

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.

The screenshot displays the Power Query Editor window. The main area shows a table with 3 columns and 50 rows. The columns are TicketID, FlightID, and BookingStatus. The data is as follows:

TicketID	FlightID	BookingStatus
5001	1178	Pending
5002	1078	Confirmed
5003	1117	Cancelled
5004	1120	Cancelled
5005	1137	Cancelled
5006	1162	Pending
5007	1076	Pending
5008	1035	Cancelled
5009	1001	Cancelled
5010	1040	Cancelled
5011	1064	Pending
5012	1150	Cancelled
5013	1060	Cancelled
5014	1064	Confirmed
5015	1093	Confirmed
5016	1072	Pending
5017	1011	Cancelled
5018	1105	Cancelled
5019	1014	Confirmed
5020	1060	Pending
5021	1030	Confirmed
5022	1035	Confirmed
5023	1165	Confirmed
5024	1005	Confirmed
5025	1083	Cancelled
5026	1123	Cancelled
5027	1078	Confirmed
5028	1154	Pending

The right-hand pane shows the 'Query Settings' for 'ticket_information'. The 'APPLIED STEPS' list includes: Source, Navigation, Promoted Headers, Changed Type, and Removed Columns. The bottom status bar indicates '3 COLUMNS, 50 ROWS' and 'Column profiling based on top 1000 rows'.

Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Sources Enter Data Data Sources Parameters Query Properties Advanced Editor Manage Columns Reduce Rows Sort Split Column Group By Data Type: Whole Number Use First Row as Headers Replace Values Merge Queries Append Queries Combine Files Text Analytics Vision Azure Machine Learning All Insights

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
1	1001 FL1102	Airline D	Houston	On Time
2	1002 FL1435	Airline B	Chicago	On Time
3	1003 FL1860	Airline A	New York	Cancelled
4	1004 FL1270	Airline C	Chicago	Delayed
5	1005 FL1106	Airline C	New York	Delayed
6	1006 FL1071	Airline A	Phoenix	On Time
7	1007 FL1700	Airline C	Los Angeles	Cancelled
8	1008 FL1020	Airline C	Los Angeles	Delayed
9	1009 FL1614	Airline A	Los Angeles	Cancelled
10	1010 FL1121	Airline D	Chicago	Cancelled
11	1011 FL1466	Airline A	Phoenix	On Time
12	1012 FL1214	Airline D	New York	Delayed
13	1013 FL1330	Airline C	Houston	On Time
14	1014 FL1458	Airline C	New York	Delayed
15	1015 FL1087	Airline C	Houston	Delayed
16	1016 FL1372	Airline B	New York	Delayed
17	1017 FL1099	Airline D	Phoenix	Delayed
18	1018 FL1871	Airline B	Houston	Delayed
19	1019 FL1663	Airline B	Chicago	Cancelled
20	1020 FL1130	Airline A	New York	On Time
21	1021 FL1661	Airline B	New York	Cancelled
22	1022 FL1308	Airline A	Houston	Delayed
23	1023 FL1769	Airline A	Chicago	On Time
24	1024 FL1343	Airline B	Chicago	Delayed
25	1025 FL1491	Airline D	Phoenix	On Time
26	1026 FL1413	Airline D	Chicago	Cancelled
27	1027 FL1805	Airline D	Chicago	On Time
28	1028 FL1385	Airline D	Chicago	On Time

COLUMNS: 200 ROWS Column profiling based on top 1000 rows

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Untitled - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply New Source Recent Sources Enter Data Data Sources Parameters Query Properties Advanced Editor Manage Columns Reduce Rows Sort Split Column Group By Data Type: Whole Number Use First Row as Headers Replace Values Merge Queries Append Queries Combine Files Text Analytics Vision Azure Machine Learning All Insights

Queries [3]

flight_information
passenger_information
ticket_information

Table.Distinct(#"Removed Columns", {"PassengerID"})

PassengerID	FlightID	SeatNumber
1	1	1161 38A
2	2	1157 24D
3	3	1141 30B
4	4	1046 17E
5	5	1035 29D
6	6	1134 10A
7	7	1082 10A
8	8	1115 20E
9	9	1197 34E
10	10	1047 2E
11	11	1153 43C
12	12	1194 48C
13	13	1010 47A
14	14	1056 23C
15	15	1030 16D
16	16	1109 40D
17	17	1005 25C
18	18	1119 32C
19	19	1033 27E
20	20	1118 32B
21	21	1065 19E
22	22	1146 5B
23	23	1177 28B
24	24	1011 22E
25	25	1085 6A
26	26	1026 5A
27	27	1063 12B
28	28	1086 46B

