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My SQL Project

# AIRLINE MANAGEMENT SYSTEM

MAKING TRAVEL EASY AND MEMORABLE

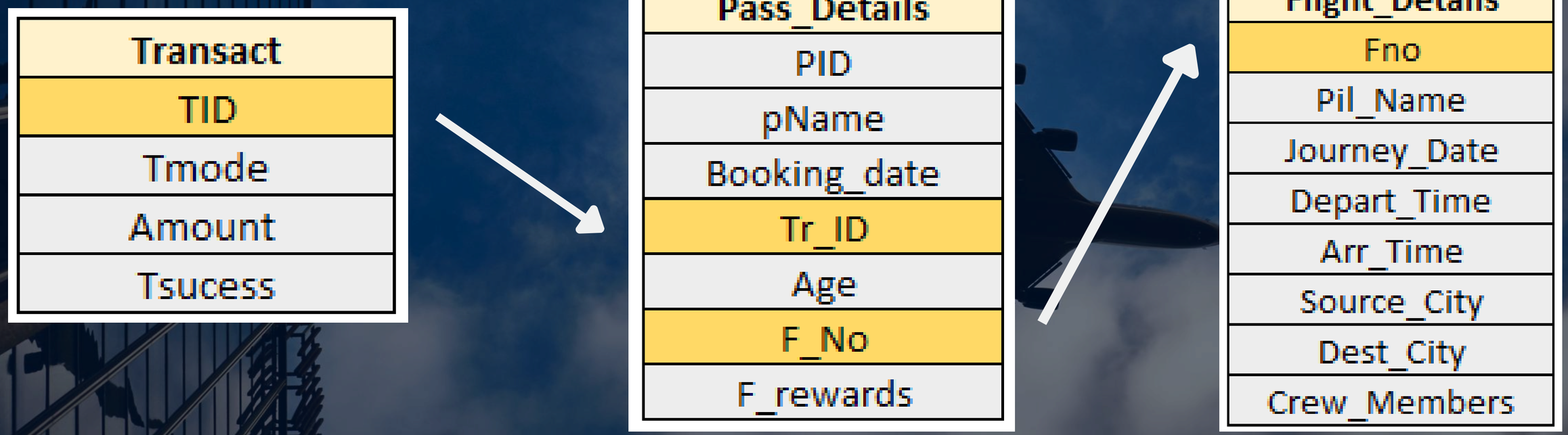
## > OBJECTIVE

. Analysis and derive insights from the Airline database using SQL queries.
. Answers specific questions related to flight details, Passenger details, Mode of Transactions and trends.
. Explore correlations between various attributes such as Flights and their departure and arrival time.

## > QUESTIONS MODE

. Easy - Queries Include: Where, Having, Group by, Order by, limit, Desc.
. Moderate - Queries Include: Joins, Subqueries, Group By, Order By
etc
. Advance - Queries Include: Windows, CTE.

# AIRLINE DATABASE



## Easy Level

- Q1) Select Avg Transaction amount based on Transaction Mode in descedning orderof avg transaction amount.

> Input

```
SELECT
    tmode, AVG(amount) AvgAmt
FROM
    transact
GROUP BY tmode;
```

> Output

| tmode | AvgAmt |
|---|---|
| NB | 7843.3333 |
| UPI | 6440.9091 |
| CC | 8841.2500 |
| DC | 6509.0000 |

## Easy Level

- **Q2) Select All Transaction mode and Transaction amount along with Passenger Name, Booking_date of passengers where booking date in on weekends.**

> Input

```
SELECT
    t.tmode,
    t.amount,
    p.pName,
    p.Booking_date,
    DAYNAME(p.Booking_date) DName
FROM
    transact t
        INNER JOIN
    pass_details p ON t.tid = p.tr_id
HAVING DName IN ('Saturday' , 'Sunday');
```

