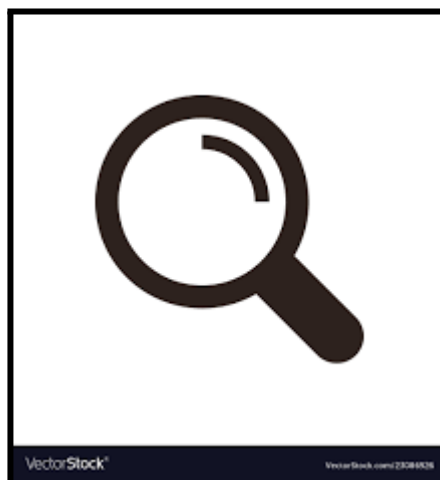# SQL Project

FLIGHT

CASE STUDY

```sql
-- 1. Find the month with most number of flights
SELECT MONTHNAME(Date_of_Journey),COUNT(*) FROM flights
GROUP BY MONTHNAME(Date_of_Journey)
ORDER BY COUNT(*) DESC LIMIT 1
```

MONTHNAME(Date_of_Journey)	COUNT(*)
June	2536

```sql
1  -- Which week day has most costly flights
2
3  SELECT DAYNAME(Date_of_Journey),AVG(Price) FROM flights
4  GROUP BY DAYNAME(Date_of_Journey)
5  ORDER BY AVG(Price) DESC LIMIT 1
```

DAYNAME(Date_of_Journey)	AVG(Price)
Thursday	9805.0886

```sql
1  -- Find number of indigo flights every month
2  SELECT MONTHNAME(Date_of_Journey),COUNT(*) FROM flights
3  WHERE Airline='Indigo'
4  GROUP BY MONTHNAME(Date_of_Journey)
5  ORDER BY MONTH(Date_of_Journey)
```

MONTHNAME(Date_of_Journey)	COUNT(*)
January	184
March	513
April	153
May	329
June	469
September	253
December	152

```
1  -- Find list of all flights that depart between 10AM and 2PM from Delhi to Banglore
2  SELECT * FROM flights
3  WHERE Source='Banglore' AND Destination='Delhi' AND
4  Dep_Time>'10:00::00' AND Dep_Time<'14:00:00'
5
```

Airline	Date_of_Journey	Source	Destination	Route	Dep_Time	Duration	Total_Stops	Price
Jet Airways	2019-01-04	Banglore	Delhi	BLR → DEL	11:10	175	non-stop	7229
IndiGo	2019-01-04	Banglore	Delhi	BLR → DEL	10:10	170	non-stop	3943
Air India	2019-01-04	Banglore	Delhi	BLR → DEL	13:20	170	non-stop	5911
Vistara	2019-01-04	Banglore	Delhi	BLR → DEL	11:30	170	non-stop	5403
IndiGo	2019-01-04	Banglore	Delhi	BLR → DEL	13:00	170	non-stop	4591
IndiGo	2019-01-05	Banglore	Delhi	BLR → DEL	13:00	170	non-stop	4423
IndiGo	2019-01-05	Banglore	Delhi	BLR → DEL	10:10	170	non-stop	3943
Air India	2019-01-05	Banglore	Delhi	BLR → DEL	13:20	170	non-stop	6121
Jet Airways	2019-01-05	Banglore	Delhi	BLR → DEL	11:10	175	non-stop	7229
Vistara	2019-01-05	Banglore	Delhi	BLR → DEL	11:30	170	non-stop	4668
GoAir	2019-01-05	Banglore	Delhi	BLR → DEL	11:40	170	non-stop	4340
Jet Airways	2019-01-05	Banglore	Delhi	BLR → DEL	11:10	175	non-stop	4030
IndiGo	2019-01-06	Banglore	Delhi	BLR → DEL	10:10	170	non-stop	3943
Jet Airways	2019-01-06	Banglore	Delhi	BLR → DEL	11:10	175	non-stop	7229
IndiGo	2019-01-06	Banglore	Delhi	BLR → DEL	13:00	170	non-stop	3943
Vistara	2019-01-06	Banglore	Delhi	BLR → DEL	11:30	170	non-stop	4668
GoAir	2019-01-06	Banglore	Delhi	BLR → DEL	11:40	170	non-stop	3898
Air India	2019-01-06	Banglore	Delhi	BLR → DEL	13:20	170	non-stop	6961
Air Asia	2019-01-06	Banglore	Delhi	BLR → DEL	11:10	165	non-stop	4483
IndiGo	2019-01-06	Banglore	Delhi	BLR → DEL	10:30	170	non-stop	3943
Jet Airways	2019-03-04	Banglore	Delhi	BLR → DEL	11:10	175	non-stop	7229
GoAir	2019-03-04	Banglore	Delhi	BLR → DEL	11:40	170	non-stop	3898
Air India	2019-03-04	Banglore	Delhi	BLR → DEL	13:20	170	non-stop	5176
IndiGo	2019-03-04	Banglore	Delhi	BLR → DEL	10:10	170	non-stop	3943
IndiGo	2019-03-04	Banglore	Delhi	BLR → DEL	13:00	170	non-stop	4077

```sql
1  -- Find the number of flights departing on weekends from Bangalore
2
3  SELECT COUNT(*) FROM flights
4  WHERE source = 'banglore' AND
5  DAYNAME(date_of_journey) IN ('saturday','sunday');
6
7
```

