DBMS LAB Assignment 3 and 4
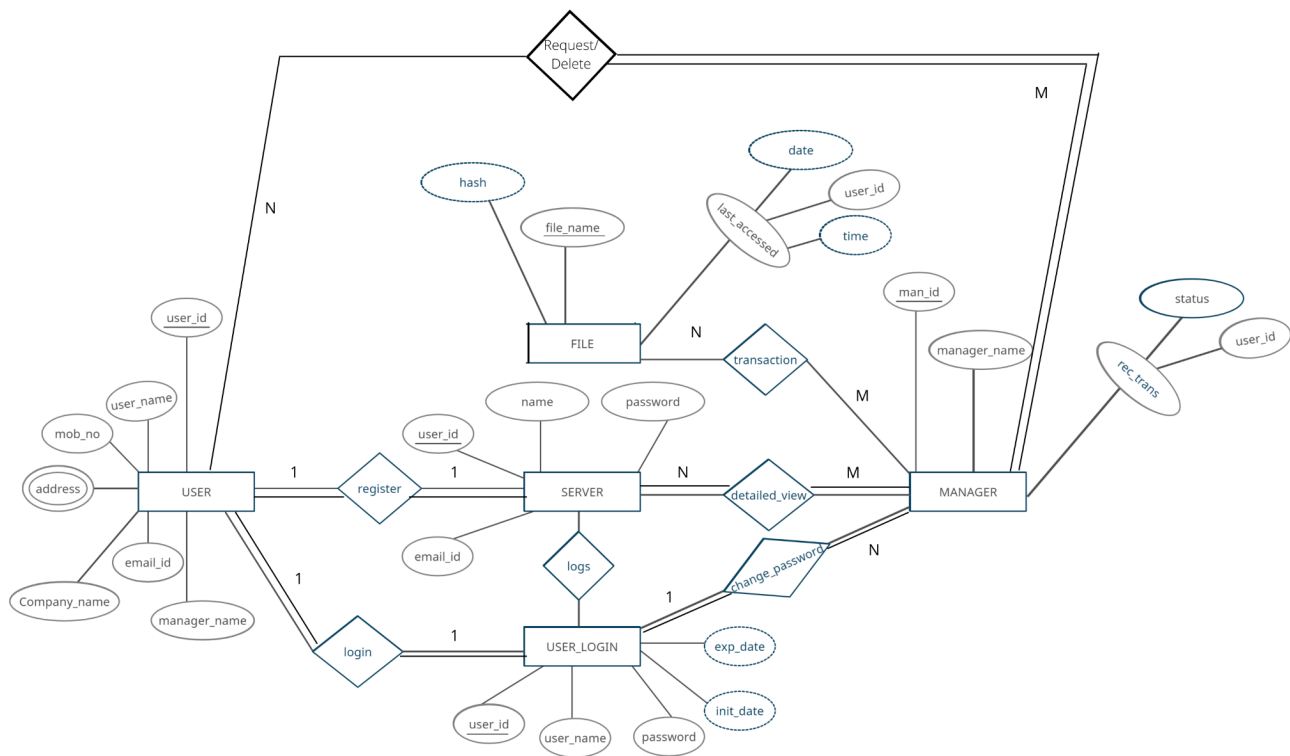
Pavithra Rajan
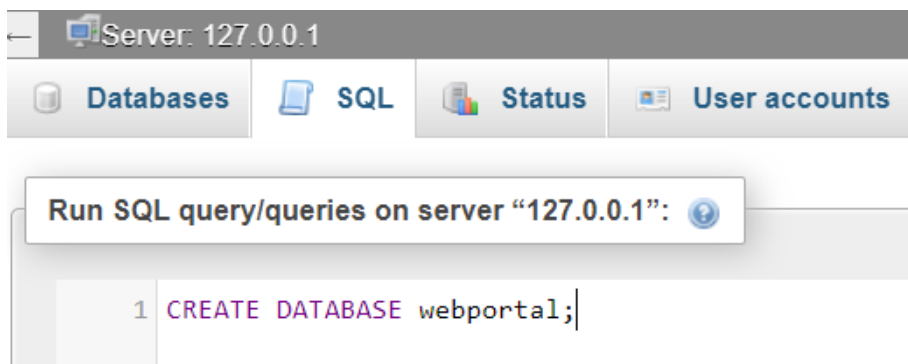**B190632CS**

