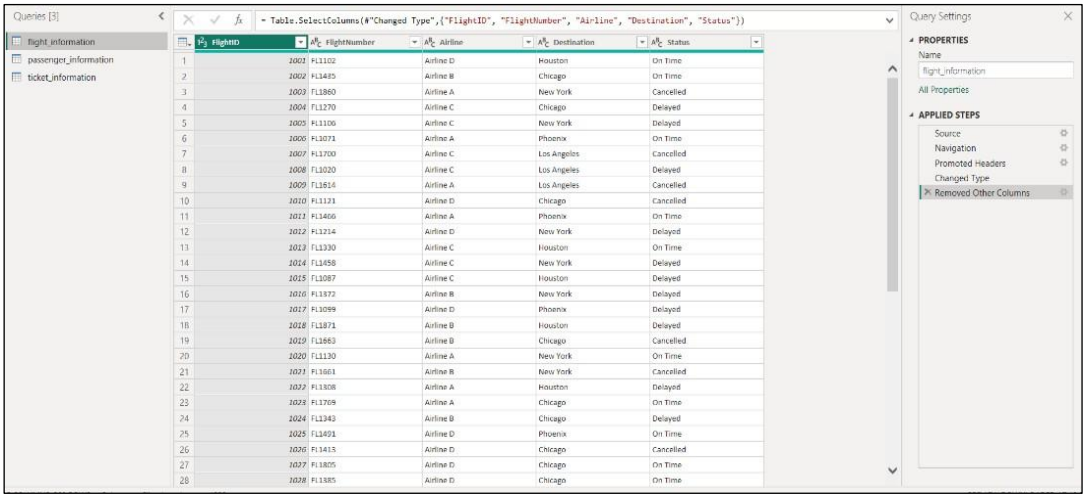
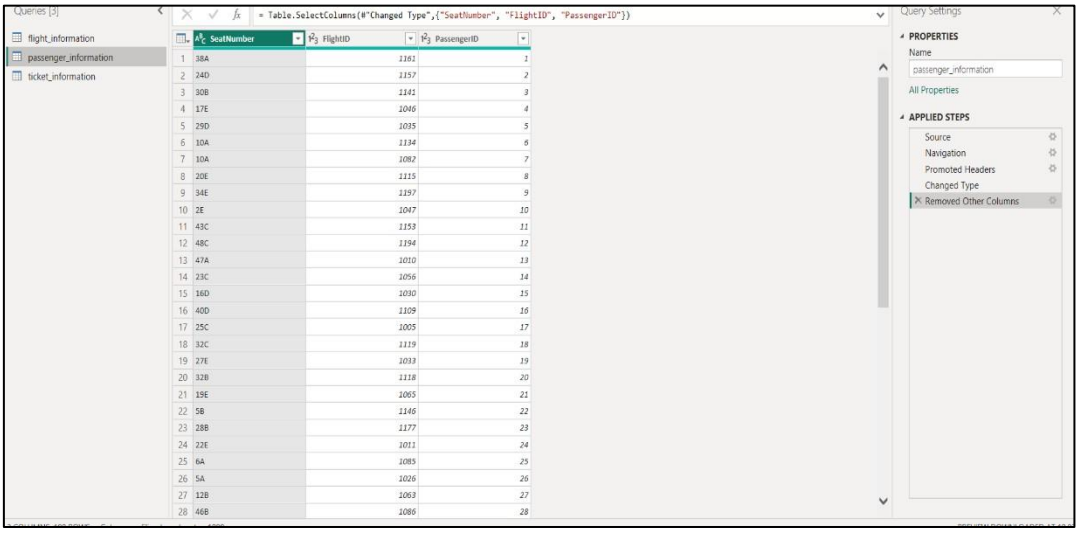
Airline Data Management and Analysis Using Power BI