3 COLUMNS, 100 ROWS Column profiling based on top 1000 rows

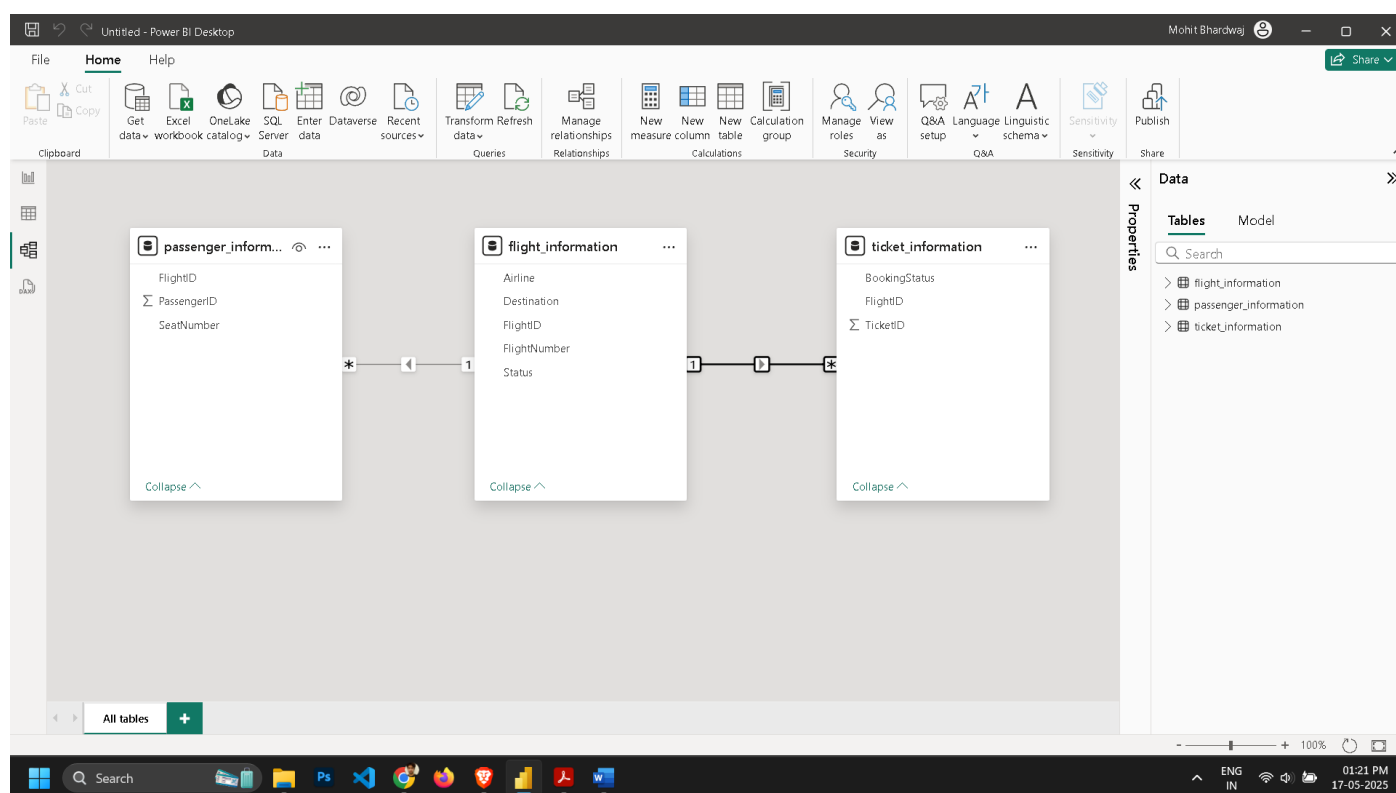
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Task 2: - Data Modelling

- 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.

The screenshot displays the Power Query Editor interface. The main area shows a table with the following columns: FlightNumber, Airline, Destination, Status, Flight Reviews, and a newly added column, FlightNum. The table contains 28 rows of data. The right sidebar shows the 'Query Settings' pane, which includes the 'Properties' section (Name: flight_information) and the 'Applied Steps' section. The 'Applied Steps' list includes: Source, Navigation, Promoted Headers, Changed Type, Removed Duplicates, Removed Columns, Added Conditional Column, and Inserted Text After Delimiter. The bottom status bar indicates '7 COLUMNS, 200 ROWS' and 'Column profiling based on top 1000 rows'.