> Output

| | tmode | amount | pName | Booking_date | DName |
|---|---|---|---|---|---|
| ▶ | DC | 5670 | Pankaj Verma | 2022-03-20 | Sunday |
| | DC | 7300 | Anjali Srivastava | 2022-03-20 | Sunday |
| | DC | 5300 | Anil Pandey | 2022-03-12 | Saturday |
| | CC | 7900 | James Spencer | 2022-03-19 | Saturday |
| | CC | 5200 | Satish Kaushik | 2022-03-06 | Sunday |
| | UPI | 7000 | Aaakriti Shukla | 2022-03-12 | Saturday |

## Easy Level

- **Q3) Select passenger name who are travelling multiple times. Display the names and the count**

> Input

```
SELECT
    pname, COUNT(pname) AS PCount
FROM
    pass_details
GROUP BY pname
HAVING pCount > 1;
```

> Output

| | pname | PCount |
|---|---|---|
| ▶ | Pankaj Verma | 3 |
| | Vipin Verma | 2 |
| | Harshit Soni | 2 |
| | Betty Sharin | 2 |
| | Jack Sterling | 2 |

## Easy Level

- **Q4) Select all passengers names, PID, flight who have failed transactions?**

> Input

```
SELECT
    p.PID, p.pName, p.F_No, t.Tsuccess
FROM
    pass_details p
        INNER JOIN
    transact t ON p.Tr_ID = t.TID
WHERE
    Tsuccess = 0;
```

> Output

| | PID | pName | F_No | Tsuccess |
|---|---|---|---|---|
| ▶ | 126 | Harshit Soni | AI-747 | 0 |
| | 129 | Pankaj Verma | IN-546 | 0 |
| | 131 | Utkarsh Arora | IN-547 | 0 |
| | 158 | Manan Gupta | AI-750 | 0 |

## Easy Level

- **Q5) Select pilots name who have been allotted multiple flights.  Display the names and the count.**

> Input

```
select pil_name, count(pil_name) as Pil_Count from flight_details
group by pil_name
having Pil_Count >1;
```

> Output

| pil_name | Pil_Count |
|---|---|
| Anusha Raina | 2 |
| Aditya Gaur | 2 |
| Vincent Spencer | 3 |

## Easy Level

- **Q6) Display count of failed transactions based on transaction mode.;**

> Input

```
select tmode, count(tsuccess) as Count_Failed_Trans from transact
where tsuccess=0
group by tmode;
```

> Output

| | tmode | Count_Failed_Trans |
|---|---|---|
| ▶ | UPI | 1 |
| | DC | 2 |
| | NB | 1 |

## Easy Level

- **Q7) Select Count of passengers per flight no.**

> Input

```
SELECT
    f_no, COUNT(*) AS Pass_Count
FROM
    pass_details
GROUP BY f_no;
```

> Output

| f_no | Pass_Count |
|---|---|
| AI-745 | 2 |
| AI-747 | 2 |
| AI-748 | 2 |
| IN-546 | 2 |
| IN-547 | 2 |
| IN-548 | 2 |

## Moderate Level

- **Q8) Select transaction mode wise maximum age from tables oredered in ascending order of maximum age. Use sub query.**

> Input

```
select TMode, Max_age from
(Select t.TMode, max(p.Age) as Max_age from transact t inner join pass_details p
on t.TID = p.Tr_ID
group by t.TMode)dt
order by  Max_age;
```

> Output

| | TMode | Max_age |
|---|---|---|
| ▶ | NB | 35 |
| | DC | 70 |
| | UPI | 71 |
| | CC | 77 |

## Moderate Level

- **Q9) Select all the passengers who have earned more Flight rewards than the avg flight rewards earned by passengers whose payment mode is Credit or Debit Card**

> Input

```
select pname, f_rewards from pass_details  where f_rewards >
(select avg(f_rewards) as AvgFRewards from pass_details p
inner join transact t on t.tid = p.tr_id
where t.tmode in ('CC','DC'));
```