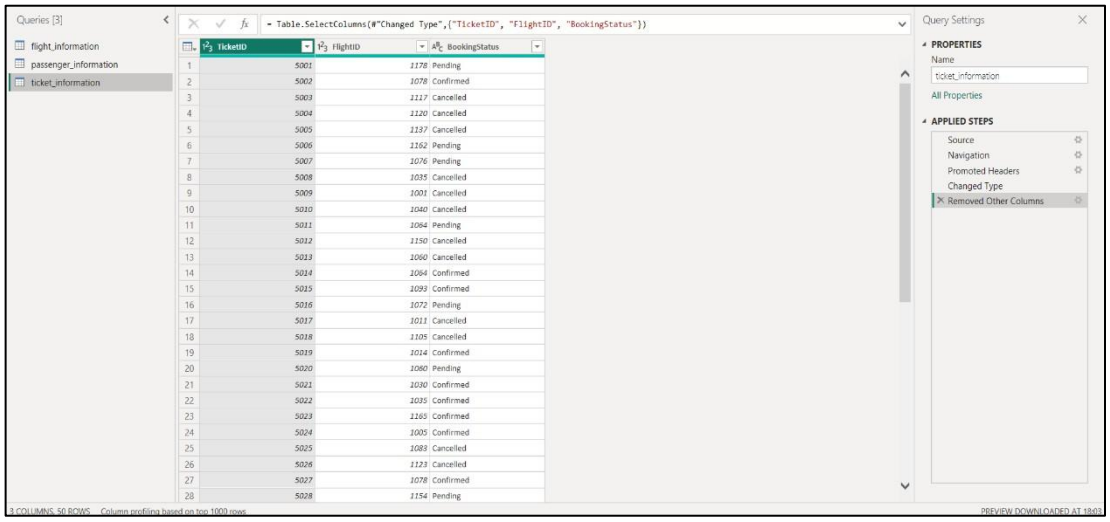
TASK-1



Flight Information data

Passenger Information data



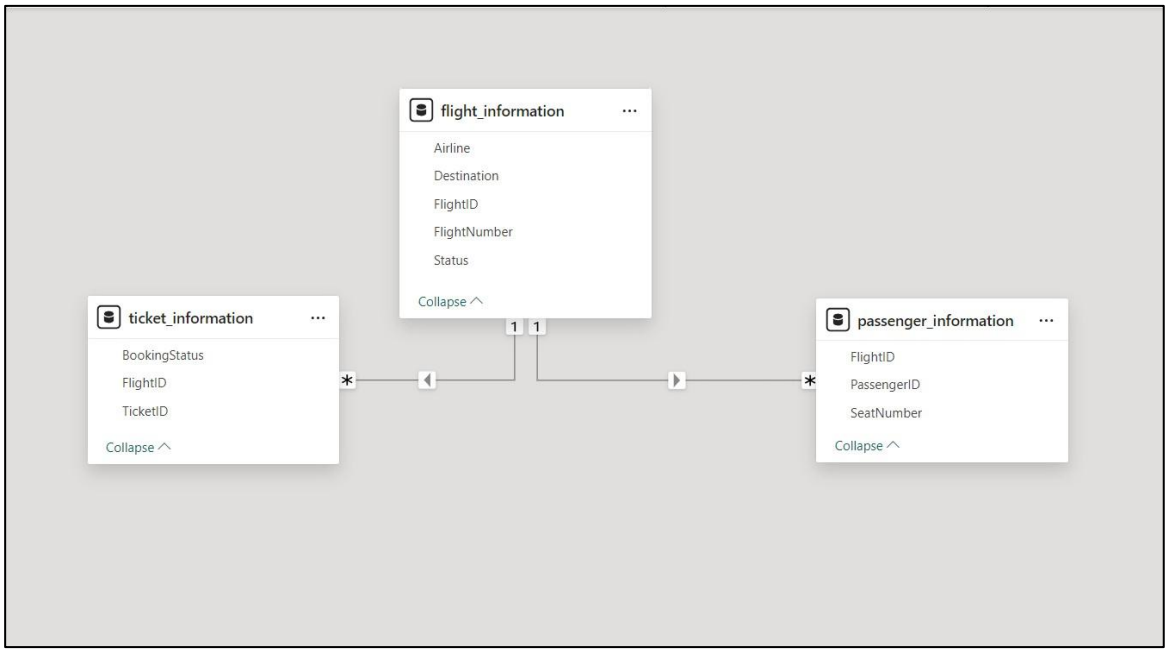


Ticket Information data

Steps:

1. I imported all the Excel files individually into the power query's editor.
2. Then, I removed the unnecessary columns from these three tables.
3. Apart from the unnecessary columns, everything else is fine in these three files.

TASK - 2

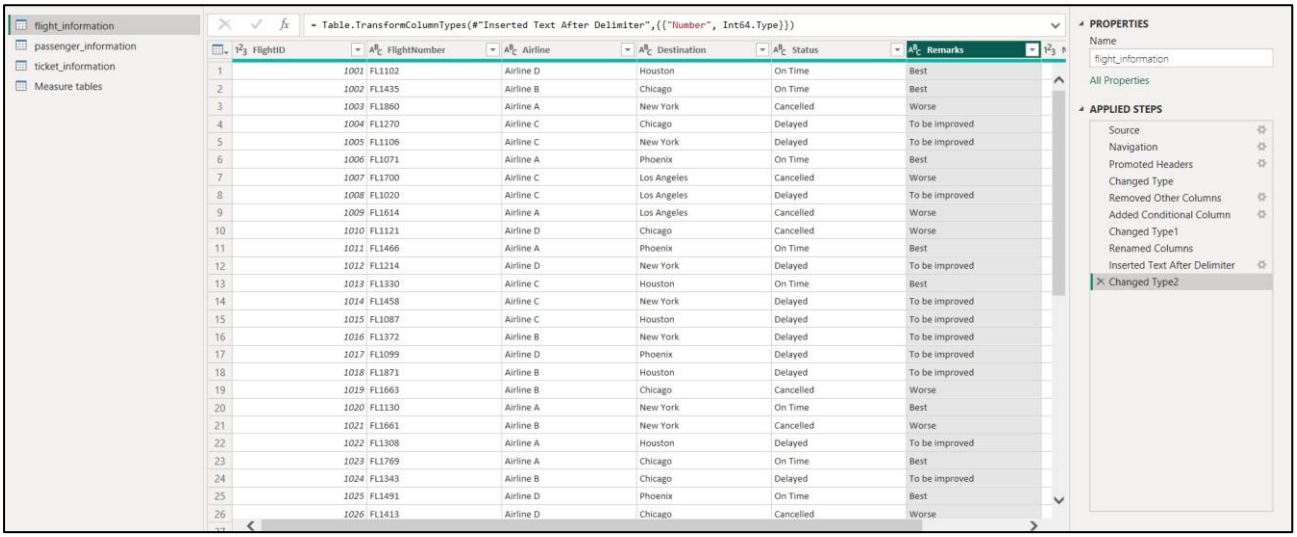


Steps:

1. After closing and applying the power query editor, I went to the model view to join the table.
2. The fact table from these three tables is the flight information and the other two tables are the dimensions table. So, the other two tables will be joined with the fact table.
3. The relationship of the flight information table with the other two tables is one to many.

