FINAL PROJECT

Project Title: - Airline Data Management and Analysis Using Power BI

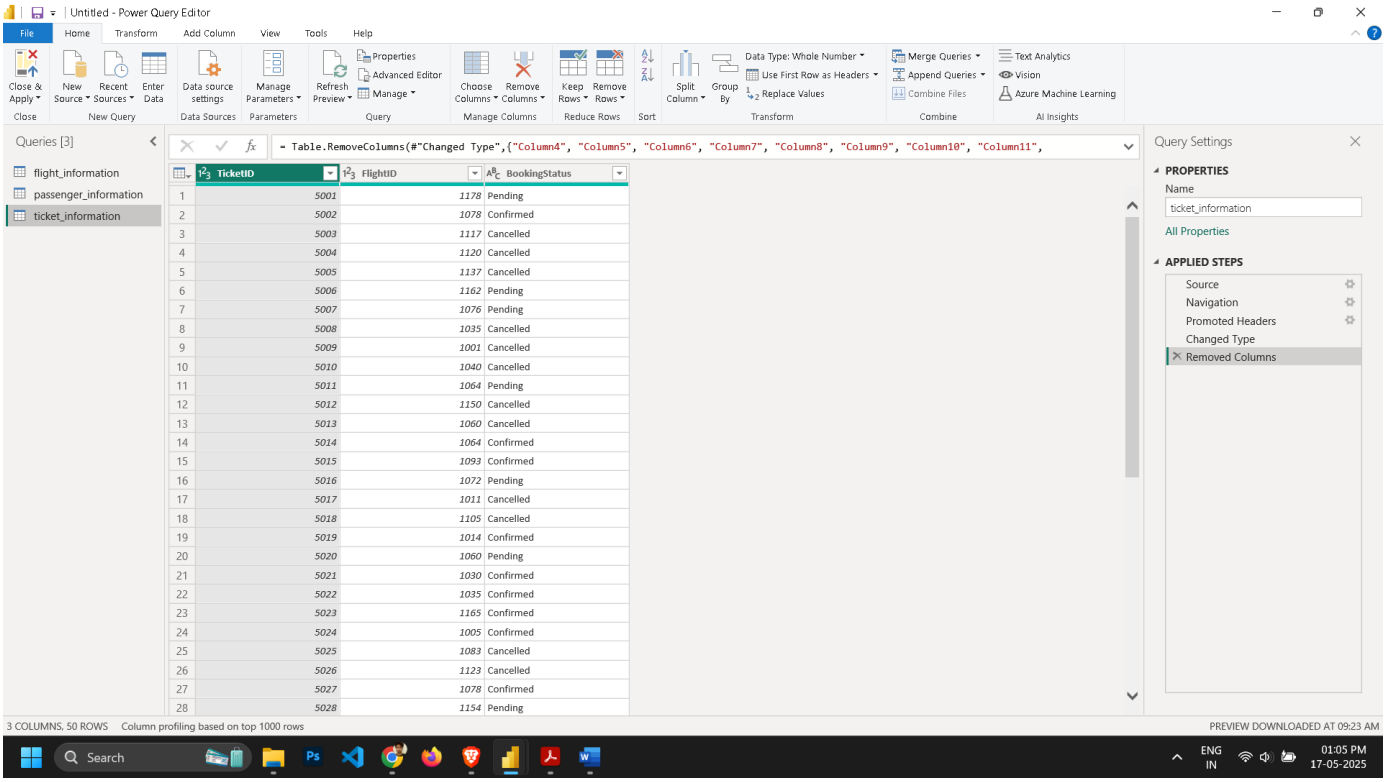
TASK 1: - Data Preparation and Cleaning

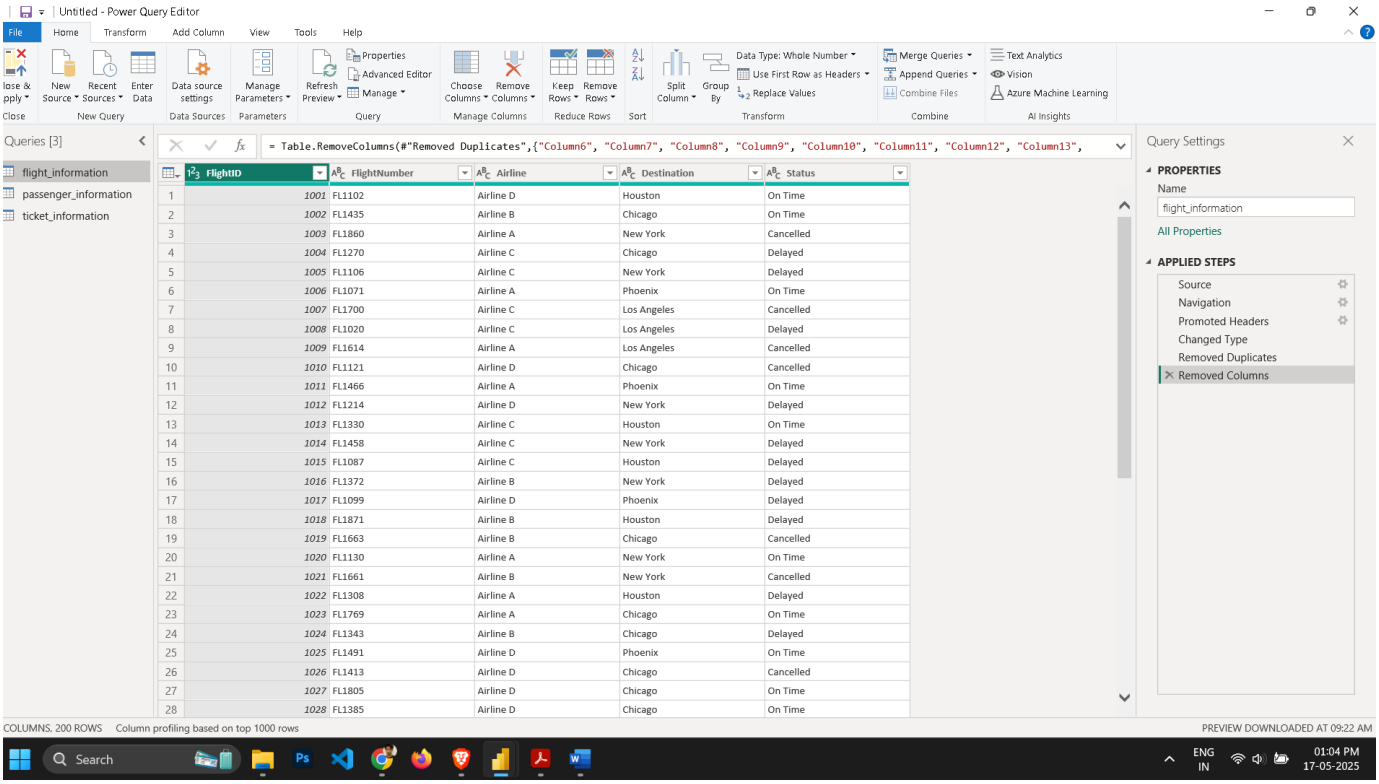
- Extract and transform data in Power Query.
- Clean data: remove duplicates, handle missing values, and format columns.
- Deliverables: Screenshot of Power Query Editor showing cleaned data.