Relational Diagram

User

User_Id	Manager_ID	Mob_No	Address	Company_Name	Email_Id	User_Name

Manager

Man_Id	Man_Name

Server

Server_ID	User_Log_ID	File_ID	Man_ID

User_Login

User_Id	User_Name	Password	init_date	exp_date

File

File_ID	File_Name	Hash	Last_Acc_date	Last_Acc_time	Last_Acc_user
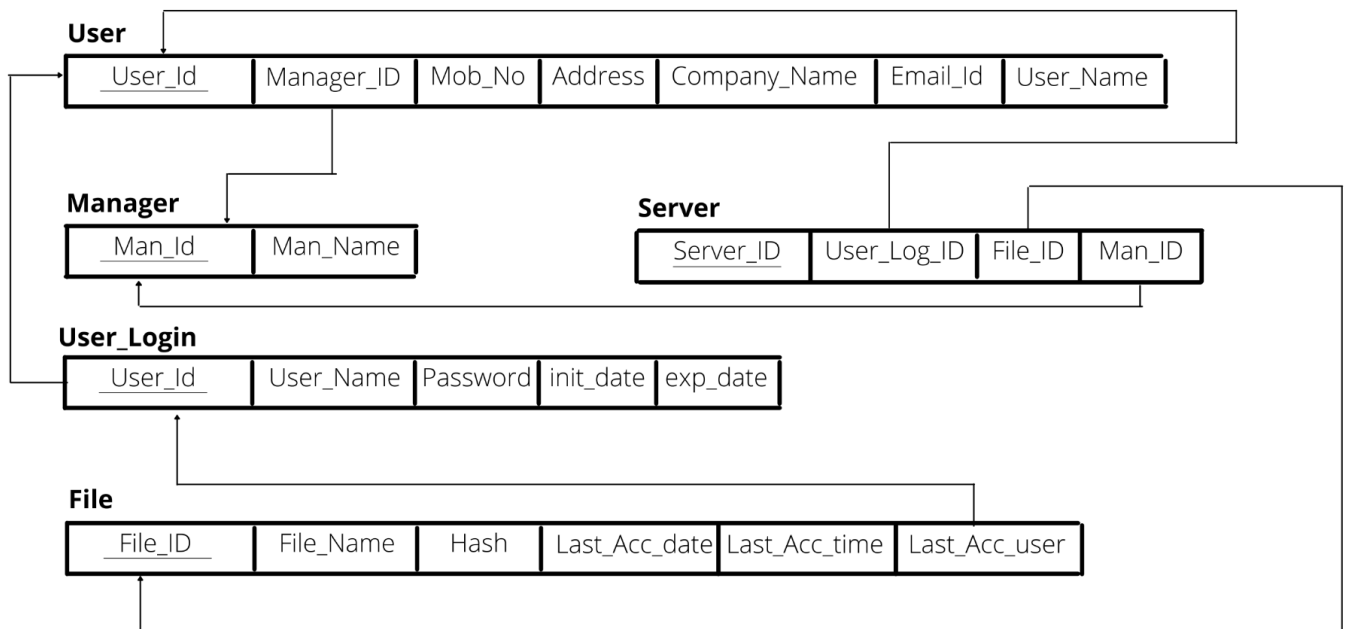
ER Diagram (After changes)

