

```

1  /* CREATING NEW TABLE em_flights */
2  create table em_flights (
3  YEAR int,
4  MONTH int,
5  DAY int,
6  DAY_OF_WEEK int,
7  AIRLINE varchar(5),
8  FLIGHT_NUMBER int,
9  TAIL_NUMBER varchar(10),
10 ORIGIN_AIRPORT varchar(7),
11 DESTINATION_AIRPORT varchar(7),
12 SCHEDULED_DEPARTURE int,
13 DEPARTURE_TIME float,
14 DEPARTURE_DELAY float,
15 TAXI_OUT float,
16 WHEELS_OFF float,
17 SCHEDULED_TIME float,
18 ELAPSED_TIME float,
19 AIR_TIME float,
20 DISTANCE int,
21 WHEELS_ON float,
22 TAXI_IN float,
23 SCHEDULED_ARRIVAL float,
24 ARRIVAL_TIME float,
25 ARRIVAL_DELAY float,
26 DIVERTED float,
27 CANCELLED float,
28 CANCELLATION_REASON varchar(5),
29 AIR_SYSTEM_DELAY float,
30 SECURITY_DELAY float,
31 AIRLINE_DELAY float,
32 LATE_AIRCRAFT_DELAY float,
33 WEATHER_DELAY float
34 );
35
36 /* UPLOADING DATA IN TO em_flights TABLE */
37
38 COPY em_flights
39 FROM 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
Analysis/Final_project_data_archive/flights.csv'
40 WITH (
41     FORMAT csv,
42     HEADER,
43     DELIMITER ',',
44     QUOTE '"'
45 );
46
47
48 alter table em_flights add column SCHEDULED_DATE date;
49
50 UPDATE em_flights SET SCHEDULED_DATE = TO_DATE(
51     LPAD(YEAR:: TEXT, 4, '0') || '-' ||
52     LPAD(MONTH:: TEXT, 2, '0') || '-' ||
53     LPAD(DAY:: TEXT, 2, '0'), 'YYYY-MM-DD')
54 WHERE SCHEDULED_DATE IS NULL;
55
56 -- -----
57
58 -- WORKING ON SCHEDULED_ARRIVAL COLUMN
59
60 ALTER TABLE EM_FLIGHTS ADD COLUMN FORMATED_SCHEDULED_ARRIVAL TIME;
61
62 UPDATE EM_FLIGHTS
63 SET FORMATED_SCHEDULED_ARRIVAL =
64 TO_TIMESTAMP(
65     CASE
66         WHEN SCHEDULED_ARRIVAL = 2400 THEN '0000'
67         ELSE LPAD(SCHEDULED_ARRIVAL:: TEXT, 4, '0') END,
68     'HH24MI'):: TIME;

```

```

69
70
71     ALTER TABLE EM_FLIGHTS
72     DROP COLUMN SCHEDULED_ARRIVAL;
73
74     ALTER TABLE EM_FLIGHTS
75     RENAME COLUMN FORMATED_SCHEDULED_ARRIVAL TO SCHEDULED_ARRIVAL;
76
77 -- WORKING ON ARRIVAL_TIME COLUMN
78
79 ALTER TABLE EM_FLIGHTS ADD COLUMN FORMATED_ARRIVAL_TIME TIME;
80
81 UPDATE EM_FLIGHTS SET
82 FORMATED_ARRIVAL_TIME= TO_TIMESTAMP(
83     CASE
84         WHEN ARRIVAL_TIME = 2400 THEN '0000'
85         ELSE LPAD(ARRIVAL_TIME::TEXT, 4, '0') END,
86         'HH24MI')::TIME;
87
88 -- SELECT *
89 -- FROM EM_FLIGHTS WHERE ARRIVAL_TIME IS NULL;
90
91
92     ALTER TABLE EM_FLIGHTS
93     DROP COLUMN ARRIVAL_TIME;
94
95     ALTER TABLE EM_FLIGHTS
96     RENAME COLUMN FORMATED_ARRIVAL_TIME TO ARRIVAL_TIME;
97
98
99 -- WORKING ON SCHEDULE_DEPARTURE COLUMN
100
101 ALTER TABLE EM_FLIGHTS ADD COLUMN FORMATED_SCHEDULED_DEPARTURE TIME;
102
103 UPDATE EM_FLIGHTS SET
104 FORMATED_SCHEDULED_DEPARTURE= TO_TIMESTAMP(
105     CASE
106         WHEN SCHEDULED_DEPARTURE = 2400 THEN '0000'
107         ELSE LPAD(SCHEDULED_DEPARTURE::TEXT, 4, '0') END,
108         'HH24MI')::TIME;
109
110     ALTER TABLE EM_FLIGHTS
111     DROP COLUMN SCHEDULED_DEPARTURE;
112
113     ALTER TABLE EM_FLIGHTS
114     RENAME COLUMN FORMATED_SCHEDULED_DEPARTURE TO SCHEDULED_DEPARTURE;
115
116
117 -- WORKING ON DEPARTURE_TIME COLUMN:
118
119 ALTER TABLE EM_FLIGHTS ADD COLUMN FORMATED_DEPARTURE_TIME TIME;
120
121 UPDATE EM_FLIGHTS SET
122 FORMATED_DEPARTURE_TIME= TO_TIMESTAMP(
123     CASE
124         WHEN DEPARTURE_TIME = 2400 THEN '0000'
125         ELSE LPAD(DEPARTURE_TIME::TEXT, 4, '0') END,
126         'HH24MI')::TIME;
127
128     ALTER TABLE EM_FLIGHTS
129     DROP COLUMN DEPARTURE_TIME;
130
131     ALTER TABLE EM_FLIGHTS
132     RENAME COLUMN FORMATED_DEPARTURE_TIME TO DEPARTURE_TIME;
133
134
135 -- WORKING ON DEPARTURE_TIME / ARRIVAL_TIME COLUMN
136 -- -- FOR CREATING TIME BUCKED:
137 -- ALTER TABLE EM_FLIGHTS DROP COLUMN ARRIVAL_TIME_BUCKET;

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138
139 ALTER TABLE EM_FLIGHTS ADD COLUMN DEPARTURE_TIME_BUCKET INT; -- CREATING TIME BUCKED FOR
DEPARTURE_TIME
140
141 ALTER TABLE EM_FLIGHTS ADD COLUMN ARRIVAL_TIME_BUCKET INT; -- CREATING TIME BUCKED FOR
ARRIVAL_TIME
142
143
144 /* EXTARCTING HOURS FROM DEPARTURE_TIME / ARRIVAL_TIME FOR
145 DEPARTURE_TIME_BUCKET AND ARRIVAL_TIME_BUCKET COLUMN
146 */
147
148 UPDATE EM_FLIGHTS
149 SET DEPARTURE_TIME_BUCKET = EXTRACT(HOUR FROM DEPARTURE_TIME),
150 ARRIVAL_TIME_BUCKET = EXTRACT(HOUR FROM ARRIVAL_TIME);
151
152
153
154
155
156 SELECT DISTINCT(EXTRACT(HOUR FROM DEPARTURE_TIME))
157 FROM EM_FLIGHTS;
158
159 SELECT *
160 FROM EM_FLIGHTS LIMIT 1000;
161
162 -- SELECT MAX(SCHEDULED_ARRIVAL) FROM EM_FLIGHTS;
163
164
165 -- DROP TABLE em_flights;
166 -- SELECT * FROM EM_FLIGHTS LIMIT 100000;
167 -- SELECT COUNT(*) FROM EM_FLIGHTS;
168 /* ----- */
169
170 /* CREATING NEW TABLE Airports */
171
172 Create table Airports (
173 IATA_CODE varchar(4),
174 AIRPORT varchar(78),
175 CITY varchar(32),
176 STATE varchar(4),
177 COUNTRY varchar(4),
178 LATITUDE float,
179 LONGITUDE float);
180
181 /* UPLOADING DATA IN TO airports TABLE*/
182
183 COPY airports
184 FROM 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
Analysis/Final_project_data_archive/airports_changed_encode.csv'
185 WITH (
186     FORMAT csv,
187     HEADER,
188     DELIMITER ',',
189     QUOTE ''''
190 );
191
192 /* ----- */
193
194 /* CREATING NEW TABLE Airlines */
195 Create table Airlines(
196     IATA_CODE varchar(4),
197     AIRLINE varchar(28)
198 );
199
200 -- DROP TABLE Airlines;
201
202 /* UPLOADING DATA IN TO Airlines TABLE*/
203

```

```

204 COPY Airlines
205 FROM 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
Analysis/Final_project_data_archive/airlines.csv'
206 WITH(
207     FORMAT csv,
208     HEADER,
209     DELIMITER ',',
210     QUOTE '"'
211 );
212
213 /* ----- */
214
215 /* DATA OPERATIONS */
216
217
218 SELECT * FROM EM_FLIGHTS;
219
220 /* THE 10th MONTH DATA HAS PROBLEM:
221     ORIGIN_AIRPORTS and ORIGIN_AIRPORTS DATA ARE IN NUMBER FORMAT
222 */
223 SELECT * FROM EM_FLIGHTS WHERE month =10;
224
225
226
227
228
229
230 /* Problem Statement:
231 -----
232 1 Analyzing the primary causes and patterns of flight delays
233 For strategic operational adjustments:
234 Means for what reason in each month how many flights delayed in each month
235 */
236
237
238 -- Solution: Finding in each month how many and what types of flights delayed happend.
239 -- COUNT OF ALL DELAYED FLIGHTS
240
241
242 /*
243 THIS CODE WILL NOT GIVE RESULTS, AND/OR LOGIC WILL EITHER
244 DECREASES/ INCREASES THE COUNTS
245 */
246     -- WITH FT_DEPT_CTE AS
247     -- (SELECT MONTH,
248     --     COUNT(DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS,
249     --     COUNT(ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS,
250     --     COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS,
251     --     COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS,
252     --     COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS,
253     --     COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS,
254     --     COUNT(SEcurity_DELAY) AS SECURITY_DELAYED_FLIGHTS
255     -- FROM EM_FLIGHTS
256     -- WHERE DEPARTURE_DELAY > 0 OR ARRIVAL_DELAY > 0 OR AIR_SYSTEM_DELAY > 0 OR
WEATHER_DELAY > 0
257     -- OR LATE_AIRCRAFT_DELAY > 0 OR AIRLINE_DELAY > 0 OR SECURITY_DELAY > 0
258     -- GROUP BY MONTH
259     -- )
260     -- SELECT * FROM FT_DEPT_CTE;
261 /*
262
263 ACTUAL CODE
264
265 */
266
267 WITH FT_DEPT_CTE AS
268     (SELECT MONTH,
269         COUNT(DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
270     FROM EM_FLIGHTS

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271     WHERE DEPARTURE_DELAY > 0
272     GROUP BY MONTH
273 ),
274 FT_ARRIV_CTE AS
275     (SELECT MONTH,
276      COUNT(ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
277      FROM EM_FLIGHTS
278      WHERE ARRIVAL_DELAY > 0
279      GROUP BY MONTH
280     ),
281
282 FT_AIRSYS_CTE AS
283     (SELECT MONTH,
284      COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
285      FROM EM_FLIGHTS
286      WHERE AIR_SYSTEM_DELAY > 0
287      GROUP BY MONTH
288     ),
289 FT_WEATH_CTE AS
290     (SELECT MONTH,
291      COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
292      FROM EM_FLIGHTS
293      WHERE WEATHER_DELAY > 0
294      GROUP BY MONTH
295     ),
296
297 FT_LT_AIRCFT_CTE AS
298     (SELECT MONTH,
299      COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
300      FROM EM_FLIGHTS
301      WHERE LATE_AIRCRAFT_DELAY > 0
302      GROUP BY MONTH
303     ),
304
305 FT_AIRL_CTE AS
306     (SELECT MONTH,
307      COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
308      FROM EM_FLIGHTS
309      WHERE AIRLINE_DELAY > 0
310      GROUP BY MONTH
311     ),
312
313 FT_SECU_CTE AS
314     (SELECT MONTH,
315      COUNT(SEcurity_DELAY) AS SECURITY_DELAYED_FLIGHTS
316      FROM EM_FLIGHTS
317      WHERE DEPARTURE_DELAY > 0
318      GROUP BY MONTH
319     ),
320
321 CUSTOM_JOIN_1 AS
322     (SELECT F1.MONTH, F1.DEPARTURE_DELAYED_FLIGHTS,
323      F2.ARRIVAL_DELAYED_FLIGHTS,
324      F3.AIR_SYSTEM_DELAYED_FLIGHTS,
325      F4.WEATHER_DELAYED_FLIGHTS,
326      F5.LATE_AIRCRAFT_DELAYED_FLIGHTS,
327      F6.SECURITY_DELAYED_FLIGHTS
328      FROM FT_DEPT_CTE AS F1
329      JOIN FT_ARRIV_CTE AS F2
330      ON F1.MONTH = F2.MONTH
331      JOIN FT_AIRSYS_CTE AS F3
332      ON F1.MONTH = F3.MONTH
333      JOIN FT_WEATH_CTE AS F4
334      ON F1.MONTH = F4.MONTH
335      JOIN FT_LT_AIRCFT_CTE AS F5
336      ON F1.MONTH = F5.MONTH
337      JOIN FT_SECU_CTE AS F6
338      ON F1.MONTH = F6.MONTH
339     )

