

NAME: Vaishnavi Kahar
INTERN ID: I0321

```
mysql> SHOW TABLES;
```

```
+-----+  
| Tables_in_appointment_system |  
+-----+  
| appointments |  
| clinics      |  
| doctors      |  
| users        |  
+-----+  
4 rows in set (0.01 sec)
```

```
mysql> SELECT * FROM appointments;
```

```
+-----+-----+-----+-----+-----+-----+-----+  
| id | user_id | doctor_id | clinic_id | appointment_time | status | created_at |  
+-----+-----+-----+-----+-----+-----+-----+  
| 1 | 1 | 1 | 1 | 2024-06-28 09:00:00 | booked | 2024-06-28 20:16:57 |  
| 2 | 2 | 2 | 2 | 2024-06-29 10:30:00 | booked | 2024-06-28 20:16:57 |  
| 3 | 3 | 3 | 3 | 2024-06-30 14:00:00 | booked | 2024-06-28 20:16:57 |  
| 4 | 4 | 4 | 4 | 2024-07-01 11:00:00 | booked | 2024-06-28 20:16:57 |  
| 5 | 5 | 5 | 5 | 2024-07-02 15:30:00 | booked | 2024-06-28 20:16:57 |  
| 6 | 6 | 1 | 1 | 2024-07-03 16:00:00 | booked | 2024-06-28 20:16:57 |  
| 7 | 2 | 2 | 2 | 2024-06-26 09:00:00 | cancelled | 2024-06-28 20:16:57 |  
| 8 | 3 | 3 | 3 | 2024-06-27 10:30:00 | booked | 2024-06-28 20:16:57 |  
| 9 | 4 | 1 | 4 | 2024-06-28 14:00:00 | cancelled | 2024-06-28 20:16:57 |  
| 10 | 5 | 3 | 5 | 2024-06-29 11:00:00 | cancelled | 2024-06-28 20:16:57 |  
| 11 | 6 | 2 | 1 | 2024-06-30 15:30:00 | booked | 2024-06-28 20:16:57 |  
| 12 | 1 | 4 | 2 | 2024-07-01 16:00:00 | booked | 2024-06-28 20:16:57 |  
| 13 | 2 | 5 | 3 | 2024-07-02 08:30:00 | cancelled | 2024-06-28 20:16:57 |  
| 14 | 3 | 4 | 4 | 2024-07-03 09:00:00 | booked | 2024-06-28 20:16:57 |  
| 15 | 4 | 5 | 5 | 2024-07-04 10:30:00 | booked | 2024-06-28 20:16:57 |  
+-----+-----+-----+-----+-----+-----+-----+  
15 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM clinics;
```

```
+-----+-----+  
| id | name |  
+-----+-----+  
| 1 | Clinic A |  
| 2 | Clinic B |  
| 3 | Clinic C |  
| 4 | Clinic D |  
| 5 | Clinic E |  
+-----+-----+  
5 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM doctors;
```

```
+-----+-----+  
| id | name |  
+-----+-----+  
| 1 | Dr. Alice |  
| 2 | Dr. Bob |  
| 3 | Dr. Charlie |  
| 4 | Dr. David |  
| 5 | Dr. Eve |  
+-----+-----+  
5 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM users;
```

```
+-----+-----+-----+  
| id | name | birthdate |  
+-----+-----+-----+  
| 1 | Jane Doe | 1990-06-28 |  
| 2 | Bob Smith | 1985-06-29 |  
| 3 | Samuel Johnson | 1978-06-30 |  
| 4 | Linda Brown | 1995-07-01 |  
| 5 | George Wilson | 1980-07-02 |  
| 6 | Anna Lee | 1992-07-03 |  
+-----+-----+-----+  
6 rows in set (0.00 sec)
```

1. All appointments booked in last 7 days for a doctor

QUERY:

```
SELECT *
FROM appointments
WHERE doctor_id = 1
      AND created_at >= NOW() - INTERVAL 7 DAY;
```

```
mysql> SELECT *
      -> FROM appointments
      -> WHERE doctor_id = 1
[      ->   AND created_at >= NOW() - INTERVAL 7 DAY;
```

id	user_id	doctor_id	clinic_id	appointment_time	status	created_at
1	1	1	1	2024-06-28 09:00:00	booked	2024-06-28 20:16:57
6	6	1	1	2024-07-03 16:00:00	booked	2024-06-28 20:16:57
9	4	1	4	2024-06-28 14:00:00	cancelled	2024-06-28 20:16:57

3 rows in set (0.01 sec)

EXPLAIN ON QUERY:

```
mysql> EXPLAIN SELECT *
      -> FROM appointments
      -> WHERE doctor_id = 1
[      ->   AND created_at >= NOW() - INTERVAL 7 DAY;
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	appointments	NULL	ref	doctor_id	doctor_id	4	const	3	33.33	Using where

1 row in set, 1 warning (0.00 sec)

2. All appointments booked in last 2 days and scheduled within next 5 hours for a doctor

QUERY:

```
SELECT *
FROM appointments
WHERE doctor_id = 1
      AND created_at >= NOW() - INTERVAL 2 DAY
      AND appointment_time <= NOW() + INTERVAL 5 HOUR;
```

```
mysql> SELECT *
-> FROM appointments
-> WHERE doctor_id = 1
-> AND created_at >= NOW() - INTERVAL 2 DAY
[ -> AND appointment_time <= NOW() + INTERVAL 5 HOUR;
```

id	user_id	doctor_id	clinic_id	appointment_time	status	created_at
1	1	1	1	2024-06-28 09:00:00	booked	2024-06-28 20:16:57
9	4	1	4	2024-06-28 14:00:00	cancelled	2024-06-28 20:16:57

