

Name	Sujal Sandeep Dingankar, Harsha Tanaji Surwase																																																																																																																																																																																																		
UID	2024301005, 2024301033																																																																																																																																																																																																		
Experiment No.	5																																																																																																																																																																																																		
Aim	Set operations and date time commands.																																																																																																																																																																																																		
Problem Statement	Set operations Union, intersect/intersection, except, rename using as, set division. The requirement for basic set operation is that the relation should have same arity and taken from same domain.																																																																																																																																																																																																		
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sec)</div>	id	firstname	lastname	contact	email	bloodgroup	Age	healthstatus	101	Sujal	Dingankar	7798802841	sujal.dingankar@spit.ac.in	O+	20	Healthy	102	Shreeya	Nemade	7698231082	shreeya.nemade@spit.ac.in	A+	19	Healthy	103	Harsha	Surwase	5612798561	harsha.surwase@spit.ac.in	B+	21	Healthy	104	Avi	Patil	1234598745	avinash.patil@spit.ac.in	AB+	18	Healthy	105	Shruti	Bhuvad	455612345	shruti.bhuvad@spit.ac.in	A+	22	Healthy	106	John	Doe	7894561230	john.doe@example.com	O+	25	Healthy	107	Jane	Smith	7894567890	jane.smith@example.com	O+	30	Healthy	108	Mark	Taylor	7894563456	mark.taylor@example.com	O+	19	Healthy	109	Lucy	Brown	7894569876	lucy.brown@example.com	A+	35	Healthy	id	firstname	lastname	contact	email	bloodgroup	healthstatus	request_id	request_date	101	Shubham	Bhuvad	7798521123	shubham.bhuvad@spit.ac.in	A+	Healthy	R001	2024-10-05	102	Sanjay	Kadam	4568912345	sanjay.bhuvad@spit.ac.in	AB+	Healthy	R002	2024-10-06	103	Harshvardan	Nemade	777894561	harshavardan.nemade@spit.ac.in	O+	Healthy	R003	2024-10-14	104	Soham	Bhojane	564781234	soham.bhojane@spit.ac.in	A+	Healthy	R004	2024-10-20	105	Shruti	Bhuvad	7798802841	sujal.dingankar@spit.ac.in	O+	Healthy	R005	2024-10-25	id	bloodgroup	quantity	expiry_date	bloodStatus	101	A+	50	2024-10-13	Available	102	B+	100	2024-10-09	Available	103	AB+	150	2024-10-15	Expired	104	O+	170	2024-10-20	Available	105	A+	60	2024-10-14	Available	id	donar_id	blood_id	donee_id	donation_date	receive_date	1	101	101	101	2024-10-01	2024-10-05	2	102	102	NULL	2024-10-15	NULL	3	103	103	NULL	2024-10-20	NULL	4	104	104	104	2024-10-16	2024-10-12
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Union:

```
mysql> Select id, firstname, lastname from Donor
-> UNION
-> Select id, firstname, lastname from Donne;
```

id	firstname	lastname
101	Sujal	Dingankar
102	Shreeya	Nemade
103	Harsha	Surwase
104	Avi	Patil
105	Shruti	Bhuvad
106	John	Doe
107	Jane	Smith
108	Mark	Taylor
109	Lucy	Brown
101	Shubham	Bhuvad
102	Sanjay	Kadam
103	Harshvardan	Nemade
104	Soham	Bhojane

13 rows in set (0.00 sec)

This query combines the `id`, `firstName`, and `lastName` from the `Donor` table and the `id`, `firstName`, and `lastName` from the `Donne` table into a single result set using `UNION`, eliminating duplicates.

Except/Minus:

```
mysql> Select id, firstname, lastname from Donor
-> Except
-> Select id, firstname, lastname from Donne;
```

id	firstname	lastname
101	Sujal	Dingankar
102	Shreeya	Nemade
103	Harsha	Surwase
104	Avi	Patil
105	Shruti	Bhuvad
106	John	Doe
107	Jane	Smith
108	Mark	Taylor
109	Lucy	Brown

9 rows in set (0.00 sec)

This query retrieves all records from the `Donor` table that are not present in the `Donne` table, based on the matching columns `id`, `firstName`, and `lastName`, using the `EXCEPT` operation.