```

```

340 SELECT * FROM CUSTOM_JOIN_1;
341
342 -- EXPORTING COUNT OF ALL DELAYED FLIGHTS INTO CSV:
343
344 COPY
345 (
346     WITH FT_DEPT_CTE AS
347         (SELECT MONTH,
348          COUNT(DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
349          FROM EM_FLIGHTS
350          WHERE DEPARTURE_DELAY > 0
351          GROUP BY MONTH
352         ),
353     FT_ARRIV_CTE AS
354         (SELECT MONTH,
355          COUNT(ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
356          FROM EM_FLIGHTS
357          WHERE ARRIVAL_DELAY > 0
358          GROUP BY MONTH
359         ),
360
361     FT_AIRSYS_CTE AS
362         (SELECT MONTH,
363          COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
364          FROM EM_FLIGHTS
365          WHERE AIR_SYSTEM_DELAY > 0
366          GROUP BY MONTH
367         ),
368     FT_WEATH_CTE AS
369         (SELECT MONTH,
370          COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
371          FROM EM_FLIGHTS
372          WHERE WEATHER_DELAY > 0
373          GROUP BY MONTH
374         ),
375
376     FT_LT_AIRCFT_CTE AS
377         (SELECT MONTH,
378          COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
379          FROM EM_FLIGHTS
380          WHERE LATE_AIRCRAFT_DELAY > 0
381          GROUP BY MONTH
382         ),
383
384     FT_AIRL_CTE AS
385         (SELECT MONTH,
386          COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
387          FROM EM_FLIGHTS
388          WHERE AIRLINE_DELAY > 0
389          GROUP BY MONTH
390         ),
391
392     FT_SECU_CTE AS
393         (SELECT MONTH,
394          COUNT(SEcurity_DELAY) AS SECURITY_DELAYED_FLIGHTS
395          FROM EM_FLIGHTS
396          WHERE DEPARTURE_DELAY > 0
397          GROUP BY MONTH
398         ),
399
400     CUSTOM_JOIN_1 AS
401         (SELECT F1.MONTH,
402          COALESCE(F1.DEPARTURE_DELAYED_FLIGHTS,0) AS DEPARTURE_DELAYED_FLIGHTS,
403          COALESCE(F2.ARRIVAL_DELAYED_FLIGHTS,0) AS ARRIVAL_DELAYED_FLIGHTS,
404          COALESCE(F3.AIR_SYSTEM_DELAYED_FLIGHTS,0) AS AIR_SYSTEM_DELAYED_FLIGHTS,
405          COALESCE(F4.WEATHER_DELAYED_FLIGHTS,0) AS WEATHER_DELAYED_FLIGHTS,
406          COALESCE(F5.LATE_AIRCRAFT_DELAYED_FLIGHTS,0) AS LATE_AIRCRAFT_DELAYED_FLIGHTS,
407          COALESCE(F6.SECURITY_DELAYED_FLIGHTS,0) AS SECURITY_DELAYED_FLIGHTS
408          FROM FT_DEPT_CTE AS F1

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409         JOIN FT_ARRIV_CTE AS F2
410         ON F1.MONTH = F2.MONTH
411         JOIN FT_AIRSYS_CTE AS F3
412         ON F1.MONTH = F3.MONTH
413         JOIN FT_WEATH_CTE AS F4
414         ON F1.MONTH = F4.MONTH
415         JOIN FT_LT_AIRCFT_CTE AS F5
416         ON F1.MONTH = F5.MONTH
417         JOIN FT_SECU_CTE AS F6
418         ON F1.MONTH = F6.MONTH
419     )
420     SELECT * FROM CUSTOM_JOIN_1
421 )TO 'D:/Data Analytics/Internship/Labmentix/Emirates Flight
Analysis/SUBMISSION/CUSTOM CSV/DELAYED_FLIGHTS_COUNTS.csv'
422     WITH CSV HEADER;
423
424
425 /* ----- */
426
427 /* COUNT OF IN WHICH MONTH EACH TYPES OF FLIGHTS DELAYED HAPPEND MOST*/
428
429 -- COUNT OF DEPARTURE DELAYED FLIGHTS
430
431     SELECT MONTH,
432     COUNT(DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
433     FROM EM_FLIGHTS
434     WHERE DEPARTURE_DELAY > 0
435     GROUP BY MONTH
436     ORDER BY DEPARTURE_DELAYED_FLIGHTS DESC;
437
438 -- AIRPORT WISE DEPARTURE DELAYED FLIGHTS
439
440     SELECT EMF.ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA, ARP1.AIRPORT AS ORIGIN_AIRPORT_NAME
441     ,
442     EMF.DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA, ARP2.AIRPORT AS
443     DESTINATION_AIRPORT_NAME,
444     COUNT(EMF.DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
445     FROM EM_FLIGHTS AS EMF
446     JOIN AIRPORTS AS ARP1
447     ON EMF.ORIGIN_AIRPORT = ARP1.IATA_CODE
448
449     JOIN AIRPORTS AS ARP2
450     ON EMF.DESTINATION_AIRPORT = ARP2.IATA_CODE
451
452     WHERE DEPARTURE_DELAY > 0
453     GROUP BY EMF.ORIGIN_AIRPORT, EMF.DESTINATION_AIRPORT, ARP1.AIRPORT, ARP2.AIRPORT
454     ORDER BY DEPARTURE_DELAYED_FLIGHTS DESC;
455
456 /*
457     Peak in June & July (over 200K delays), lowest in September & October.
458 */
459 -- COUNT OF ARRIVAL DELAYED FLIGHTS
460
461     SELECT MONTH,
462     COUNT(ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
463     FROM EM_FLIGHTS
464     WHERE ARRIVAL_DELAY > 0 -- "ARRIVAL_DELAY <= 15 OR ARRIVAL_DELAY >= 15" BASEDD ON
465     THE INSTRUCTIONS,
466     -- BUT I HAVE COSIDER ALL THOSE FLIGHTS THOSE EVEN 1 MINUTE
467     LATE.
468
469     GROUP BY MONTH
470     ORDER BY ARRIVAL_DELAYED_FLIGHTS DESC;
471
472 -- AIRPORT WISE ARRIVAL DELAYED FLIGHTS:
473
474     SELECT EMF.ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA, ARP1.AIRPORT AS ORIGIN_AIRPORT_NAME

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```

473      ,
      EMF.DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA, ARP2.AIRPORT AS
      DESTINATION_AIRPORT_NAME,
474      COUNT(EMF.ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
475      FROM EM_FLIGHTS AS EMF
476      JOIN AIRPORTS AS ARP1
477      ON EMF.ORIGIN_AIRPORT = ARP1.IATA_CODE
478
479      JOIN AIRPORTS AS ARP2
480      ON EMF.DESTINATION_AIRPORT = ARP2.IATA_CODE
481
482      WHERE ARRIVAL_DELAY > 0
483      GROUP BY EMF.ORIGIN_AIRPORT, EMF.DESTINATION_AIRPORT, ARP1.AIRPORT, ARP2.AIRPORT
484      ORDER BY ARRIVAL_DELAYED_FLIGHTS DESC;
485
486  /*
487      Peak in June & July (over 200K delays), lowest in September & October.
488  */
489
490  -- COUNT OF AIR SYSTEM DELAYED FLIGHTS
491
492      SELECT MONTH,
493      COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
494      FROM EM_FLIGHTS
495      WHERE AIR_SYSTEM_DELAY > 0
496      GROUP BY MONTH
497      ORDER BY AIR_SYSTEM_DELAYED_FLIGHTS DESC;
498
499
500  -- AIRPORT WISE AIR SYSTEM DELAYED FLIGHTS
501
502      SELECT EMF.ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA, ARP1.AIRPORT AS ORIGIN_AIRPORT_NAME
503      ,
      EMF.DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA, ARP2.AIRPORT AS
      DESTINATION_AIRPORT_NAME,
504      COUNT(EMF.AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
505      FROM EM_FLIGHTS AS EMF
506      JOIN AIRPORTS AS ARP1
507      ON EMF.ORIGIN_AIRPORT = ARP1.IATA_CODE
508
509      JOIN AIRPORTS AS ARP2
510      ON EMF.DESTINATION_AIRPORT = ARP2.IATA_CODE
511
512      WHERE AIR_SYSTEM_DELAY > 0
513      GROUP BY EMF.ORIGIN_AIRPORT, EMF.DESTINATION_AIRPORT, ARP1.AIRPORT, ARP2.AIRPORT
514      ORDER BY AIR_SYSTEM_DELAYED_FLIGHTS DESC;
515
516  /*
517      Gradual rise till June, peaking at ~58K, with dip in fall (Sep-Nov)
518  */
519
520  -- COUNT OF SECURITY DELAYED FLIGHTS
521
522      SELECT MONTH,
523      COUNT(SEcurity_DELAY) AS SECURITY_DELAYED_FLIGHTS
524      FROM EM_FLIGHTS
525      WHERE SEcurity_DELAY > 0
526      GROUP BY MONTH
527      ORDER BY SECURITY_DELAYED_FLIGHTS DESC;
528
529  -- AIRPORT WISE SECURITY DELAYED FLIGHTS
530
531      SELECT EMF.ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA, ARP1.AIRPORT AS ORIGIN_AIRPORT_NAME
532      ,
      EMF.DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA, ARP2.AIRPORT AS
      DESTINATION_AIRPORT_NAME,
533      COUNT(EMF.SECURITY_DELAY) AS SECURITY_DELAYED_FLIGHTS
534      FROM EM_FLIGHTS AS EMF
535      JOIN AIRPORTS AS ARP1

```



```

536     ON EMF.ORIGIN_AIRPORT = ARP1.IATA_CODE
537
538     JOIN AIRPORTS AS ARP2
539     ON EMF.DESTINATION_AIRPORT = ARP2.IATA_CODE
540
541     WHERE SECURITY_DELAY > 0
542     GROUP BY EMF.ORIGIN_AIRPORT, EMF.DESTINATION_AIRPORT, ARP1.AIRPORT, ARP2.AIRPORT
543     ORDER BY SECURITY_DELAYED_FLIGHTS DESC;
544
545
546  /*
547    Most severe in June (105K), with a consistent pattern around ~85K for most months.
548  */
549
550  -- COUNT OF AIRLINE DELAYED FLIGHTS
551
552      SELECT MONTH,
553      COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
554      FROM EM_FLIGHTS
555      WHERE AIRLINE_DELAY > 0
556      GROUP BY MONTH
557      ORDER BY AIRLINE_DELAYED_FLIGHTS DESC;
558
559  -- AIRPORT WISE AIRLINE DELAYED FLIGHTS
560
561      SELECT EMF.ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA, ARP1.AIRPORT AS ORIGIN_AIRPORT_NAME
562      ,
563      EMF.DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA, ARP2.AIRPORT AS
564      DESTINATION_AIRPORT_NAME,
565      COUNT(EMF.AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
566      FROM EM_FLIGHTS AS EMF
567      JOIN AIRPORTS AS ARP1
568      ON EMF.ORIGIN_AIRPORT = ARP1.IATA_CODE
569
570
571      JOIN AIRPORTS AS ARP2
572      ON EMF.DESTINATION_AIRPORT = ARP2.IATA_CODE
573
574      WHERE AIRLINE_DELAY > 0
575      GROUP BY EMF.ORIGIN_AIRPORT, EMF.DESTINATION_AIRPORT, ARP1.AIRPORT, ARP2.AIRPORT
576      ORDER BY AIRLINE_DELAYED_FLIGHTS DESC;
577
578  /*
579  Airline delayed mostly happened in June & July month, may be due rainy season and
580  maintenance required extra care
581  */
582
583  -- COUNT OF LATE AIRCRAFT DELAYED FLIGHTS
584
585      SELECT MONTH,
586      COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
587      FROM EM_FLIGHTS
588      WHERE LATE_AIRCRAFT_DELAY > 0
589      GROUP BY MONTH
590      ORDER BY LATE_AIRCRAFT_DELAYED_FLIGHTS DESC;
591
592  -- AIRPORT WISE LATE AIRCRAFT DELAYED FLIGHTS
593
594      SELECT EMF.ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA, ARP1.AIRPORT AS ORIGIN_AIRPORT_NAME
595      ,
596      EMF.DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA, ARP2.AIRPORT AS
597      DESTINATION_AIRPORT_NAME,
598      COUNT(EMF.LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
599      FROM EM_FLIGHTS AS EMF
600      JOIN AIRPORTS AS ARP1
601      ON EMF.ORIGIN_AIRPORT = ARP1.IATA_CODE
602
603
604      JOIN AIRPORTS AS ARP2
605      ON EMF.DESTINATION_AIRPORT = ARP2.IATA_CODE

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600     WHERE LATE_AIRCRAFT_DELAY > 0
601     GROUP BY EMF.ORIGIN_AIRPORT, EMF.DESTINATION_AIRPORT, ARP1.AIRPORT, ARP2.AIRPORT
602     ORDER BY LATE_AIRCRAFT_DELAYED_FLIGHTS DESC;
603
604  /*
605  Highest in June (64K), lowest in September & October
606  */
607
608  -- COUNT OF WEATHER DELAYED FLIGHTS
609
610     SELECT MONTH,
611     COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
612     FROM EM_FLIGHTS
613     WHERE WEATHER_DELAY > 0
614     GROUP BY MONTH
615     ORDER BY WEATHER_DELAYED_FLIGHTS DESC;
616
617
618  -- AIRPORT WISE LATE WEATHER DELAYED FLIGHTS
619     SELECT EMF.ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA, ARP1.AIRPORT AS ORIGIN_AIRPORT_NAME
620     , EMF.DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA, ARP2.AIRPORT AS
621     DESTINATION_AIRPORT_NAME,
622     COUNT(EMF.WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
623     FROM EM_FLIGHTS AS EMF
624     JOIN AIRPORTS AS ARP1
625     ON EMF.ORIGIN_AIRPORT = ARP1.IATA_CODE
626
627     JOIN AIRPORTS AS ARP2
628     ON EMF.DESTINATION_AIRPORT = ARP2.IATA_CODE
629
630     WHERE WEATHER_DELAY > 0
631     GROUP BY EMF.ORIGIN_AIRPORT, EMF.DESTINATION_AIRPORT, ARP1.AIRPORT, ARP2.AIRPORT
632     ORDER BY WEATHER_DELAYED_FLIGHTS DESC;
633
634     SELECT * FROM AIRPORTS;
635
636  /*
637  February may see unpredictable winter storms or fog (common in many connecting hubs).
638  June could involve summer storms or heat waves.
639  */
640
641  -- COUNT OF DELAYED FLIGHTS BASED ON THE INSTRUCTION
642
643     SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
644     COUNT(ARRIVAL_DELAY) AS DELAYED_FLIGHTS
645     FROM EM_FLIGHTS
646     WHERE ARRIVAL_DELAY >= -15 AND ARRIVAL_DELAY <= 15
647     GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
648     ORDER BY DELAYED_FLIGHTS DESC;
649
650
651  -- EXPORTING IN CSV:
652
653  COPY
654  (
655     SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
656     COUNT(ARRIVAL_DELAY) AS DELAYED_FLIGHTS
657     FROM EM_FLIGHTS
658     WHERE ARRIVAL_DELAY >= -15 AND ARRIVAL_DELAY <= 15
659     GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
660     ORDER BY DELAYED_FLIGHTS DESC
661
662     ) TO 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
663     Analysis/SUBMISSION/INSTRUCTION_DELAYED_FLIGHTS.csv'
664     WITH CSV HEADER;
665