Create Database

Creating Tables

1) Manager

Structure   SQL   Search   Query   Export

Run SQL query/queries on database webportal: ⓘ

```
1  CREATE TABLE manager(
2      Man_ID CHAR(6) NOT NULL UNIQUE,
3      Man_Name VARCHAR(25) NOT NULL,
4      PRIMARY KEY(Man_ID)
5
6  );
```

2) User

```
1  CREATE TABLE user(
2      User_ID CHAR(6) NOT NULL UNIQUE,
3      Manager_ID CHAR(6) NOT NULL,
4      Mob_Num VARCHAR(14) NOT NULL,
5      Address VARCHAR(50),
6      Company_name VARCHAR(20),
7      Email_ID VARCHAR(35) NOT NULL,
8      User_Name VARCHAR(25) NOT NULL,
9      PRIMARY KEY(User_ID),
10     FOREIGN KEY(Manager_ID) REFERENCES manager(Man_ID)
11
12 );
```

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0265 seconds.)

CREATE TABLE user(User_ID CHAR(6) NOT NULL UNIQUE, Manager_ID CHAR(6) NOT NULL, Mob_Num VARCHAR(14) NOT NULL, Address VARCHAR(50), Company_name VARCHAR(20), Email_ID VARCHAR(35) NOT NULL, User_Name VARCHAR(25) NOT NULL, PRIMARY KEY(User_ID), FOREIGN KEY(Manager_ID) REFERENCES manager(Man_ID));

3) userlogin

Run SQL query/queries on database webportal: ⓘ

```sql
1  CREATE TABLE userlogin(
2      User_ID CHAR(6) NOT NULL UNIQUE,
3      User_Name VARCHAR(25) NOT NULL UNIQUE,
4      Pass_word VARCHAR(25) NOT NULL,
5      init_date date NOT NULL,
6      exp_date date NOT NULL,
7      PRIMARY KEY(User_ID),
8      FOREIGN KEY(User_ID) REFERENCES user(User_ID)
9
10 );
```

✔ MySQL returned an empty result set (i.e. zero rows). (Query took 0.0219 seconds.)

CREATE TABLE userlogin(User_ID CHAR(6) NOT NULL UNIQUE, User_Name VARCHAR(25) NOT NULL UNIQUE, Pass_word VARCHAR(25) NOT NULL, init_date date NOT NULL, exp_date date NOT NULL, PRIMARY KEY(User_ID), FOREIGN KEY(User_ID) REFERENCES user(User_ID));

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

4) File

```sql
1  CREATE TABLE file(
2      File_ID CHAR(10) NOT NULL UNIQUE,
3      File_Name VARCHAR(25) NOT NULL UNIQUE,
4      Hash VARCHAR(80) NOT NULL,
5      last_acc_date date NOT NULL,
6      last_acc_time time NOT NULL,
7      last_acc_user CHAR(6) NOT NULL,
8      PRIMARY KEY(File_ID),
9      FOREIGN KEY(last_acc_user) REFERENCES userlogin(User_ID)
10
11 );
```