Intersect:

```
mysql> Select id, firstname, lastname from Donor
-> INTERSECT
-> Select id, firstname, lastname from Donne;
+-----+-----+-----+
| id | firstname | lastname |
+-----+-----+-----+
| 105 | Shruti    | Bhuvad   |
+-----+-----+-----+
1 row in set (0.00 sec)
```

This query retrieves the common id and firstName, lastName pairs from the Donor and Donne tables, returning records that exist in both tables.

Set Division and Rename using As:

```
mysql> SELECT
->     D.id AS donor_id,
->     D.firstname AS first_name,
->     D.lastname AS last_name,
->     COUNT(B.id) AS total_donations
-> FROM
->     Donor D
-> LEFT JOIN
->     blood_donation B ON D.id = B.donar_id
-> GROUP BY
->     D.id, D.firstname, D.lastname;
+-----+-----+-----+-----+
| donor_id | first_name | last_name | total_donations |
+-----+-----+-----+-----+
| 101      | Sujal      | Dingankar | 1                |
| 102      | Shreeya    | Nemade    | 1                |
| 103      | Harsha     | Surwase   | 1                |
| 104      | Avi        | Patil     | 1                |
| 105      | Shruti     | Bhuvad    | 0                |
| 106      | John       | Doe       | 0                |
| 107      | Jane       | Smith     | 0                |
| 108      | Mark       | Taylor    | 0                |
| 109      | Lucy       | Brown     | 0                |
+-----+-----+-----+-----+
9 rows in set (0.00 sec)
```

This query retrieves each donor's ID, first name, last name, and the number of donations they've made, ensuring the count matches the total donations recorded for that donor.

Date Functions in SQL:

```
mysql> Select * from Blood where expiry_date <= '2024-10-15';
+-----+-----+-----+-----+-----+
| id | bloodgroup | quantity | expiry_date | bloodStatus |
+-----+-----+-----+-----+-----+
| 101 | A+         | 50       | 2024-10-13 | Available   |
| 102 | B+         | 100      | 2024-10-09 | Available   |
| 103 | AB+        | 150      | 2024-10-15 | Expired     |
| 105 | A+         | 60       | 2024-10-14 | Available   |
+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

This query retrieves expired blood units from the Blood table.

1. Select the current date and time using NOW() :

```
mysql> SELECT NOW() AS CURRENT_DATETIME;
+-----+
| CURRENT_DATETIME |
+-----+
| 2024-10-17 23:01:35 |
+-----+
1 row in set (0.00 sec)
```

2. Select only the current date using CURDATE():

```
mysql> SELECT CURDATE() AS CurrentDate;
+-----+
| CurrentDate |
+-----+
| 2024-10-17 |
+-----+
1 row in set (0.00 sec)
```

3. Add 10 days to the request date of all donors using DATE_ADD():

```
mysql> SELECT id, firstname, lastname, request_date,
-> DATE_ADD(request_date, INTERVAL 10 DAY) AS new_request_date
-> FROM donne;
+-----+-----+-----+-----+-----+
| id | firstname | lastname | request_date | new_request_date |
+-----+-----+-----+-----+-----+
| 101 | Shubham | Bhuvad | 2024-10-05 | 2024-10-15 |
| 102 | Sanjay | Kadam | 2024-10-06 | 2024-10-16 |
| 103 | Harshvardan | Nemade | 2024-10-14 | 2024-10-24 |
| 104 | Soham | Bhojane | 2024-10-20 | 2024-10-30 |
| 105 | Shruti | Bhuvad | 2024-10-25 | 2024-11-04 |
| 112 | Alice | Williams | NULL | NULL |
+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

