCREMENT	Change Drop More
2	employee_ID	int(11)			No	None			Change Drop More
3	date	date			No	None			Change Drop More
4	start_time	time			No	None			Change Drop More
5	end_time	time			No	None			Change Drop More

Check all With selected: Browse Change Drop Primary Unique Index Spatial

Fulltext Add to central columns Remove from central columns

Print Propose table structure Track table Move columns Normalize

Add 1 column(s) after end\_time Go

- Relations

127.0.0.1/phpmyadmin/index.php?route=/table/relation&db=tim+database&table=attendance

Server: localhost:3306 Database: tim database Table: attendance

Table structure Relation view

Foreign key constraints

Actions	Constraint properties	Column	Foreign key constraint (INNODB)		
			Database	Table	Column
attendance_1	ON DELETE CASCADE	employee_ID	tim database	employee	employee_ID
ON UPDATE RESTRICT		+ Add column			
Constraint name	ON DELETE RESTRICT		tim database		
ON UPDATE RESTRICT		+ Add column			
+ Add constraint					

Server: localhost:3306 » Database: tim database » Table: payroll

[Browse](#)
[Structure](#)
[SQL](#)
[Search](#)
[Insert](#)
[Export](#)
[Import](#)
[Privileges](#)
[Operations](#)
[More](#)

[Table structure](#)
[Relation view](#)

Foreign key constraints

Actions	Constraint properties	Column	Foreign key constraint (INNODB)		
			Database	Table	Column
<input type="text" value="payroll_1"/> Drop	ON DELETE CASCADE ON UPDATE RESTRICT	<input type="text" value="employee_ID"/> + Add column	<input type="text" value="tim database"/>	<input type="text" value="employee"/>	<input type="text" value="employee_ID"/>
Constraint name ON DELETE RESTRICT ON UPDATE RESTRICT + Add constraint					