COUNT(*)
452

```sql
1  -- Calculate the arrival date for all the flights
2  ALTER TABLE flights ADD COLUMN departure DATETIME;
3
4  UPDATE flights
5    SET departure = STR_TO_DATE(CONCAT(date_of_journey,''          ,dep_time),'%Y-%m-%d %H:%i');
6
7  ALTER TABLE flights
8  ADD COLUMN duration_mins INTEGER,
9  ADD COLUMN arrival DATETIME;
10 UPDATE flights
11 SET duration_mins = REPLACE(SUBSTRING_INDEX(duration,'              ',1),'h','')*60 +
12 CASE
13     WHEN SUBSTRING_INDEX(duration,' ',-1) =                  SUBSTRING_INDEX(duration,' ',1) THEN 0
14     ELSE REPLACE(SUBSTRING_INDEX(duration,' ',-1),'m','')
15 END;
16
17 UPDATE flights
18 SET arrival = DATE_ADD(departure,INTERVAL duration_mins MINUTE);
19 SELECT Airline,TIME(arrival) FROM flights
```

Airline	TIME(arrival)
Jet Airways	04:40:00
SpiceJet	20:35:00
Jet Airways	04:00:00
Air India	01:50:00
Jet Airways	20:40:00
Air India	17:30:00
Air India	13:30:00
Air India	06:50:00
Jet Airways	12:00:00
IndiGo	03:55:00
Air India	15:45:00
IndiGo	04:20:00
Air India	01:50:00
IndiGo	02:10:00
IndiGo	10:55:00
SpiceJet	18:20:00
Air India	04:50:00
IndiGo	12:35:00
Air India	08:00:00
Air India	11:30:00
Jet Airways	13:55:00
Air Asia	07:50:00
Air India	14:00:00
Jet Airways	08:40:00
Air India	13:30:00

```sql
1  -- find the number of flights which travel on multiple dates
2
3  SELECT COUNT(*) FROM flights
4  WHERE DATE(departure)!=DATE(arrival)
```

COUNT(*)
10682

```sql
1  -- Calculate the average duration of flights between all city pairs. The answer
2  -- should In xh ym format
3
4  SELECT source,destination,
5  TIME_FORMAT(SEC_TO_TIME(AVG(duration_mins)*60),'%kh %im') AS 'avg_duration' FROM flights
6  GROUP BY source,destination
7
```

source	destination	avg_duration
Banglore	Delhi	171h 41m
Banglore	New Delhi	654h 04m
Chennai	Kolkata	139h 37m
Delhi	Cochin	817h 59m
Kolkata	Banglore	747h 14m
Mumbai	Hyderabad	191h 42m

```sql
-- Find all flights which departed before midnight but arrived at their destination
-- after midnight having only 0 stops.

SELECT * FROM flights
WHERE Total_Stops='non-stop' AND
DATE(departure)<DATE(arrival)