5) server_web

```
CREATE TABLE server_web(
    Server_ID CHAR(10) NOT NULL UNIQUE,
    User_Log_ID CHAR(6) NOT NULL,
    File_ID CHAR(10) NOT NULL,
    Man_ID CHAR(6) NOT NULL,
    PRIMARY KEY(Server_ID),
    FOREIGN KEY(User_Log_ID) REFERENCES userlogin(User_ID),
    FOREIGN KEY(File_ID) REFERENCES file(File_ID),
    FOREIGN KEY(Man_ID) REFERENCES manager(Man_ID)

);
```
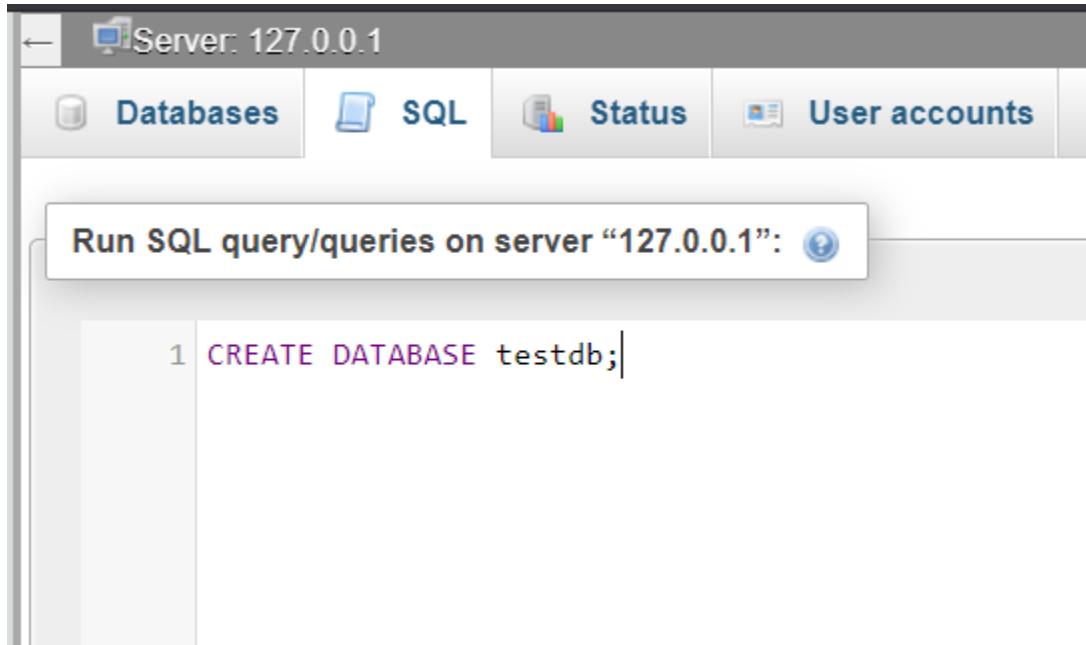
Dropping a Database

I created a temporary database called testdb and dropped it. The procedure is as follows:

Insert

Insertion of values to the table can be done in two ways. Multiple query lines or multiple values in one single query.


```
1  INSERT INTO manager(Man_ID,Man_Name) VALUES(453451,"Mrs. Seema");
2  INSERT INTO manager(Man_ID,Man_Name) VALUES(724521,"Mr. Sharma");
3  INSERT INTO manager(Man_ID,Man_Name) VALUES(632459,"Ms. Athira");
4  INSERT INTO manager(Man_ID,Man_Name) VALUES(231654,"Mr. Rahul");
5  INSERT INTO manager(Man_ID,Man_Name) VALUES(759645,"Mr. Athul");
6  INSERT INTO manager(Man_ID,Man_Name) VALUES(164521,"Ms. Hema");
```

✔ Showing rows 0 - 5 (6 total, Query took 0.0003 seconds.)

SELECT * FROM `manager`

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

☐ Show all | Number of rows: 25 ⌄ Filter rows: Search this table Sort by key: None ⌄

+ Options

				Man_ID	Man_Name
☐	🖉 Edit	ᴣᵢ Copy	⊖ Delete	164521	Ms. Hema
☐	🖉 Edit	ᴣᵢ Copy	⊖ Delete	231654	Mr. Rahul
☐	🖉 Edit	ᴣᵢ Copy	⊖ Delete	453451	Mrs. Seema
☐	🖉 Edit	ᴣᵢ Copy	⊖ Delete	632459	Ms. Athira
☐	🖉 Edit	ᴣᵢ Copy	⊖ Delete	724521	Mr. Sharma
☐	🖉 Edit	ᴣᵢ Copy	⊖ Delete	759645	Mr. Athul