	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

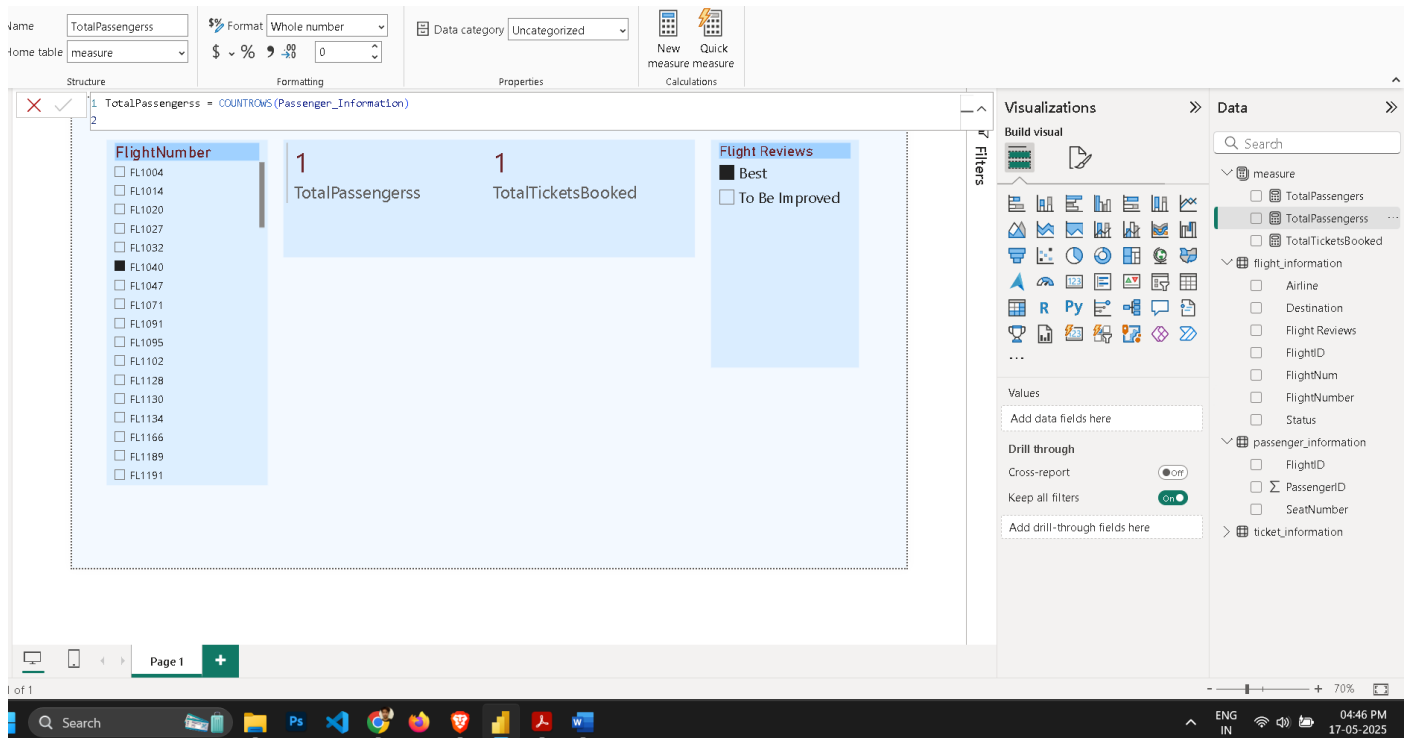
Task 4:- Calculations Using DAX

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

- Add 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.

me Tickets Booked Format Whole number Data category Uncategorized

me table measure \$ % 0

Structure Formatting Properties Calculations

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

Calculations Using DAX

FlightNumber

17 Tickets Booked 100 Total Passengers

Flight Reviews

☐ Best

☐ To Be Improved

Airline	FlightNumber	Destination	Tickets Booked
Airline A	FL1769	Chicago	1
Airline D	FL1957	Chicago	1
Airline A	FL1510	Houston	1
Airline C	FL1021	Houston	1
Airline B	FL1166	Los Angeles	1
Airline B	FL1476	Los Angeles	1
Airline B	FL1804	Los Angeles	1
Airline B	FL1955	Los Angeles	2
Airline D	FL1565	Los Angeles	1
Airline D	FL1727	Los Angeles	1
Airline D	FL1760	Los Angeles	1
Airline A	FL1474	New York	1
Airline C	FL1106	New York	1
Airline C	FL1458	New York	1
Airline B	FL1955	Phoenix	1
Airline C	FL1498	Phoenix	1
Total			17

Visualizations

Build visual

Filters

Fields

Tickets Booked

Total Passengers

Drill through

Cross-report

Keep all filters

Add drill-through fields here

Data

Search

measure

Airline A Flights

OnTime Flights

Tickets Booked

Total Cancelled Flights

Total Delayed Flights

Total Passengers

flight_information

Airline

Destination

Flight Reviews

FlightID

FlightNum

FlightNumber

Status

passenger_information

FlightID

PassengerID

SeatNumber

ticket_information

BookingStatus

FlightID

TicketID

DAX calculation visualization chart Dashboard Quick Views Page 1 Airline Details

Search

ENG IN 10:07 AM 18-05-2025

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")*

Clipboard Data Queries Insert Calculations Sensitivity Share Copilot

Calculations Using DAX

FlightNumber

7 Tickets Booked 42 Total Passengers

Flight Reviews

☒ Best

☐ To Be Improved

Airline	FlightNumber	Destination	Tickets Booked
Airline A	FL1769	Chicago	1
Airline B	FL1166	Los Angeles	1
Airline B	FL1476	Los Angeles	1
Airline B	FL1804	Los Angeles	1
Airline D	FL1768	Los Angeles	1
Airline B	FL1955	Phoenix	1
Airline C	FL1498	Phoenix	1
Total			7