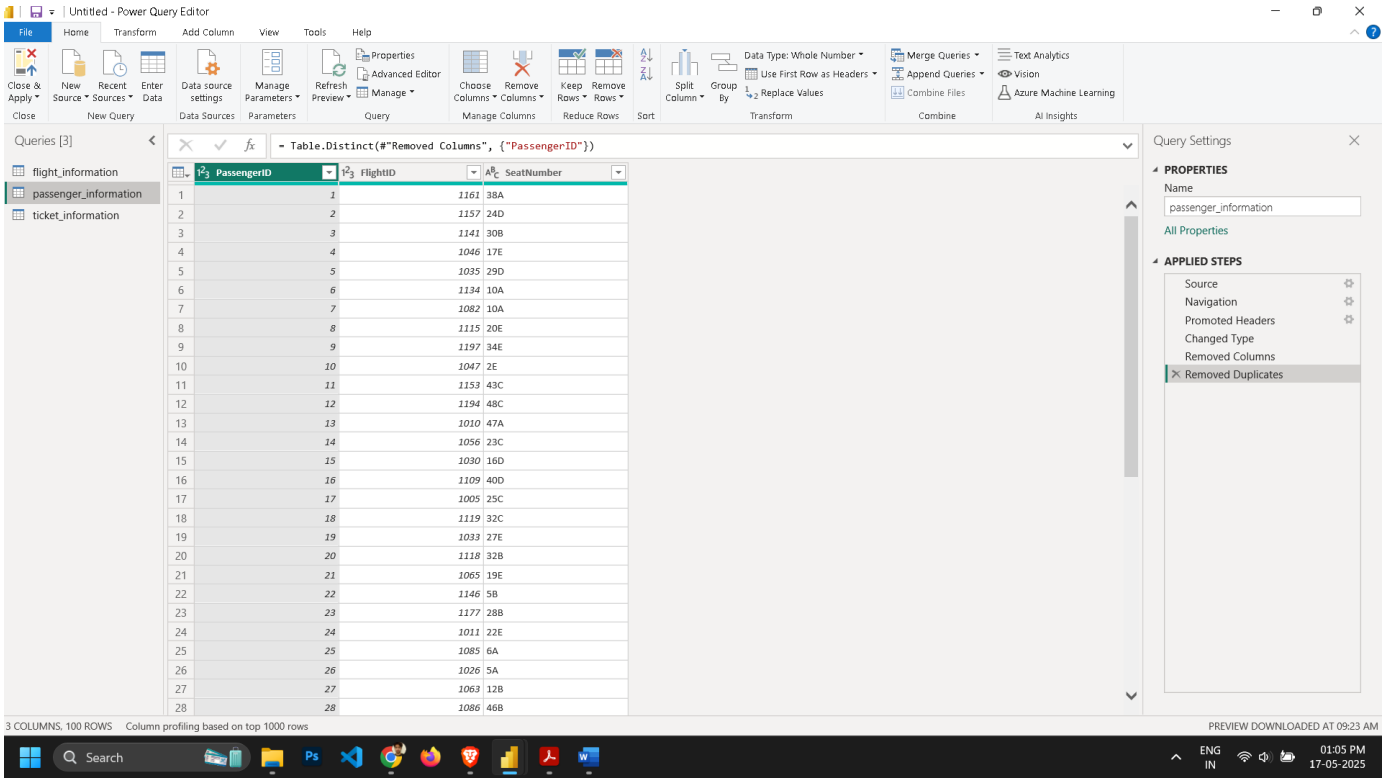
STEP 1): - Load all the 3 excel files to power query.

STEP 2): - Removed null columns which are not required in data from all three files.

STEP 3): - Now Data is clean and then Load the data to power BI desktop.




Untitled - Power Query Editor
File Home Transform Add Column View Tools Help
Queries [3]
flight_information
passenger_information
ticket_information
= Table.RemoveColumns(#"Removed Duplicates",{"Column6", "Column7", "Column8", "Column9", "Column10", "Column11", "Column12", "Column13",
FlightID FlightNumber Airline Destination Status
1001 FL1102 Airline D Houston On Time
1002 FL1435 Airline B Chicago On Time
1003 FL1860 Airline A New York Cancelled
1004 FL1270 Airline C Chicago Delayed
1005 FL1106 Airline C New York Delayed
1006 FL1071 Airline A Phoenix On Time
1007 FL1700 Airline C Los Angeles Cancelled
1008 FL1020 Airline C Los Angeles Delayed
1009 FL1614 Airline A Los Angeles Cancelled
1010 FL1121 Airline D Chicago Cancelled
1011 FL1466 Airline A Phoenix On Time
1012 FL1214 Airline D New York Delayed
1013 FL1330 Airline C Houston On Time
1014 FL1458 Airline C New York Delayed
1015 FL1087 Airline C Houston Delayed
1016 FL1372 Airline B New York Delayed
1017 FL1099 Airline D Phoenix Delayed
1018 FL1871 Airline B Houston Delayed
1019 FL1663 Airline B Chicago Cancelled
1020 FL1130 Airline A New York On Time
1021 FL1661 Airline B New York Cancelled
1022 FL1308 Airline A Houston Delayed
1023 FL1769 Airline A Chicago On Time
1024 FL1343 Airline B Chicago Delayed
1025 FL1491 Airline D Phoenix On Time
1026 FL1413 Airline D Chicago Cancelled
1027 FL1805 Airline D Chicago On Time
1028 FL1385 Airline D Chicago On Time
Query Settings
PROPERTIES
Name
flight_information
All Properties
APPLIED STEPS
Source
Navigation
Promoted Headers
Changed Type
Removed Duplicates
Removed Columns
COLUMNS, 200 ROWS Column profiling based on top 1000 rows
PREVIEW DOWNLOADED AT 09:22 AM
Search
ENG IN
01:04 PM 17-05-2025