TASK-3

1.

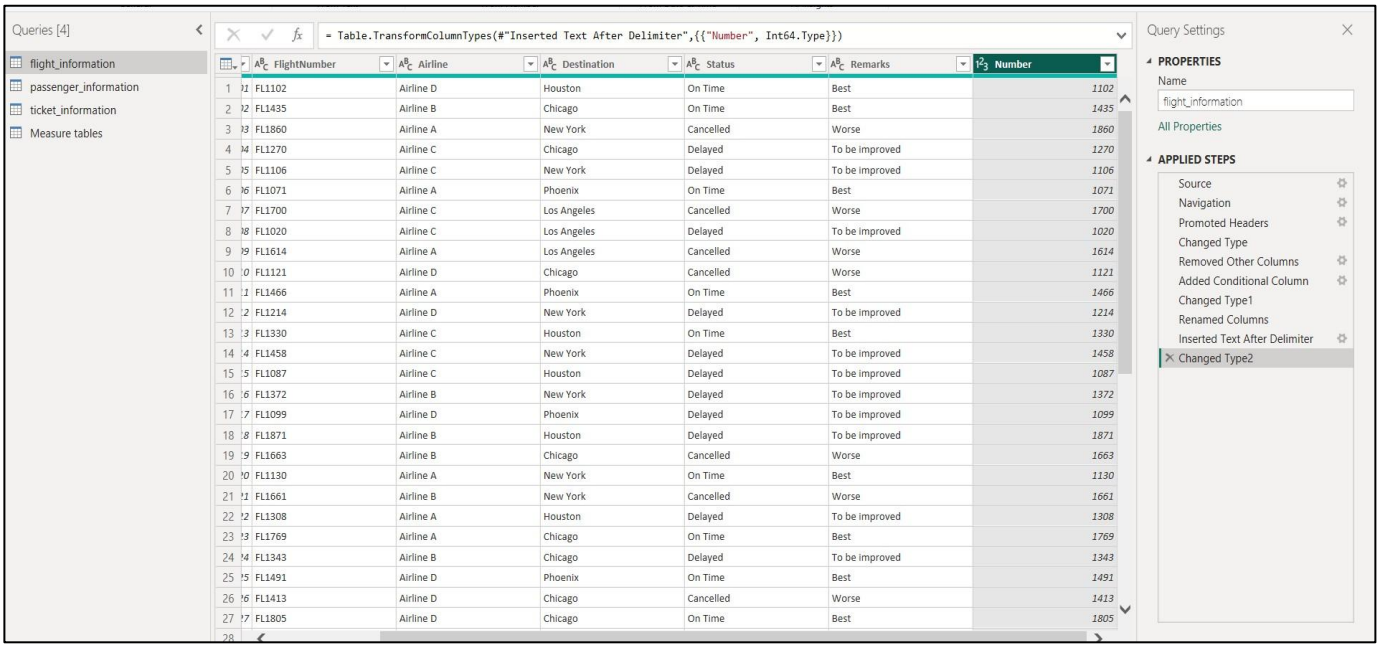


	FlightID	FlightNumber	Airline	Destination	Status	Remarks
1	1001	FL1102	Airline D	Houston	On Time	Best
2	1002	FL1435	Airline B	Chicago	On Time	Best
3	1003	FL1860	Airline A	New York	Cancelled	Worse
4	1004	FL1270	Airline C	Chicago	Delayed	To be improved
5	1005	FL1106	Airline C	New York	Delayed	To be improved
6	1006	FL1071	Airline A	Phoenix	On Time	Best
7	1007	FL1700	Airline C	Los Angeles	Cancelled	Worse
8	1008	FL1020	Airline C	Los Angeles	Delayed	To be improved
9	1009	FL1614	Airline A	Los Angeles	Cancelled	Worse
10	1010	FL1121	Airline D	Chicago	Cancelled	Worse
11	1011	FL1466	Airline A	Phoenix	On Time	Best
12	1012	FL1214	Airline D	New York	Delayed	To be improved
13	1013	FL1330	Airline C	Houston	On Time	Best
14	1014	FL1458	Airline C	New York	Delayed	To be improved
15	1015	FL1087	Airline C	Houston	Delayed	To be improved
16	1016	FL1372	Airline B	New York	Delayed	To be improved
17	1017	FL1099	Airline D	Phoenix	Delayed	To be improved
18	1018	FL1871	Airline B	Houston	Delayed	To be improved
19	1019	FL1663	Airline B	Chicago	Cancelled	Worse
20	1020	FL1130	Airline A	New York	On Time	Best
21	1021	FL1661	Airline B	New York	Cancelled	Worse
22	1022	FL1308	Airline A	Houston	Delayed	To be improved
23	1023	FL1769	Airline A	Chicago	On Time	Best
24	1024	FL1343	Airline B	Chicago	Delayed	To be improved
25	1025	FL1491	Airline D	Phoenix	On Time	Best
26	1026	FL1413	Airline D	Chicago	Cancelled	Worse

Steps:

1. I returned to the power query's editor to create a conditional column.
2. From the add column tab, I clicked on the conditional column option.
3. In the first condition, I select if the flight status is "On time," then the output will be "Best", else if the flight status is "Delayed," then the output will be "To be improved", else the output will be "Worse".
4. After that, I named the column Remarks.

2.