Airline	Destination	FlightNumber	Status	Performance
Airline A	Chicago	FL1216	On Time	Best
Airline A	Chicago	FL1769	On Time	Best
Airline A	Houston	FL1389	On Time	Best
Airline A	Houston	FL1683	On Time	Best
Airline A	Los Angeles	FL1986	On Time	Best
Airline A	New York	FL1130	On Time	Best
Airline A	New York	FL1134	On Time	Best
Airline A	New York	FL1189	On Time	Best
Airline A	New York	FL1345	On Time	Best
Airline A	New York	FL1508	On Time	Best
Airline A	Phoenix	FL1071	On Time	Best
Airline A	Phoenix	FL1391	On Time	Best
Airline A	Phoenix	FL1466	On Time	Best
Airline A	Phoenix	FL1504	On Time	Best
Airline A	Phoenix	FL1775	On Time	Best
Airline B	Chicago	FL1435	On Time	Best
Airline B	Chicago	FL1560	On Time	Best
Airline B	Houston	FL1095	On Time	Best
Airline B	Houston	FL1251	On Time	Best
Airline B	Houston	FL1719	On Time	Best
Airline B	Los Angeles	FL1032	On Time	Best
Airline B	Los Angeles	FL1166	On Time	Best

Visualizations

Build visual

Filters

Values

Add data fields here

Drill through

Cross-report

Keep all filters

Add drill-through fields here

Data

Search

measure

Airline A Flights

BestFlight

OnTime Flights

Tickets Booked

Total Cancelled...

Total Delayed...

Total Passeng...

flight_information

Airline

Destination

Flight Reviews

FlightID

FlightNum

FlightNumber

Status

passenger_informati...

FlightID

PassengerID

SeatNumber

ticket_information

BookingStatus

FlightID

DAX calculation visualization chart Dashboard Quick Views Page 1 Airline Details

Search

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Task 5:- Visualization and Interactive Features

• Visuals for:

- Passenger count by airline.
- Ticket booking statuses.

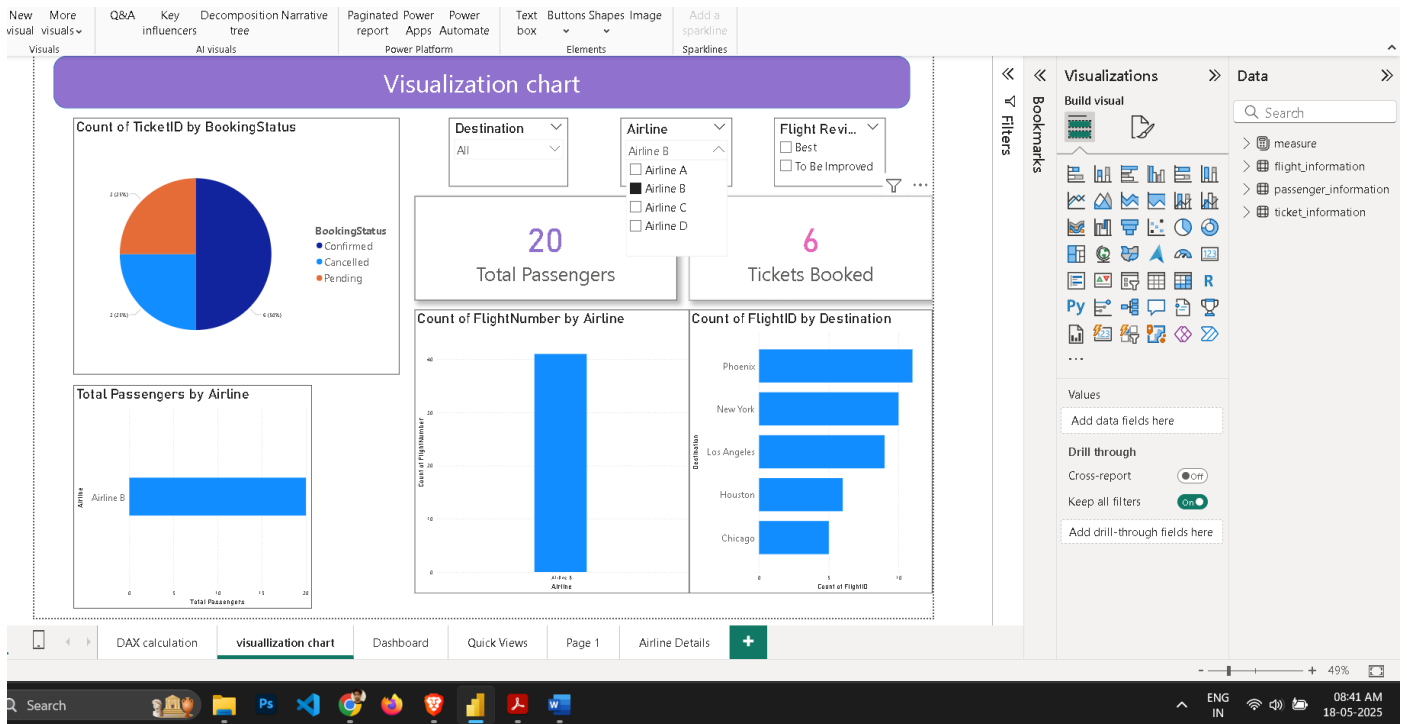
Use the **Passenger_Information** and **Flight_Information** tables.