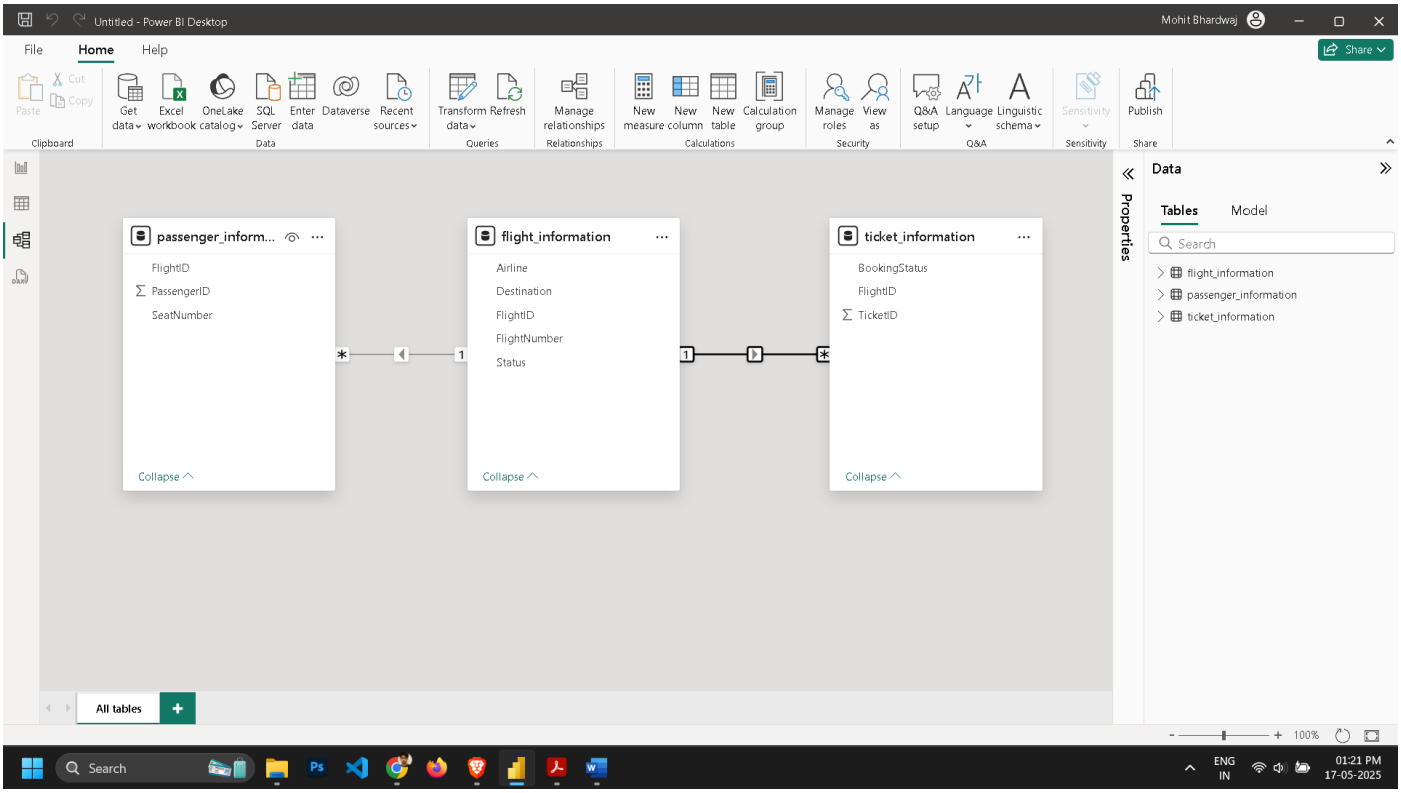

Untitled - Power Query Editor
File Home Transform Add Column View Tools Help
Queries [3]
flight_information
passenger_information
ticket_information
= Table.Distinct(#"Removed Columns", {"PassengerID"})
PassengerID FlightID SeatNumber
1 1161 38A
2 1157 24D
3 1141 30B
4 1046 17E
5 1035 29D
6 1134 10A
7 1082 10A
8 1115 20E
9 1197 34E
10 1047 2E
11 1153 43C
12 1194 48C
13 1010 47A
14 1056 23C
15 1030 16D
16 1109 40D
17 1005 25C
18 1119 32C
19 1033 27E
20 1118 32B
21 1065 19E
22 1146 5B
23 1177 28B
24 1011 22E
25 1085 6A
26 1026 5A
27 1063 12B
28 1086 46B
Query Settings
PROPERTIES
Name
passenger_information
All Properties
APPLIED STEPS
Source
Navigation
Promoted Headers
Changed Type
Removed Columns
Removed Duplicates
3 COLUMNS, 100 ROWS Column profiling based on top 1000 rows
PREVIEW DOWNLOADED AT 09:23 AM
Search
ENG IN
01:05 PM 17-05-2025

Task 2: - Data Modelling

- Create relationships between datasets (FlightID as the key).
- Understand cardinality and configure the model appropriately.
- Deliverables: Screenshot of the data model with relationships.

STEP 1):- go to model view connect flightId from ticket_information table to flightId of Flight_information table. This is many-to-one relationship.

STEP 2):- Then connect FlightId of Flight_informaion to Flight_id of Passenger_information. This is one-to-many relationship.



Task 3:- Enhanced Data Insights

- Add a **conditional column** to classify flights as "Best" or "To Be Improved" based on status.
- Use **"Column from Examples"** to extract the flight number from FlightNumber.
- **Deliverables:** Screenshot of the transformed data.

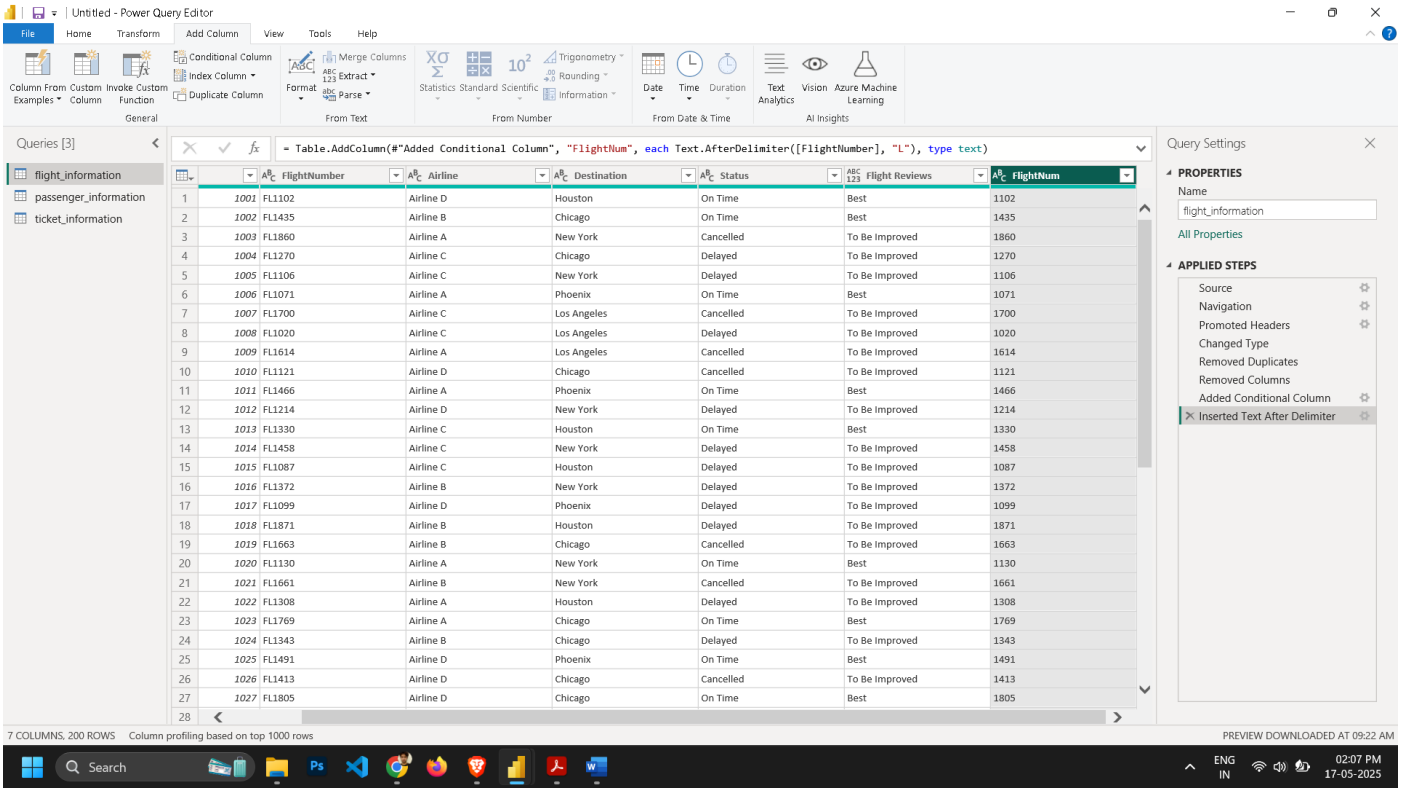
STEP 1): -Click on Transform data that will take us to Power Query editor.

STEP 2): - Then select Add column tab and conditional column.

STEP 3): - Then give conditions according to the Status column requirements on Time = ”Best” and for Delayed and Cancelled = ”To Be Improved”.

STEP 4): - Then again from Add Column Tab then selected “Column from example” after that

“from selection” and give examples of numeric terms from flightNumber column and got our new column that contains only numeric term of FlightNumber.



	FlightNumber	Airline	Destination	Status	Flight Reviews	FlightNum
1	1001	FL1102	Airline D	Houston	On Time	Best	1102
2	1002	FL1435	Airline B	Chicago	On Time	Best	1435
3	1003	FL1860	Airline A	New York	Cancelled	To Be Improved	1860
4	1004	FL1270	Airline C	Chicago	Delayed	To Be Improved	1270
5	1005	FL1106	Airline C	New York	Delayed	To Be Improved	1106
6	1006	FL1071	Airline A	Phoenix	On Time	Best	1071
7	1007	FL1700	Airline C	Los Angeles	Cancelled	To Be Improved	1700
8	1008	FL1020	Airline C	Los Angeles	Delayed	To Be Improved	1020
9	1009	FL1614	Airline A	Los Angeles	Cancelled	To Be Improved	1614
10	1010	FL1121	Airline D	Chicago	Cancelled	To Be Improved	1121
11	1011	FL1466	Airline A	Phoenix	On Time	Best	1466
12	1012	FL1214	Airline D	New York	Delayed	To Be Improved	1214
13	1013	FL1330	Airline C	Houston	On Time	Best	1330
14	1014	FL1458	Airline C	New York	Delayed	To Be Improved	1458
15	1015	FL1087	Airline C	Houston	Delayed	To Be Improved	1087
16	1016	FL1372	Airline B	New York	Delayed	To Be Improved	1372
17	1017	FL1099	Airline D	Phoenix	Delayed	To Be Improved	1099
18	1018	FL1871	Airline B	Houston	Delayed	To Be Improved	1871
19	1019	FL1663	Airline B	Chicago	Cancelled	To Be Improved	1663
20	1020	FL1130	Airline A	New York	On Time	Best	1130
21	1021	FL1661	Airline B	New York	Cancelled	To Be Improved	1661
22	1022	FL1308	Airline A	Houston	Delayed	To Be Improved	1308
23	1023	FL1769	Airline A	Chicago	On Time	Best	1769
24	1024	FL1343	Airline B	Chicago	Delayed	To Be Improved	1343
25	1025	FL1491	Airline D	Phoenix	On Time	Best	1491
26	1026	FL1413	Airline D	Chicago	Cancelled	To Be Improved	1413
27	1027	FL1805	Airline D	Chicago	On Time	Best	1805
28						