Run SQL query/queries on database webportal: ⑦

```sql
1  INSERT INTO userlogin(User_ID,User_Name,Pass_word,init_date,exp_date) VALUES
2  (100000,"ritika1998","pass001","2021-09-01","2021-10-06"),
3  (120000,"shanaya1997","pass010","2021-09-01","2021-09-01"),
4  (130000,"rahul2206","pass011","2021-09-01","2021-09-01"),
5  (140000,"rohan_23","pass100","2021-09-01","2021-09-01"),
6  (150000,"amritha1990","pass101","2021-09-01","2021-09-01");
```

+ Options

←T→				User_ID	User_Name	Pass_word	init_date	exp_date
☐	🖉 Edit	🏗 Copy	⊖ Delete	100000	ritika1998	pass001	2021-09-01	2021-10-06
☐	🖉 Edit	🏗 Copy	⊖ Delete	120000	shanaya1997	pass010	2021-09-01	2021-09-01
☐	🖉 Edit	🏗 Copy	⊖ Delete	130000	rahul2206	pass011	2021-09-01	2021-09-01
☐	🖉 Edit	🏗 Copy	⊖ Delete	140000	rohan_23	pass100	2021-09-01	2021-09-01
☐	🖉 Edit	🏗 Copy	⊖ Delete	150000	amritha1990	pass101	2021-09-01	2021-09-01

🏗 Structure 📄 SQL 🔍 Search 🗄 Query 📤 Export 📥 Import 🔧 Oper

Run SQL query/queries on database webportal: ⑦

```sql
1  INSERT INTO server_web(Server_ID,User_Log_ID,File_ID,Man_ID) VALUES
2  ("1000000000","100000","1000000001","164521"),
3  ("1000000001","120000","1000000000","724521"),
4  ("1000000002","130000","1000000002","164521"),
5  ("1000000003","140000","1000000003","453451"),
6  ("1000000004","150000","1000000004","724521");
```

```
1  INSERT INTO user(User_ID,Manager_ID,Mob_Num,Address,Company_name,Email_ID,User_Name) VALUES
2  (100000,164521,9847543242,"221 St New Delhi","Google","ritika@hotmail.com","ritika1998"),
3  (120000,724521,9396523419,"Silver Hills Calicut","Tata Consultancy","shanaya@hotmail.com","shanaya1997"),
4  (130000,164521,8606222928,"14 Ram Street Uttar Pradesh","Intel","ravi@gmail.com","rahul2206"),
5  (140000,453451,9765423145,"Nirmala Road Kochi","Micromax","rohan@hotmail.com","rohan_23"),
6  (150000,724521,8907652341,"Pankim Nagar Orissa","Blume Global","amritha@hotmail.com","amritha1990");
```

· Options

				User_ID	Manager_ID	Mob_Num	Address	Company_name	Email_ID	User_Name
☐	Edit	Copy	Delete	100000	164521	9847543242	221 St New Delhi	Google	ritika@hotmail.com	ritika1998
☐	Edit	Copy	Delete	120000	724521	9396523419	Silver Hills Calicut	Tata Consultancy	shanaya@hotmail.com	shanaya1997
☐	Edit	Copy	Delete	130000	164521	8606222928	14 Ram Street Uttar Pradesh	Intel	ravi@gmail.com	rahul2206
☐	Edit	Copy	Delete	140000	453451	9765423145	Nirmala Road Kochi	Micromax	rohan@hotmail.com	rohan_23
☐	Edit	Copy	Delete	150000	724521	8907652341	Pankim Nagar Orissa	Blume Global	amritha@hotmail.com	amritha1990

Alter Table

I alter the table by adding a constraint for the User_Name attribute of the table 'user'. Initially User_Name was not unique so this query changes it to ensure that the values are unique.