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**.



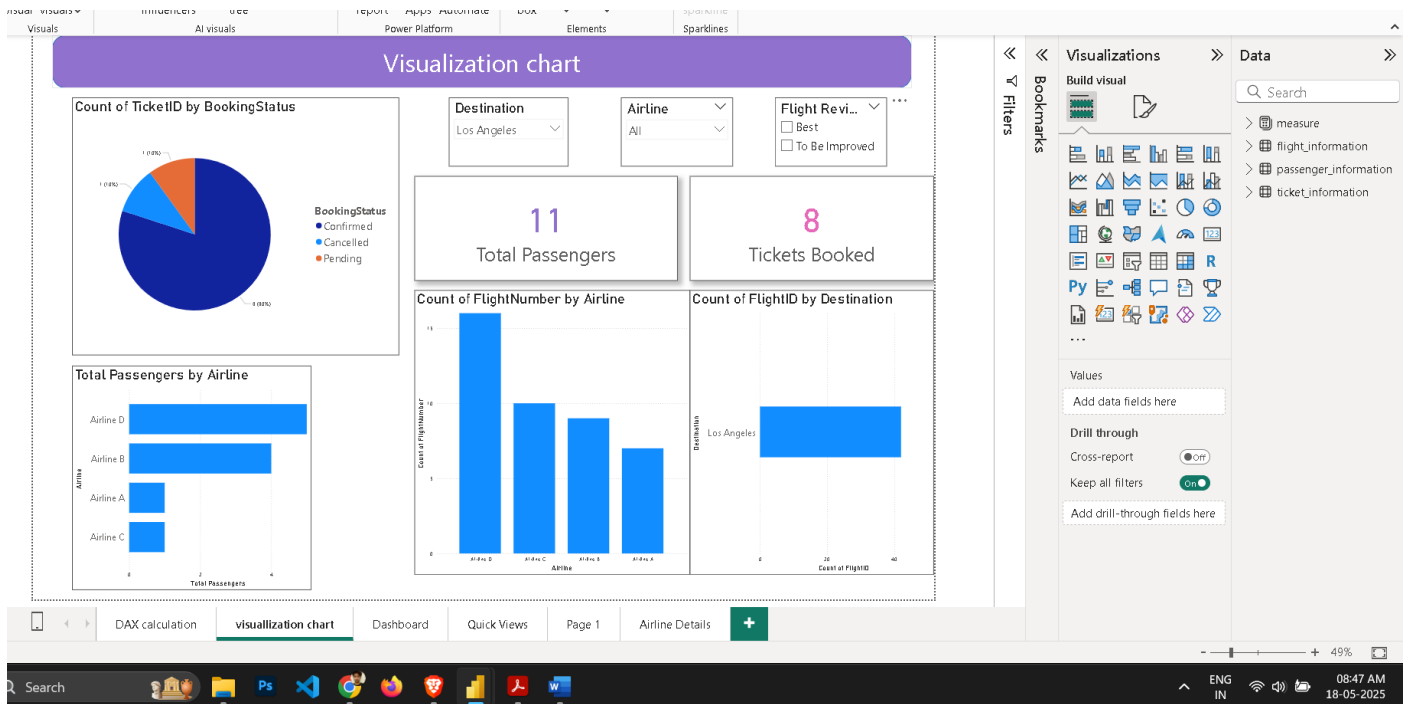
○ Flights by airline and destination.