```

```

666  /* ----- */
667
668  /* FINDING DEPARTURE DELAY IN EACH MONTHS:
669      BASED ON HOW MANY FLIGHTS, HOW MANY MINUTES */
670
671  SELECT MONTH, DEPARTURE_DELAY AS DEPARTURE_DELAY_MINUTE,
672  COUNT(DEPARTURE_DELAY) AS NO_OF_DELAYED_FLIGHTS
673  FROM EM_FLIGHTS
674  WHERE DEPARTURE_DELAY > 0
675  GROUP BY MONTH, DEPARTURE_DELAY
676  ORDER BY NO_OF_DELAYED_FLIGHTS DESC;
677
678  /* FINDING EARLY DEPARTURE IN EACH MONTHS:
679      BASED ON HOW MANY FLIGHTS, HOW MANY MINUTES */
680
681
682  SELECT MONTH, ABS(DEPARTURE_DELAY) AS EARLY_DEPARTURE_MINUTE,
683  COUNT(DEPARTURE_DELAY) AS NO_OF_EARLY_DEPARTURE_FLIGHTS
684  FROM EM_FLIGHTS
685  WHERE DEPARTURE_DELAY < 0 -- WHEN DEPARTURE_DELAY IS IN NEGATIVE
686  GROUP BY MONTH, DEPARTURE_DELAY
687  ORDER BY NO_OF_EARLY_DEPARTURE_FLIGHTS DESC;
688
689  /*
690  -----
691  */
692
693  /* Problem Statement 2:
694  Benchmarking the on-time performance, delay severity,
695  and cancellation rates of different airlines for competitive analysis and improvement
696  initiatives.
697  */
698
699  /* FINDING ON TIME PERFORMANCE (PERCENTAGE) OF EACH AIRLINE IN EACH MONTHS: */
700
701  WITH AIR_L_CTE AS
702  (
703      SELECT MONTH, AIRLINE,
704      COUNT(SCHEDULED_ARRIVAL) AS ON_TIME_FLIGHTS
705      FROM EM_FLIGHTS
706      WHERE
707          ARRIVAL_TIME <= SCHEDULED_ARRIVAL
708          AND ARRIVAL_TIME IS NOT NULL
709          AND CANCELLED = 0
710
711      GROUP BY MONTH, AIRLINE
712  ),
713
714  AIR_L_CTE2 AS
715  (
716
717      SELECT ALC.MONTH, ALC.AIRLINE,
718      ALN.AIRLINE AS AIRLINE_NAME,
719      ALC.ON_TIME_FLIGHTS
720
721      FROM AIR_L_CTE AS ALC
722      LEFT JOIN AIRLINES AS ALN
723      ON ALC.AIRLINE= ALN.IATA_CODE
724      ORDER BY ALC.MONTH
725  ),
726
727  AIR_L_CTE3 AS
728  (
729
730      SELECT
731      ALC2.MONTH,

```

```

732         ALC2.AIRLINE,
733         ALC2.AIRLINE_NAME,
734         ALC2.ON_TIME_FLIGHTS,
735         COUNT(EMF.ARRIVAL_TIME) AS NUMBER_OF_FLIGHTS_FLY
736     FROM AIR_L_CTE2 AS ALC2
737     JOIN EM_FLIGHTS AS EMF
738     ON ALC2.AIRLINE = EMF.AIRLINE
739     WHERE EMF.CANCELLED = 0
740     GROUP BY
741         ALC2.MONTH,
742         ALC2.AIRLINE,
743         ALC2.AIRLINE_NAME,
744         ALC2.ON_TIME_FLIGHTS
745     ORDER BY ALC2.MONTH
746 )
747 SELECT *, ROUND((ON_TIME_FLIGHTS::NUMERIC /NUMBER_OF_FLIGHTS_FLY)*100, 2) AS
ON_TIME_PERCENTAGE
748 FROM AIR_L_CTE3;
749
750
751 -- FINDING ON TIME PERFORMANCE ON AIRLINES:
752 SELECT
753     EMF.AIRLINE AS AIRLINE_IATA,
754     ARL.AIRLINE AS AIRLINE_NAME,
755     COUNT(EMF.SCHEDULED_ARRIVAL) AS ON_TIME_FLIGHTS
756
757     FROM EM_FLIGHTS AS EMF
758     JOIN AIRLINES AS ARL
759     ON EMF.AIRLINE = ARL.IATA_CODE
760
761     WHERE EMF.ARRIVAL_TIME <= EMF.SCHEDULED_ARRIVAL AND EMF.ARRIVAL_TIME IS NOT NULL
762     GROUP BY EMF.AIRLINE, ARL.AIRLINE
763     ORDER BY ON_TIME_FLIGHTS DESC;
764
765 SELECT * FROM AIRLINES;
766
767 SELECT * FROM EM_FLIGHTS LIMIT 10;
768
769 /*
770
771 THE SOUTHWEST AIRLINE DELIVER BEST ON TIME PERFORMANCE
772
773 */
774
775
776 -- -- BY AIRLINE
777 -- SELECT MONTH, AIRLINE,
778 -- COUNT(SCHEDULED_ARRIVAL) AS ON_TIME_FLIGHTS
779 -- FROM EM_FLIGHTS
780 -- WHERE ARRIVAL_TIME <= SCHEDULED_ARRIVAL AND ARRIVAL_TIME IS NOT NULL
781 -- GROUP BY MONTH,AIRLINE;
782
783 -- WORKING ON AIRLINES SCHEDULED_ARRIVAL AND ACTUAL ARRIVAL_TIME
784
785 -- FINDING ON TIME PERFORMANCE ON MONTH:
786
787 SELECT MONTH,
788     COUNT(SCHEDULED_ARRIVAL) AS ON_TIME_FLIGHTS
789 FROM EM_FLIGHTS
790 WHERE ARRIVAL_TIME <= SCHEDULED_ARRIVAL
791 GROUP BY MONTH
792 ORDER BY ON_TIME_FLIGHTS DESC;
793
794 /*
795 POOREST ON TIME PERFORMANCE HAPPENED IN JANUARY AND FEBRUARY MAY BE DUE TO THUNDER
STROME, UN EXPECTED MACHINARY PROBLEMS
796
797 SELECT EMF.MONTH, EMF.AIRLINE AS AIRLINE_IATA,
798     ARL.AIRLINE AS AIRLINE_NAME,

```

```

799     COUNT(EMF.SCHEDULED_ARRIVAL) AS   ON_TIME_FLIGHTS
800
801     FROM EM_FLIGHTS AS EMF
802     JOIN AIRLINES AS ARL
803     ON EMF.AIRLINE = ARL.IATA_CODE
804
805     WHERE ARRIVAL_TIME <= SCHEDULED_ARRIVAL
806     GROUP BY EMF.MONTH, EMF.AIRLINE, ARL.AIRLINE
807     ORDER BY ON_TIME_FLIGHTS DESC;
808
809  /*-----*/
810
811  /* PROBLEM 2 PART 2:
812  FINDING ON DELAY SEVERITY OF EACH AIRLINE IN EACH MONTHS
813  */
814
815
816  WITH FT_DEPT_CTE AS
817      (SELECT MONTH, AIRLINE,
818       COUNT(DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
819       FROM EM_FLIGHTS
820       WHERE DEPARTURE_DELAY > 0
821       GROUP BY MONTH, AIRLINE
822      ),
823  FT_ARRIV_CTE AS
824      (SELECT MONTH, AIRLINE,
825       COUNT(ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
826       FROM EM_FLIGHTS
827       WHERE ARRIVAL_DELAY > 0
828       GROUP BY MONTH, AIRLINE
829      ),
830
831  FT_AIRSYS_CTE AS
832      (SELECT MONTH, AIRLINE,
833       COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
834       FROM EM_FLIGHTS
835       WHERE AIR_SYSTEM_DELAY > 0
836       GROUP BY MONTH, AIRLINE
837      ),
838  FT_WEATH_CTE AS
839      (SELECT MONTH, AIRLINE,
840       COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
841       FROM EM_FLIGHTS
842       WHERE WEATHER_DELAY > 0
843       GROUP BY MONTH, AIRLINE
844      ),
845
846  FT_LT_AIRCFT_CTE AS
847      (SELECT MONTH, AIRLINE,
848       COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
849       FROM EM_FLIGHTS
850       WHERE LATE_AIRCRAFT_DELAY > 0
851       GROUP BY MONTH, AIRLINE
852      ),
853
854  FT_AIRL_CTE AS
855      (SELECT MONTH, AIRLINE,
856       COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
857       FROM EM_FLIGHTS
858       WHERE AIRLINE_DELAY > 0
859       GROUP BY MONTH, AIRLINE
860      ),
861
862  FT_SECU_CTE AS
863      (SELECT MONTH, AIRLINE,
864       COUNT(SECURITY_DELAY) AS SECURITY_DELAYED_FLIGHTS
865       FROM EM_FLIGHTS
866       WHERE DEPARTURE_DELAY > 0
867       GROUP BY MONTH, AIRLINE

```

```

868     ),
869
870 CUSTOM_JOIN_1 AS
871     (SELECT F1.MONTH, F1.AIRLINE, F1.DEPARTURE_DELAYED_FLIGHTS,
872         F2.ARRIVAL_DELAYED_FLIGHTS,
873         F3.AIR_SYSTEM_DELAYED_FLIGHTS,
874         F4.WEATHER_DELAYED_FLIGHTS,
875         F5.LATE_AIRCRAFT_DELAYED_FLIGHTS,
876         F6.SECURITY_DELAYED_FLIGHTS
877     FROM FT_DEPT_CTE AS F1
878     LEFT JOIN FT_ARRIV_CTE AS F2
879     ON F1.MONTH = F2.MONTH AND F1.AIRLINE = F2.AIRLINE
880     LEFT JOIN FT_AIRSYS_CTE AS F3
881     ON F1.MONTH = F3.MONTH AND F1.AIRLINE = F3.AIRLINE
882     LEFT JOIN FT_WEATH_CTE AS F4
883     ON F1.MONTH = F4.MONTH AND F1.AIRLINE = F4.AIRLINE
884     LEFT JOIN FT_LT_AIRCFT_CTE AS F5
885     ON F1.MONTH = F5.MONTH AND F1.AIRLINE = F5.AIRLINE
886     LEFT JOIN FT_SECU_CTE AS F6
887     ON F1.MONTH = F6.MONTH AND F1.AIRLINE = F6.AIRLINE
888     ),
889 CUSTOM_JOIN_2 AS
890     (
891     SELECT MONTH, AIRLINE,
892     COUNT (DEPARTURE_TIME) AS TOTAL_FLIGHTS_DEPARTED FROM EM_FLIGHTS
893     WHERE DEPARTURE_TIME IS NOT NULL
894     GROUP BY MONTH, AIRLINE
895     ),
896 CUSTOM_JOIN_3 AS
897     (
898     SELECT CJ1.*,
899     CJ2.TOTAL_FLIGHTS_DEPARTED
900     FROM CUSTOM_JOIN_1 AS CJ1
901     JOIN CUSTOM_JOIN_2 AS CJ2
902     ON CJ1.MONTH = CJ2.MONTH AND CJ1.AIRLINE = CJ2.AIRLINE
903     ),
904 CUSTOM_JOIN_4 AS
905     (
906     SELECT MONTH, AIRLINE,
907     (DEPARTURE_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
908     DEPARTURE_DELAYED_PERCENTAGE,
909     (ARRIVAL_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
910     ARRIVAL_DELAYED_PERCENTAGE,
911     (AIR_SYSTEM_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
912     AIR_SYSTEM_DELAYED_PERCENTAGE,
913     (WEATHER_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
914     WEATHER_DELAYED_PERCENTAGE,
915     (LATE_AIRCRAFT_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
916     LATE_AIRCRAFT_DELAYED_PERCENTAGE,
917     (SECURITY_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
918     SECURITY_DELAYED_PERCENTAGE
919     FROM CUSTOM_JOIN_3
920     )
921
922 SELECT CJ3.*,
923 CJ4.DEPARTURE_DELAYED_PERCENTAGE,
924 CJ4.ARRIVAL_DELAYED_PERCENTAGE ,
925 CJ4.AIR_SYSTEM_DELAYED_PERCENTAGE ,
926 CJ4.WEATHER_DELAYED_PERCENTAGE ,
927 CJ4.LATE_AIRCRAFT_DELAYED_PERCENTAGE ,
928 CJ4.SECURITY_DELAYED_PERCENTAGE
929 FROM CUSTOM_JOIN_4 AS CJ4
930 JOIN CUSTOM_JOIN_3 AS CJ3
931 ON CJ3.MONTH = CJ4.MONTH AND CJ3.AIRLINE = CJ4.AIRLINE;
932
933 /* ----- */