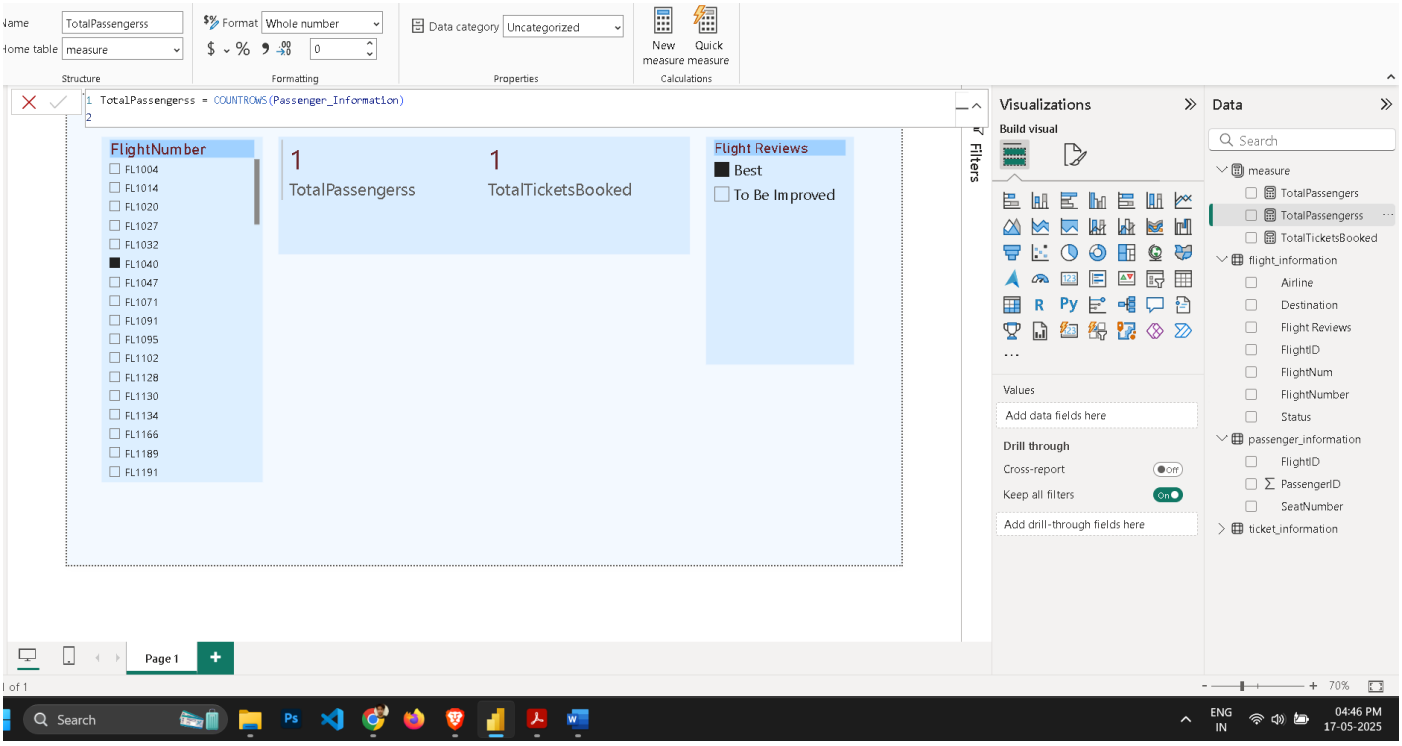
Task 4:- Calculations Using DAX

4.1) Total passengers for a specific flight.

Step 1:- Create the DAX Measure

In report, go to the **Modeling** tab → **New measure**, and enter something like:

TotalPassengers = COUNTROWS(Passenger_Information)



4.2) Total tickets booked.

Step 1:- Create the DAX Measure

In report, go to the **Modeling** tab → **New measure**, and enter something like:

Tickets Booked = CALCULATE(COUNTROWS(Ticket_Information), Ticket_Information[BookingStatus] = "Confirmed")

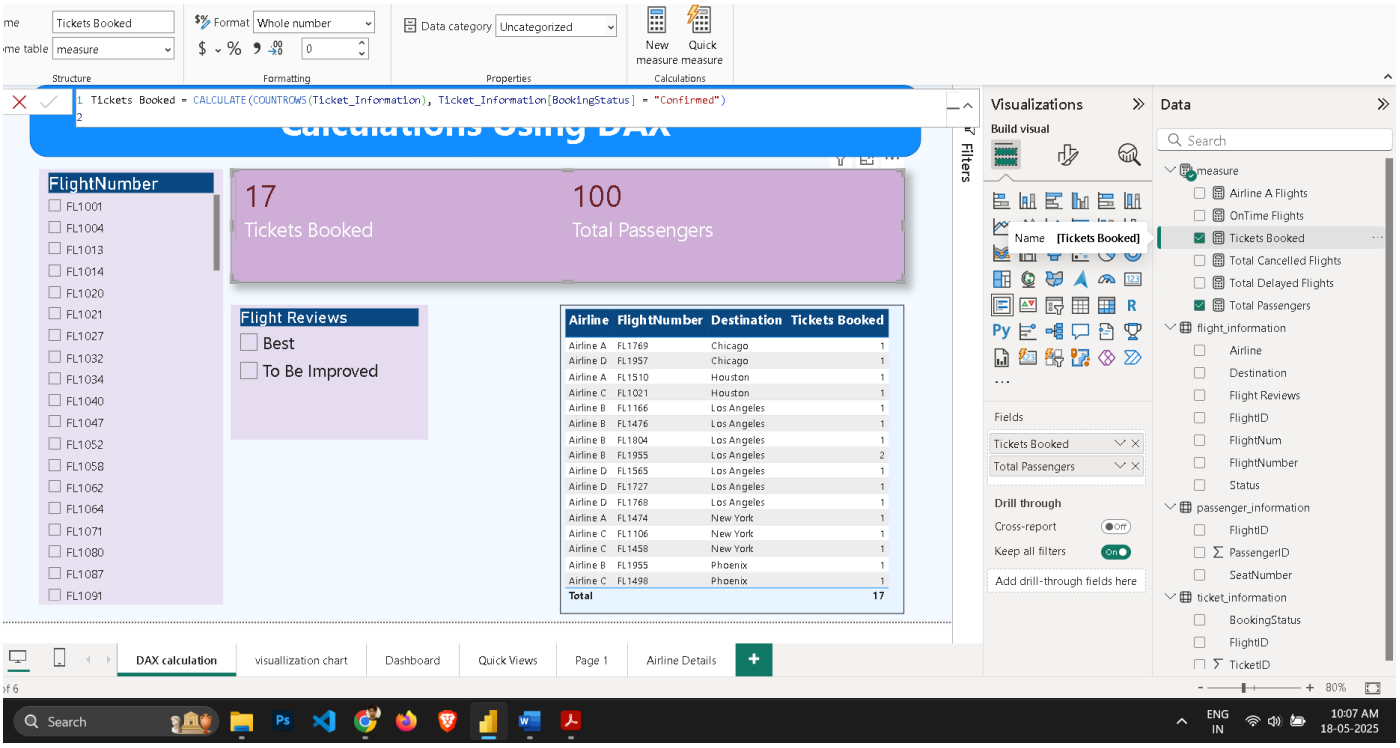
Step 2:- Build the Visual

- Go to the **Report** view.
- Insert a **Card** visual.
- Drag the **TotalPassengers** measure onto the Card.