```

Airline	Date_of_Journey	Source	Destination	Route	Dep_Time	Duration	Total_Stops	Price	departure	duration_mins	arrival
IndiGo	2019-01-03	Chennai	Kolkata	MAA → CCU	7:55	140	non-stop	8580	2019-01-03 07:55:00	8400	2019-01-09 03:55:00
IndiGo	2019-01-03	Chennai	Kolkata	MAA → CCU	13:20	135	non-stop	7295	2019-01-03 13:20:00	8100	2019-01-09 04:20:00
IndiGo	2019-01-03	Kolkata	Banglore	CCU → BLR	15:10	155	non-stop	6565	2019-01-03 15:10:00	9300	2019-01-10 02:10:00
IndiGo	2019-01-03	Mumbai	Hyderabad	BOM → HYD	16:55	90	non-stop	8853	2019-01-03 16:55:00	5400	2019-01-07 10:55:00
SpiceJet	2019-01-03	Kolkata	Banglore	CCU → BLR	22:20	140	non-stop	5515	2019-01-03 22:20:00	8400	2019-01-09 18:20:00
IndiGo	2019-01-03	Chennai	Kolkata	MAA → CCU	11:35	145	non-stop	7900	2019-01-03 11:35:00	8700	2019-01-09 12:35:00
Air Asia	2019-01-03	Banglore	New Delhi	BLR → DEL	5:50	170	non-stop	10715	2019-01-03 05:50:00	10200	2019-01-10 07:50:00
Air India	2019-01-03	Banglore	New Delhi	BLR → DEL	17:00	165	non-stop	25913	2019-01-03 17:00:00	9900	2019-01-10 14:00:00
Air India	2019-01-03	Mumbai	Hyderabad	BOM → HYD	13:55	90	non-stop	10082	2019-01-03 13:55:00	5400	2019-01-07 07:55:00
GoAir	2019-01-03	Banglore	New Delhi	BLR → DEL	7:45	175	non-stop	13663	2019-01-03 07:45:00	10500	2019-01-10 14:45:00
SpiceJet	2019-01-03	Kolkata	Banglore	CCU → BLR	17:15	150	non-stop	5515	2019-01-03 17:15:00	9000	2019-01-09 23:15:00
IndiGo	2019-01-03	Banglore	New Delhi	BLR → DEL	23:30	170	non-stop	10067	2019-01-03 23:30:00	10200	2019-01-11 01:30:00
IndiGo	2019-01-03	Banglore	New Delhi	BLR → DEL	22:20	170	non-stop	11934	2019-01-03 22:20:00	10200	2019-01-11 00:20:00
Jet Airways	2019-01-03	Banglore	New Delhi	BLR → DEL	19:55	160	non-stop	18308	2019-01-03 19:55:00	9600	2019-01-10 11:55:00
IndiGo	2019-01-03	Banglore	New Delhi	BLR → DEL	13:00	170	non-stop	19685	2019-01-03 13:00:00	10200	2019-01-10 15:00:00
Air India	2019-01-03	Banglore	New Delhi	BLR → DEL	21:10	165	non-stop	25703	2019-01-03 21:10:00	9900	2019-01-10 18:10:00
Air India	2019-01-03	Banglore	New Delhi	BLR → DEL	6:10	165	non-stop	15676	2019-01-03 06:10:00	9900	2019-01-10 03:10:00
Vistara	2019-01-03	Banglore	New Delhi	BLR → DEL	7:00	160	non-stop	21520	2019-01-03 07:00:00	9600	2019-01-09 23:00:00
IndiGo	2019-01-03	Kolkata	Banglore	CCU → BLR	17:15	160	non-stop	6565	2019-01-03 17:15:00	9600	2019-01-10 09:15:00
IndiGo	2019-01-03	Kolkata	Banglore	CCU → BLR	14:20	155	non-stop	6565	2019-01-03 14:20:00	9300	2019-01-10 01:20:00
SpiceJet	2019-01-03	Chennai	Kolkata	MAA → CCU	8:20	135	non-stop	7298	2019-01-03 08:20:00	8100	2019-01-08 23:20:00
Vistara	2019-01-03	Banglore	New Delhi	BLR → DEL	11:30	160	non-stop	12648	2019-01-03 11:30:00	9600	2019-01-10 03:30:00
IndiGo	2019-01-03	Banglore	New Delhi	BLR → DEL	7:10	175	non-stop	11934	2019-01-03 07:10:00	10500	2019-01-10 14:10:00
Air India	2019-01-03	Banglore	New Delhi	BLR → DEL	13:20	170	non-stop	12526	2019-01-03 13:20:00	10200	2019-01-10 15:20:00
Vistara	2019-01-03	Banglore	New Delhi	BLR → DEL	21:10	175	non-stop	21730	2019-01-03 21:10:00	10500	2019-01-11 04:10:00

```
1  -- Find quarter wise number of flights for each airline
2  SELECT Airline,QUARTER(departure),COUNT(*)
3  FROM flights
4  GROUP BY airline,QUARTER(departure)
```