```

```

931
932 -- EXPORTING DELAY SEVERITY OF EACH AIRLINE IN EACH MONTHS:
933
934 COPY
935 (
936     WITH FT_DEPT_CTE AS
937     (SELECT MONTH, AIRLINE,
938      COUNT(DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
939      FROM EM_FLIGHTS
940      WHERE DEPARTURE_DELAY > 0
941      GROUP BY MONTH, AIRLINE
942     ),
943     FT_ARRIV_CTE AS
944     (SELECT MONTH, AIRLINE,
945      COUNT(ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
946      FROM EM_FLIGHTS
947      WHERE ARRIVAL_DELAY > 0
948      GROUP BY MONTH, AIRLINE
949     ),
950
951     FT_AIRSYS_CTE AS
952     (SELECT MONTH, AIRLINE,
953      COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
954      FROM EM_FLIGHTS
955      WHERE AIR_SYSTEM_DELAY > 0
956      GROUP BY MONTH, AIRLINE
957     ),
958     FT_WEATH_CTE AS
959     (SELECT MONTH, AIRLINE,
960      COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
961      FROM EM_FLIGHTS
962      WHERE WEATHER_DELAY > 0
963      GROUP BY MONTH, AIRLINE
964     ),
965
966     FT_LT_AIRCFT_CTE AS
967     (SELECT MONTH, AIRLINE,
968      COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
969      FROM EM_FLIGHTS
970      WHERE LATE_AIRCRAFT_DELAY > 0
971      GROUP BY MONTH, AIRLINE
972     ),
973
974     FT_AIRL_CTE AS
975     (SELECT MONTH, AIRLINE,
976      COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
977      FROM EM_FLIGHTS
978      WHERE AIRLINE_DELAY > 0
979      GROUP BY MONTH, AIRLINE
980     ),
981
982     FT_SECU_CTE AS
983     (SELECT MONTH, AIRLINE,
984      COUNT(SEcurity_DELAY) AS SECURITY_DELAYED_FLIGHTS
985      FROM EM_FLIGHTS
986      WHERE DEPARTURE_DELAY > 0
987      GROUP BY MONTH, AIRLINE
988     ),
989
990     CUSTOM_JOIN_1 AS
991     (SELECT F1.MONTH, F1.AIRLINE,
992      COALESCE(F1.DEPARTURE_DELAYED_FLIGHTS, 0) AS DEPARTURE_DELAYED_FLIGHTS,
993      COALESCE(F2.ARRIVAL_DELAYED_FLIGHTS, 0) AS ARRIVAL_DELAYED_FLIGHTS,
994      COALESCE(F3.AIR_SYSTEM_DELAYED_FLIGHTS, 0) AS AIR_SYSTEM_DELAYED_FLIGHTS,
995      COALESCE(F4.WEATHER_DELAYED_FLIGHTS, 0) AS WEATHER_DELAYED_FLIGHTS,
996      COALESCE(F5.LATE_AIRCRAFT_DELAYED_FLIGHTS, 0) AS LATE_AIRCRAFT_DELAYED_FLIGHTS,
997      COALESCE(F6.SECURITY_DELAYED_FLIGHTS, 0) AS SECURITY_DELAYED_FLIGHTS
998      FROM FT_DEPT_CTE AS F1
999      LEFT JOIN FT_ARRIV_CTE AS F2

```

```

1000     ON F1.MONTH = F2.MONTH AND F1.AIRLINE = F2.AIRLINE
1001     LEFT JOIN FT_AIRSYS_CTE AS F3
1002     ON F1.MONTH = F3.MONTH AND F1.AIRLINE = F3.AIRLINE
1003     LEFT JOIN FT_WEATH_CTE AS F4
1004     ON F1.MONTH = F4.MONTH AND F1.AIRLINE = F4.AIRLINE
1005     LEFT JOIN FT_LT_AIRCFT_CTE AS F5
1006     ON F1.MONTH = F5.MONTH AND F1.AIRLINE = F5.AIRLINE
1007     LEFT JOIN FT_SECU_CTE AS F6
1008     ON F1.MONTH = F6.MONTH AND F1.AIRLINE = F6.AIRLINE
1009 ),
1010 CUSTOM_JOIN_2 AS
1011 (
1012     SELECT MONTH, AIRLINE,
1013     COUNT (DEPARTURE_TIME) AS TOTAL_FLIGHTS_DEPARTED FROM EM_FLIGHTS
1014     WHERE DEPARTURE_TIME IS NOT NULL
1015     GROUP BY MONTH, AIRLINE
1016 ),
1017 CUSTOM_JOIN_3 AS
1018 (
1019     SELECT CJ1.*,
1020     CJ2.TOTAL_FLIGHTS_DEPARTED
1021     FROM CUSTOM_JOIN_1 AS CJ1
1022     JOIN CUSTOM_JOIN_2 AS CJ2
1023     ON CJ1.MONTH = CJ2.MONTH AND CJ1.AIRLINE = CJ2.AIRLINE
1024 ),
1025 CUSTOM_JOIN_4 AS
1026 (
1027     SELECT MONTH, AIRLINE,
1028     ROUND((DEPARTURE_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1029     DEPARTURE_DELAYED_PERCENTAGE,
1030     ROUND((ARRIVAL_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1031     ARRIVAL_DELAYED_PERCENTAGE,
1032     ROUND((AIR_SYSTEM_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1033     AIR_SYSTEM_DELAYED_PERCENTAGE,
1034     ROUND((WEATHER_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1035     WEATHER_DELAYED_PERCENTAGE,
1036     ROUND((LATE_AIRCRAFT_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1037     LATE_AIRCRAFT_DELAYED_PERCENTAGE,
1038     ROUND((SECURITY_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1039     SECURITY_DELAYED_PERCENTAGE
1040     FROM CUSTOM_JOIN_3
1041 )
1042 SELECT CJ3.*,
1043     COALESCE(CJ4.DEPARTURE_DELAYED_PERCENTAGE, 0) AS DEPARTURE_DELAYED_PERCENTAGE,
1044     COALESCE(CJ4.ARRIVAL_DELAYED_PERCENTAGE, 0) AS ARRIVAL_DELAYED_PERCENTAGE,
1045     COALESCE(CJ4.AIR_SYSTEM_DELAYED_PERCENTAGE, 0) AS AIR_SYSTEM_DELAYED_PERCENTAGE,
1046     COALESCE(CJ4.WEATHER_DELAYED_PERCENTAGE, 0) AS WEATHER_DELAYED_PERCENTAGE,
1047     COALESCE(CJ4.LATE_AIRCRAFT_DELAYED_PERCENTAGE, 0) AS
1048     LATE_AIRCRAFT_DELAYED_PERCENTAGE,
1049     COALESCE(CJ4.SECURITY_DELAYED_PERCENTAGE, 0) AS SECURITY_DELAYED_PERCENTAGE
1050 FROM CUSTOM_JOIN_4 AS CJ4
1051 JOIN CUSTOM_JOIN_3 AS CJ3
1052 ON CJ3.MONTH = CJ4.MONTH AND CJ3.AIRLINE = CJ4.AIRLINE
1053 ) TO 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
1054 Analysis/SUBMISSION/CUSTOM_CSV/AIRLINES_DELAY_SEVERITY_MONTHS.csv'
1055 WITH CSV HEADER;
1056
1057 /* PROBLEM 2 PART 2.2:
1058 FINDING ON DELAY SEVERITY OF "EACH AIRLINE FROM DEPARTURE AIRPORT" IN EACH MONTHS
1059 */
1060
1061 WITH FT_DEPT_CTE AS
1062 (SELECT MONTH, AIRLINE, ORIGIN_AIRPORT,
1063     COUNT(DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
1064     FROM EM_FLIGHTS
1065     WHERE DEPARTURE_DELAY > 0

```



```

1061     GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1062 ),
1063 FT_ARRIV_CTE AS
1064     (SELECT MONTH, AIRLINE, ORIGIN_AIRPORT,
1065      COUNT(ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
1066      FROM EM_FLIGHTS
1067      WHERE ARRIVAL_DELAY > 0
1068      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1069      ),
1070
1071 FT_AIRSYS_CTE AS
1072     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1073      COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
1074      FROM EM_FLIGHTS
1075      WHERE AIR_SYSTEM_DELAY > 0
1076      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1077      ),
1078 FT_WEATH_CTE AS
1079     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1080      COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
1081      FROM EM_FLIGHTS
1082      WHERE WEATHER_DELAY > 0
1083      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1084      ),
1085
1086 FT_LT_AIRCFT_CTE AS
1087     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1088      COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
1089      FROM EM_FLIGHTS
1090      WHERE LATE_AIRCRAFT_DELAY > 0
1091      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1092      ),
1093
1094 FT_AIRL_CTE AS
1095     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1096      COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
1097      FROM EM_FLIGHTS
1098      WHERE AIRLINE_DELAY > 0
1099      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1100      ),
1101
1102 FT_SECU_CTE AS
1103     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1104      COUNT(SEcurity_DELAY) AS SECURITY_DELAYED_FLIGHTS
1105      FROM EM_FLIGHTS
1106      WHERE DEPARTURE_DELAY > 0
1107      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1108      ),
1109
1110 CUSTOM_JOIN_1 AS
1111     (SELECT F1.MONTH, F1.AIRLINE, F1.ORIGIN_AIRPORT, F1.DEPARTURE_DELAYED_FLIGHTS,
1112      F2.ARRIVAL_DELAYED_FLIGHTS,
1113      F3.AIR_SYSTEM_DELAYED_FLIGHTS,
1114      F4.WEATHER_DELAYED_FLIGHTS,
1115      F5.LATE_AIRCRAFT_DELAYED_FLIGHTS,
1116      F6.SECURITY_DELAYED_FLIGHTS
1117      FROM FT_DEPT_CTE AS F1
1118      LEFT JOIN FT_ARRIV_CTE AS F2
1119      ON F1.MONTH = F2.MONTH AND F1.AIRLINE = F2.AIRLINE AND F1.ORIGIN_AIRPORT = F2.
1120      ORIGIN_AIRPORT
1121      LEFT JOIN FT_AIRSYS_CTE AS F3
1122      ON F1.MONTH = F3.MONTH AND F1.AIRLINE = F3.AIRLINE AND F1.ORIGIN_AIRPORT = F3.
1123      ORIGIN_AIRPORT
1124      LEFT JOIN FT_WEATH_CTE AS F4
1125      ON F1.MONTH = F4.MONTH AND F1.AIRLINE = F4.AIRLINE AND F1.ORIGIN_AIRPORT = F4.
1126      ORIGIN_AIRPORT
1127      LEFT JOIN FT_LT_AIRCFT_CTE AS F5
1128      ON F1.MONTH = F5.MONTH AND F1.AIRLINE = F5.AIRLINE AND F1.ORIGIN_AIRPORT = F5.
1129      ORIGIN_AIRPORT

```

```

1126         LEFT JOIN FT_SECU_CTE AS F6
1127         ON F1.MONTH = F6.MONTH AND F1.AIRLINE = F6.AIRLINE AND F1.ORIGIN_AIRPORT = F6.
           ORIGIN_AIRPORT
1128     ),
1129     CUSTOM_JOIN_2 AS
1130     (
1131         SELECT MONTH, AIRLINE, ORIGIN_AIRPORT,
1132         COUNT (DEPARTURE_TIME) AS TOTAL_FLIGHTS_DEPARTED FROM EM_FLIGHTS
1133         WHERE DEPARTURE_TIME IS NOT NULL
1134         GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1135     ),
1136     CUSTOM_JOIN_3 AS
1137     (
1138         SELECT CJ1.*,
1139         CJ2.TOTAL_FLIGHTS_DEPARTED
1140         FROM CUSTOM_JOIN_1 AS CJ1
1141         JOIN CUSTOM_JOIN_2 AS CJ2
1142         ON CJ1.MONTH = CJ2.MONTH AND CJ1.AIRLINE = CJ2.AIRLINE AND CJ1.ORIGIN_AIRPORT = CJ2.
           ORIGIN_AIRPORT
1143     ),
1144     CUSTOM_JOIN_4 AS
1145     (
1146         SELECT MONTH, AIRLINE, ORIGIN_AIRPORT,
1147         (DEPARTURE_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
           DEPARTURE_DELAYED_PERCENTAGE,
1148         (ARRIVAL_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
           ARRIVAL_DELAYED_PERCENTAGE,
1149         (AIR_SYSTEM_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
           AIR_SYSTEM_DELAYED_PERCENTAGE,
1150         (WEATHER_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
           WEATHER_DELAYED_PERCENTAGE,
1151         (LATE_AIRCRAFT_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
           LATE_AIRCRAFT_DELAYED_PERCENTAGE,
1152         (SECURITY_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100 AS
           SECURITY_DELAYED_PERCENTAGE
1153     FROM CUSTOM_JOIN_3
1154     )
1155
1156     SELECT CJ3.*,
1157         CJ4.DEPARTURE_DELAYED_PERCENTAGE,
1158         CJ4.ARRIVAL_DELAYED_PERCENTAGE ,
1159         CJ4.AIR_SYSTEM_DELAYED_PERCENTAGE ,
1160         CJ4.WEATHER_DELAYED_PERCENTAGE ,
1161         CJ4.LATE_AIRCRAFT_DELAYED_PERCENTAGE ,
1162         CJ4.SECURITY_DELAYED_PERCENTAGE
1163     FROM CUSTOM_JOIN_4 AS CJ4
1164     JOIN CUSTOM_JOIN_3 AS CJ3
1165     ON CJ3.MONTH = CJ4.MONTH
1166     AND CJ3.AIRLINE = CJ4.AIRLINE
1167     AND CJ3.ORIGIN_AIRPORT = CJ4.ORIGIN_AIRPORT
1168     ;
1169
1170
1171 -- EXPORTING DELAY SEVERITY OF EACH AIRLINE FROM ORIGIN_AIRPORT IN EACH MONTHS:
1172
1173 COPY
1174     (
1175         WITH FT_DEPT_CTE AS
1176         (SELECT MONTH, AIRLINE, ORIGIN_AIRPORT,
1177         COUNT (DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
1178         FROM EM_FLIGHTS
1179         WHERE DEPARTURE_DELAY > 0
1180         GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1181         ),
1182         FT_ARRIV_CTE AS
1183         (SELECT MONTH, AIRLINE, ORIGIN_AIRPORT,
1184         COUNT (ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
1185         FROM EM_FLIGHTS
1186         WHERE ARRIVAL_DELAY > 0

