

PERFORM USER REQUIREMENT: RAILWAY MANAGEMENT SYSTEM

1. List of all trains?

```
select * from train;
```

TRAIN_ID	TRAIN_NAME	TRAIN_TYPE
101	Cennai Express	Express
102	Bangloare Mail	Mail
103	Rajdhani express	Express
104	Duronto Express	Express
105	Garib Rath	Economy
106	Humsafar Express	Express

2. Get passengers details along with their booked tickets?

```
SELECT
    p.passenger_id,
    p.first_name,
    p.last_name,
    t.train_id,
    t.travel_date
FROM
    passengers p,
    tickets t
WHERE
    p.passenger_id = t.passenger_id;
```

PASSENGER_ID	FIRST_NAME	LAST_NAME	TRAIN_ID	TRAVEL_DATE
1002	Jane	Smith	101	25-12-24
1004	Emily	Davis	107	26-01-25
1007	David	Garcia	102	31-12-24
1008	Sophia	Martinez	104	12-01-25
1009	James	Lee	103	15-01-25
1009	James	Lee	103	15-01-25
1015	Charlotte	Young	114	26-01-25
1020	Andrew	Scott	110	17-01-25
1021	Ava	Green	115	31-12-24
1022	Joseph	Adms	109	29-01-25

3.Count the total number of passengers

```
select count(*) as Total_passengers from passengers;
```

TOTAL_PASSENGERS
50

4.Calculate the total fare for two specific tickets?

```
SELECT  
    fare1 + fare2 AS total_fare  
FROM  
    (  
        SELECT  
            fare AS fare1  
        FROM  
            tickets  
        WHERE  
            ticket_id = 10002  
    ),  
    (  
        SELECT  
            fare AS fare2  
        FROM  
            tickets  
        WHERE  
            ticket_id = 10004  
    );
```

TOTAL_FARE
3500

5.calculate the total fare for a group booking of 5 tickets at a fare of 500 each?

```
select 5*500 as Total_group_fare from dual;
```

TOTAL_GROUP_FARE
2500

6. List of all unique source and destination station from tickets?

```
SELECT
    source_station_id
FROM
    tickets
UNION
SELECT
    destination_station_id
FROM
    tickets;
```

TRAIN_ID	TRAIN_NAME
112	palace on Wheels
114	Sampoorna Kranti express
104	Duronto Express
103	Rajdhani express
111	Konkan kanya

7. Find trains with tickets priced above the average fare?

```
select train_id, train_name from train where train_id in
    (select distinct train_id from tickets where fare >
        (select avg(fare) from tickets));
```

TRAIN_ID	TRAIN_NAME
103	Rajdhani express
104	Duronto Express
111	Konkan kanya
112	palace on Wheels
114	Sampoorna Kranti express

8. Find passengers who booked more than one ticket?

```
select p.passenger_id, p.first_name, p.last_name from passengers p where  
    (select count(*) from tickets tk where tk.passenger_id=p.passenger_id)>1;
```

PASSENGER_ID	FIRST_NAME	LAST_NAME
1001	John	Doe
1002	Jane	Smith
1003	Michel	Brown
1004	Emily	Davis
1005	Chris	Wilson
1006	Olivia	Johnson
1007	David	Garcia
1008	Sophia	Martinez

9. Find the fare difference between two consecutive tickets?

```
select ticket_id, fare, lag(fare) over (order by Booking_date),  
    fare-lag(fare) over (order by booking_date) from tickets;
```

TICKET_ID	FARE	LAG(FARE)OVER(ORDERBYBOOKING_DATE)	FARE_DIFFERENCE
10003	1500	(null)	(null)
10019	2500	1500	1000
10015	500	2500	-2000
10014	2500	500	2000
10013	2000	2500	-500
10012	1800	2000	-200
10016	2400	1800	600

10. Predict the fare of the next ticket?

```
select ticket_id, fare, lead(fare) over (order by Booking_date) from tickets;
```

TICKET_ID	FARE	LEAD(FARE)OVER(ORDERBYBOOKING_DATE)
10003	1500	2500
10019	2500	500
10015	500	2500
10014	2500	2000
10013	2000	1800
10012	1800	2400

11.Total Number of trains passing through each station?

```
select source_station_id, count(passenger_id) as passenger_count from tickets group by source_station_id;
```