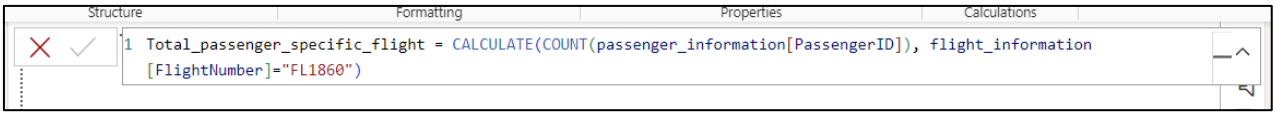


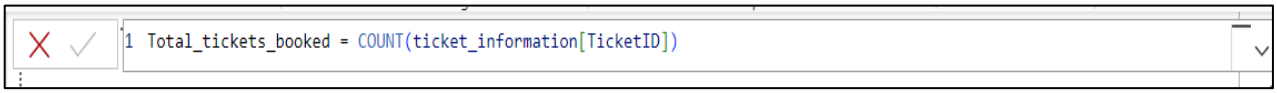
Steps:

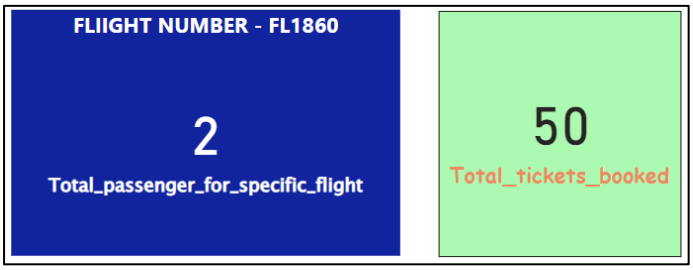
1. To extract the flight number from FlightNumber, I selected the "column from examples"-"from selection" from the add column tab.
2. Then, I named the new column "Number," entered the number from the FlightNumber in the first row, and hit enter; after that, I changed the data type to the whole number.

TASK-4

1.







Steps:

1. I selected the enter data from the home tab to create a measure table.
2. In the measure table, I created two measures using DAX formulas.
3. The first formula is for the total passengers for a specific flight, i.e., FlightNumber = "FL1860".
   DAX Formula: Total_passenger_specific_flight = CALCULATE (COUNT(passenger_information[PassengerID]), flight_information[FlightNumber]="FL1860")
4. The second formula is for the total number of tickets booked.
   DAX Formula: Total_tickets_booked = COUNT(ticket_information[TicketID])

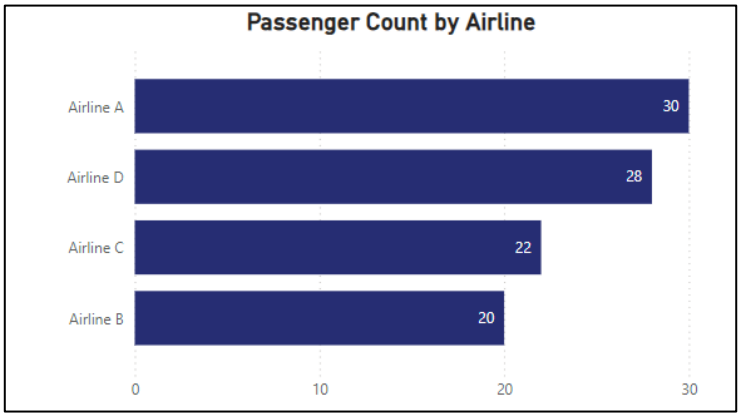
2.

Steps:

1. To filter out the table showing "Best" flights only, I went to the table view and selected the flight information table.
2. I created a new table from the table tools column and wrote the dax formula to filter the best flights only.
   DAX formula: Best_flights = FILTER(flight_information, flight_information[Remarks] = “Best”)

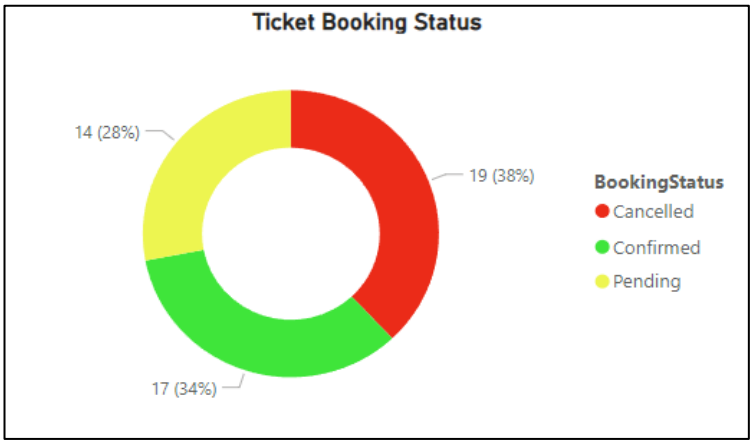
TASK – 5

1.