```

```

1187     GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1188 ),
1189
1190 FT_AIRSYS_CTE AS
1191     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1192      COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
1193      FROM EM_FLIGHTS
1194      WHERE AIR_SYSTEM_DELAY > 0
1195      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1196      ),
1197 FT_WEATH_CTE AS
1198     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1199      COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
1200      FROM EM_FLIGHTS
1201      WHERE WEATHER_DELAY > 0
1202      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1203      ),
1204
1205 FT_LT_AIRCFT_CTE AS
1206     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1207      COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
1208      FROM EM_FLIGHTS
1209      WHERE LATE_AIRCRAFT_DELAY > 0
1210      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1211      ),
1212
1213 FT_AIRL_CTE AS
1214     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1215      COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
1216      FROM EM_FLIGHTS
1217      WHERE AIRLINE_DELAY > 0
1218      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1219      ),
1220
1221 FT_SECU_CTE AS
1222     (SELECT MONTH, AIRLINE , ORIGIN_AIRPORT,
1223      COUNT(SECURITY_DELAY) AS SECURITY_DELAYED_FLIGHTS
1224      FROM EM_FLIGHTS
1225      WHERE DEPARTURE_DELAY > 0
1226      GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1227      ),
1228
1229 CUSTOM_JOIN_1 AS
1230     (SELECT F1.MONTH, F1.AIRLINE, F1.ORIGIN_AIRPORT,
1231      COALESCE(F1.DEPARTURE_DELAYED_FLIGHTS, 0) AS DEPARTURE_DELAYED_FLIGHTS,
1232      COALESCE(F2.ARRIVAL_DELAYED_FLIGHTS, 0) AS ARRIVAL_DELAYED_FLIGHTS,
1233      COALESCE(F3.AIR_SYSTEM_DELAYED_FLIGHTS, 0) AS AIR_SYSTEM_DELAYED_FLIGHTS,
1234      COALESCE(F4.WEATHER_DELAYED_FLIGHTS, 0) AS WEATHER_DELAYED_FLIGHTS,
1235      COALESCE(F5.LATE_AIRCRAFT_DELAYED_FLIGHTS, 0) AS LATE_AIRCRAFT_DELAYED_FLIGHTS,
1236      COALESCE(F6.SECURITY_DELAYED_FLIGHTS, 0) AS SECURITY_DELAYED_FLIGHTS
1237      FROM FT_DEPT_CTE AS F1
1238      LEFT JOIN FT_ARRIV_CTE AS F2
1239      ON F1.MONTH = F2.MONTH AND F1.AIRLINE = F2.AIRLINE AND F1.ORIGIN_AIRPORT = F2.
1240      ORIGIN_AIRPORT
1241      LEFT JOIN FT_AIRSYS_CTE AS F3
1242      ON F1.MONTH = F3.MONTH AND F1.AIRLINE = F3.AIRLINE AND F1.ORIGIN_AIRPORT = F3.
1243      ORIGIN_AIRPORT
1244      LEFT JOIN FT_WEATH_CTE AS F4
1245      ON F1.MONTH = F4.MONTH AND F1.AIRLINE = F4.AIRLINE AND F1.ORIGIN_AIRPORT = F4.
1246      ORIGIN_AIRPORT
1247      LEFT JOIN FT_LT_AIRCFT_CTE AS F5
1248      ON F1.MONTH = F5.MONTH AND F1.AIRLINE = F5.AIRLINE AND F1.ORIGIN_AIRPORT = F5.
1249      ORIGIN_AIRPORT
1250      LEFT JOIN FT_SECU_CTE AS F6
1251      ON F1.MONTH = F6.MONTH AND F1.AIRLINE = F6.AIRLINE AND F1.ORIGIN_AIRPORT = F6.
1252      ORIGIN_AIRPORT
1253      ),
1254 CUSTOM_JOIN_2 AS
1255     (

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```

1251     SELECT MONTH, AIRLINE, ORIGIN_AIRPORT,
1252     COUNT (DEPARTURE_TIME) AS TOTAL_FLIGHTS_DEPARTED FROM EM_FLIGHTS
1253     WHERE DEPARTURE_TIME IS NOT NULL
1254     GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1255     ),
1256 CUSTOM_JOIN_3 AS
1257     (
1258     SELECT CJ1.*,
1259     CJ2.TOTAL_FLIGHTS_DEPARTED
1260     FROM CUSTOM_JOIN_1 AS CJ1
1261     JOIN CUSTOM_JOIN_2 AS CJ2
1262     ON CJ1.MONTH = CJ2.MONTH AND CJ1.AIRLINE = CJ2.AIRLINE AND CJ1.ORIGIN_AIRPORT = CJ2.
1263     ORIGIN_AIRPORT
1264     ),
1265 CUSTOM_JOIN_4 AS
1266     (
1267     SELECT MONTH, AIRLINE, ORIGIN_AIRPORT,
1268     ROUND((DEPARTURE_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1269     DEPARTURE_DELAYED_PERCENTAGE,
1270     ROUND((ARRIVAL_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1271     ARRIVAL_DELAYED_PERCENTAGE,
1272     ROUND((AIR_SYSTEM_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1273     AIR_SYSTEM_DELAYED_PERCENTAGE,
1274     ROUND((WEATHER_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1275     WEATHER_DELAYED_PERCENTAGE,
1276     ROUND((LATE_AIRCRAFT_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1277     LATE_AIRCRAFT_DELAYED_PERCENTAGE,
1278     ROUND((SECURITY_DELAYED_FLIGHTS::NUMERIC / TOTAL_FLIGHTS_DEPARTED) * 100,2) AS
1279     SECURITY_DELAYED_PERCENTAGE
1280     FROM CUSTOM_JOIN_3
1281     )
1282
1283     SELECT CJ3.*,
1284     COALESCE(CJ4.DEPARTURE_DELAYED_PERCENTAGE, 0) AS DEPARTURE_DELAYED_PERCENTAGE,
1285     COALESCE(CJ4.ARRIVAL_DELAYED_PERCENTAGE, 0) AS ARRIVAL_DELAYED_PERCENTAGE,
1286     COALESCE(CJ4.AIR_SYSTEM_DELAYED_PERCENTAGE, 0) AS AIR_SYSTEM_DELAYED_PERCENTAGE,
1287     COALESCE(CJ4.WEATHER_DELAYED_PERCENTAGE, 0) AS WEATHER_DELAYED_PERCENTAGE,
1288     COALESCE(CJ4.LATE_AIRCRAFT_DELAYED_PERCENTAGE, 0) AS
1289     LATE_AIRCRAFT_DELAYED_PERCENTAGE,
1290     COALESCE(CJ4.SECURITY_DELAYED_PERCENTAGE, 0) AS SECURITY_DELAYED_PERCENTAGE
1291     FROM CUSTOM_JOIN_4 AS CJ4
1292     JOIN CUSTOM_JOIN_3 AS CJ3
1293     ON CJ3.MONTH = CJ4.MONTH
1294     AND CJ3.AIRLINE = CJ4.AIRLINE
1295     AND CJ3.ORIGIN_AIRPORT = CJ4.ORIGIN_AIRPORT
1296
1297     ) TO 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
1298     Analysis/SUBMISSION/CUSTOM CSV/AIRLINES_AIRPORT_MONTHLY_DELAYED.csv'
1299     WITH CSV HEADER;
1300
1301
1302 /* PROBLEM 2 PART 3:
1303 FINDING ON CANCELLATION SEVERITY RATES OF EACH AIRLINE FROM ORIGIN AIRPORT IN EACH
1304 MONTHS
1305 */
1306
1307 -- AIRLINE>AIROPRT MONTHLY CANCELLATION GROUP BY CANCELLATION_REASON:
1308
1309 WITH FT_CANCELLED_CTE AS
1310     (SELECT MONTH, AIRLINE, ORIGIN_AIRPORT, CANCELLATION_REASON,
1311     COUNT(CANCELLED) AS CANCELLED_FLIGHTS
1312     FROM EM_FLIGHTS
1313     WHERE CANCELLED = 1
1314     GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT, CANCELLATION_REASON
1315     )
1316     SELECT * FROM FT_CANCELLED_CTE;
1317
1318 -- AIRLINE>AIROPRT MONTHLY CANCELLATION PERCENTAGE:
1319

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```

1310 WITH FT_CANCEL2_CTE AS
1311 (
1312     SELECT
1313         MONTH,
1314         AIRLINE,
1315         ORIGIN_AIRPORT,
1316         COUNT(SCHEDULED_DEPARTURE) AS SCHEDULED_FLIGHTS_COUNT,
1317         COUNT(CASE WHEN CANCELLED = 1 THEN 1 END) AS CANCELLED_FLIGHTS
1318     FROM EM_FLIGHTS
1319     GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1320 ),
1321 FT_CANCEL2_PERCENT AS
1322 (
1323     SELECT *,
1324     ROUND ((CANCELLED_FLIGHTS::NUMERIC/ SCHEDULED_FLIGHTS_COUNT)*100, 2) AS
1325     CANCELLED_FT_PERCENT
1326     FROM FT_CANCEL2_CTE
1327 )
1328 SELECT * FROM FT_CANCEL2_PERCENT;
1329
1330 -- AIRPORT WISE CANCELLED_FLIGHTS
1331 SELECT EMF.ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA, ARP1.AIRPORT AS ORIGIN_AIRPORT_NAME
1332 ,
1333 EMF.DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA, ARP2.AIRPORT AS
1334 DESTINATION_AIRPORT_NAME,
1335 COUNT(EMF.CANCELLED) AS CANCELLED_FLIGHTS
1336 FROM EM_FLIGHTS AS EMF
1337 JOIN AIRPORTS AS ARP1
1338 ON EMF.ORIGIN_AIRPORT = ARP1.IATA_CODE
1339
1340 JOIN AIRPORTS AS ARP2
1341 ON EMF.DESTINATION_AIRPORT = ARP2.IATA_CODE
1342
1343 WHERE CANCELLED > 0
1344 GROUP BY EMF.ORIGIN_AIRPORT, EMF.DESTINATION_AIRPORT, ARP1.AIRPORT, ARP2.AIRPORT
1345 ORDER BY CANCELLED_FLIGHTS ASC
1346 -- ORDER BY CANCELLED_FLIGHTS ASC
1347 ;
1348
1349 -- MONTH WISE CANCELLED_FLIGHTS
1350
1351 SELECT
1352     MONTH,
1353     COUNT(CANCELLED) AS CANCELLED_FLIGHTS
1354 FROM EM_FLIGHTS
1355 WHERE CANCELLED > 0 OR CANCELLED=1
1356 GROUP BY MONTH
1357 ORDER BY CANCELLED_FLIGHTS DESC;
1358
1359 -- SELECT * FROM AIRPORTS;
1360
1361 -- EXPORTING CANCELLATION SEVERITY RATES OF EACH AIRLINE FROM ORIGIN AIRPORT IN EACH
1362 MONTHS:
1363
1364 COPY
1365 (
1366     WITH FT_CANCEL2_CTE AS
1367     (
1368         SELECT
1369             MONTH,
1370             AIRLINE,
1371             ORIGIN_AIRPORT,
1372             COUNT(SCHEDULED_DEPARTURE) AS SCHEDULED_FLIGHTS_COUNT,
1373             COUNT(CASE WHEN CANCELLED = 1 THEN 1 END) AS CANCELLED_FLIGHTS
1374         FROM EM_FLIGHTS
1375         GROUP BY MONTH, AIRLINE, ORIGIN_AIRPORT
1376     ),
1377     FT_CANCEL2_PERCENT AS

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```

1375         (
1376         SELECT *,
1377         ROUND ((CANCELLED_FLIGHTS::NUMERIC/ SCHEDULED_FLIGHTS_COUNT)*100, 2)
        AS CANCELLED_FT_PERCENT
        FROM FT_CANCEL2_CTE
        )
1378
1379
1380 SELECT * FROM FT_CANCEL2_PERCENT
1381 )
1382 TO 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
Analysis/SUBMISSION/CUSTOM CSV/AIRLINES_AIRPORT_MONTHLY_CANCELLED.csv'
WITH CSV HEADER;

1383
1384
1385
1386
1387 -- AIRLINE MONTHLY CANCELLATION PERCENTAGE:
1388
1389 WITH FT_CANCEL2_CTE AS
1390 (
1391     SELECT
1392         MONTH,
1393         AIRLINE,
1394         COUNT(SCHEDULED_DEPARTURE) AS SCHEDULED_FLIGHTS_COUNT,
1395         COUNT(CASE WHEN CANCELLED = 1 THEN 1 END) AS CANCELLED_FLIGHTS
1396     FROM EM_FLIGHTS
1397     GROUP BY MONTH, AIRLINE
1398 ),
1399 FT_CANCEL2_PERCENT AS
1400 (
1401     SELECT *,
1402     ROUND ((CANCELLED_FLIGHTS::NUMERIC/ SCHEDULED_FLIGHTS_COUNT)*100, 2) AS
    CANCELLED_FT_PERCENT
    FROM FT_CANCEL2_CTE
    )
1403
1404
1405 SELECT * FROM FT_CANCEL2_PERCENT
1406 ORDER BY CANCELLED_FT_PERCENT DESC;
1407
1408
1409 -- FROM ORIGIN AIRPORTS MONTHLY CANCELLATION PERCENTAGE:
1410
1411 WITH FT_CANCEL2_CTE AS
1412 (
1413     SELECT
1414         MONTH,
1415         ORIGIN_AIRPORT,
1416         COUNT(SCHEDULED_DEPARTURE) AS SCHEDULED_FLIGHTS_COUNT,
1417         COUNT(CASE WHEN CANCELLED = 1 THEN 1 END) AS CANCELLED_FLIGHTS
1418     FROM EM_FLIGHTS
1419     GROUP BY MONTH, ORIGIN_AIRPORT
1420 ),
1421 FT_CANCEL2_PERCENT AS
1422 (
1423     SELECT *,
1424     ROUND ((CANCELLED_FLIGHTS::NUMERIC/ SCHEDULED_FLIGHTS_COUNT)*100, 2) AS
    CANCELLED_FT_PERCENT
    FROM FT_CANCEL2_CTE
    )
1425
1426
1427 SELECT * FROM FT_CANCEL2_PERCENT
1428 ORDER BY CANCELLED_FT_PERCENT DESC;
1429
1430
1431 -- CANCELLATION PATTERN/REASONS BASED ON THE TRAVELLING ROUTES:
1432
1433 WITH CR_CTE AS
1434 (
1435     SELECT ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA,
1436     DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA,
1437     CANCELLATION_REASON,
1438     COUNT(CANCELLED) AS CANCELLATION_COUNT
1439     FROM EM_FLIGHTS