Internal relationships

Server: localhost:3306 » Database: tim database » Table: shift\_schedule

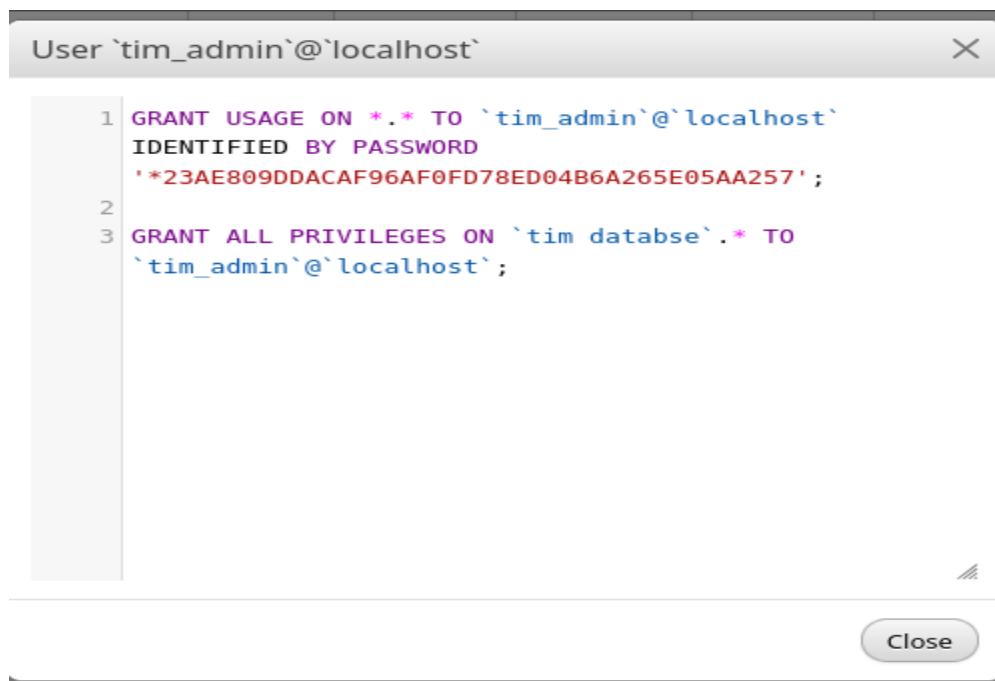
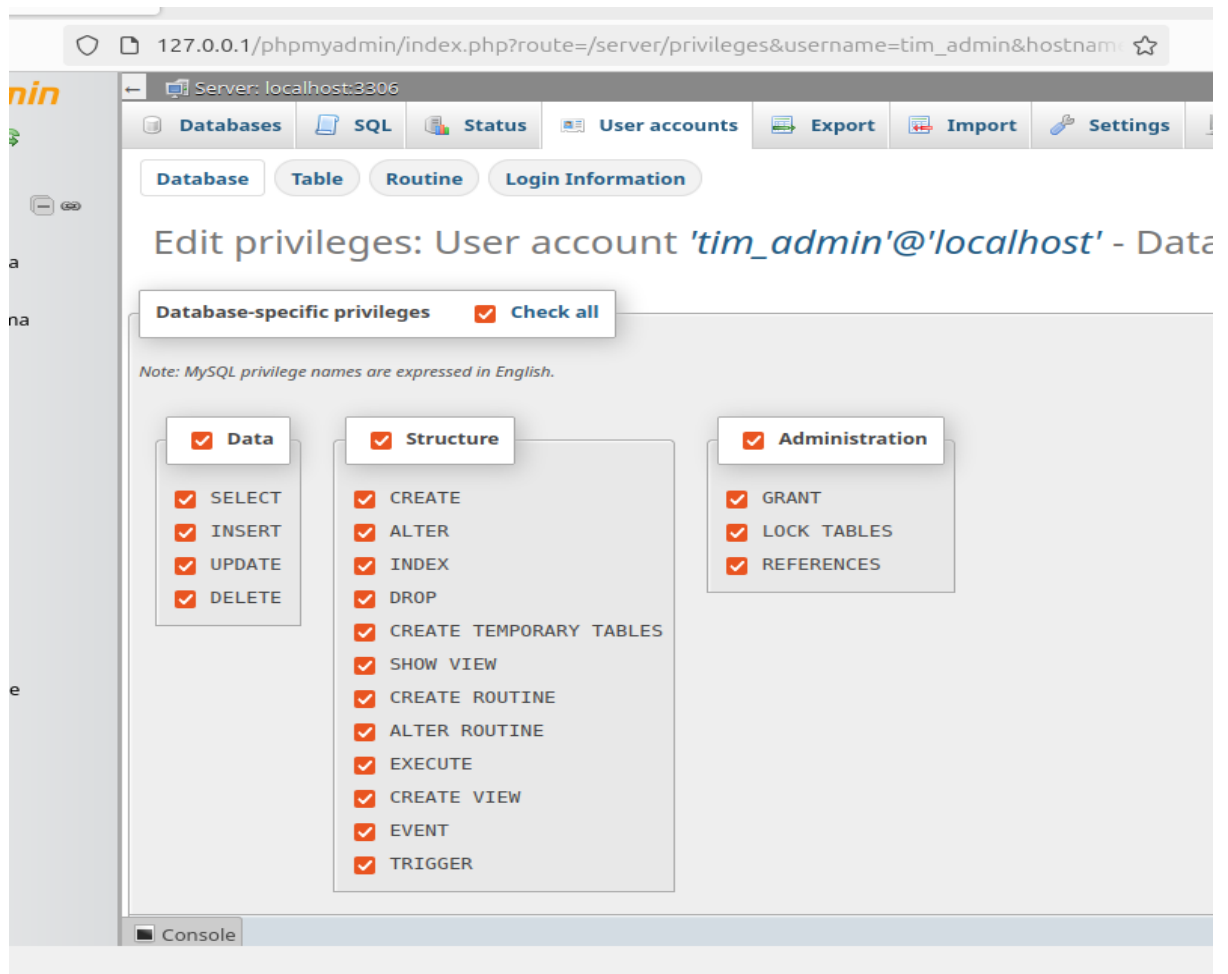
[Browse](#)
[Structure](#)
[SQL](#)
[Search](#)
[Insert](#)
[Export](#)
[Import](#)
[Privileges](#)
[Operations](#)
[More](#)