> Output

| pname | f_rewards |
|---|---|
| Betty Sharin | 20 |
| Betty Sharin | 30 |
| Sakshi Ghosh | 40 |
| Garima Singh | 20 |
| Anusha Raina | 20 |
| Aditya Gaur | 30 |

## Easy Level

- **Q10) Find PID, passenger Names, Booking_date, Tr_ID, Age in each airlines(Indigo, SpiceJet, Air India) whose age is more than avg age of passengers travellling in that airlines.**

> Input

```
SELECT
    PID, pName, Booking_date, Tr_ID, Age, F_No
FROM
    pass_details
WHERE
    age > (SELECT
            AVG(age)
        FROM
            pass_details);
```

> Output

| | PID | pName | Booking_date | Tr_ID | Age | F_No |
|---|---|---|---|---|---|---|
| ▶ | 135 | Anshul Singh | 2022-03-07 | 78977 | 50 | SJ-324 |
| | 136 | Vaishu Bhutani | 2022-03-01 | 78978 | 40 | SJ-324 |
| | 138 | Sakshi Ghosh | 2022-03-18 | 78980 | 70 | SJ-325 |
| | 140 | Anil Pandey | 2022-03-12 | 78982 | 56 | SJ-326 |
| | 141 | Amitabh Verma | 2022-03-17 | 78983 | 70 | SJ-330 |
| | 142 | James Spencer | 2022-03-19 | 78984 | 69 | SJ-327 |

## Moderate Level

- **Q11) Select all the passengers name, flight_rewards, transaction mode of those passengers whose payment mode is Credit or Debit Card andwho have earned more Flight rewards than the avg flight rewards earned  by all the passengers.**

> Input

```
select p.pname,p.f_rewards, t.tmode from pass_details p
inner join transact t on t.tid = p.tr_id
where t.tmode in ('CC','DC') and  p.f_rewards >
(select avg(f_rewards) from pass_details);
```

> Output

| pname | f_rewards | tmode |
|---|---|---|
| Sakshi Ghosh | 40 | DC |
| Garima Singh | 20 | DC |
| Anusha Raina | 20 | CC |
| Aditya Gaur | 30 | CC |
| Andrew Silva | 18 | DC |
| Ederson Walker | 50 | CC |

## Moderate Level

- **Q12) Select All Transaction mode and Transaction amount along with Passenger Name, of passengers those who have made the payment using 'CC' or 'UPI'. Also display 10% cashback and name the column as Cashback that can be redeemed only if payment mode is 'CC' and 0 cashback otherwise.**

> Input

```
select p.pname, t.tmode, t.amount, case
when t.tmode ='CC' then t.amount*0.1
else 0
end as Cashback
from pass_details p join transact t on t.tid = p.tr_id
where t.tmode in ('CC','UPI');
```

> Output

| pname | tmode | amount | Cashback |
|---|---|---|---|
| Vipin Verma | UPI | 8440 | 0 |
| Shivang Malhotra | CC | 9730 | 973.0 |
| Harshit Soni | UPI | 3460 | 0 |
| Betty Sharin | UPI | 4535 | 0 |
| Betty Anshu | CC | 12300 | 1230.0 |
| Anshul Singh | UPI | 7300 | 0 |

## Moderate Level

- **Q13) Display the pilots, source_cty, dest_city,journey_date who flew from either Mumbai or Bangalore but didnt land in Delhi or Chennai**

> Input

```
select * from flight_details;
select pil_name, source_city,dest_city, journey_date from flight_details
where source_city in ('Mumbai','Bangalore') and dest_city not in ('Delhi','Chennai');
```

> Output

| pil_name | source_city | dest_city | journey_date |
|---|---|---|---|
| Aditya Gaur | Mumbai | Ahemdabad | 2022-04-17 |
| Vincent Spencer | Mumbai | Kolkata | 2022-04-21 |
| Vincent Spencer | Bangalore | Hyderabad | 2022-04-15 |