Step 3:- Interactively Change Flight

- A a **Slicer** to the page: drag **FlightNumber** into a Slicer visual.
- Then the Card will dynamically update to show total passengers for whichever flight you select in that Slicer.

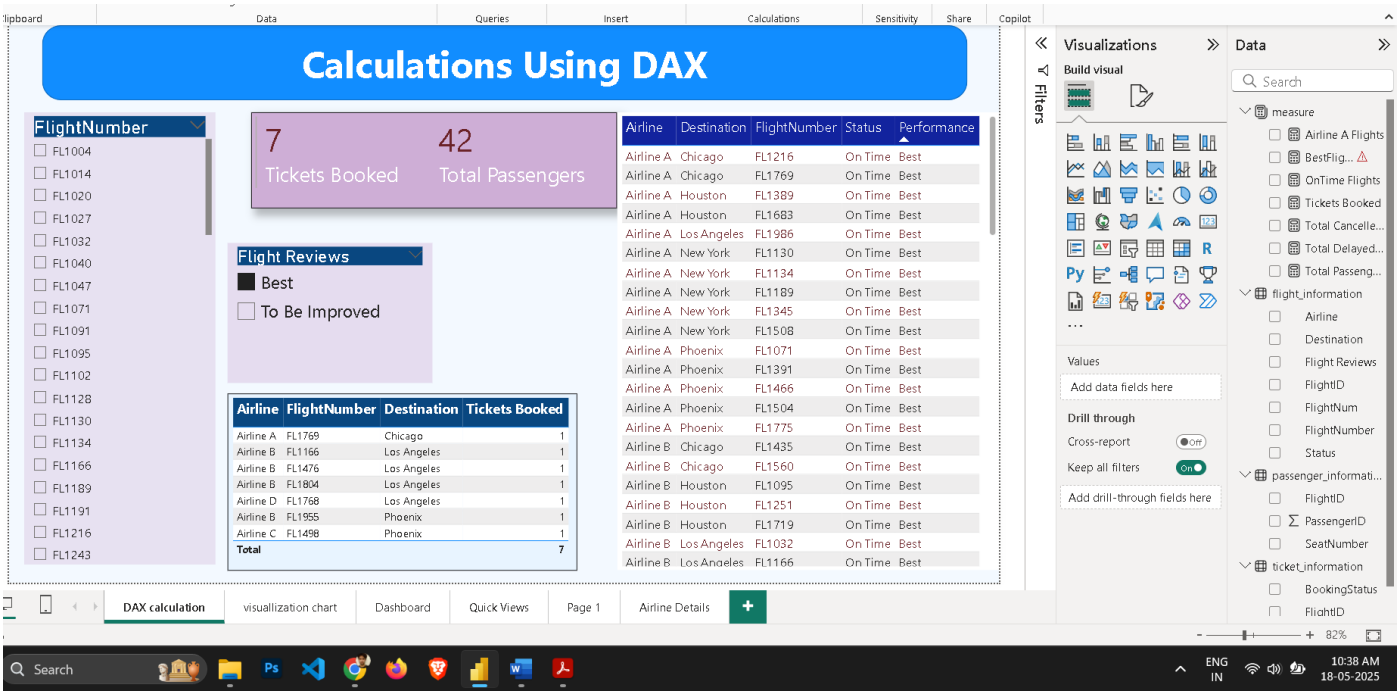
Step 4:- Add Table and add values Airline, flight number, Destination and tickets booked for detailed view of all ticket booked.



4.3) Filtered table showing "Best" flights only.

In Power BI Report View:

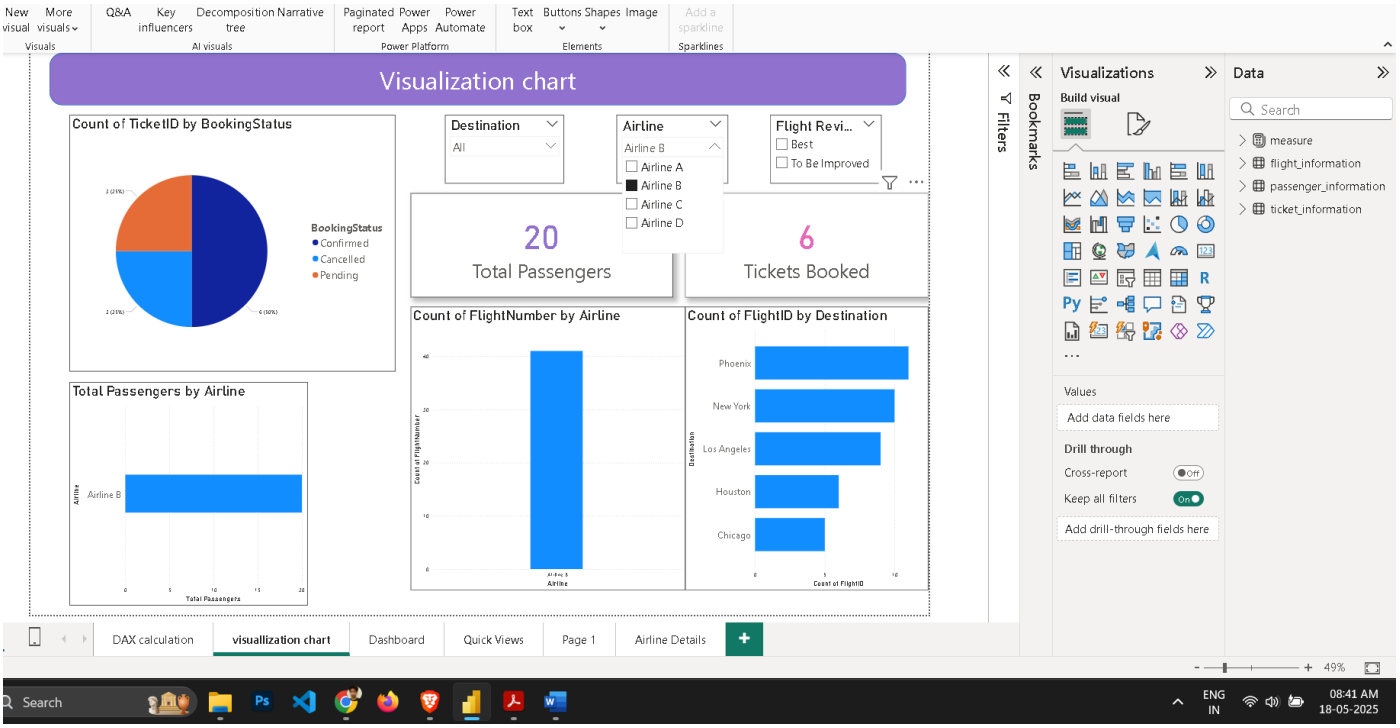
- Use a **Slicer** with fields from Flight_Reviews that we created earlier.
- Now you can choose this option anytime and see the results in dashboard..
-
- *BestFlights = FILTER('Flight_Information', 'Flight_Information'[Flight performance] = "Best")*



Task 5:- Visualization and Interactive Features

- **Visuals for:**
  - Passenger count by airline.
  - Ticket booking statuses.

Use the **Passenger_Information** and **Flight_Information** tables.
Make sure they're related by FlightID.
Create a **visual** (e.g., bar chart or column chart).
Drag the **Airline** field from Flight_Information to the **Axis**.
Drag **PassengerID** from Passenger_Information to the **Values**, and set it to **Count**.