[Table structure](#)
[Relation view](#)

Foreign key constraints





Actions	Constraint properties	Column	Foreign key constraint (INNODB)		
			Database	Table	Column
<input type="text" value="shift_schedule_1"/> Drop	ON DELETE CASCADE ON UPDATE RESTRICT	<input type="text" value="employee_ID"/> + Add column	<input type="text" value="tim database"/>	<input type="text" value="employee"/>	<input type="text" value="employee_ID"/>
Constraint name ON DELETE RESTRICT ON UPDATE RESTRICT + Add constraint					

- Exports of the user permissions for each table.



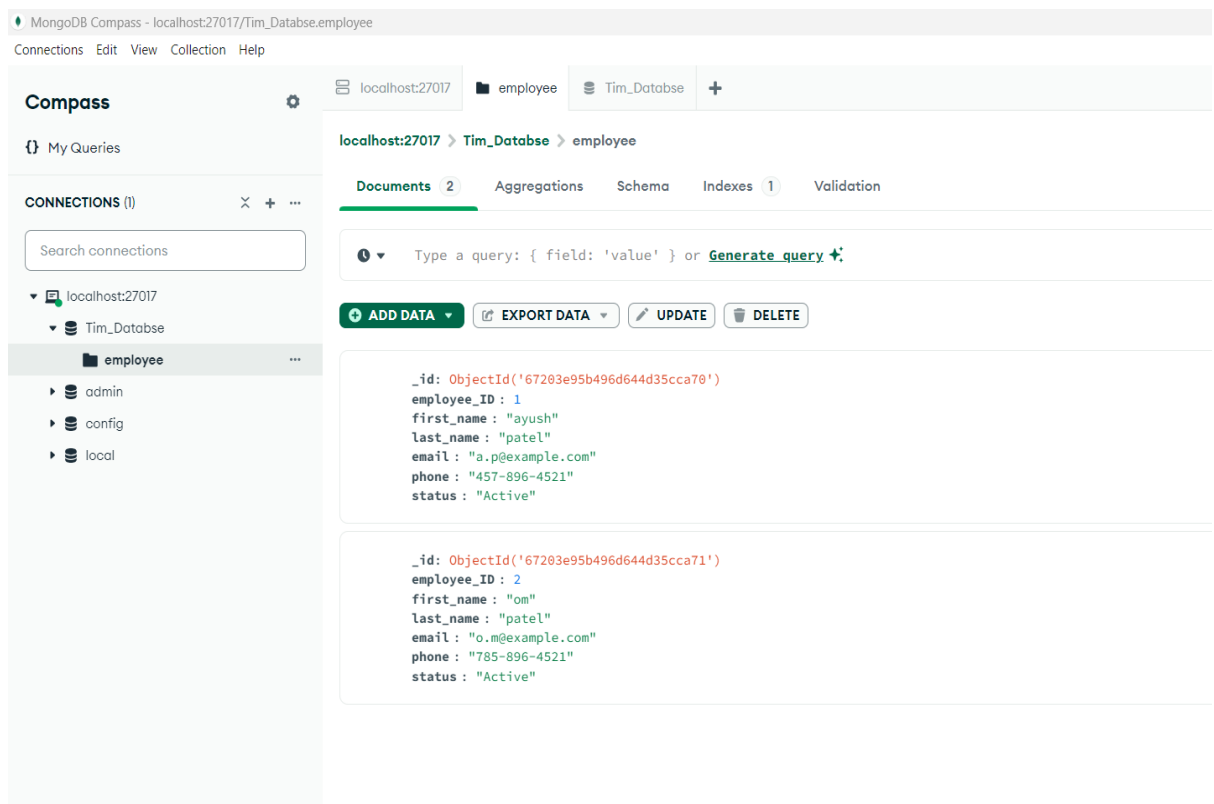
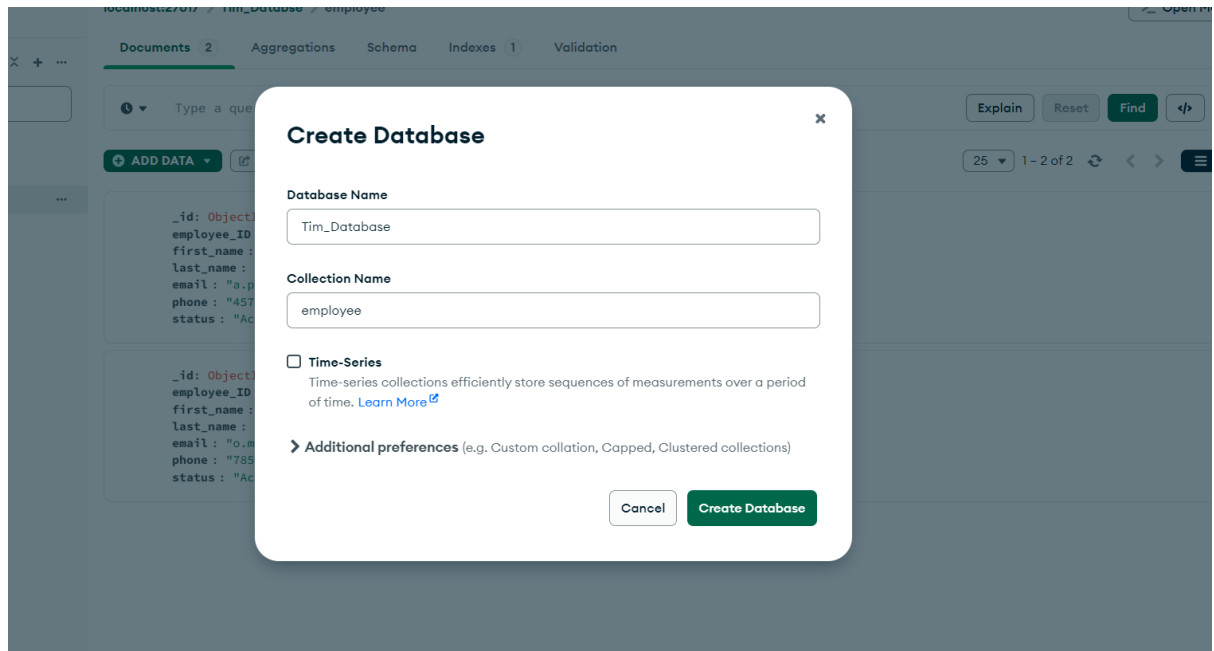
- Screenshots of the encryption applied to encrypted fields.

In this picture “email” and “phone” is encrypted.

of rows:	25	Filter rows:	Search this table	Sort by key:	None
	▼				▼
▼	employee_ID	first_name	last_name	email	phone
Delete	1	ayush	patel	0xb7ab8d51479ab00b63aabdeae6390c1656915a60883c4086...	0x88339bdd5f56f438fd60d9b36aec6fff
Delete	2	mann	patel	0xf8a20dd9ef4737f25d6946eed77b6ae356915a60883c4086...	0x28d088ba35e50b208beae40a84972208
Delete	3	om	patel	0x7b4e34b7c55e77d9a893fc1ec303e8cf56915a60883c4086...	0xdb89e7de2fdc4fad007ce862c3ab34e8
Delete	4	abhay	nom	0xd457fd3b1c6a3aab3c8083800c7bb62a56915a60883c4086...	0xe35a5aeb7620cf506615b29e79b30f31
With selected:  Edit  Copy  Delete  Export					

