Group Assignment 1: Project Proposal

You will **form a team of 4 students** to propose a project that you will later develop into your final visualization. The goal of this assignment is to select a topic and dataset, analyze the data, users, and tasks, and sketch initial visualization concepts.

Part 1: Data Description (30%)

As a team, select a topic of interest and find a dataset that is suitable for visual analysis.

Minimum Requirement: If the dataset is in tabular format, it should contain at least 10,000 rows and at least 10 variables.

Your write-up for this section should include:
- **Selected Topic:** Describe the topic you have chosen and explain why it is interesting or important.
- **Dataset Description:** Provide the name and description of the dataset. Explain its relevance to your chosen topic and briefly describe how the data was collected.
- **Data Attributes:** List the attributes in the dataset and identify their data types (nominal, ordinal, discrete, continuous, binary, etc.). Discuss whether there are missing values or outliers, and whether the dataset needs transformation before analysis.
- **Data Access:** Provide the link or reference for accessing the dataset.

Part 2: Data – Users – Tasks (30%)

Next, you will analyze the dataset in the context of potential users and their tasks. This analysis will help guide your design decisions.

Your write-up should address the following:
- **Data Characterization:** What is the structure of the data (e.g., multidimensional, time-oriented, hierarchical, network/graph)? What are the key variables and their types?
- **User and Domain Analysis:** Who are the target users of your visualization (e.g., analysts, managers, students, policymakers, the general public)? Be specific about their characteristics, needs, and level of familiarity with data visualization. What domain is the data situated in, and are there any domain-specific considerations?
- **Tasks and Goals:** Define at least three concrete tasks or goals that users should be able to achieve with your visualization (e.g., detecting anomalies, identifying trends, comparing categories, exploring correlations).

For more background on the data-users-tasks triangle, you may consult the following article: Silvia Miksch, Wolfgang Aigner, **A Matter of Time: Applying a Data-Users-Tasks Design Triangle to Visual Analytics of Time-Oriented Data**, *Computers & Graphics, Special Section on Visual Analytics*, vol. 38, pp. 286-290, 2014.

You may make reasonable assumptions about users, data context, and tasks.

Part 3: Conceptual Design (40%)

Based on your analysis of the data, users, and tasks, design an interactive visualization concept that communicates the data effectively. You will create at least two mockups or sketches (hand-drawn or digital). These should illustrate possible layouts, visual encodings, and interaction methods.

In your write-up, you will provide:
- The **rationale** for your design decisions (why certain visual encodings, colors, or layouts are appropriate).
- The **visual encodings** you plan to use (e.g., mapping numerical values to position or size, categories to color).
- The **interaction methods** (e.g., zooming, filtering, brushing, highlighting, focus+context) and how they support user tasks.
- A discussion of the **strengths, limitations, and possible improvements** of your design.

To structure your process, you are encouraged to follow the **Five Design-Sheet (FdS) methodology**: https://fds-design.github.io/

Submission

The team submits **a PDF document** containing your project proposal, including the data description, user and task analysis, and conceptual design sketches.

Be sure your sketches and text are clear and readable.

In-Class Presentations

We will hold two sessions for the final project proposal presentations. Each team will have 5 minutes for the presentation, followed by 5 minutes of Q&A and feedback.

Your presentation should be concise and focused, and should cover the following content:
1. **(~1-2 minutes) Data-Users-Tasks:** Provide a brief overview of your project. Explain the dataset you are using, your target users, and the main tasks or goals your visualization addresses.
2. **(~2-3 minutes) Conceptual Design Walkthrough:** Present your proposed visualization design from the perspective of your target users. Walk us through how a user would interact with your visualization.
3. **(~1 minute) Key Takeaways:** Conclude with what you want users (and the class) to learn from your visualization tool, and explain how your approach effectively supports the identified tasks.