Run SQL query/queries on database webportal:

```
1  ALTER TABLE user ADD UNIQUE(User_Name);
```

Delete

Run SQL query/queries on database webportal:

```
1  DELETE FROM server_web WHERE MAN_ID = "453451";
```

✔ 1 row affected. (Query took 0.0042 seconds.)

```
DELETE FROM server_web WHERE MAN_ID = "453451";
```

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

Update, Where

Run SQL query/queries on table webportal.user:

```
1  UPDATE user SET Mob_Num = "6383887969" WHERE User_ID="100000";
```

After updating

		User_ID	Manager_ID	Mob_Num	Address	Company_name	Email_ID	User_Name
☐	✎ Edit ⊞ Copy ⊖ Delete	100000	164521	6383887969	221 St New Delhi	Google	ritika@hotmail.com	ritika1998
☐	✎ Edit ⊞ Copy ⊖ Delete	120000	724521	9396523419	Silver Hills Calicut	Tata Consultancy	shanaya@hotmail.com	shanaya1997
☐	✎ Edit ⊞ Copy ⊖ Delete	130000	164521	8606222928	14 Ram Street Uttar Pradesh	Intel	ravi@gmail.com	rahul2206
☐	✎ Edit ⊞ Copy ⊖ Delete	140000	453451	9765423145	Nirmala Road Kochi	Micromax	rohan@hotmail.com	rohan_23
☐	✎ Edit ⊞ Copy ⊖ Delete	150000	724521	8907652341	Pankim Nagar Orissa	Blume Global	amritha@hotmail.com	amritha1990

Run SQL query/queries on table webportal.userlogin: ⓘ

```
1 UPDATE userlogin SET exp_date = '2021-10-08' WHERE User_ID = '120000';
```

			User_ID	User_Name	Pass_word	init_date	exp_date
☐	🖉 Edit	📋 Copy ⊖ Delete	100000	ritika1998	pass001	2021-09-01	2021-10-06
☐	🖉 Edit	📋 Copy ⊖ Delete	120000	shanaya1997	pass010	2021-09-01	2021-10-08
☐	🖉 Edit	📋 Copy ⊖ Delete	130000	rahul2206	pass011	2021-09-01	2021-09-01
☐	🖉 Edit	📋 Copy ⊖ Delete	140000	rohan_23	pass100	2021-09-01	2021-09-01
☐	🖉 Edit	📋 Copy ⊖ Delete	150000	amritha1990	pass101	2021-09-01	2021-09-01

Auto-Increment

Run SQL query/queries on database webportal: ⓘ

```
1 CREATE TABLE current_stat(
2     id INT(11) NOT NULL AUTO_INCREMENT,
3     f_id CHAR(10) NOT NULL,
4     u_id CHAR(6) NOT NULL,
5     stat CHAR(1) NOT NULL,
6     FOREIGN KEY(f_id) REFERENCES file(File_ID),
7     FOREIGN KEY(u_id) REFERENCES userlogin(User_ID),
8     CONSTRAINT id_pk PRIMARY KEY (id)
9 );
```

If a request made by the user is approved then, it will be inserted into the current_stat table and deleted from the server_web table which holds the set of requests.

Run SQL query/queries on database webportal: ⓘ

```
1  INSERT INTO current_stat(f_id,u_id,stat) VALUES ("1000000001","100000","Y");
2  DELETE FROM server_web WHERE File_ID="1000000001" AND User_Log_ID="100000";
```

			id	f_id	u_id	stat
☐	✏ Edit	📋 Copy ⊖ Delete	1	1000000001	100000	Y

Exists, Views

Run SQL query/queries on table webportal.server_web: ⓘ

```
1  SELECT * FROM server_web WHERE EXISTS (SELECT * FROM manager
2                      WHERE Man_Name = "Ms. Hema");
```

✔ Showing rows 0 - 3 (4 total, Query took 0.0005 seconds.)