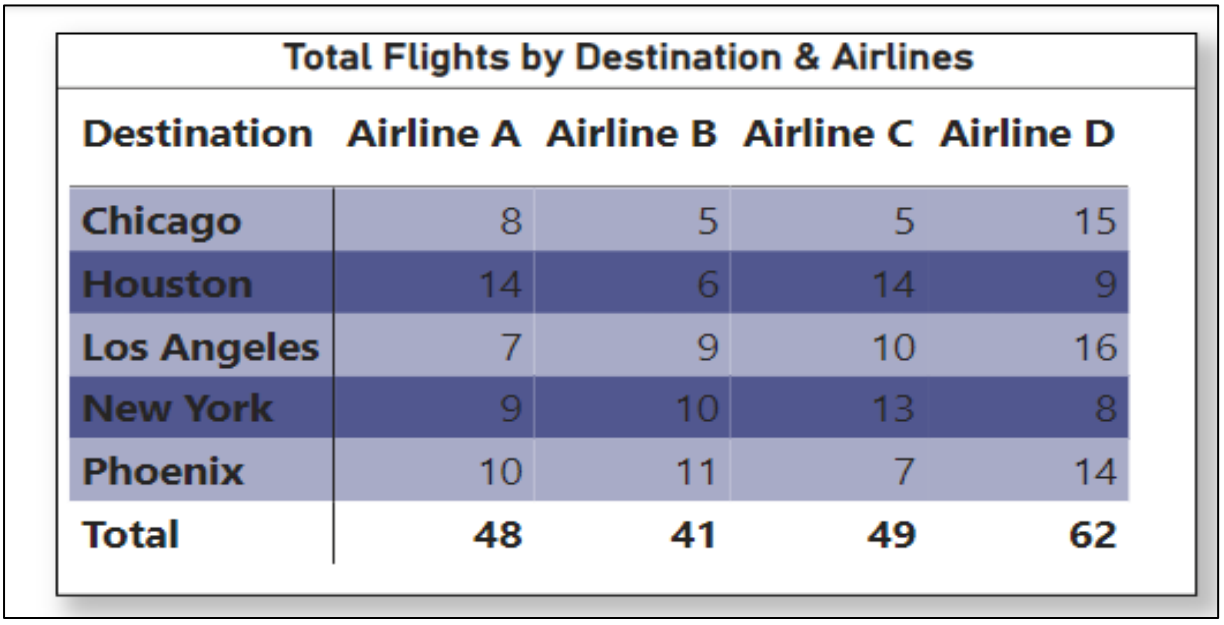
Steps:

To create a visual for passenger count by Airline, I selected the clustered bar chart and formatted the colors and texts in the format pane.



Steps:

To create a visual for ticket booking statuses, I selected a donut chart and formatted the colors and texts in the format pane.



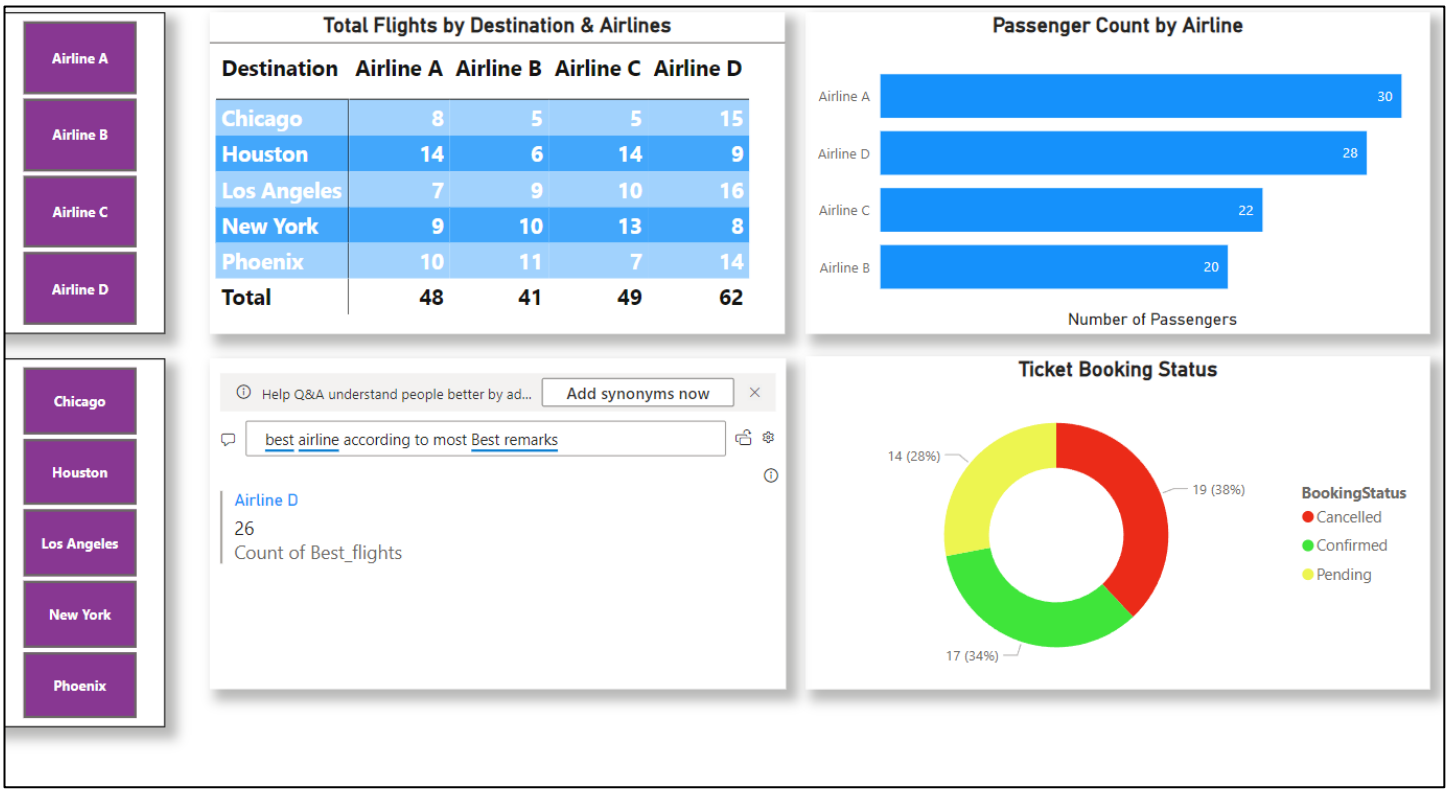
Total Flights by Destination & Airlines

Destination	Airline A	Airline B	Airline C	Airline D
Chicago	8	5	5	15
Houston	14	6	14	9
Los Angeles	7	9	10	16
New York	9	10	13	8
Phoenix	10	11	7	14
Total	**48**	**41**	**49**	**62**