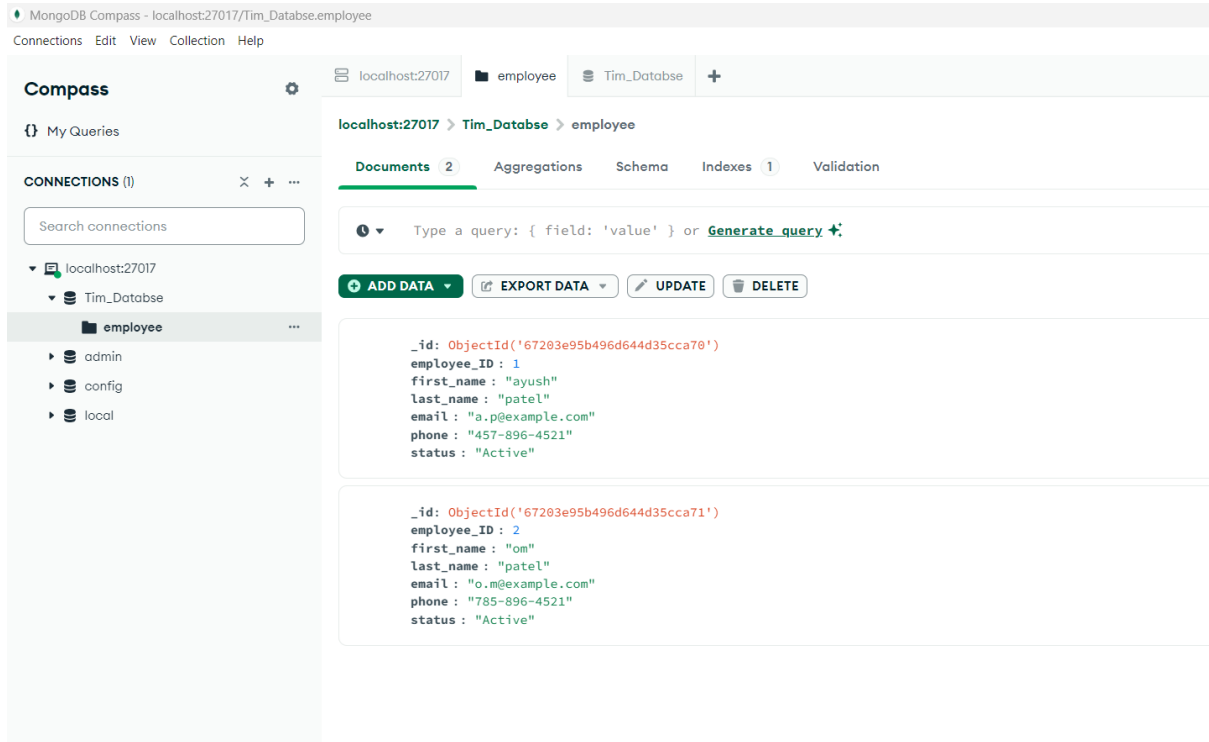
## ● MongoDB

- Screenshots of MongoDB server running and your ability to connect to it using Compass.





- Screenshots of your table structure in MongoDB



- code for the creation of the required tables.

```
[
  {
    "employee_ID": 1,
    "first_name": "ayush",
    "last_name": "patel",
    "email": "a.p@example.com",
    "phone": "457-896-4521",
    "status": "Active"
  },
  {
    "employee_ID": 2,
    "first_name": "om",
    "last_name": "patel",
    "email": "o.m@example.com",
    "phone": "785-896-4521",
    "status": "Active"
  }
]
```