SOURCE_STATION_ID	PASSENGER_COUNT
1	3
2	6
4	2
8	3
3	2
7	1
9	1

12.Number of passenger travelling in each class per train?

```
select train_id,class,count(passenger_id) as passenger_count from tickets group by train_id,class;
```

TRAIN_ID	CLASS	PASSENGER_COUNT
104	AC	1
109	NON-AC	2
104	SLEEPER	1
114	SLEEPER	1
102	NON-AC	1
115	AC	1
101	AC	1
111	SLEEPER	1
103	AC	2

13.Maximum, Minimum fare for each train?

```
select train_id,max(fare),min(fare) from tickets group by train_id;
```

TRAIN_ID	MAX(FARE)	MIN(FARE)
112	2400	1300
102	1500	1500
110	1300	500
101	1000	1000
107	1200	1200
114	2500	2000
104	2700	1500
115	1000	1000

14. Calculate revenue per day for each train?

```
select train_id, trunc(booking_date), sum(fare) from tickets group by train_id, trunc(booking_date) order by sum(fare);
```

TRAIN_ID	TRUNC(BOOKING_DATE)	SUM(FARE)
110	20-12-24	500
109	24-01-25	900
109	26-12-24	900
115	23-12-24	1000
101	23-12-24	1000
107	24-01-25	1200
112	23-12-24	1300
110	23-12-24	1300

15. Find the top 3 revenue-generating trains?

```
select train_id, sum(fare) total_revenue from tickets group by train_id order by sum(fare) desc fetch first 3 rows only;
```

TRAIN_ID	TOTAL_REVENUE
103	6800
114	4500
104	4200

16. Identify passenger who travel frequently?

```
SELECT
    *
FROM
    tickets;

SELECT
    p.passenger_id,
    p.first_name,
    p.last_name,
    COUNT(ticket_id)
FROM
    passengers p
    JOIN tickets t ON p.passenger_id = t.passenger_id
GROUP BY
    p.passenger_id,
    p.first_name,
    p.last_name;
```

PASSENGER_ID	FIRST_NAME	LAST_NAME	COUNT(TICKET_ID)
1009	James	Lee	2
1022	Joseph	Adms	3

17. Find second highest fare collected for each train?

```
SELECT
    train_id, fare
FROM
    (
        SELECT
            train_id, fare, RANK() OVER(
                PARTITION BY train_id
                ORDER BY fare DESC
            ) AS rank
        FROM tickets
    ) ranked_fares
WHERE rank = 2;
```

TRAIN_ID	FARE
104	1500
110	500
112	1300
114	2000

18.Display train details along with the total number of passengers who travelled on each train?

```
select t.train_id,t.train_name,(select count(*)from tickets tk where tk.train_id=t.train_id)as passenger_count from train t;
```

TRAIN_ID	TRAIN_NAME	PASSENGER_COUNT
101	Cennai Express	1
102	Bangloare Mail	1
103	Rajdhani express	3
104	Duronto Express	2
105	Garib Rath	0
106	Humsafar Express	0
107	Intercity Express	1
108	Tejas Express	0
109	Tejas Baharat	2
110	vandhe Baharat	2

19.List of all trains and their routes, include trains that have no assigned routes?

```
SELECT
    t.train_id
    || '-'
    || t.train_name,
    r.station_id,
    r.boarding_time
FROM
    train    t,
    routes   r
WHERE
    t.train_id = r.train_id (+)
    AND t.train_name LIKE '%i%';
```


T.TRAIN_ID ' ' T.TRAIN_NAME	STATION_ID	BOARDING_TIME
101-Cennai Express	2	31-12-24 12:30:00.000000000 PM
102-Bangloare Mail	5	27-12-24 09:15:05.000000000 AM
102-Bangloare Mail	6	30-12-24 07:15:00.000000000 AM
103-Rajdhani express	8	27-02-25 03:15:00.000000000 AM
105-Garib Rath	7	13-01-25 09:10:00.000000000 AM
107-Intercity Express	10	26-01-25 09:30:00.000000000 AM
113-Mandovi express	(null)	(null)
114-Sampoorna Kranti express	(null)	(null)
115-Howrah Kranti express	(null)	(null)

20.Identity trains listed in routes but with no tickets booked in the tickets table?

```
select train_id from routes minus select train_id from tickets;
```

TRAIN_ID
105
106
108