4. Subtract 7 days from the blood expiry date using DATE_SUB():

```
mysql> SELECT id, bloodgroup, quantity, expiry_date,
-> DATE_SUB(expiry_date, INTERVAL 7 DAY) AS new_expiry_date
-> FROM blood;
+-----+-----+-----+-----+-----+
| id | bloodgroup | quantity | expiry_date | new_expiry_date |
+-----+-----+-----+-----+-----+
| 101 | A+ | 50 | 2024-10-13 | 2024-10-06 |
| 102 | B+ | 100 | 2024-10-09 | 2024-10-02 |
| 103 | AB+ | 150 | 2024-10-15 | 2024-10-08 |
| 104 | O+ | 170 | 2024-10-20 | 2024-10-13 |
| 105 | A+ | 60 | 2024-10-14 | 2024-10-07 |
+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

5. Calculate the difference in days between the current date and request date using **DATEDIFF()**:

```
mysql> SELECT id, firstname, lastname, request_date,
->          DATEDIFF(CURDATE(), request_date) AS days_since_request
-> FROM donne;
```

id	firstname	lastname	request_date	days_since_request
101	Shubham	Bhuvad	2024-10-05	12
102	Sanjay	Kadam	2024-10-06	11
103	Harshvardan	Nemade	2024-10-14	3
104	Soham	Bhojane	2024-10-20	-3
105	Shruti	Bhuvad	2024-10-25	-8
112	Alice	Williams	NULL	NULL

6 rows in set (0.00 sec)

6. Extract the year, month, and day from the request date using **EXTRACT()**:

```
mysql> SELECT id, firstname, lastname, request_date,
->          EXTRACT(YEAR FROM request_date) AS year,
->          EXTRACT(MONTH FROM request_date) AS month,
->          EXTRACT(DAY FROM request_date) AS day
-> FROM donne;
```

id	firstname	lastname	request_date	year	month	day
101	Shubham	Bhuvad	2024-10-05	2024	10	5
102	Sanjay	Kadam	2024-10-06	2024	10	6
103	Harshvardan	Nemade	2024-10-14	2024	10	14
104	Soham	Bhojane	2024-10-20	2024	10	20
105	Shruti	Bhuvad	2024-10-25	2024	10	25
112	Alice	Williams	NULL	NULL	NULL	NULL

6 rows in set (0.00 sec)

7. Format the request date in a different format using **DATE_FORMAT()**:

```
mysql> SELECT id, firstname, lastname,
->          DATE_FORMAT(request_date, '%d-%m-%Y') AS formatted_request_date
-> FROM donne;
```

id	firstname	lastname	formatted_request_date
101	Shubham	Bhuvad	05-10-2024
102	Sanjay	Kadam	06-10-2024
103	Harshvardan	Nemade	14-10-2024
104	Soham	Bhojane	20-10-2024
105	Shruti	Bhuvad	25-10-2024
112	Alice	Williams	NULL

6 rows in set (0.00 sec)

8. Find all donors whose request date is greater than or equal to the current date:

```
mysql> SELECT *
-> FROM donne
-> WHERE request_date >= CURDATE();
```

id	firstname	lastname	contact	email	bloodgroup	healthstatus	request_id	request_date
104	Soham	Bhojane	564781234	soham.bhojane@spit.ac.in	A+	Healthy	R004	2024-10-20
105	Shruti	Bhuvad	7798802841	sujal.dingankar@spit.ac.in	O+	Healthy	R005	2024-10-25

2 rows in set (0.00 sec)

9. Find all blood units that are expiring within the next 7 days:

```
mysql> SELECT *
-> FROM blood
-> WHERE expiry_date BETWEEN CURDATE() AND DATE_ADD(CURDATE(), INTERVAL 7 DAY);
```

id	bloodgroup	quantity	expiry_date	bloodStatus
104	O+	170	2024-10-20	Available

1 row in set (0.00 sec)

10. Get the most recent blood request made by any donor:

```
mysql> SELECT id, firstname, lastname, request_date
-> FROM donne
-> ORDER BY request_date DESC
-> LIMIT 1;
```

id	firstname	lastname	request_date
105	Shruti	Bhuvad	2024-10-25

1 row in set (0.00 sec)

Conclusion

From this experiment, I learnt different set operations performed in SQL & also implemented them.