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:

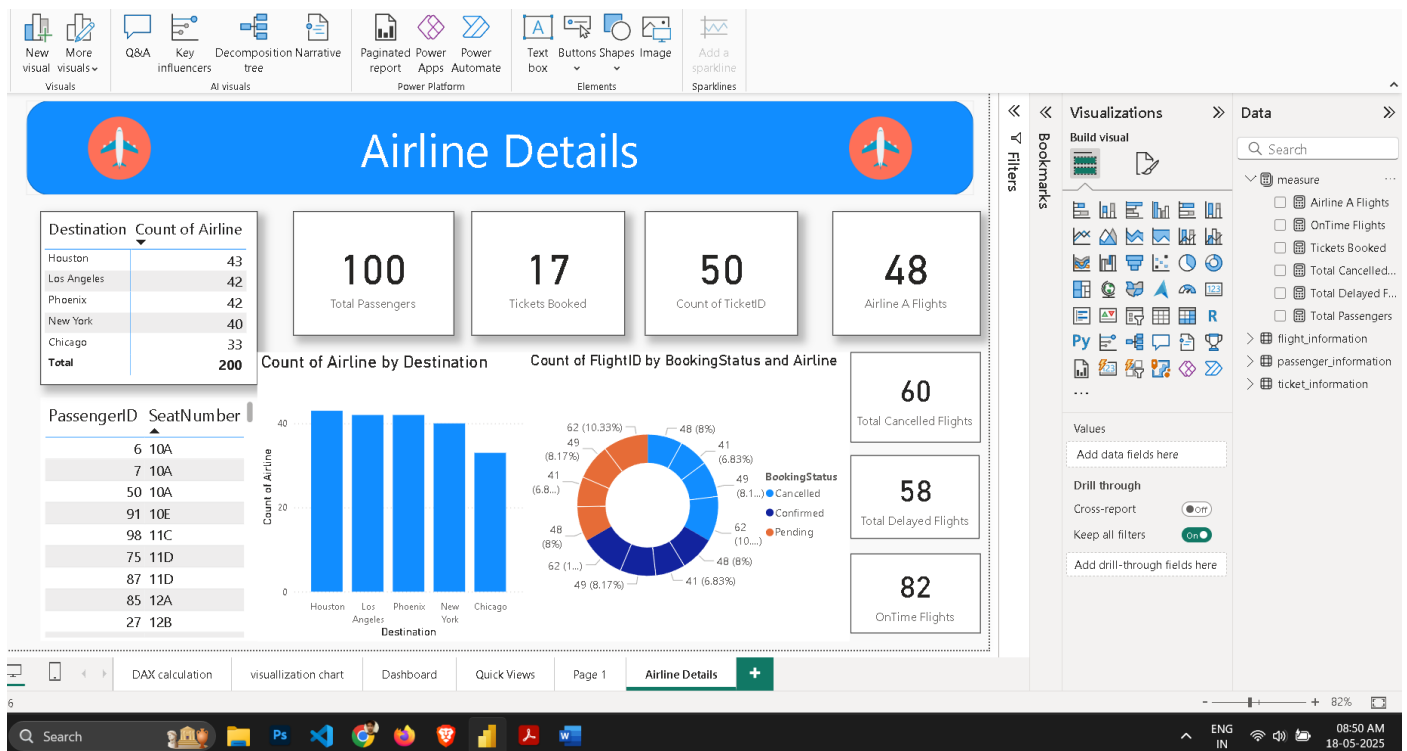
○ Destination and Airline.

Insert Slicers:

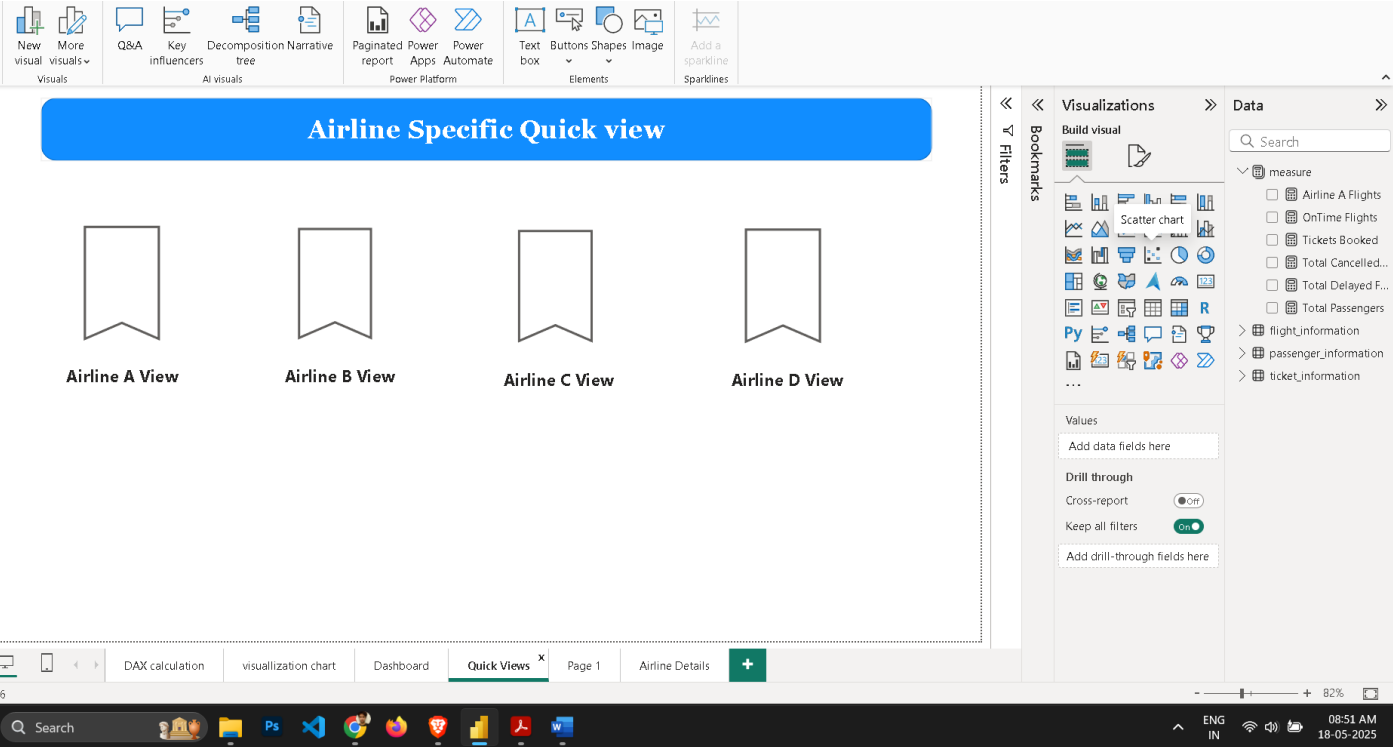
- Go to **Report View**.
 - Click on the **Slicer** visual from the Visualizations pane.
 - Drag the **Destination** field to one slicer.
 - Drag the **Airline** field to another slicer.
2. **Customize (Optional):**
 - Set slicers to **Dropdown** or **List** from the format pane.
 - Add **search** box (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