```
2 rows in set (0.01 sec)
```

EXPLAIN ON QUERY:

```
mysql> EXPLAIN SELECT *
-> FROM appointments
-> WHERE doctor_id = 1
-> AND created_at >= NOW() - INTERVAL 2 DAY
[ -> AND appointment_time <= NOW() + INTERVAL 5 HOUR;
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	appointments	NULL	ref	doctor_id	doctor_id	4	const	3	11.11	Using where

```
1 row in set, 1 warning (0.02 sec)
```

3. Users who have at least 1 appointment and have their birthday coming in next 5 days

QUERY:

```
SELECT DISTINCT u.*
FROM users u
JOIN appointments a ON u.id = a.user_id
WHERE DATE_FORMAT(u.birthdate, '%m-%d') BETWEEN DATE_FORMAT(CURDATE(),
'%m-%d') AND DATE_FORMAT(CURDATE() + INTERVAL 5 DAY, '%m-%d');
```

QUERY and EXPLAIN ON QUERY:

```
mysql> SELECT DISTINCT u.*
  -> FROM users u
  -> JOIN appointments a ON u.id = a.user_id
  -> WHERE DATE_FORMAT(u.birthdate, '%m-%d') BETWEEN DATE_FORMAT(CURDATE(), '%m-%d') AND DATE_FORMAT(CURDATE() + INTERVAL 5 DAY, '%m-%d');
```

id	name	birthdate
1	Jane Doe	1990-06-28
2	Bob Smith	1985-06-29
3	Samuel Johnson	1978-06-30
4	Linda Brown	1995-07-01
5	George Wilson	1980-07-02
6	Anna Lee	1992-07-03

6 rows in set (0.00 sec)

```
mysql> EXPLAIN SELECT DISTINCT u.*
  -> FROM users u
  -> JOIN appointments a ON u.id = a.user_id
  -> WHERE DATE_FORMAT(u.birthdate, '%m-%d') BETWEEN DATE_FORMAT(CURDATE(), '%m-%d') AND DATE_FORMAT(CURDATE() + INTERVAL 5 DAY, '%m-%d');
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	u	NULL	ALL	PRIMARY	NULL	NULL	NULL	6	100.00	Using where; Using temporary
1	SIMPLE	a	NULL	ref	user_id	user_id	4	appointment_system.u.id	1	100.00	Using index; Distinct

2 rows in set, 1 warning (0.00 sec)

4. Appointments for a particular patient in the last 7 days

QUERY:

```
SELECT *
FROM appointments
WHERE user_id = 1
AND created_at >= NOW() - INTERVAL 7 DAY;
```

QUERY and EXPLAIN ON QUERY:

```
mysql> SELECT *
  -> FROM appointments
  -> WHERE user_id = 1
  -> AND created_at >= NOW() - INTERVAL 7 DAY;
```

id	user_id	doctor_id	clinic_id	appointment_time	status	created_at
1	1	1	1	2024-06-28 09:00:00	booked	2024-06-28 20:16:57
12	1	4	2	2024-07-01 16:00:00	booked	2024-06-28 20:16:57

2 rows in set (0.02 sec)

```
mysql> EXPLAIN SELECT *
  -> FROM appointments
  -> WHERE user_id = 1
  -> AND created_at >= NOW() - INTERVAL 7 DAY;
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	appointments	NULL	ref	user_id	user_id	4	const	2	33.33	Using where

1 row in set, 1 warning (0.00 sec)

5. Appointment cancellation percentage for a doctor by clinic

QUERY:

```
SELECT c.name AS clinic_name,
       d.name AS doctor_name,
       (SUM(a.status = 'cancelled') / COUNT(*)) * 100 AS
cancellation_percentage
FROM appointments a
JOIN clinics c ON a.clinic_id = c.id
JOIN doctors d ON a.doctor_id = d.id
WHERE a.doctor_id = 3
GROUP BY c.id, d.id;
```

QUERY and EXPLAIN ON QUERY:

```
mysql> SELECT c.name AS clinic_name,
->         d.name AS doctor_name,
->         (SUM(a.status = 'cancelled') / COUNT(*)) * 100 AS cancellation_percentage
-> FROM appointments a
-> JOIN clinics c ON a.clinic_id = c.id
-> JOIN doctors d ON a.doctor_id = d.id
-> WHERE a.doctor_id = 3
-> GROUP BY c.id, d.id;
```

clinic_name	doctor_name	cancellation_percentage
Clinic C	Dr. Charlie	0.0000
Clinic B	Dr. Charlie	100.0000
Clinic E	Dr. Charlie	100.0000

3 rows in set (0.01 sec)

```
mysql> EXPLAIN SELECT c.name AS clinic_name,
->         d.name AS doctor_name,
->         (SUM(a.status = 'cancelled') / COUNT(*)) * 100 AS cancellation_percentage
-> FROM appointments a
-> JOIN clinics c ON a.clinic_id = c.id
-> JOIN doctors d ON a.doctor_id = d.id
-> WHERE a.doctor_id = 3
-> GROUP BY c.id, d.id;
```

id	select_type	table	partitions	type	possible_keys	key	key_len	ref	rows	filtered	Extra
1	SIMPLE	d	NULL	const	PRIMARY	PRIMARY	4	const	1	100.00	Using temporary
1	SIMPLE	a	NULL	ref	doctor_id,clinic_id	doctor_id	4	const	3	100.00	NULL
1	SIMPLE	c	NULL	eq_ref	PRIMARY	PRIMARY	4	appointment_system.a.clinic_id	1	100.00	NULL

3 rows in set, 1 warning (0.01 sec)