```

```

1440 WHERE CANCELLED = 1
1441 GROUP BY ORIGIN_AIRPORT, DESTINATION_AIRPORT, CANCELLATION_REASON
1442 ORDER BY CANCELLATION_COUNT DESC
1443 ),
1444 ARP_CTE AS
1445 (
1446 SELECT ARP.IATA_CODE, ARP.AIRPORT AS ORIGIN_AIRPORT,
1447 ARP.CITY AS ORIGIN_CITY,
1448 ARP2.IATA_CODE AS DESTINATION_IATA_CODE,
1449 ARP2.AIRPORT AS DESTINATION_AIRPORT,
1450 ARP2.CITY AS DESTINATION_CITY
1451 FROM AIRPORTS AS ARP
1452 JOIN AIRPORTS AS ARP2
1453 ON ARP.IATA_CODE =ARP2.IATA_CODE
1454 ),
1455
1456 FINAL_OUTPUT AS
1457 (
1458 select CRC.ORIGIN_AIRPORT_IATA,
1459 ARPC.ORIGIN_AIRPORT,
1460 ARPC.ORIGIN_CITY,
1461
1462 CRC.DESTINATION_AIRPORT_IATA,
1463 ARPC2.DESTINATION_AIRPORT,
1464 ARPC2.DESTINATION_CITY,
1465
1466 CRC.CANCELLATION_REASON,
1467 CRC.CANCELLATION_COUNT
1468 FROM CR_CTE AS CRC
1469 JOIN ARP_CTE AS ARPC
1470 ON CRC.ORIGIN_AIRPORT_IATA =ARPC.IATA_CODE
1471
1472 JOIN ARP_CTE AS ARP2
1473 ON CRC.DESTINATION_AIRPORT_IATA =ARP2.DESTINATION_IATA_CODE
1474 )
1475 SELECT * FROM FINAL_OUTPUT;
1476
1477
1478 -- EXPORTING CANCELLATION PATTERN/REASONS BASED ON THE TRAVELLING ROUTS
1479
1480 COPY
1481 (
1482 WITH CR_CTE AS
1483 (
1484 SELECT ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA,
1485 DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA,
1486 CANCELLATION_REASON,
1487 COUNT(CANCELLED) AS CANCELLATION_COUNT
1488 FROM EM_FLIGHTS
1489 WHERE CANCELLED = 1
1490 GROUP BY ORIGIN_AIRPORT, DESTINATION_AIRPORT, CANCELLATION_REASON
1491 ORDER BY CANCELLATION_COUNT DESC
1492 ),
1493 ARP_CTE AS
1494 (
1495 SELECT ARP.IATA_CODE, ARP.AIRPORT AS ORIGIN_AIRPORT,
1496 ARP.CITY AS ORIGIN_CITY,
1497 ARP2.IATA_CODE AS DESTINATION_IATA_CODE,
1498 ARP2.AIRPORT AS DESTINATION_AIRPORT,
1499 ARP2.CITY AS DESTINATION_CITY
1500 FROM AIRPORTS AS ARP
1501 JOIN AIRPORTS AS ARP2
1502 ON ARP.IATA_CODE =ARP2.IATA_CODE
1503 ),
1504
1505 FINAL_OUTPUT AS
1506 (
1507 select CRC.ORIGIN_AIRPORT_IATA,
1508 ARPC.ORIGIN_AIRPORT,

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1509     ARPC.ORIGIN_CITY,
1510
1511     CRC.DESTINATION_AIRPORT_IATA,
1512     ARPC2.DESTINATION_AIRPORT,
1513     ARPC2.DESTINATION_CITY,
1514
1515     CRC.CANCELLATION_REASON,
1516     CRC.CANCELLATION_COUNT
1517 FROM CR_CTE AS CRC
1518 JOIN ARP_CTE AS ARPC
1519 ON CRC.ORIGIN_AIRPORT_IATA =ARPC.IATA_CODE
1520
1521 JOIN ARP_CTE AS ARPC2
1522 ON CRC.DESTINATION_AIRPORT_IATA =ARPC2.DESTINATION_IATA_CODE
1523 )
1524 SELECT * FROM FINAL_OUTPUT
1525
1526 )
1527 TO 'D:\Data Analytics\Internship\Labmentix\Emirates_Flight Analysis\SUBMISSION\CUSTOM
    CSV\CANCEL REASONS_ON_ROUTES.csv'
1528 WITH CSV HEADER;
1529
1530 -- -----
1531
1532 /*
    -----
    */
1533
1534 /* Problem Statement 3:
1535 Evaluating the operational performance of various U.S. airports
1536 to identify bottlenecks and areas for infrastructure or process improvement.
1537 */
1538
1539
1540 SELECT MONTH, ORIGIN_AIRPORT,
1541 COUNT(ARRIVAL_TIME) AS ON_TIME_FLIGHTS
1542 FROM EM_FLIGHTS
1543 WHERE ARRIVAL_TIME<= SCHEDULED_ARRIVAL AND ARRIVAL_TIME IS NOT NULL
1544 GROUP BY MONTH, ORIGIN_AIRPORT
1545 ORDER BY ON_TIME_FLIGHTS DESC;
1546
1547 -- ----
1548 SELECT * FROM EM_FLIGHTS LIMIT 1000;
1549
1550 -- ORIGIN AND DESTINATION AIRPORTS GROUP BY OPERATIONS:
1551
1552 WITH FT_ON_TIME_CTE AS (
1553     SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1554     COUNT(ARRIVAL_TIME) AS ON_TIME_FLIGHTS
1555     FROM EM_FLIGHTS
1556     WHERE ARRIVAL_TIME<= SCHEDULED_ARRIVAL AND ARRIVAL_TIME IS NOT NULL
1557     GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1558 ),
1559
1560 FT_CANCELLED_CTE AS
1561 (
1562     SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1563     COUNT(CANCELLED) AS CANCELLED_FLIGHTS
1564     FROM EM_FLIGHTS
1565     WHERE CANCELLED = 1
1566     GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1567 ),
1568
1569 FT_DEPT_CTE AS
1570 (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1571     COUNT(DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
1572     FROM EM_FLIGHTS
1573     WHERE DEPARTURE_DELAY > 0
1574     GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT

```



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1575     ),
1576
1577 FT_ARRIV_CTE AS
1578     (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1579      COUNT(ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
1580      FROM EM_FLIGHTS
1581      WHERE ARRIVAL_DELAY > 0
1582      GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1583     ),
1584
1585 FT_AIRSYS_CTE AS
1586     (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1587      COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
1588      FROM EM_FLIGHTS
1589      WHERE AIR_SYSTEM_DELAY > 0
1590      GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1591     ),
1592 FT_WEATH_CTE AS
1593     (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1594      COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
1595      FROM EM_FLIGHTS
1596      WHERE WEATHER_DELAY > 0
1597      GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1598     ),
1599
1600 FT_LT_AIRCFT_CTE AS
1601     (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1602      COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
1603      FROM EM_FLIGHTS
1604      WHERE LATE_AIRCRAFT_DELAY > 0
1605      GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1606     ),
1607
1608 FT_AIRL_CTE AS
1609     (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1610      COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
1611      FROM EM_FLIGHTS
1612      WHERE AIRLINE_DELAY > 0
1613      GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1614     ),
1615
1616 FT_SECU_CTE AS
1617     (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1618      COUNT(SEcurity_DELAY) AS SECURITY_DELAYED_FLIGHTS
1619      FROM EM_FLIGHTS
1620      WHERE DEPARTURE_DELAY > 0
1621      GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1622     ),
1623
1624 CUSTOM_JOIN_1 AS
1625     (SELECT F1.MONTH, F1.ORIGIN_AIRPORT, F1.DESTINATION_AIRPORT, F1.
1626      DEPARTURE_DELAYED_FLIGHTS,
1627      F2.ARRIVAL_DELAYED_FLIGHTS,
1628      F3.AIR_SYSTEM_DELAYED_FLIGHTS,
1629      F4.WEATHER_DELAYED_FLIGHTS,
1630      F5.LATE_AIRCRAFT_DELAYED_FLIGHTS,
1631      F6.SECURITY_DELAYED_FLIGHTS
1632      FROM FT_DEPT_CTE AS F1
1633      LEFT JOIN FT_ARRIV_CTE AS F2
1634      ON F1.MONTH = F2.MONTH AND F1.ORIGIN_AIRPORT = F2.ORIGIN_AIRPORT AND F1.
1635      DESTINATION_AIRPORT = F2.DESTINATION_AIRPORT
1636
1637      LEFT JOIN FT_AIRSYS_CTE AS F3
1638      ON F1.MONTH = F3.MONTH AND F1.ORIGIN_AIRPORT = F3.ORIGIN_AIRPORT AND F1.
1639      DESTINATION_AIRPORT = F3.DESTINATION_AIRPORT
1640
1641      LEFT JOIN FT_WEATH_CTE AS F4
1642      ON F1.MONTH = F4.MONTH AND F1.ORIGIN_AIRPORT = F4.ORIGIN_AIRPORT AND F1.
1643      DESTINATION_AIRPORT = F4.DESTINATION_AIRPORT

```

```

1640
1641     LEFT JOIN FT_LT_AIRCFT_CTE AS F5
1642     ON F1.MONTH = F5.MONTH AND F1.ORIGIN_AIRPORT = F5.ORIGIN_AIRPORT AND F1.
       DESTINATION_AIRPORT = F5.DESTINATION_AIRPORT
1643
1644     LEFT JOIN FT_SECU_CTE AS F6
1645     ON F1.MONTH = F6.MONTH AND F1.ORIGIN_AIRPORT = F6.ORIGIN_AIRPORT AND F1.
       DESTINATION_AIRPORT = F6.DESTINATION_AIRPORT
1646 ),
1647 CUSTOM_JOIN_2 AS
1648 (
1649     SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1650     COUNT (DEPARTURE_TIME) AS TOTAL_FLIGHTS_DEPARTED FROM EM_FLIGHTS
1651     WHERE DEPARTURE_TIME IS NOT NULL
1652     GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1653 ),
1654 CUSTOM_JOIN_3 AS
1655 (
1656     SELECT CJ1.*,
1657     CJ2.TOTAL_FLIGHTS_DEPARTED
1658     FROM CUSTOM_JOIN_1 AS CJ1
1659     JOIN CUSTOM_JOIN_2 AS CJ2
1660     ON CJ1.MONTH = CJ2.MONTH AND CJ1.ORIGIN_AIRPORT = CJ2.ORIGIN_AIRPORT AND CJ1.
       DESTINATION_AIRPORT = CJ2.DESTINATION_AIRPORT
1661 ),
1662 CUSTOM_JOIN_4 AS
1663 (
1664     SELECT FTON.*,
1665     COALESCE(FTCN.CANCELLED_FLIGHTS, 0) AS CANCELLED_FLIGHTS, -- COALESCE( FILL THE NULL
       VALUES WITH 0)
1666     COALESCE(CJ3.DEPARTURE_DELAYED_FLIGHTS, 0) AS DEPARTURE_DELAYED_FLIGHTS,
1667     COALESCE(CJ3.ARRIVAL_DELAYED_FLIGHTS, 0) AS ARRIVAL_DELAYED_FLIGHTS,
1668     COALESCE(CJ3.AIR_SYSTEM_DELAYED_FLIGHTS, 0) AS AIR_SYSTEM_DELAYED_FLIGHTS,
1669     COALESCE(CJ3.WEATHER_DELAYED_FLIGHTS, 0) AS WEATHER_DELAYED_FLIGHTS,
1670     COALESCE(CJ3.LATE_AIRCRAFT_DELAYED_FLIGHTS, 0) AS LATE_AIRCRAFT_DELAYED_FLIGHTS,
1671     COALESCE(CJ3.SECURITY_DELAYED_FLIGHTS, 0) AS SECURITY_DELAYED_FLIGHTS
1672     FROM FT_ON_TIME_CTE AS FTON
1673     LEFT JOIN CUSTOM_JOIN_3 AS CJ3
1674     ON FTON.MONTH = CJ3.MONTH AND FTON.ORIGIN_AIRPORT = CJ3.ORIGIN_AIRPORT AND FTON.
       DESTINATION_AIRPORT = CJ3.DESTINATION_AIRPORT
1675     LEFT JOIN FT_CANCELLED_CTE AS FTCN
1676     ON FTON.MONTH = FTCN.MONTH AND FTON.ORIGIN_AIRPORT = FTCN.ORIGIN_AIRPORT AND FTON.
       DESTINATION_AIRPORT = FTCN.DESTINATION_AIRPORT
1677 )
1678 SELECT * FROM CUSTOM_JOIN_4;
1679
1680
1681
1682
1683 -- EXPORTING EACH ORIGIN AND DESTINATION AIRPORTS FLIGHTS STATS IN EACH MONTHS:
1684 -- REPLACED THE NULL VALUE COUNTS WITH "0"
1685 /* COALESCE() returns the "first non-NULL value" from the list of arguments.
1686    So "if column_name is NULL", it will "return 0".*/
1687
1688 COPY
1689 (
1690     WITH FT_ON_TIME_CTE AS (
1691     SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1692     COUNT (ARRIVAL_TIME) AS ON_TIME_FLIGHTS
1693     FROM EM_FLIGHTS
1694     WHERE ARRIVAL_TIME<= SCHEDULED_ARRIVAL AND ARRIVAL_TIME IS NOT NULL
1695     GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1696     ),
1697
1698     FT_CANCELLED_CTE AS
1699     (
1700     SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1701     COUNT (CANCELLED) AS CANCELLED_FLIGHTS
1702     FROM EM_FLIGHTS

```

