**Income /Happiness Project**

**Tools Used SQL, Python, and PowerBI**

**Overview**

In this project, we focused on data analysis using a dataset related to **Income and Happiness**. The process involved several key steps, including data extraction from a JSON file, conversion to CSV, loading into SQL, and finally visualizing and analyzing the data using Power BI. The main objective was to explore the relationship between income levels and happiness, leveraging SQL for data manipulation and Power BI for insightful visualizations.

**Steps Taken**

1. **Extracting and Converting Data:**
   * **Source:** The initial data was provided in a JSON format.
   * **Conversion:** We converted the JSON file into a CSV file using Python, ensuring that the data structure was compatible with SQL.
2. **Loading Data into SQL:**
   * **Database Creation:** We created a new SQL database named IncomeHappiness to store our dataset.
   * **Table Setup:** We manually defined a table Income.data with the following columns:
     + ID (Primary Key, INT)
     + Income (FLOAT)
     + Happiness (FLOAT)
   * **Data Import:** The CSV file was successfully imported into the SQL table, with a check to ensure data integrity.
3. **Handling Issues:**
   * **Data Type Errors:** During the import, issues arose with converting string values to integers. We resolved these by trimming the columns to remove any invisible characters and ensuring the data types matched.
   * **Database Conflicts:** We encountered an error when trying to drop and recreate the database, which was resolved by ensuring no active connections were using the database.
4. **Data Analysis with Power BI:**
   * **Importing Data:** The cleaned and structured data from SQL was imported into Power BI.
   * **Visualization:**
     + Created a line chart to analyze the relationship between income and happiness.
     + Added a trend line to better explain the correlation between the two variables.
     + Used slicers to filter and explore the data dynamically.
   * **Dashboard Creation:** A comprehensive dashboard was created to present the findings, with clear titles and labels to communicate the insights effectively.

**Issues Faced and Solutions**

* **File Import Errors:** Initial attempts to import the CSV file into SQL led to errors related to data type mismatches. This was resolved by correctly configuring the column data types during table creation.
* **Primary Key Configuration:** Setting up the ID column as the primary key and ensuring it was correctly formatted as an integer.
* **Power BI Visualization Challenges:** Understanding how to properly add and configure multiple visualizations on the canvas, including handling new features and UI changes in the latest version of Power BI.