Airline	QUARTER(departure)	COUNT(*)
Air Asia	1	87
Air Asia	2	162
Air Asia	3	41
Air Asia	4	29
Air India	1	566
Air India	2	783
Air India	3	234
Air India	4	169
GoAir	1	64
GoAir	2	95
GoAir	3	23
GoAir	4	12
IndiGo	1	697
IndiGo	2	951
IndiGo	3	253
IndiGo	4	152
Jet Airways	1	1104
Jet Airways	2	1777
Jet Airways	3	544
Jet Airways	4	424
Jet Airways Business	1	5
Jet Airways Business	2	1
Multiple carriers	1	336
Multiple carriers	2	635
Multiple carriers	3	160

```
1  -- 12. Find the longest flight distance(between cities in terms of time) in India
2
3  SELECT Airline,MAX(duration_mins),Route FROM flights
4
5
```

Airline	MAX(duration_mins)	Route
Jet Airways	171600	BLR → BOM → DEL

```sql
1  -- Average time duration for flights that have 1 stop vs more than 1 stops
2
3  WITH temp_table AS (SELECT *,
4  CASE
5      WHEN total_stops = 'non-stop' THEN 'non-stop'
6      ELSE 'with stop'
7  END AS 'temp'
8  FROM flights)
9
10 SELECT temp,
11 TIME_FORMAT(SEC_TO_TIME(AVG(duration_mins)*60),'%kh %im') AS 'avg_duration',
12 AVG(price) AS 'avg_price'
13 FROM temp_table
14 GROUP BY temp
15
```

temp	avg_duration	avg_price
non-stop	150h 05m	5024.9003
with stop	838h 59m	11058.8402

```sql
1  -- Find all Air India flights in a given date range originating from Delhi -1st March 2019 to
   10th March 2019
2
3  SELECT * FROM flights
4  WHERE Source='Delhi'  AND
5  DATE(departure) BETWEEN '2019-03-01' AND '2019-03-10'
6
7
8
```