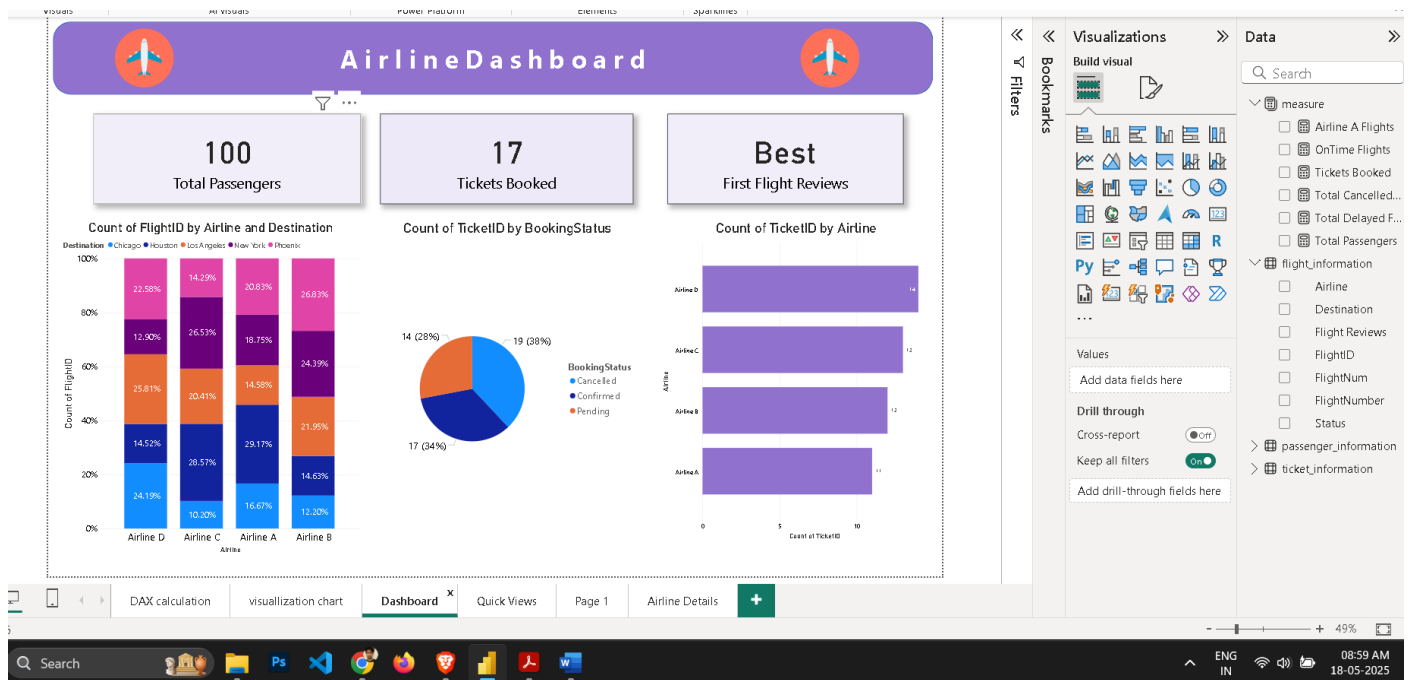
- **Stacked bar chart**
- Axis: Destination
- Legend: Airline
- Values: FlightID (Count)