```

1703 WHERE CANCELLED = 1
1704 GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1705 ),
1706
1707 FT_DEPT_CTE AS
1708 (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1709 COUNT(DEPARTURE_DELAY) AS DEPARTURE_DELAYED_FLIGHTS
1710 FROM EM_FLIGHTS
1711 WHERE DEPARTURE_DELAY > 0
1712 GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1713 ),
1714
1715 FT_ARRIV_CTE AS
1716 (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1717 COUNT(ARRIVAL_DELAY) AS ARRIVAL_DELAYED_FLIGHTS
1718 FROM EM_FLIGHTS
1719 WHERE ARRIVAL_DELAY > 0
1720 GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1721 ),
1722
1723 FT_AIRSYS_CTE AS
1724 (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1725 COUNT(AIR_SYSTEM_DELAY) AS AIR_SYSTEM_DELAYED_FLIGHTS
1726 FROM EM_FLIGHTS
1727 WHERE AIR_SYSTEM_DELAY > 0
1728 GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1729 ),
1730 FT_WEATH_CTE AS
1731 (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1732 COUNT(WEATHER_DELAY) AS WEATHER_DELAYED_FLIGHTS
1733 FROM EM_FLIGHTS
1734 WHERE WEATHER_DELAY > 0
1735 GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1736 ),
1737
1738 FT_LT_AIRCFT_CTE AS
1739 (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1740 COUNT(LATE_AIRCRAFT_DELAY) AS LATE_AIRCRAFT_DELAYED_FLIGHTS
1741 FROM EM_FLIGHTS
1742 WHERE LATE_AIRCRAFT_DELAY > 0
1743 GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1744 ),
1745
1746 FT_AIRL_CTE AS
1747 (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1748 COUNT(AIRLINE_DELAY) AS AIRLINE_DELAYED_FLIGHTS
1749 FROM EM_FLIGHTS
1750 WHERE AIRLINE_DELAY > 0
1751 GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1752 ),
1753
1754 FT_SECU_CTE AS
1755 (SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1756 COUNT(SEcurity_DELAY) AS SECURITY_DELAYED_FLIGHTS
1757 FROM EM_FLIGHTS
1758 WHERE DEPARTURE_DELAY > 0
1759 GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1760 ),
1761
1762 CUSTOM_JOIN_1 AS
1763 (SELECT F1.MONTH, F1.ORIGIN_AIRPORT, F1.DESTINATION_AIRPORT, F1.
DEPARTURE_DELAYED_FLIGHTS,
1764 COALESCE(F2.ARRIVAL_DELAYED_FLIGHTS, 0) AS ARRIVAL_DELAYED_FLIGHTS,
1765 COALESCE(F3.AIR_SYSTEM_DELAYED_FLIGHTS, 0) AS AIR_SYSTEM_DELAYED_FLIGHTS,
1766 COALESCE(F4.WEATHER_DELAYED_FLIGHTS, 0) AS WEATHER_DELAYED_FLIGHTS,
1767 COALESCE(F5.LATE_AIRCRAFT_DELAYED_FLIGHTS, 0) AS LATE_AIRCRAFT_DELAYED_FLIGHTS,
1768 COALESCE(F6.SECURITY_DELAYED_FLIGHTS, 0) AS SECURITY_DELAYED_FLIGHTS
1769 FROM FT_DEPT_CTE AS F1
1770 LEFT JOIN FT_ARRIV_CTE AS F2

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```

1771      ON F1.MONTH = F2.MONTH AND F1.ORIGIN_AIRPORT = F2.ORIGIN_AIRPORT AND F1.
1772      DESTINATION_AIRPORT = F2.DESTINATION_AIRPORT
1773
1774      LEFT JOIN FT_AIRSYS_CTE AS F3
1775      ON F1.MONTH = F3.MONTH AND F1.ORIGIN_AIRPORT = F3.ORIGIN_AIRPORT AND F1.
1776      DESTINATION_AIRPORT = F3.DESTINATION_AIRPORT
1777
1778      LEFT JOIN FT_WEATH_CTE AS F4
1779      ON F1.MONTH = F4.MONTH AND F1.ORIGIN_AIRPORT = F4.ORIGIN_AIRPORT AND F1.
1780      DESTINATION_AIRPORT = F4.DESTINATION_AIRPORT
1781
1782      LEFT JOIN FT_LT_AIRCFT_CTE AS F5
1783      ON F1.MONTH = F5.MONTH AND F1.ORIGIN_AIRPORT = F5.ORIGIN_AIRPORT AND F1.
1784      DESTINATION_AIRPORT = F5.DESTINATION_AIRPORT
1785
1786      LEFT JOIN FT_SECU_CTE AS F6
1787      ON F1.MONTH = F6.MONTH AND F1.ORIGIN_AIRPORT = F6.ORIGIN_AIRPORT AND F1.
1788      DESTINATION_AIRPORT = F6.DESTINATION_AIRPORT
1789
1790      ),
1791      CUSTOM_JOIN_2 AS
1792      (
1793      SELECT MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1794      COUNT (DEPARTURE_TIME) AS TOTAL_FLIGHTS_DEPARTED FROM EM_FLIGHTS
1795      WHERE DEPARTURE_TIME IS NOT NULL
1796      GROUP BY MONTH, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1797      ),
1798      CUSTOM_JOIN_3 AS
1799      (
1800      SELECT CJ1.*,
1801      CJ2.TOTAL_FLIGHTS_DEPARTED
1802      FROM CUSTOM_JOIN_1 AS CJ1
1803      JOIN CUSTOM_JOIN_2 AS CJ2
1804      ON CJ1.MONTH = CJ2.MONTH AND CJ1.ORIGIN_AIRPORT = CJ2.ORIGIN_AIRPORT AND CJ1.
1805      DESTINATION_AIRPORT = CJ2.DESTINATION_AIRPORT
1806      ),
1807      CUSTOM_JOIN_4 AS
1808      (
1809      SELECT FTON.*,
1810      COALESCE(FTCN.CANCELLED_FLIGHTS, 0) AS CANCELLED_FLIGHTS,
1811      COALESCE(CJ3.DEPARTURE_DELAYED_FLIGHTS, 0) AS DEPARTURE_DELAYED_FLIGHTS,
1812      COALESCE(CJ3.ARRIVAL_DELAYED_FLIGHTS, 0) AS ARRIVAL_DELAYED_FLIGHTS,
1813      COALESCE(CJ3.AIR_SYSTEM_DELAYED_FLIGHTS, 0) AS AIR_SYSTEM_DELAYED_FLIGHTS,
1814      COALESCE(CJ3.WEATHER_DELAYED_FLIGHTS, 0) AS WEATHER_DELAYED_FLIGHTS,
1815      COALESCE(CJ3.LATE_AIRCRAFT_DELAYED_FLIGHTS, 0) AS LATE_AIRCRAFT_DELAYED_FLIGHTS,
1816      COALESCE(CJ3.SECURITY_DELAYED_FLIGHTS, 0) AS SECURITY_DELAYED_FLIGHTS
1817      FROM FT_ON_TIME_CTE AS FTON
1818      LEFT JOIN CUSTOM_JOIN_3 AS CJ3
1819      ON FTON.MONTH = CJ3.MONTH AND FTON.ORIGIN_AIRPORT = CJ3.ORIGIN_AIRPORT AND FTON.
1820      DESTINATION_AIRPORT = CJ3.DESTINATION_AIRPORT
1821      LEFT JOIN FT_CANCELLED_CTE AS FTCN
1822      ON FTON.MONTH = FTCN.MONTH AND FTON.ORIGIN_AIRPORT = FTCN.ORIGIN_AIRPORT AND FTON.
1823      DESTINATION_AIRPORT = FTCN.DESTINATION_AIRPORT
1824      )
1825      SELECT *
1826
1827      FROM CUSTOM_JOIN_4
1828
1829      ) TO 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
1830      Analysis/SUBMISSION/CUSTOM_CSV/AIRPORTS_MONTHLY_DEPT_ARIVE_STATS.csv'
1831      WITH CSV HEADER;
1832
1833      /*
1834      -----
1835      */
1836
1837      /* Problem Statement 4:

```

```

1829 Investigating how factors like time of day, day of week, month,
1830 and specific routes affect flight operations to optimize scheduling and resource
1831 allocation.
1832 */
1833 -- DAY WISE OPERATION
1834 -- -- DELAY OPERATION
1835 -- 1)
1836 SELECT DAY, COUNT(DEPARTURE_TIME) AS DELAY_FLIGHTS_PER_DAY
1837 FROM EM_FLIGHTS
1838 WHERE DEPARTURE_TIME> SCHEDULED_DEPARTURE
1839 GROUP BY DAY
1840 ORDER BY DELAY_FLIGHTS_PER_DAY DESC;
1841
1842 -- -- MONTH & DAY OPERATION
1843 --1)
1844 SELECT MONTH, DAY, COUNT(DEPARTURE_TIME) AS DELAY_FLIGHTS_PER_DAY
1845 FROM EM_FLIGHTS
1846 WHERE DEPARTURE_TIME> SCHEDULED_DEPARTURE
1847 GROUP BY MONTH, DAY
1848 ORDER BY DELAY_FLIGHTS_PER_DAY DESC;
1849
1850 -- 2)
1851 SELECT MONTH, DAY, COUNT(DEPARTURE_TIME) AS ON_TIME_FLIGHTS_DAY
1852 FROM EM_FLIGHTS
1853 WHERE DEPARTURE_TIME<= SCHEDULED_DEPARTURE AND CANCELLED = 0
1854 GROUP BY MONTH, DAY
1855 ORDER BY ON_TIME_FLIGHTS_DAY DESC;
1856
1857 -- FINAL STATS: MONTH - DAY_OF_WEEK - DEPARTURE_TIME_BUCKET
1858
1859 -- PART 1:
1860 WITH MONTHDAY_ONTIME_FTE AS
1861 (
1862     SELECT MONTH, DAY, DEPARTURE_TIME_BUCKET,
1863     COUNT(DEPARTURE_TIME) AS ON_TIME_FLIGHTS_DAY
1864     FROM EM_FLIGHTS
1865     WHERE DEPARTURE_TIME<= SCHEDULED_DEPARTURE AND CANCELLED = 0
1866     GROUP BY MONTH, DAY, DEPARTURE_TIME_BUCKET
1867     ORDER BY ON_TIME_FLIGHTS_DAY DESC
1868 ),
1869 DELAYED_FT_CTE AS
1870 (
1871     SELECT MONTH, DAY, DEPARTURE_TIME_BUCKET,
1872     COUNT(DEPARTURE_TIME) AS DELAY_FLIGHTS_PER_DAY
1873     FROM EM_FLIGHTS
1874     WHERE DEPARTURE_TIME> SCHEDULED_DEPARTURE
1875     GROUP BY MONTH, DAY, DEPARTURE_TIME_BUCKET
1876 ),
1877 CANCELLED_FT_CTE AS
1878 (
1879     SELECT MONTH, DAY, DEPARTURE_TIME_BUCKET,
1880     COUNT(CANCELLED) AS CANCELLED_FLIGHTS
1881     FROM EM_FLIGHTS
1882     WHERE CANCELLED = 1
1883     GROUP BY MONTH, DAY, DEPARTURE_TIME_BUCKET
1884 ),
1885 DATE_STATS AS
1886 (
1887     SELECT MDOF.*,
1888     COALESCE(DFC.DELAY_FLIGHTS_PER_DAY, 0) AS DELAY_FLIGHTS_PER_DAY,
1889     COALESCE(CFC.CANCELLED_FLIGHTS, 0) AS CANCELLED_FLIGHTS
1890     FROM MONTHDAY_ONTIME_FTE AS MDOF
1891
1892     LEFT JOIN DELAYED_FT_CTE AS DFC
1893     ON MDOF.MONTH = DFC.MONTH AND MDOF.DAY = DFC.DAY AND MDOF.DEPARTURE_TIME_BUCKET = DFC
1894     .DEPARTURE_TIME_BUCKET
1895
1896     LEFT JOIN CANCELLED_FT_CTE AS CFC

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```

1896     ON MDOF.MONTH = CFC.MONTH AND MDOF.DAY = CFC.DAY AND MDOF.DEPARTURE_TIME_BUCKET = CFC
1897     .DEPARTURE_TIME_BUCKET
1898 )
1899 SELECT * FROM DATE_STATS;
1900
1901 -- PART 2:
1902
1903
1904 WITH MONTHDAY_ONTIME_FTE AS
1905 (
1906     SELECT MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1907     COUNT(DEPARTURE_TIME) AS ON_TIME_FLIGHTS_DAY
1908     FROM EM_FLIGHTS
1909     WHERE DEPARTURE_TIME <= SCHEDULED_DEPARTURE AND CANCELLED = 0
1910     GROUP BY MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1911     ORDER BY MONTH
1912 ),
1913 DELAYED_FT_CTE AS
1914 (
1915     SELECT MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1916     COUNT(DEPARTURE_TIME) AS DELAY_FLIGHTS_PER_DAY
1917     FROM EM_FLIGHTS
1918     WHERE DEPARTURE_TIME > SCHEDULED_DEPARTURE
1919     GROUP BY MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1920 ),
1921 CANCELLED_FT_CTE AS
1922 (
1923     SELECT MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
1924     COUNT(CANCELLED) AS CANCELLED_FLIGHTS
1925     FROM EM_FLIGHTS
1926     WHERE CANCELLED = 1
1927     GROUP BY MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT
1928 ),
1929 DATE_STATS AS
1930 (
1931     SELECT MDOF.*,
1932     COALESCE(DFC.DELAY_FLIGHTS_PER_DAY, 0) AS DELAY_FLIGHTS_PER_DAY,
1933     COALESCE(CFC.CANCELLED_FLIGHTS, 0) AS CANCELLED_FLIGHTS
1934     FROM MONTHDAY_ONTIME_FTE AS MDOF
1935
1936     LEFT JOIN DELAYED_FT_CTE AS DFC
1937     ON MDOF.MONTH = DFC.MONTH AND MDOF.DAY = DFC.DAY AND MDOF.ORIGIN_AIRPORT = DFC.
1938     ORIGIN_AIRPORT AND MDOF.DESTINATION_AIRPORT = DFC.DESTINATION_AIRPORT
1939
1940     LEFT JOIN CANCELLED_FT_CTE AS CFC
1941     ON MDOF.MONTH = CFC.MONTH AND MDOF.DAY = CFC.DAY AND MDOF.ORIGIN_AIRPORT = CFC.
1942     ORIGIN_AIRPORT AND MDOF.DESTINATION_AIRPORT = CFC.DESTINATION_AIRPORT
1943 )
1944 SELECT * FROM DATE_STATS;
1945
1946 -- EXPORTING THE DATA
1947 -- -- PART 1
1948
1949 COPY
1950 (
1951     WITH MONTHDAY_ONTIME_FTE AS
1952     (
1953         SELECT MONTH, DAY, DEPARTURE_TIME_BUCKET,
1954         COUNT(DEPARTURE_TIME) AS ON_TIME_FLIGHTS_DAY
1955         FROM EM_FLIGHTS
1956         WHERE DEPARTURE_TIME <= SCHEDULED_DEPARTURE AND CANCELLED = 0
1957         GROUP BY MONTH, DAY, DEPARTURE_TIME_BUCKET
1958         ORDER BY ON_TIME_FLIGHTS_DAY DESC
1959     ),
1960 DELAYED_FT_CTE AS
1961 (
1962     SELECT MONTH, DAY, DEPARTURE_TIME_BUCKET,
1963     COUNT(DEPARTURE_TIME) AS DELAY_FLIGHTS_PER_DAY

