**Capstone Project Brief: SQL Analysis and Visualization**

**Overview:**

As part of your final capstone project, you have been divided into two groups. Each group will work on a different dataset and is tasked with applying SQL for data cleaning and analysis, and Excel for visualization. Your objective is to explore, clean, and analyze your dataset, and to create an interactive dashboard that presents key insights. Additionally, you will document your entire process and present your findings.

**Instructions:**

1. Data Access: Each group will find their respective dataset within the provided ZIP file.

2. Collaboration: You are encouraged to work collaboratively within your group.

3. Documentation: Ensure that all SQL queries, data cleaning processes, and Excel dashboards are well-documented.

4. Deadline: The final project submission is due in one weeks. Presentations will be held.

**Evaluation Criteria:**

- SQL Proficiency: Accuracy and complexity of SQL queries.

- Data Cleaning: Effectiveness in cleaning and transforming the dataset.

- Data Analysis: Depth and relevance of insights derived from the data.

- Visualization: Quality and interactivity of the Excel dashboard.

- Documentation: Completeness and clarity of project documentation.

- Presentation: Clarity, organization, and professionalism in the presentation of your findings.

**Group Assignments:**

1. Group 1: Mental Health Data Analysis

2. Group 2: HR Data Analysis

**Project Scenarios**

**Group 2: HR Data Analysis**

**Scenario:**

You have been hired as a data analyst for a company facing high employee turnover. The HR department has provided you with a dataset containing information on employee demographics, job roles, races and tenure with the company. Your task is to analyze this data to identify key factors contributing to employee attrition and to provide recommendations to reduce turnover.

**Project Objectives:**

1. Problem Statement Definition:

- Clearly define the problem statement that your analysis aims to address. Identify key challenges such as understanding the reasons behind employee attrition, the role of compensation, and the impact of performance ratings.

**2. Data Import and Database Setup:**

- Import the HR dataset into SQL Server using SSMS. Set up the necessary database tables and relationships to store the HR data efficiently.

**3. Data Cleaning and Transformation:**

- Perform data cleaning and transformation tasks within SSMS to ensure the accuracy and reliability of the HR data. This may include handling missing values, removing duplicate entries, standardizing data formats, and creating calculated fields or derived tables to support analysis.

**4. Data Analysis and Querying:**

- Use SQL queries in SSMS to analyze the HR data. Write SQL queries to retrieve key metrics, such as employee attrition rates by department, the relationship between salaries and turnover, and performance ratings over time.

**5. Data Visualization with Excel:**

- Export the cleaned and transformed data from SSMS to Excel. Create an interactive HR Dashboard in Excel that includes visualizations such as bar charts, line graphs, and pie charts. Implement features like filters and slicers to allow users to explore the data and gain insights into employee attrition trends.

**6. Dashboard Interactivity and User Experience:**

- Enhance the dashboard’s interactivity and user experience by incorporating features such as slicers, filters, and tooltips. Ensure that the dashboard provides an intuitive navigation experience, allowing users to easily access and interpret the HR data.

**7. Report Generation:**

- Implement automated report generation functionality in Excel to create periodic HR reports. Configure the reports to include key metrics, visualizations, and insights, ensuring that HR and management can regularly monitor employee turnover and retention efforts.

**Group 1: Mental Health Data Analysis**

**Scenario:**

You are working as a data analyst for a health and wellness company that helps organizations manage employee stress levels. The company collects data on employee stress levels through surveys and monitoring systems. Your task is to create a comprehensive Stress Management Dashboard that provides key insights into employee stress levels across different departments, time periods, and other factors. This dashboard will help HR and management make informed decisions about stress reduction programs.

**Project Objectives:**

**1. Problem Statement Definition:**

- Clearly define the problem statement that the Stress Management Dashboard aims to address. Identify key challenges related to employee stress within the organization, such as identifying high-stress departments, peak stress periods, and factors contributing to increased stress levels.

**2. Data Import and Database Setup:**

- Import the data from the provided `stress\_levels\_dataset.xlsx` file into a SQL Server database using SSMS. Ensure that the data is accurately imported and that necessary database tables and relationships are set up to store the stress data efficiently.

**3. Data Cleaning and Transformation:**

- Perform data cleaning and transformation tasks within SSMS to ensure the accuracy and reliability of the stress data. This may include handling missing values, removing duplicate entries, standardizing data formats, and creating calculated fields or derived tables to support analysis.

**4. Data Analysis and Querying:**

- Use SQL queries in SSMS to analyze the stress data. Write SQL queries to retrieve key metrics, such as average stress levels by department, changes in stress levels over time, and the impact of specific factors on stress levels.

**5. Data Visualization with Excel:**

- Export the cleaned and transformed data from SSMS to Excel. Create an interactive Stress Management Dashboard in Excel that includes visualizations such as bar charts, line graphs, and heatmaps. Implement features like drill-downs, interactive filters, and dynamic visualizations that allow users to explore the data and gain insights into stress trends.

**6. Dashboard Interactivity and User Experience:**

- Enhance the dashboard’s interactivity and user experience by incorporating features such as slicers, filters, and tooltips. Ensure that the dashboard provides an intuitive navigation experience, allowing users to easily access and interpret the stress data.

**7. Report Generation:**

- Implement automated report generation functionality in Excel to create periodic stress reports. Configure the reports to include key metrics, visualizations, and insights, ensuring that HR and management can regularly monitor employee stress levels and the effectiveness of stress reduction initiatives.

Good luck, and approach the project with creativity and analytical rigor!