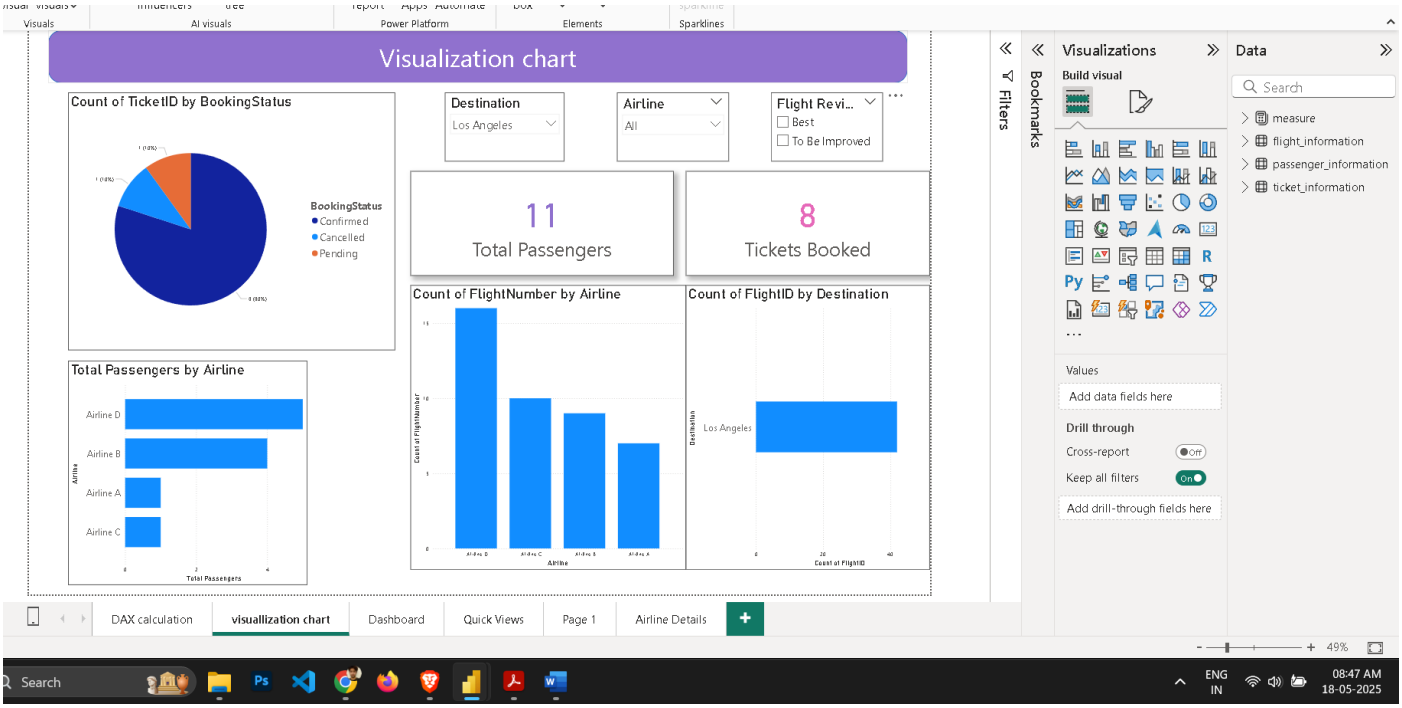
○ Flights by airline and destination.

Insert Slicers:

- Go to **Report View**.
- From the **Visualizations** pane, click on the **Slicer** visual.
- Drag the Destination field into one slicer.
- Drag the Airline field into another slicer.

Customize Slicers (Optional):

- Change orientation to **Horizontal** for button-style selection (via Format → Orientation).
- Use **Drop-down** style if you prefer a cleaner look.



● Add interactive features for:

○ Destination and Airline.

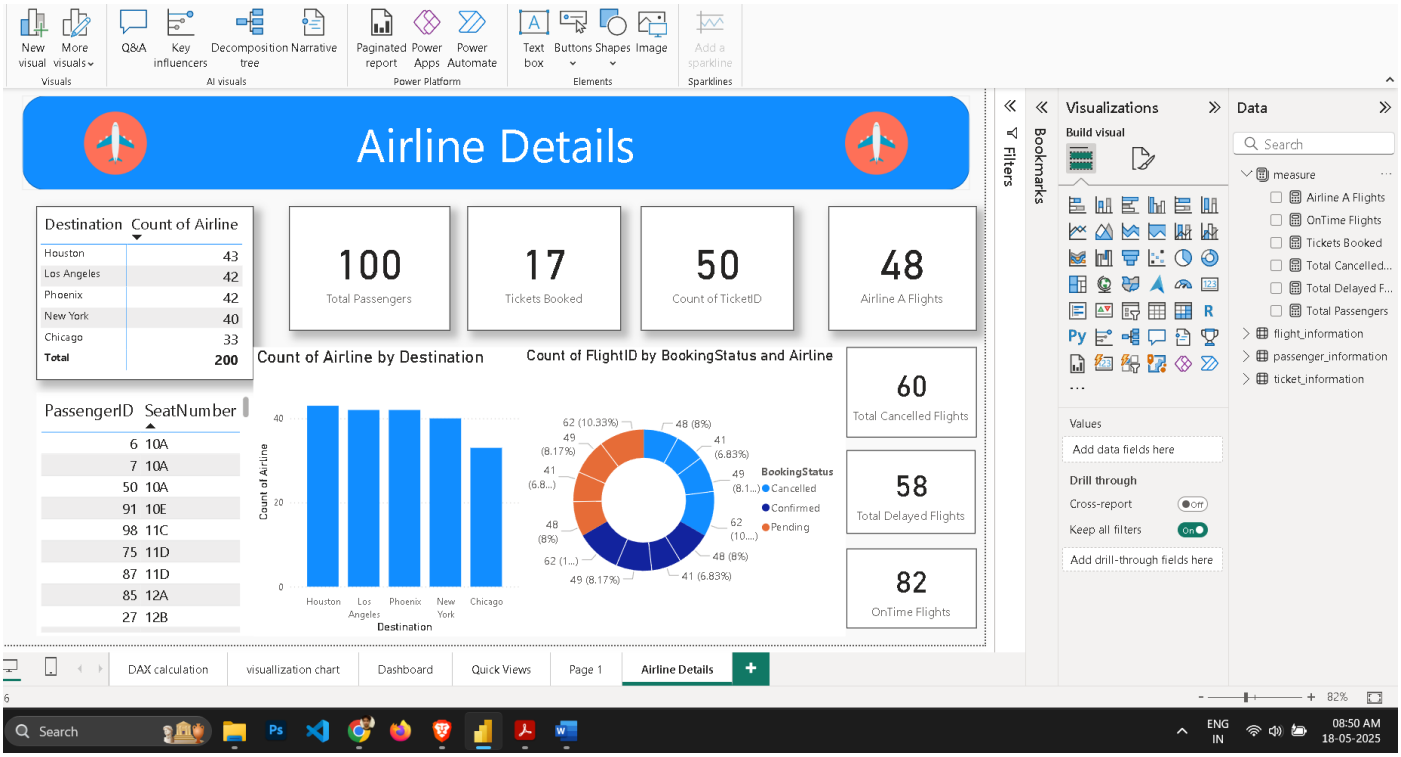
Insert Slicers:

- Go to **Report View**.
- Click on the **Slicer** visual from the Visualizations pane.
- Drag the Destination field to one slicer.
- Drag the Airline field to another slicer.

2. **Customize (Optional):**
   - Set slicers to **Dropdown** or **List** from the format pane.
   - Add **search** box (Format → Slicer settings → Show search).
3. **Functionality:**
   - These slicers will let users filter all report visuals by **destination** or **airline** interactively.