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```

1962         FROM EM_FLIGHTS
1963         WHERE DEPARTURE_TIME > SCHEDULED_DEPARTURE
1964         GROUP BY MONTH, DAY, DEPARTURE_TIME_BUCKET
1965     ),
1966 CANCELLED_FT_CTE AS
1967 (
1968     SELECT MONTH, DAY, DEPARTURE_TIME_BUCKET,
1969     COUNT(CANCELLED) AS CANCELLED_FLIGHTS
1970     FROM EM_FLIGHTS
1971     WHERE CANCELLED = 1
1972     GROUP BY MONTH, DAY, DEPARTURE_TIME_BUCKET
1973 ),
1974 DATE_STATS AS
1975 (
1976     SELECT MDOF.*,
1977     COALESCE(DFC.DELAY_FLIGHTS_PER_DAY, 0) AS DELAY_FLIGHTS_PER_DAY,
1978     COALESCE(CFC.CANCELLED_FLIGHTS, 0) AS CANCELLED_FLIGHTS
1979     FROM MONTHDAY_ONTIME_FTE AS MDOF
1980
1981     LEFT JOIN DELAYED_FT_CTE AS DFC
1982     ON MDOF.MONTH = DFC.MONTH AND MDOF.DAY = DFC.DAY AND MDOF.DEPARTURE_TIME_BUCKET = DFC
        .DEPARTURE_TIME_BUCKET
1983
1984     LEFT JOIN CANCELLED_FT_CTE AS CFC
1985     ON MDOF.MONTH = CFC.MONTH AND MDOF.DAY = CFC.DAY AND MDOF.DEPARTURE_TIME_BUCKET = CFC
        .DEPARTURE_TIME_BUCKET
1986 )
1987 SELECT * FROM DATE_STATS
1988
1989 ) TO 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
Analysis/SUBMISSION/CUSTOM CSV/M.D.T_FLIGHTS_STATS.csv'
1990 WITH CSV HEADER;
1991
1992
1993
1994
1995 -- -- PART 2
1996
1997 COPY
1998 (
1999     WITH MONTHDAY_ONTIME_FTE AS
2000     (
2001         SELECT MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
2002         COUNT(DEPARTURE_TIME) AS ON_TIME_FLIGHTS_DAY
2003         FROM EM_FLIGHTS
2004         WHERE DEPARTURE_TIME <= SCHEDULED_DEPARTURE AND CANCELLED = 0
2005         GROUP BY MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT
2006         ORDER BY MONTH
2007     ),
2008     DELAYED_FT_CTE AS
2009     (
2010         SELECT MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
2011         COUNT(DEPARTURE_TIME) AS DELAY_FLIGHTS_PER_DAY
2012         FROM EM_FLIGHTS
2013         WHERE DEPARTURE_TIME > SCHEDULED_DEPARTURE
2014         GROUP BY MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT
2015     ),
2016     CANCELLED_FT_CTE AS
2017     (
2018         SELECT MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT,
2019         COUNT(CANCELLED) AS CANCELLED_FLIGHTS
2020         FROM EM_FLIGHTS
2021         WHERE CANCELLED = 1
2022         GROUP BY MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT
2023     ),
2024     DATE_STATS AS
2025     (
2026         SELECT MDOF.*,
2027         COALESCE(DFC.DELAY_FLIGHTS_PER_DAY, 0) AS DELAY_FLIGHTS_PER_DAY,

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2028         COALESCE(CFC.CANCELLED_FLIGHTS, 0) AS CANCELLED_FLIGHTS
2029     FROM MONTHDAY_ONTIME_FTE AS MDOF
2030
2031     LEFT JOIN DELAYED_FT_CTE AS DFC
2032     ON MDOF.MONTH = DFC.MONTH AND MDOF.DAY = DFC.DAY AND MDOF.ORIGIN_AIRPORT = DFC.
ORIGIN_AIRPORT AND MDOF.DESTINATION_AIRPORT = DFC.DESTINATION_AIRPORT
2033
2034     LEFT JOIN CANCELLED_FT_CTE AS CFC
2035     ON MDOF.MONTH = CFC.MONTH AND MDOF.DAY = CFC.DAY AND MDOF.ORIGIN_AIRPORT = CFC.
ORIGIN_AIRPORT AND MDOF.DESTINATION_AIRPORT = CFC.DESTINATION_AIRPORT
2036 )
2037 SELECT * FROM DATE_STATS
2038
2039 )TO 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight
Analysis/SUBMISSION/CUSTOM CSV/M.D_ORG.DEST_FT_STATS.csv'
2040 WITH CSV HEADER;
2041
2042
2043
2044
2045
2046
2047 -- -- PART 3 MONTH-DAY-AIRLINE-ORIGIN_AIRPORT-DESTINATION_AIRPORT WISE DATA
2048
2049 COPY
2050 (
2051     WITH MONTHDAY_ONTIME_FTE AS
2052     (
2053         SELECT MONTH,DAY,ORIGIN_AIRPORT, DESTINATION_AIRPORT,AIRLINE,
2054         COUNT(DEPARTURE_TIME) AS ON_TIME_FLIGHTS_DAY
2055         FROM EM_FLIGHTS
2056         WHERE DEPARTURE_TIME<= SCHEDULED_DEPARTURE AND CANCELLED = 0
2057         GROUP BY MONTH, DAY,ORIGIN_AIRPORT, DESTINATION_AIRPORT, AIRLINE
2058         ORDER BY MONTH
2059     ),
2060     DELAYED_FT_CTE AS
2061     (
2062         SELECT MONTH, DAY,ORIGIN_AIRPORT, DESTINATION_AIRPORT, AIRLINE,
2063         COUNT(DEPARTURE_TIME) AS DELAY_FLIGHTS_PER_DAY
2064         FROM EM_FLIGHTS
2065         WHERE DEPARTURE_TIME> SCHEDULED_DEPARTURE
2066         GROUP BY MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT, AIRLINE
2067     ),
2068     CANCELLED_FT_CTE AS
2069     (
2070         SELECT MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT, AIRLINE,
2071         COUNT(CANCELLED) AS CANCELLED_FLIGHTS
2072         FROM EM_FLIGHTS
2073         WHERE CANCELLED = 1
2074         GROUP BY MONTH, DAY, ORIGIN_AIRPORT, DESTINATION_AIRPORT, AIRLINE
2075     ),
2076     DATE_STATS AS
2077     (
2078         SELECT MDOF.*,
2079         COALESCE(DFC.DELAY_FLIGHTS_PER_DAY, 0) AS DELAY_FLIGHTS_PER_DAY,
2080         COALESCE(CFC.CANCELLED_FLIGHTS, 0) AS CANCELLED_FLIGHTS
2081         FROM MONTHDAY_ONTIME_FTE AS MDOF
2082
2083         LEFT JOIN DELAYED_FT_CTE AS DFC
2084         ON MDOF.MONTH = DFC.MONTH AND MDOF.DAY = DFC.DAY AND MDOF.ORIGIN_AIRPORT = DFC.
ORIGIN_AIRPORT AND MDOF.DESTINATION_AIRPORT = DFC.DESTINATION_AIRPORT
2085
2086         LEFT JOIN CANCELLED_FT_CTE AS CFC
2087         ON MDOF.MONTH = CFC.MONTH AND MDOF.DAY = CFC.DAY AND MDOF.ORIGIN_AIRPORT = CFC.
ORIGIN_AIRPORT AND MDOF.DESTINATION_AIRPORT = CFC.DESTINATION_AIRPORT
2088     )
2089     SELECT * FROM DATE_STATS
2090
2091 )TO 'D:/Data Analytics/Internship/Labmentix/Emirates_Flight

```



```

2092 WITH CSV HEADER;
2093
2094
2095
2096
2097
2098
2099
2100
2101
2102
2103
2104 SELECT *
2105 FROM EM_FLIGHTS LIMIT 100;
2106
2107
2108 -- DAY_OF_WEEK WISE OPERATION: WHICH DAYS IN A WEEK MOST DELAYED HAPPEN
2109 -- -- DELAY OPERATION
2110 -- 1)
2111
2112 SELECT DAY_OF_WEEK, COUNT(DEPARTURE_TIME) AS DELAY_FLIGHTS_DAY_WEEK
2113 FROM EM_FLIGHTS
2114 WHERE DEPARTURE_TIME > SCHEDULED_DEPARTURE
2115 GROUP BY DAY_OF_WEEK
2116 ORDER BY DELAY_FLIGHTS_DAY_WEEK DESC;
2117
2118 -- -- MONTH & DAY_OF_WEEK OPERATION
2119
2120 SELECT MONTH, DAY_OF_WEEK, COUNT(DEPARTURE_TIME) AS DELAY_FLIGHTS_DAY_WEEK
2121 FROM EM_FLIGHTS
2122 WHERE DEPARTURE_TIME > SCHEDULED_DEPARTURE
2123 GROUP BY MONTH, DAY_OF_WEEK
2124 ORDER BY DELAY_FLIGHTS_DAY_WEEK DESC;
2125
2126
2127
2128 /*
-----
*/

2129
2130
2131 /* Problem Statement 5:
2132 Providing data-driven recommendations to stakeholders (airlines, airports, regulatory
2133 bodies)
2134 to enhance passenger experience and operational efficiency.
2135 */
2136
2137 WITH CR_CTE AS
2138 (
2139 SELECT ORIGIN_AIRPORT AS ORIGIN_AIRPORT_IATA,
2140 DESTINATION_AIRPORT AS DESTINATION_AIRPORT_IATA,
2141 CANCELLATION_REASON,
2142 COUNT(CANCELLED) AS CANCELLATION_COUNT
2143 FROM EM_FLIGHTS
2144 WHERE CANCELLED = 1
2145 GROUP BY ORIGIN_AIRPORT, DESTINATION_AIRPORT, CANCELLATION_REASON
2146 ORDER BY CANCELLATION_COUNT DESC
2147 ),
2148 ARP_CTE AS
2149 (
2150 SELECT ARP.IATA_CODE, ARP.AIRPORT AS ORIGIN_AIRPORT,
2151 ARP.CITY AS ORIGIN_CITY,
2152 ARP2.IATA_CODE AS DESTINATION_IATA_CODE,
2153 ARP2.AIRPORT AS DESTINATION_AIRPORT,
2154 ARP2.CITY AS DESTINATION_CITY
2155 FROM AIRPORTS AS ARP
2156 JOIN AIRPORTS AS ARP2

```

```

2157         ON ARP.IATA_CODE =ARP2.IATA_CODE
2158     ),
2159
2160 FINAL_OUTPUT AS
2161 (
2162     select CRC.ORIGIN_AIRPORT_IATA,
2163     ARPC.ORIGIN_AIRPORT,
2164     ARPC.ORIGIN_CITY,
2165
2166     CRC.DESTINATION_AIRPORT_IATA,
2167     ARPC2.DESTINATION_AIRPORT,
2168     ARPC2.DESTINATION_CITY,
2169
2170     CRC.CANCELLATION_REASON,
2171     CRC.CANCELLATION_COUNT
2172 FROM CR_CTE AS CRC
2173 JOIN ARP_CTE AS ARPC
2174 ON CRC.ORIGIN_AIRPORT_IATA =ARPC.IATA_CODE
2175
2176 JOIN ARP_CTE AS ARPC2
2177 ON CRC.DESTINATION_AIRPORT_IATA =ARPC2.DESTINATION_IATA_CODE
2178 )
2179 SELECT * FROM FINAL_OUTPUT;
2180
2181
2182
2183 SELECT ORIGIN_AIRPORT, DESTINATION_AIRPORT, CANCELLATION_REASON,
2184 COUNT(CANCELLED) AS CANCELLATION_COUNT
2185 FROM EM_FLIGHTS
2186 WHERE CANCELLED = 1
2187 GROUP BY ORIGIN_AIRPORT, DESTINATION_AIRPORT, CANCELLATION_REASON
2188 ORDER BY CANCELLATION_COUNT DESC;
2189
2190
2191 SELECT *
2192 FROM AIRPORTS LIMIT 100;
2193
2194 SELECT DISTINCT(MONTH)
2195 FROM EM_FLIGHTS;
2196
2197
2198 /*
2199 -----
2200 */
2201
2202 SELECT * FROM EM_FLIGHTS limit 10000;
2203 SELECT DISTINCT ORIGIN_AIRPORT FROM EM_FLIGHTS;
2204
2205 /*
2206 ARRIVAL_DELAY float,
2207 DIVERTED float,
2208 CANCELLED float,
2209 CANCELLATION_REASON object,
2210 AIR_SYSTEM_DELAY float,
2211 SECURITY_DELAY float,
2212 AIRLINE_DELAY float,
2213 LATE_AIRCRAFT_DELAY float,
2214 WEATHER_DELAY float
2215
2216 */
2217
2218

```