Steps:

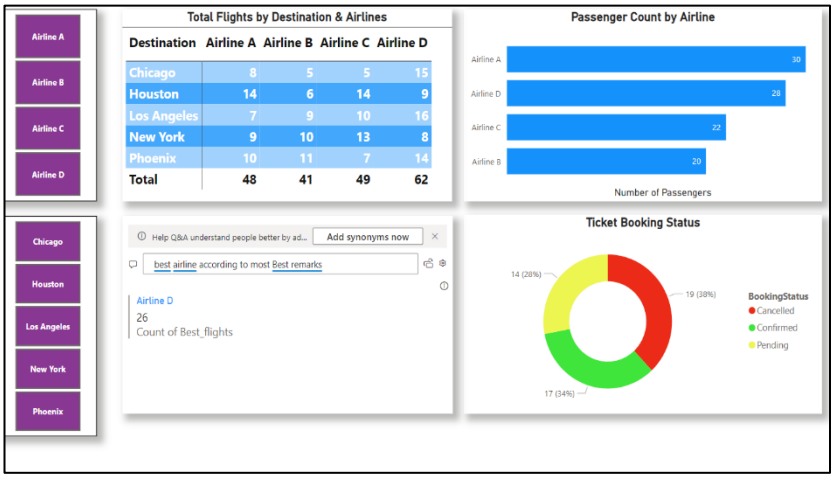
I selected a matrix to create a visual for total flights by destination and Airline and formatted the colors and text in the format pane.

2.



Steps:

I added the airline slicer, destination slicer, and Q&A visual to add interactive features for destination, airline, and quick views.



Steps:

1. To add an interactive feature for an airline-specific page, I created a page for airline- specific visuals.

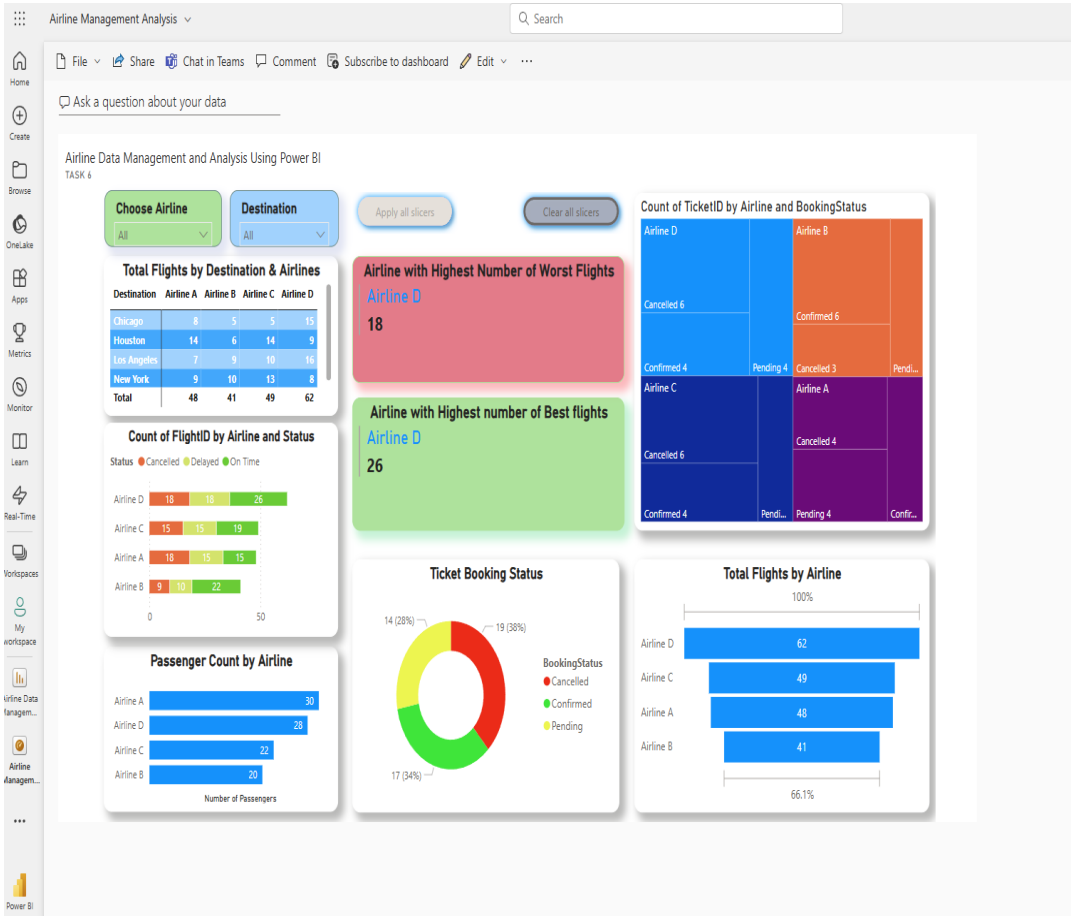
2. Then, I created a drill-through on the destination, airline slicer, and quick views page.