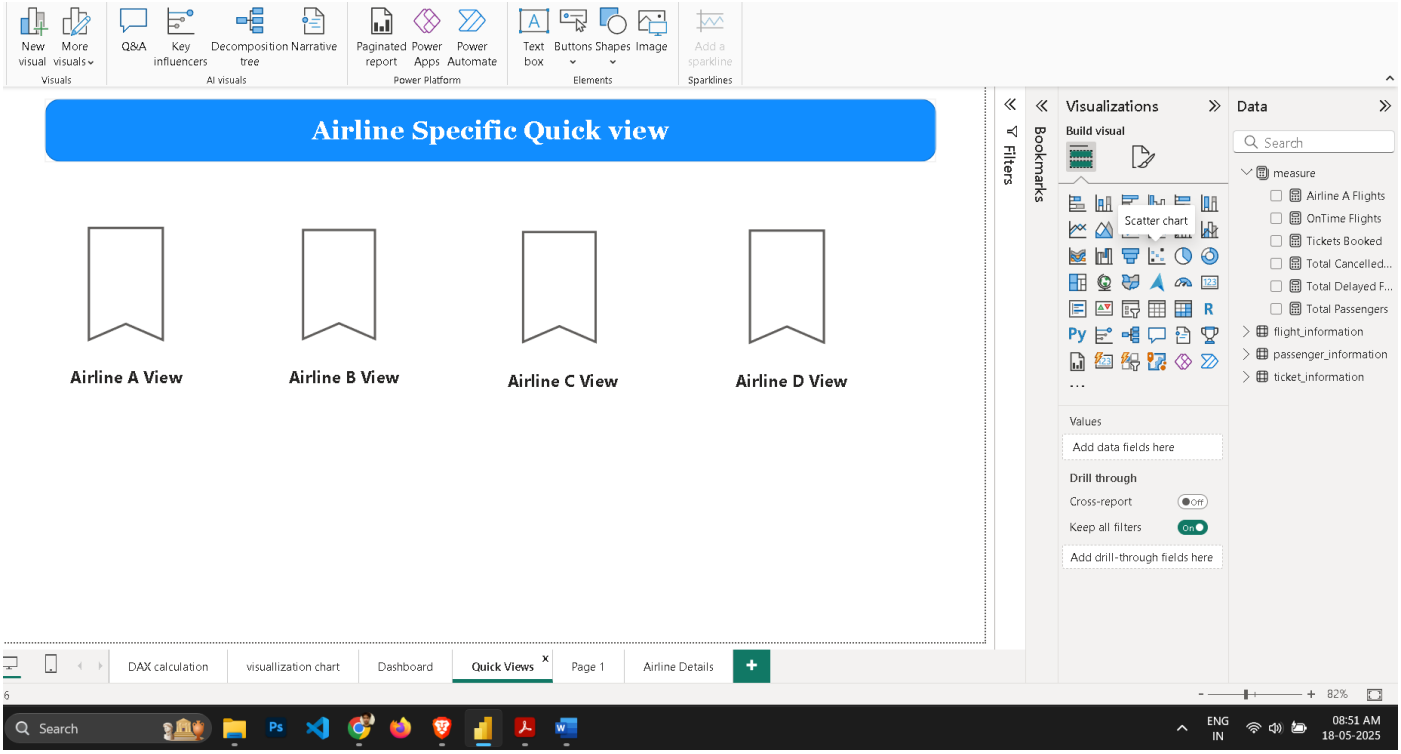
2. Airline-Specific Pages

1. **Duplicate Report Pages:**
   - Right-click a report page and choose **Duplicate Page**.
   - Rename each page (e.g., “Airline A Report”, “Airline B Report”).
2. **Apply Page-Level Filters:**
   - On each page, drag the Airline field into the **Filters on this page** section (Filters pane).
   - Select the specific airline (e.g., only “Airline A”).
3. **Add Navigation Buttons (Optional):**
   - Go to **Insert → Buttons → Blank**.
   - Label the button (e.g., “Go to Airline A”).
   - With the button selected, go to **Format pane → Action**.
     - Turn **Action ON**
     - Set **Type**: *Page navigation*
     - Choose the target airline-specific page.



○ Quick views.

I used bookmarks for quick view



Task 6:- Final Dashboard and Power BI Service

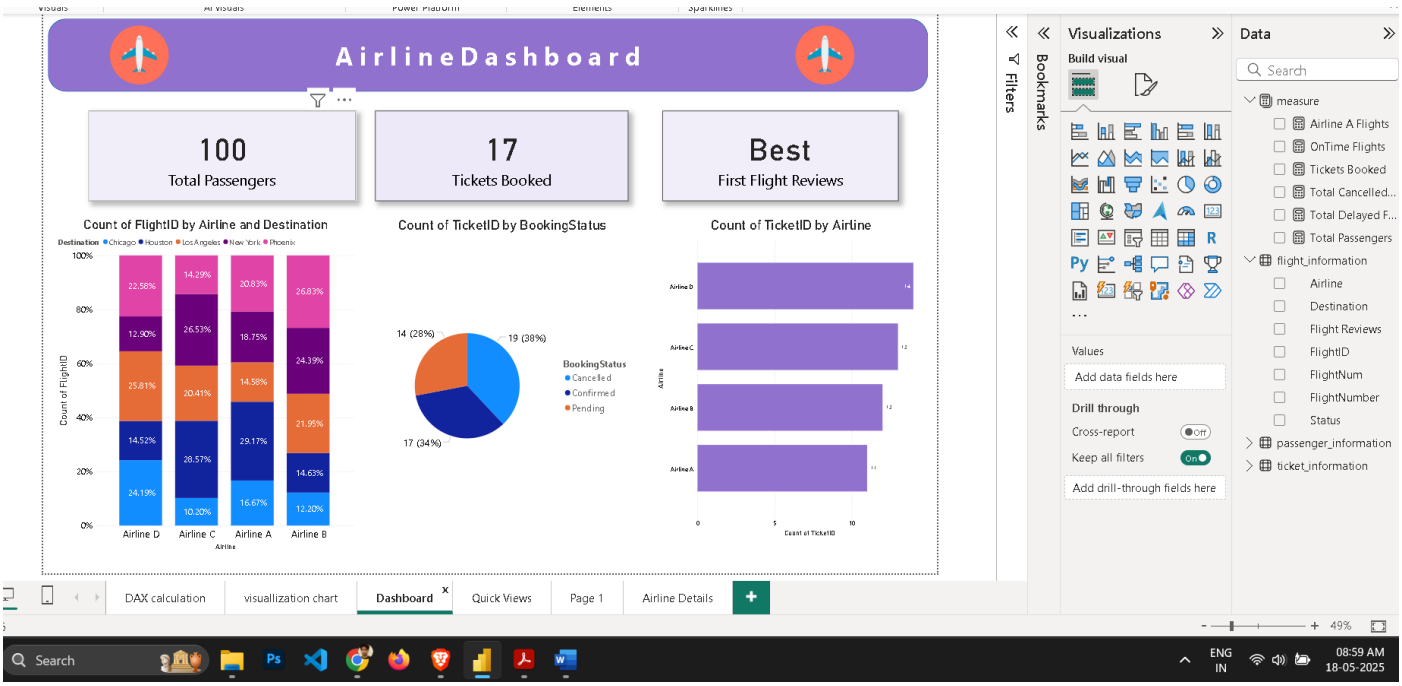
- Design a **comprehensive dashboard** with key visuals and insights.