Airline	Date_of_Journey	Source	Destination	Route	Dep_Time	Duration	Total_Stops	Price	departure	duration_mins	arrival
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	11:30	440	1 stop	15135	2019-03-03 11:30:00	26400	2019-03-21 19:30:00
Jet Airways	2019-03-03	Delhi	Cochin	DEL → BHO → BOM → COK	5:40	2230	2 stops	21314	2019-03-03 05:40:00	133800	2019-06-04 03:40:00
Jet Airways	2019-03-03	Delhi	Cochin	DEL → BOM → COK	11:30	1015	1 stop	19828	2019-03-03 11:30:00	60900	2019-04-14 18:30:00
Jet Airways	2019-03-03	Delhi	Cochin	DEL → BOM → COK	9:00	590	1 stop	15400	2019-03-03 09:00:00	35400	2019-03-27 23:00:00
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	8:00	650	1 stop	15342	2019-03-03 08:00:00	39000	2019-03-30 10:00:00
IndiGo	2019-03-03	Delhi	Cochin	DEL → HYD → COK	11:55	625	1 stop	11600	2019-03-03 11:55:00	37500	2019-03-29 12:55:00
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	13:00	755	1 stop	17493	2019-03-03 13:00:00	45300	2019-04-04 00:00:00
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	7:05	835	1 stop	17057	2019-03-03 07:05:00	50100	2019-04-07 02:05:00
IndiGo	2019-03-03	Delhi	Cochin	DEL → BOM → COK	4:45	645	1 stop	14871	2019-03-03 04:45:00	38700	2019-03-30 01:45:00
Jet Airways	2019-03-03	Delhi	Cochin	DEL → IDR → BOM → COK	5:25	2245	2 stops	18799	2019-03-03 05:25:00	134700	2019-06-04 18:25:00
IndiGo	2019-03-03	Delhi	Cochin	DEL → BOM → COK	16:00	575	1 stop	14871	2019-03-03 16:00:00	34500	2019-03-27 15:00:00
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	17:00	515	1 stop	17073	2019-03-03 17:00:00	30900	2019-03-25 04:00:00
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	10:00	935	1 stop	16863	2019-03-03 10:00:00	56100	2019-04-11 09:00:00
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	4:00	890	1 stop	15237	2019-03-03 04:00:00	53400	2019-04-09 06:00:00
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	11:30	845	1 stop	18286	2019-03-03 11:30:00	50700	2019-04-07 16:30:00
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	2:15	665	1 stop	17057	2019-03-03 02:15:00	39900	2019-03-30 19:15:00
Jet Airways	2019-03-03	Delhi	Cochin	DEL → BOM → COK	16:00	1610	1 stop	17234	2019-03-03 16:00:00	96600	2019-05-09 18:00:00
Multiple carriers	2019-03-03	Delhi	Cochin	DEL → BOM → COK	8:00	450	1 stop	17057	2019-03-03 08:00:00	27000	2019-03-22 02:00:00
IndiGo	2019-03-03	Delhi	Cochin	DEL → HYD → COK	6:40	320	1 stop	9304	2019-03-03 06:40:00	19200	2019-03-16 14:40:00
Jet Airways	2019-03-03	Delhi	Cochin	DEL → BOM → COK	16:00	745	1 stop	17234	2019-03-03 16:00:00	44700	2019-04-03 17:00:00
Vistara	2019-03-03	Delhi	Cochin	DEL → COK	6:00	190	non-stop	8001	2019-03-03 06:00:00	11400	2019-03-11 04:00:00
Air India	2019-03-03	Delhi	Cochin	DEL → BHO → BOM → COK	20:00	1395	2 stops	17266	2019-03-03 20:00:00	83700	2019-04-30 23:00:00
Air India	2019-03-03	Delhi	Cochin	DEL → AMD → BOM → COK	5:00	2295	2 stops	10283	2019-03-03 05:00:00	137700	2019-06-06 20:00:00
Air India	2019-03-03	Delhi	Cochin	DEL → HYD → MAA → COK	7:05	1580	2 stops	9400	2019-03-03 07:05:00	94800	2019-05-08 03:05:00
Jet Airways	2019-03-03	Delhi	Cochin	DEL → BOM → COK	11:30	440	1 stop	18550	2019-03-03 11:30:00	26400	2019-03-21 19:30:00

```sql
1  -- Find the longest flight of each airline
2
3  SELECT Airline,
4  TIME_FORMAT(SEC_TO_TIME(MAX(duration_mins)*60),'%kh %im')AS 'max_duration' FROM flights
5  GROUP BY Airline
6  ORDER BY MAX(duration_mins) DESC
7
8
9
```