3. After that, I selected an airline from the matrix and drilled through to the airline-specific page.

4. So, if we want to look at detailed information about an airline, we just have to select a single airline from the matrix or bar graph and then click on drill through.

TASK-6

1.



Steps:

1. In this dashboard, I put together the visualization that was created in the previous task.
2. I added some extra visuals and interactive features for key insights: airline remarks, count of booking statuses by Airline and booking statuses, total flights by Airline, apply all slicer button and clear all slicer button.
3. I used a 100% stacked bar chart for airline flight status(e.g: delay, on time or cancelled).
4. Next, for total flights by Airline, I used the funnel to determine the total number of flights operated by each Airline; in the values section, I used the count distinct function to get the total number of unique flights.
5. Then, for the count of booking status by airline and booking status, I used the treemap to determine the ticket status for each Airline.

6. I created two new measures for the Airline with the highest number of best flights and then represented it in the multi-row card.

   The DAX formulas are:

   1. Best_airline = CALCULATE(MAX(Best_flights[Airline]),Best_flights[Remarks] = "Best")
   2. Count_of_flights_best_airline = CALCULATE(DISTINCTCOUNT(Best_flights[FlightNumber]), Best_flights[Airline]="Airline D")

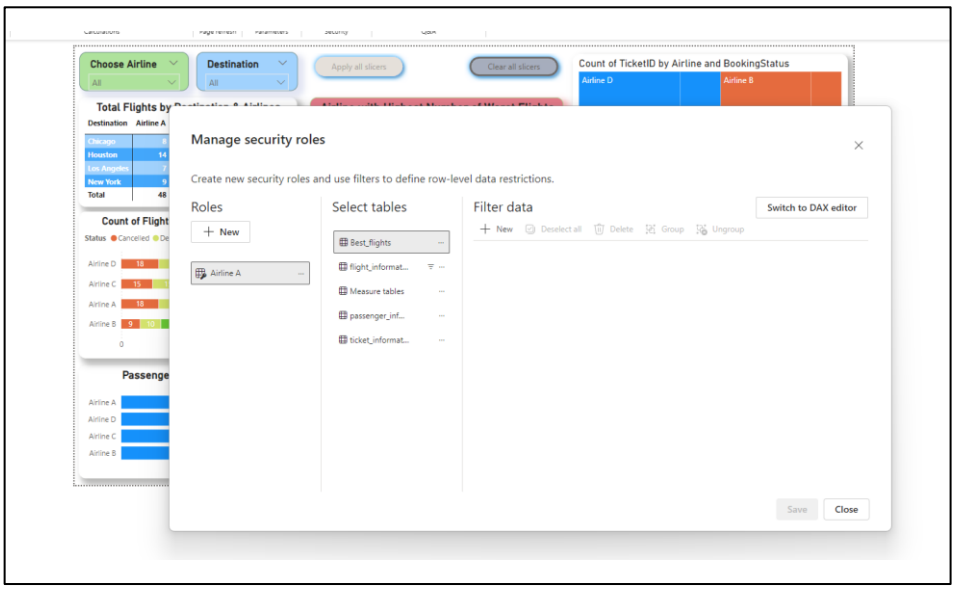
7. For the airline with highest number of worse flights, I also created two new measures and then represented it in a multi-row card.

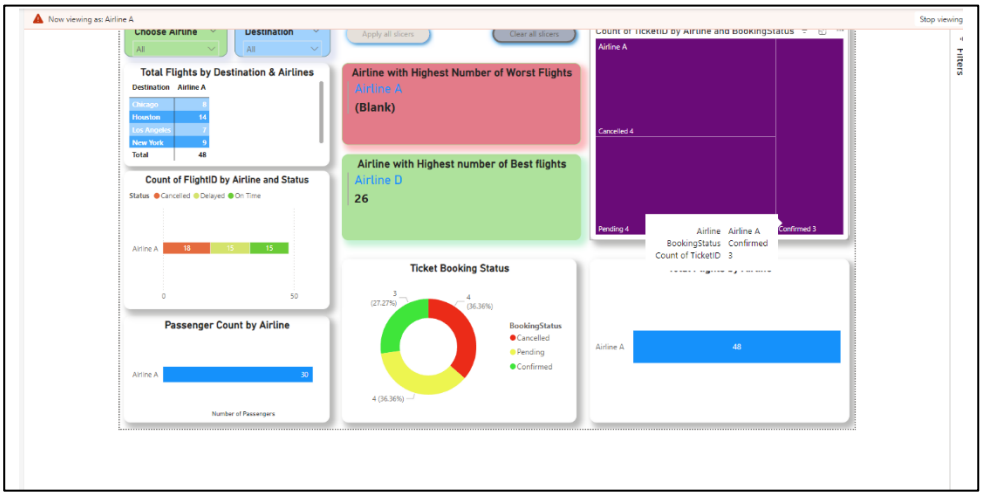
   The DAX formulas are:

   1. worse_flights = CALCULATE(MAX(flight_information[Airline]), flight_information[Remarks]="Worse")
   2. count_of_worse_flights = CALCULATE(DISTINCTCOUNT(flight_information[FlightNumber]), FILTER(flight_information, flight_information[Airline] = "Airline D" && flight_information[Remarks] = "Worse"))

8. After that, I published the power report in my workspace and then created a dashboard in the Power BI service called Airline Management Analysis, where I pinned the main report to the dashboard.