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:

The screenshot displays the 'Manage security roles' dialog box in Power BI. The dialog is titled 'Manage security roles' and includes a subtitle 'Create new security roles and use filters to define row-level data restrictions.' It features three main sections: 'Roles', 'Select tables', and 'Filter data'. In the 'Roles' section, a role named 'AirlineAUser' is listed. In the 'Select tables' section, the 'flight_informat...' table is selected. In the 'Filter data' section, a filter rule is defined for the 'Airline' column with the condition 'Equals' and the value 'Airline A'. The background shows a dashboard with a bar chart titled 'Count of Flight' and a data pane on the right.

Column	Condition	Value
Airline	Equals	Airline A

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

- 1. Publish Your Report to Power BI Service**

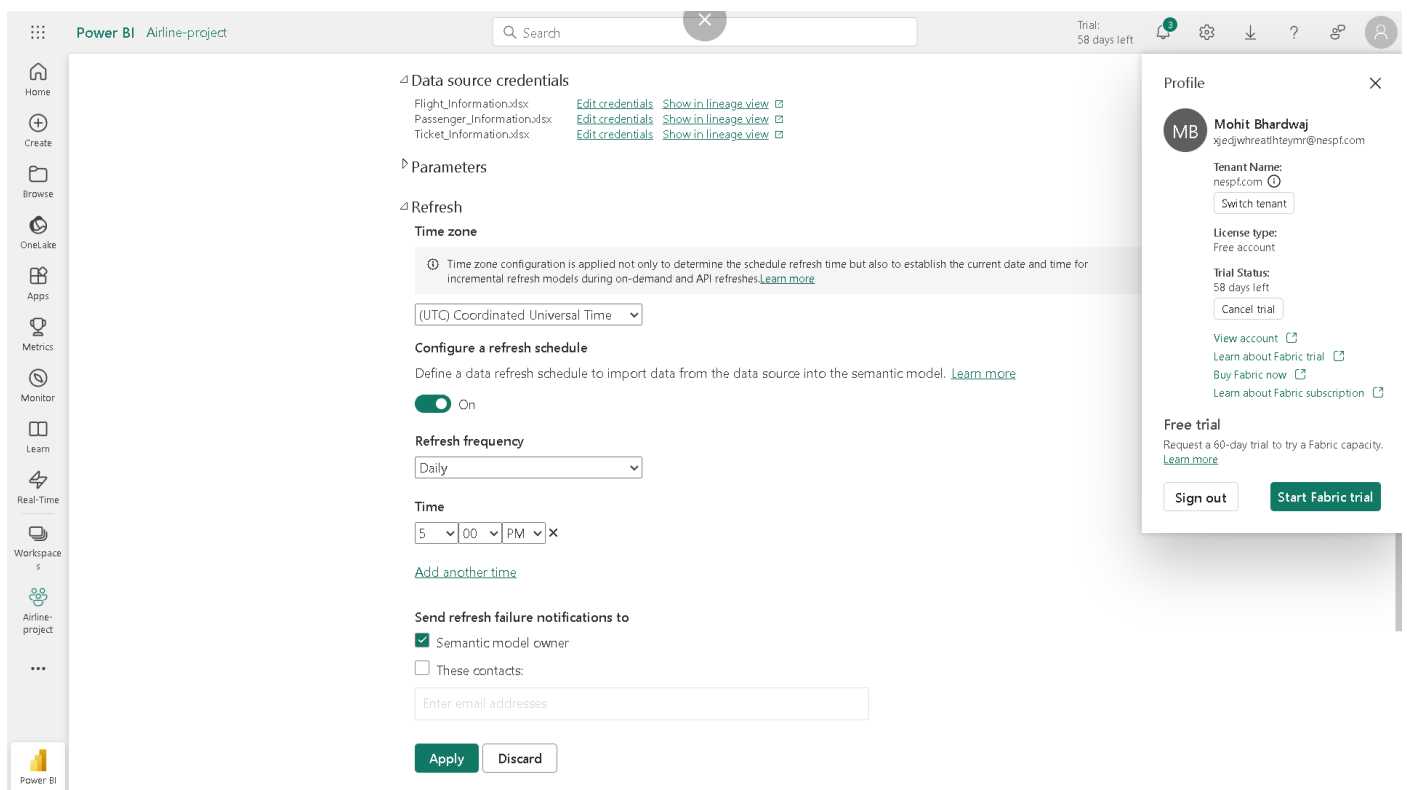
- In **Power BI Desktop**, go to **Home** → **Publish** → Choose your workspace.

- 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/1InL8DwQpzfQUQEsJrVH37uqKipFu_9IA/view?usp=sharing