Case Study 1
Impact of U.S. Tariff Increases on the Canadian Economy

Objective:

Students will analyze how increased tariffs by the USA affect the Canadian economy, derive insights from the data, and make policy recommendations based on their findings.

Data Sources:

1. **Trade Data** - Access detailed import and export data between Canada and the USA via the Canadian Government's official trade statistics (e.g., Statistics Canada website).
2. **Economic Indicators** - Use data from the Bank of Canada and Statistics Canada for GDP, employment rates, manufacturing output, etc.
3. **Tariff Information** - Obtain specific tariff rates and changes from the U.S. International Trade Commission and Canada Border Services Agency.

Tasks:

1. **Data Extraction**:
   - ✓ Download relevant datasets from the provided online resources.
   - ✓ Ensure the data includes the time periods before and after the tariff changes for comparative analysis.
2. **Data Preparation**:
   - ✓ Clean the data by removing anomalies and handling missing values.
   - ✓ Transform data into a suitable format for analysis, e.g., aggregating monthly data into quarterly data.
3. **Data Analysis and Visualization**:
   - ✓ Use Microsoft Power BI to load and process the data.
   - ✓ Analyze the data to identify trends, correlations, and impacts of the tariff changes.
   - ✓ Create visual representations such as time series plots, bar charts, and correlation matrices.
4. **Dashboard Creation**:
   - ✓ Design and develop a dashboard in Power BI that clearly communicates the economic impact, including key metrics and trends.
   - ✓ The dashboard should be executive-friendly, focusing on clarity and ease of understanding for government officials.

Systematic Guiding Questions:

1. What initial observations can you make about the trade volume trends post-tariff changes?
2. How do the tariff changes correlate with key economic indicators like GDP, employment rates, and manufacturing output?
3. Which sectors appear to be most affected by the tariff changes?
4. What anomalies or outliers do you notice in the data post-tariff implementation?
5. Based on your analysis, what short-term and long-term economic impacts can be predicted?

Insights and Recommendations Report:

Outline:

1. Executive Summary
2. Data Analysis Methodology
3. Key Insights from the Data
4. Policy Recommendations
5. Appendices and Data Sources

Format:

- ✓ Begin with an executive summary that provides a snapshot of findings and recommendations.
- ✓ Detailed sections on methodology and insights, using visuals from the dashboard to support arguments.
- ✓ Conclude with actionable policy recommendations based on the analyzed data

Rubrics

Data Preparation (20% of total grade)

Objective: Assess the ability to efficiently extract, clean, and transform raw data into an analyzable format.

Criteria:

- ✓ **Extraction Accuracy (5%)**: Ability to correctly extract required data from specified sources without introducing errors.
- ✓ **Cleaning Techniques (7.5%)**: Effective handling of missing values, duplicate data, and incorrect data types. Application of best practices in data cleaning.
- ✓ **Transformation Accuracy (7.5%)**: Proper conversion of data into a suitable format for analysis, including aggregation, normalization, and structuring data as needed for Power BI.

2. Analysis Skill (30% of total grade)

Objective: Evaluate the student's ability to perform in-depth data analysis and interpret results to discover insights.

Criteria:

- ✓ **Analytical Techniques (15%)**: Application of statistical methods, correlation analysis, trend identification, and hypothesis testing.
- ✓ **Insight Quality (15%)**: Depth and relevance of insights drawn from the data, including understanding the impact of U.S. tariffs on Canadian sectors.

3. Dashboard and Visualization (25% of total grade)

Objective: Judge the effectiveness of the data visualizations and the Power BI dashboard in communicating clear, actionable insights.

Criteria:

- ✓ **Visualization Design (12.5%)**: Clarity, accuracy, and aesthetic quality of visualizations. Appropriate choice of charts and graphs to represent data.
- ✓ **Dashboard Usability (12.5%)**: Cohesiveness, interactivity, and executive-friendliness of the dashboard. It should be intuitive for government officials to use and understand.

4. Insights and Recommendations (25% of total grade)

Objective: Assess the student's ability to compile their findings into a well-structured report with clear, logical policy recommendations.

Criteria:

- ✓ **Report Clarity and Structure (12.5%)**: Organization of the report including an executive summary, clear headings, logical flow, and inclusion of all relevant findings.
- ✓ **Quality of Recommendations (12.5%)**: Relevance and feasibility of the policy recommendations provided. Recommendations should be directly supported by the data analyzed and insights found.