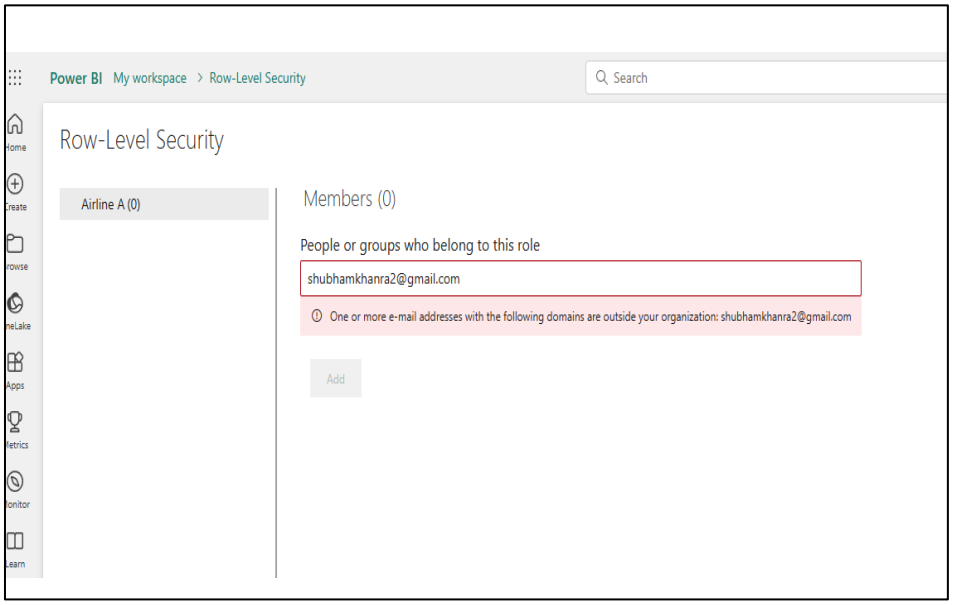
2.



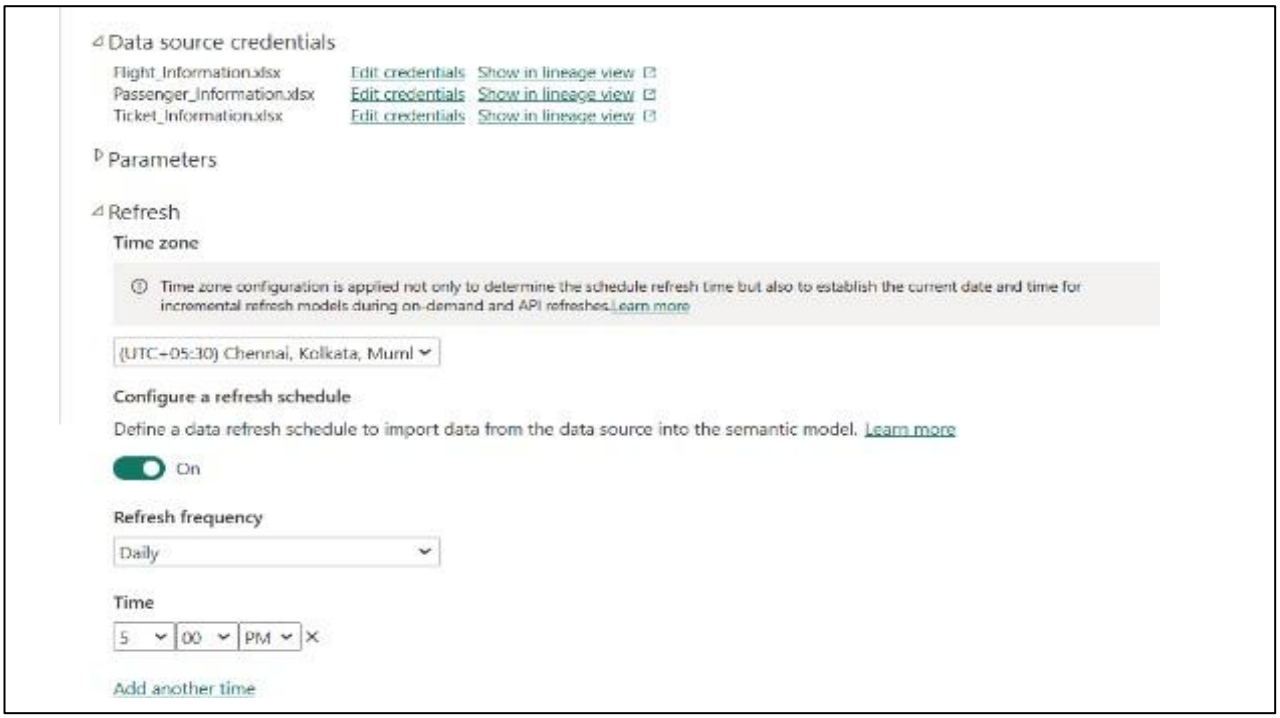


Steps:

1. I selected the manage roles from the modeling tab to configure Row-Level Security (RLS) for Airline A data.
2. Then, I created a new role called Airline A and selected the flight information table; after that, I created a new filter data where the Airline column equals Airline A value.
3. To view the RLS, we have to select the "view as" option from the modeling tab and then choose the Airline A role.
4. To assign it to a user, I clicked on the 3 dots of the Power BI project semantic in my workspace of Power BI service and chose security.
5. After that, add the user's email ID and click save.



3.



Steps:

1. To set up a scheduled refresh at 5 PM daily, we have to select the Power BI settings from the settings present in my workspace.
2. After that, in the semantic models, we have to choose the refresh, select the time zone, and set the refresh frequency to daily.
3. Finally, set the time to 5 PM.