Project : Visualizing Global Debt Rates with Matplotlib

Objective:

In this project, we will:

1. Parse and analyze a CSV file containing global debt rate data.
2. Create bar and line charts using Matplotlib.

Project Instructions

1. Setup:

Students will be provided a CSV file `central_government_debt.csv` with the following columns:

- `country_name` : The name of the country.
- `indicator_name` : A description of the data (e.g., "Annual average of central government debt (Percent of GDP)").
- `1950` to `2022` : The debt rate for each year.

Sample data:

```
country_name,indicator_name,1950,1951,1952,1953,...,2020,2021,2022
Afghanistan,Annual average of central government debt (Percent of
GDP),,,,,...,7.384,6.130,7.397
Albania,Annual average of central government debt (Percent of
GDP),,,,,...,70.119,67.610,66.464
...
```

2. Tasks:

Task 1: Load and Parse the CSV Data

- Write a Python function that loads the CSV file and parses it into a list of dictionaries.
- Each dictionary should contain the `country_name` , the `indicator_name` , and a list of debt values for each year (1950–2022).

Task 2: Bar Graph of Top 5 Countries with the Highest Debt in 2022

- Write a function to find the top 5 countries with the highest debt rate in 2022.
- Create a bar chart showing these countries and their debt rate in 2022.

Task 3: Line Chart for Three Countries' Debt Rates Over Time

- Select any three countries.
- Create a line chart showing their debt rates over time (1950–2022).

Task 4: Scatter Plot: Debt Rate vs. GDP

- Choose a country and create a scatter plot showing the relationship between debt rate and the country's GDP over time. Your task is to find a dataset on the internet of GDP for that country over the time period. Then read in that dataset.

Task 5: Bar Chart: Top 10 Countries with the Lowest Debt in a Given Year

- Find and plot the 10 countries with the lowest debt rate in 2022 in a bar chart.
