# Assignment – Aviation Financial Data Analysis

## Problem statement: To analyze the data, clean for visualization and share insights using the dashboard.

**Scenario 1**: You are an aviation industry analyst tasked with putting together a high-level financial overview of the largest US American airlines **over the last 10 years.** What are the most important callouts to understand the current state of the industry? What are any interesting trends you see?

## Tools Used:

1. Microsoft Excel (Formulas/Functions/Power Query)
2. Tableau Desktop
3. Word

## Data Cleaning

* The CSV file provided was giving below data loss error (not in sync with the task explanation), so had to convert it in excel format.



* There is only one tab (**BDA\_Round2\_Use\_Case**) and data looks good with few observations.
* Checking all columns on the tab, UNIQUE\_CARRIER\_NAME is the main dimension column with classification of types of airlines.
* Year column contains information only for years doesn’t have month / date details.
* Used the formula (**=LEFT(B2,4)**) to have only year information. (YEAR column updated)
* Quarter column already in place.
* Expenses / Revenue values are not in negative which is good sign.
* Profit / Loss has values in positive / negative sides which is understood.
* There were various components of the Revenue and Expense types which constitutes to the total numbers.
* Deleted overall total number columns for Revenue, Expenses and Profit Loss.
* Grouped the data as per Expense and Revenue fields (using Power Query)
* Did a union for both datasets to prepare the final data which needs to be fed to Tableau application.
* There were NA values on couple of Expense / Revenue columns which are not relevant, so I replaced them using numeric value 0. (Replace function NA with 0)

A screenshot of a text message

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## Tell a Story / Visualizations

* For Visualization, I have used Tableau desktop application.
* Dashboard shows:

1. Summary Dashboard
2. Comparison Dashboard
3. High level numbers
4. Revenues by Airlines
5. Expenses by Type
6. Revenue/Expense Yearly Trend
7. Expense Type – Quarterly Trend

* Changed alias names for Quarter, Unique Carrier Name to make data more readable
* Added a data source filter for Year to show only last 10 years of data (2019 year has only 2 quarters of data, can be excluded so I considered period 2009 to 2018)
* Added Actions to make the dashboard interactive
* Added filters to get drill down information
* Key highlights are mentioned below

1. Significant increase in the revenue over a span of years
2. The total revenue for the period 2009-2018 was 1.61B.
3. The total expense loss was 1.37B.
4. Delta Airlines and United Air Lines were amongst the top two companies which generated highest revenue.
5. Majority of the revenue generated was from Rev-trans\_rev\_pax and Rev-Trans\_revenue categories.
6. In terms of operating expenses, flying operations was the highest. There were couple of other factors too.
7. Though the highest revenue was generated on year 2018, but the maximum profit was yielded on year 2015.

Chart, application

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Chart, table

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<https://public.tableau.com/app/profile/kuldeep.choudhary/viz/AviationDashboard_16662065673510/Summary?publish=yes>

## Next Steps

* Doing deep dive analysis for small set of case types to understand more on data breaches and its significance.
* Enhancing capabilities to make dashboard more user friendly and improved experience.
* Taking Feedback / Inputs from stakeholders and give best optimal solution.
* Creating conversion factor to showcase numbers in millions, billions and whole numbers.