## Moderate Level

- **Q14) Display the count of most frequent destination based on Destination city and airlines company (Indigo, Air India and Spice Jet) where the flight arrived more than once.**

> Input

```
select dest_city, left(FNo,2) as Airlines, count(dest_city) Most_Freq_Dest from flight_details
group by dest_city, Airlines
having Most_Freq_Dest >1
order by Most_Freq_Dest desc;
```

> Output

| | pil_name | source_city | dest_city | journey_date |
|---|---|---|---|---|
| ▶ | Aditya Gaur | Mumbai | Ahemdabad | 2022-04-17 |
| | Vincent Spencer | Mumbai | Kolkata | 2022-04-21 |
| | Vincent Spencer | Bangalore | Hyderabad | 2022-04-15 |

## Moderate Level

- **Q15) Select PID, PName, Transaction_Mode, transaction_amount, Booking_Date, Age, Flight_No, Journey date, depart time, arrival time, source city and dest city where flight departure time is on or after 6pm**

> Input

```
select p.pid,p.pname, t.tmode,t.amount, p.booking_date, p.age, p.f_no,
f.journey_date,f.depart_time,f.arr_time,f.source_city,f.dest_city from pass_details p
inner join transact t on t.tid = p.tr_id
inner join flight_details f on f.fno = p.f_no
where f.depart_time >= '18:00:00';
```

> Output

| pid | pname | tmode | amount | booking_date | age | f_no | journey_date | depart_time | arr_time | source_city | dest_city |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 131 | Utkarsh Arora | DC | 4535 | 2022-03-29 | 30 | IN-547 | 2022-04-17 | 20:15:00 | 22:30:00 | Mumbai | Ahemdabad |
| 132 | Anjali Srivastava | DC | 7300 | 2022-03-20 | 27 | IN-547 | 2022-04-17 | 20:15:00 | 22:30:00 | Mumbai | Ahemdabad |
| 139 | Harshit Soni | DC | 5200 | 2022-03-11 | NULL | SJ-326 | 2022-04-22 | 19:30:00 | 21:30:00 | Kolkata | Delhi |
| 140 | Anil Pandey | DC | 5300 | 2022-03-12 | 56 | SJ-326 | 2022-04-22 | 19:30:00 | 21:30:00 | Kolkata | Delhi |
| 141 | Amitabh Verma | UPI | 9100 | 2022-03-17 | 70 | SJ-330 | 2022-04-15 | 23:30:00 | 01:45:00 | Bangalore | Hyderabad |
| 152 | Ederson Walker | CC | 8000 | 2022-03-26 | 28 | SJ-329 | 2022-04-16 | 23:15:00 | 03:00:00 | Chennai | Kolkata |

## Moderate Level

- **Q16) Display count of passengers based on airlines(Indigo, SpiceJet, Air India) in descending order of count values**

> Input

```
SELECT
    LEFT(f_no, 2) AS Airlines, COUNT(PID) AS Pass_Count
FROM
    pass_details
GROUP BY Airlines;
```

> Output

| Airlines | Pass_Count |
|---|---|
| AI | 11 |
| IN | 12 |
| SJ | 13 |

## Moderate Level

- **Q17) Select all pilots details (name,passengerID) who are travelling as passengers.  Also display their transaction amount and transaction mode**

> Input

```
SELECT DISTINCT
    (f.pil_name), p.pid
FROM
    flight_details f
        INNER JOIN
    pass_details p ON p.pname = f.pil_name;
```

> Output

| | pil_name | pid |
|---|---|---|
| ▶ | Anusha Raina | 147 |
| | Aditya Gaur | 148 |
| | Harvey Becker | 149 |

# Hard Level

- **Q18) Select passenger id, passenger names,depart time,arrival time, transaction mode, time diff in minutes(including hours time) between arr_time and dest_time for passengers where Transcation mode is 'NB' or 'CC'**