Airline	max_duration
Jet Airways	838h 59m
Air India	838h 59m
Vistara	838h 59m
IndiGo	838h 59m
Air Asia	838h 59m
Multiple carriers	838h 59m
Multiple carriers Premium economy	838h 59m
GoAir	555h 00m
SpiceJet	520h 00m
Jet Airways Business	500h 00m
Trujet	195h 00m
Vistara Premium economy	170h 00m

```sql
-- Find all the pair of cities having average time duration > 3 hours

SELECT source,destination,
TIME_FORMAT(SEC_TO_TIME(AVG(duration_mins)*60),'%kh %im') AS 'avg_duration' FROM flights
GROUP BY source,destination
HAVING AVG(duration_mins) > 180;
```

source	destination	avg_duration
Banglore	Delhi	171h 41m
Banglore	New Delhi	654h 04m
Chennai	Kolkata	139h 37m
Delhi	Cochin	817h 59m
Kolkata	Banglore	747h 14m
Mumbai	Hyderabad	191h 42m

```sql
-- Make a weekday vs time grid showing frequency of flights from Banglore and Delhi

SELECT DAYNAME(departure),
SUM(CASE WHEN HOUR(departure) BETWEEN 0 AND 5 THEN 1 ELSE 0 END) AS '12AM-6AM',
SUM(CASE WHEN HOUR(departure) BETWEEN 6 AND 11 THEN 1 ELSE 0 END) AS '6AM-12PM',
SUM(CASE WHEN HOUR(departure) BETWEEN 12 AND 17 THEN 1 ELSE 0 END) AS '12PM-6PM',
SUM(CASE WHEN HOUR(departure) BETWEEN 18 AND 23 THEN 1 ELSE 0 END) AS '6PM-12PM'
FROM flights
WHERE Source='Banglore' AND Destination='Delhi'
GROUP BY DAYNAME(departure)
ORDER BY DAYOFWEEK(departure) ASC
```

DAYNAME(departure)	12AM-6AM	6AM-12PM	12PM-6PM	6PM-12PM
Sunday	9	38	16	24
Monday	19	69	29	54
Tuesday	19	72	24	53
Wednesday	30	105	43	79
Thursday	26	80	33	63
Friday	24	82	37	68
Saturday	18	71	30	50

```sql
1  -- Make a weekday vs time grid showing avg flight price from Banglore and Delhi
2
3  SELECT DAYNAME(departure),
4  AVG(CASE WHEN HOUR(departure) BETWEEN 0 AND 5 THEN price ELSE NULL END) AS '12AM - 6AM',
5  AVG(CASE WHEN HOUR(departure) BETWEEN 6 AND 11 THEN price ELSE NULL END) AS '6AM - 12PM',
6  AVG(CASE WHEN HOUR(departure) BETWEEN 12 AND 17 THEN price ELSE NULL END) AS '12PM - 6PM',
7  AVG(CASE WHEN HOUR(departure) BETWEEN 18 AND 23 THEN price ELSE NULL END) AS '6PM - 12PM'
8  FROM flights
9  WHERE source = 'Banglore' AND destination = 'Delhi'
10 GROUP BY DAYNAME(departure)
11 ORDER BY DAYOFWEEK(departure) ASC
12
```

DAYNAME(departure)	12AM - 6AM	6AM - 12PM	12PM - 6PM	6PM - 12PM
Sunday	4157.8889	5581.7105	5997.3750	5155.6667
Monday	3842.5263	5022.1014	5514.3793	4859.5926
Tuesday	4194.4737	5246.6806	5793.8333	4855.3019
Wednesday	3935.0333	5157.6952	5634.8837	5001.8228
Thursday	3893.1538	5453.0750	5801.3030	5141.2698
Friday	4082.3750	5444.5854	6249.4054	5071.1618
Saturday	4279.0000	5250.8732	5822.1333	4945.3600