SELECT * FROM server_web WHERE EXISTS (SELECT * FROM manager WHERE Man_Name = "Ms. Hema");

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

☐ Show all	Number of rows:	25 ∨	Filter rows:	Search this table	Sort by key:	None ∨

+ Options

			Server_ID	User_Log_ID	File_ID	Man_ID
☐	✏ Edit 📋 Copy ⊖ Delete	1000000000	100000		1000000001	164521
☐	✏ Edit 📋 Copy ⊖ Delete	1000000001	120000		1000000000	724521
☐	✏ Edit 📋 Copy ⊖ Delete	1000000002	130000		1000000002	164521
☐	✏ Edit 📋 Copy ⊖ Delete	1000000004	150000		1000000004	724521

Inner Join

```
SELECT user.User_Name, manager.Man_ID, manager.Man_Name FROM manager INNER JOIN user ON manager.Man_ID=user.Manager_ID;
```

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

☐ Show all | Number of rows: 25 ⌄   Filter rows: Search this table   Sort by key: None ⌄

+ Options

User_Name	Man_ID	Man_Name
ritika1998	164521	Ms. Hema
shanaya1997	724521	Mr. Sharma
rahul2206	164521	Ms. Hema
rohan_23	453451	Mrs. Seema
amritha1990	724521	Mr. Sharma

☐ Show all | Number of rows: 25 ⌄   Filter rows: Search this table   Sort by key: None ⌄

Left Join

Run SQL query/queries on database webportal: ⊙

```
1  SELECT user.User_Name, manager.Man_ID, manager.Man_Name
2  FROM user
3  LEFT JOIN manager ON manager.Man_ID=user.Manager_ID
4  ORDER BY manager.Man_Name;
```

```
SELECT user.User_Name, manager.Man_ID, manager.Man_Name FROM user LEFT JOIN manager ON manager.Man_ID=user.Manager_ID ORDER BY manager.Man_Name;
```

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

☐ Show all | Number of rows: 25 ⌄   Filter rows: Search this table

+ Options

User_Name	Man_ID	Man_Name ▲ 1
amritha1990	724521	Mr. Sharma
shanaya1997	724521	Mr. Sharma
rohan_23	453451	Mrs. Seema
rahul2206	164521	Ms. Hema
ritika1998	164521	Ms. Hema

Right Join

Run SQL query/queries on database webportal:

```
1  SELECT server_web.User_Log_ID,server_web.File_ID,manager.Man_Name
2  FROM manager
3  RIGHT JOIN server_web ON manager.Man_ID=server_web.Man_ID;
```

✔ Showing rows 0 - 2 (3 total, Query took 0.0013 seconds.)

SELECT server_web.User_Log_ID,server_web.File_ID,manager.Man_Name FROM manager RIGHT JOIN server_web ON manager.Man_ID=server_web.Man_ID;

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

☐ Show all | Number of rows: 25 ⌄ | Filter rows: Search this table | Sort by key: None ⌄

+ Options

User_Log_ID	File_ID	Man_Name
120000	1000000000	Mr. Sharma
130000	1000000002	Ms. Hema
150000	1000000004	Mr. Sharma

Union, Union All

✔ Showing rows 0 - 5 (6 total, Query took 0.0035 seconds.)

SELECT Manager_ID from user UNION SELECT Man_ID from manager;

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

☐ Show all | Number of rows: 25 ⌄ | Filter rows: Search this table

+ Options

Manager_ID
164521
453451
724521
231654
632459
759645

+ Options

Manager_ID
164521
164521
453451
724521
724521
164521
231654
453451
632459
724521
759645

Like

Run SQL query/queries on database webportal: ❓

```
1 SELECT * from user WHERE Company_name LIKE "%oo%";
```

⊢ Options

User_ID	Manager_ID	Mob_Num	Address	Company_name	Email_ID	User_Name
100000	164521	6383887969	221 St New Delhi	Google	ritika@hotmail.com	ritika1998

Group By

✔ Showing rows 0 - 2 (3 total, Query took 0.0012 seconds.)

```sql
SELECT * FROM userlogin GROUP BY exp_date;
```