> Input

```
select p.pid,p.pname,f.depart_time, f.arr_time, t.tmode,
case when f.arr_time> f.depart_time then
hour(timediff(f.arr_time,f.depart_time))*60 + minute(timediff(f.arr_time,f.depart_time))
else hour(timediff('23:59:59',f.depart_time))*60 + minute(timediff('23:59:59',f.depart_time)) + 1 +
 hour(timediff(f.arr_time,'00:00:00'))*60 + minute(timediff(f.arr_time,'00:00:00'))
end as Duration_Mins
from pass_details p inner join transact t on t.tid = p.tr_id
inner join flight_details f on p.f_no = f.fno;
```

> Output

| pid | pname | depart_time | arr_time | tmode | Duration_Mins |
|---|---|---|---|---|---|
| 123 | Pankaj Verma | 09:45:00 | 11:30:00 | NB | 105 |
| 124 | Vipin Verma | 09:45:00 | 11:30:00 | UPI | 105 |
| 125 | Shivang Malhotra | 13:30:00 | 15:30:00 | CC | 120 |
| 126 | Harshit Soni | 13:30:00 | 15:30:00 | UPI | 120 |
| 127 | Pankaj Verma | 15:45:00 | 17:30:00 | NB | 105 |
| 128 | Vipin Verma | 15:45:00 | 17:30:00 | NB | 105 |

## Hard Level

- **Q19) Display the passenger names, their IDs, FNo, age whose age is greater than avg age of all passengers whose airlines is either Air India or Spice Jet using sub query**

> Input

```
select p.pname, pid, p.f_no,p.age from pass_details p  where p.age >
(select avg(age) from pass_details where left(f_no,2) in ('AI','SJ'));
```

> Output

| pname | pid | f_no | age |
|---|---|---|---|
| Anshul Singh | 135 | SJ-324 | 50 |
| Sakshi Ghosh | 138 | SJ-325 | 70 |
| Anil Pandey | 140 | SJ-326 | 56 |
| Amitabh Verma | 141 | SJ-330 | 70 |
| James Spencer | 142 | SJ-327 | 69 |
| Satish Kaushik | 143 | SJ-327 | 77 |

# Hard Level

- **Q20) Display count and percentage of successful and failed transactions.**

> Input

```
select SuccessCount, FailedCount, (SuccessCount/TotalCount)*100 as Per_Success,
(FailedCount/TotalCount)*100 as Per_Fail from
(select sum(case when tsuccess=1 then 1 end) as SuccessCount,
sum(case when tsuccess=0 then 1 end) as FailedCount,
sum(case when tsuccess is null then 1 end) as NullCount,
count(*) as TotalCount
from transact) dt;
```

> Output

| | SuccessCount | FailedCount | Per_Success | Per_Fail |
|---|---|---|---|---|
| ▶ | 28 | 4 | 77.7778 | 11.1111 |

## Hard Level

- **Q21) Allot 15% cashback to the passengers who are senior citizens(people aged 55 and above) on their transaction amount. Display PID, passenger names, Flight number,age, and transaction amount renamed as DiscountedAmt.**

> Input

```
SELECT p.PID, p.pName, p.F_No, p.age, t.amount,
(t.Amount * 0.85) AS DiscountedAmt
FROM
    transact t
        INNER JOIN
    pass_details p ON t.TID = p.Tr_ID
WHERE
    age >= 55;
```

> Output

| PID | pName | F_No | age | amount | DiscountedAmt |
|---|---|---|---|---|---|
| 138 | Sakshi Ghosh | SJ-325 | 70 | 6700 | 5695.00 |
| 140 | Anil Pandey | SJ-326 | 56 | 5300 | 4505.00 |
| 141 | Amitabh Verma | SJ-330 | 70 | 9100 | 7735.00 |
| 142 | James Spencer | SJ-327 | 69 | 7900 | 6715.00 |
| 143 | Satish Kaushik | SJ-327 | 77 | 5200 | 4420.00 |
| 144 | Aaakriti Shukla | SJ-327 | 66 | 7000 | 5950.00 |

# THANK YOU!

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