  Use **Card visuals** for quick-glance metrics:
  - Total Passanger
  - Total tickets booked
  - Flight reviews
  -

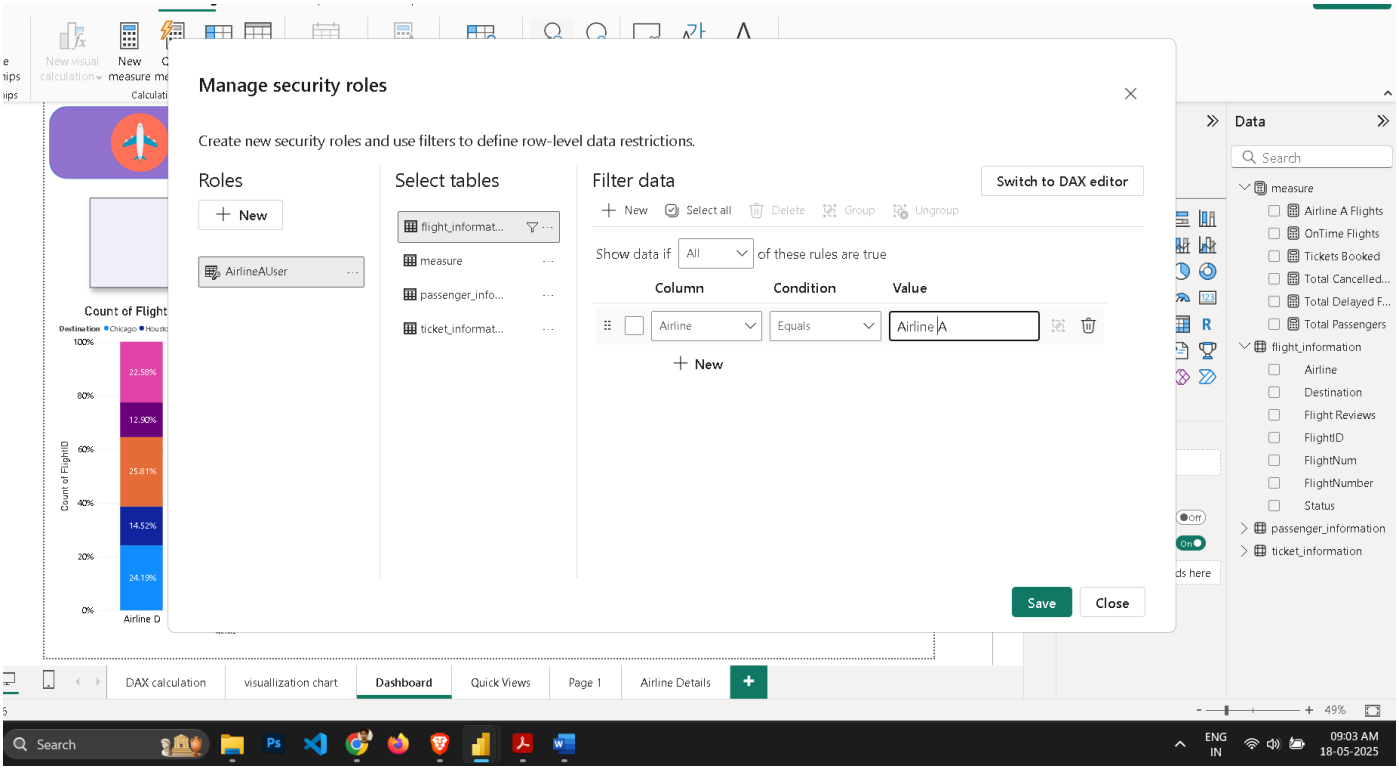
  1. Flights by Airline and Destination
  - **Stacked bar chart**
  - Axis: Destination
  - Legend: Airline
  - Values: FlightID (Count)

  2. Passenger Count by Airline
  - **Bar chart** or **donut chart**
  - Axis: Airline
  - Values: PassengerID (Count)

  3. Ticket Booking Status
  - **Pie or donut chart**
  - Legend: BookingStatus
  - Values: TicketID (Count)



- Configure **Row-Level Security (RLS)** for Airline A data and assign it to a user.
  Go to the **Modeling** tab → Click **Manage roles**.
  Click **Create** and name the role: AirlineAUser.
  Select the Flight_Information table.
  In the DAX filter box, enter:

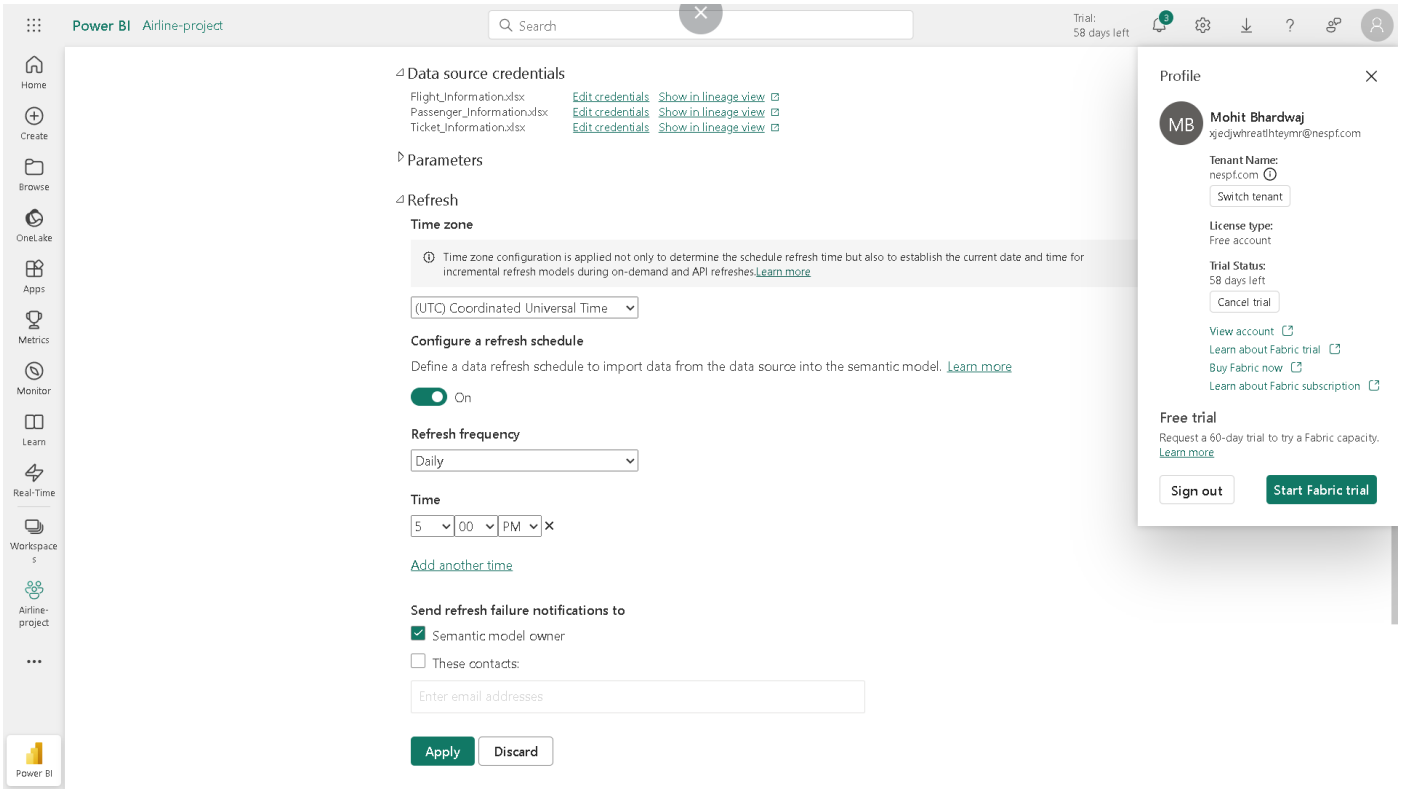


- **Set up a schedule refresh at 5 PM daily.**

1. **Publish Your Report to Power BI Service**
   - In **Power BI Desktop**, go to **Home** → **Publish** → Choose your workspace.

2. **Open the Dataset in Power BI Service**
   - Go to Power BI Service.
   - In the **left navigation pane**, click on your **workspace**.
   - Go to the **Datasets + Dataflows** tab.
   - Click the **ellipsis (⋯)** next to your dataset → Select **Settings**.

3. **Set Up Scheduled Refresh**
   - Under **Settings** → **Dataset** → **Scheduled refresh**:
     - Turn **Keep data updated** to **On**.
     - Under **Scheduled refresh**, click **Add another time**.
     - Set the **Time** to **5:00 PM** and **Time zone** according to your local time.
     - Choose the **Refresh frequency** as **Daily**.



Video Link

https://drive.google.com/file/d/1lnL8DwQpzfQUQEsJrVH37uqKipFu_9IA/view?usp=sharing