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

| ☐ Show all | Number of rows: | 25 ▾ | Filter rows: | Search this table | Sort by key: | None ▾ |

+ Options

					User_ID	User_Name	Pass_word	init_date	exp_date
☐	🖊 Edit	Copy	⊖ Delete		130000	rahul2206	pass011	2021-09-01	2021-09-01
☐	🖊 Edit	Copy	⊖ Delete		100000	ritika1998	pass001	2021-09-01	2021-10-06
☐	🖊 Edit	Copy	⊖ Delete		120000	shanaya1997	pass010	2021-09-01	2021-10-08

✔ Showing rows 0 - 1 (2 total, Query took 0.0010 seconds.)

```sql
SELECT User_Name, exp_date FROM userlogin GROUP BY exp_date HAVING User_Name LIKE "r%";
```

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

| ☐ Show all | Number of rows: | 25 ▾ | Filter rows: | Search this table | Sort by key: | None ▾ |

+ Options

					User_Name	exp_date
☐	🖊 Edit	Copy	⊖ Delete		rahul2206	2021-09-01
☐	🖊 Edit	Copy	⊖ Delete		ritika1998	2021-10-06

Aggregate

Run SQL query/queries on database webportal: ⓘ

```sql
1 SELECT MAX(exp_date) FROM userlogin;
2 SELECT MIN(exp_date) FROM userlogin;
3 SELECT COUNT(exp_date) FROM userlogin;
```

✔ Showing rows 0 - 0 (1 total, Query took 0.0026 seconds.)

```sql
SELECT MAX(exp_date) FROM userlogin;
```

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

☐ Show all | Number of rows: 25 ˅   Filter rows: Search this table

+ Options

MAX(exp_date)

2021-10-08

☐ Show all | Number of rows: 25 ˅   Filter rows: Search this table

Query results operations

🖨 Print   ✂ Copy to clipboard   📤 Export   📊 Display chart   🔲 Create view

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

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

```sql
SELECT MIN(exp_date) FROM userlogin;
```

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

☐ Show all | Number of rows: 25 ˅   Filter rows: Search this table

+ Options

MIN(exp_date)

2021-09-01

☐ Show all | Number of rows: 25 ˅   Filter rows: Search this table

Query results operations

🖨 Print   ✂ Copy to clipboard   📤 Export   📊 Display chart   🔲 Create view

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

✔ Your SQL query has been executed successfully.

```sql
SELECT COUNT(exp_date) FROM userlogin;
```

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

+ Options

COUNT(exp_date)

5

Query results operations

🖨 Print   ✂ Copy to clipboard   📤 Export   📊 Display chart   🔲 Create view

SQL Injection

A table called temp was created with the following entries. When the below input is given

<div align="center">

`Pavithra' UNION SELECT * FROM temp where '1'='1`

</div>

In the php code, the sql query is as follows

```php
$sql= "SELECT * FROM temp where firstname='$name'";

$result = $conn->query($sql);
$i=0;
while($i<10)
{
    echo "<br>";
    $i=$i+1;
}
while($row = $result->fetch_assoc()) {
    echo $row['firstname']." ".$row['pwd']. "<br>";
}

mysqli_close($conn);
```

So, the above mentioned input results in a statement injection and the whole table is displayed.

✔ Showing rows 0 - 2 (3 total, Query took 0.0007 seconds.)

SELECT * FROM `temp`

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

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

⊢ Options

		id	firstname	pwd
☐	🖉 Edit ≟ Copy ⊖ Delete	1	Pavithra	password123
☐	🖉 Edit ≟ Copy ⊖ Delete	2	Ritika	password345
☐	🖉 Edit ≟ Copy ⊖ Delete	3	Shilpa	password678

Name: Pavithra' UNION SELECT   SUBMIT

Name: [   ] SUBMIT

Pavithra password123
Ritika password345
Shilpa password678