**Week 1: Introduction to Data Analysis Assessment**

### **Multiple Choice Questions (MCQs):**

1. **What is the primary purpose of data analysis?**
   * a) To collect as much data as possible
   * b) To make data-based decisions
   * c) To replace human decision-making with automation
   * d) To eliminate errors in the data
2. **Which of the following is NOT a type of data analysis?**
   * a) Descriptive analysis
   * b) Diagnostic analysis
   * c) Predictive analysis
   * d) Passive analysis
3. **Which of these is a common task of a data analyst?**
   * a) Developing software applications
   * b) Creating machine learning algorithms
   * c) Cleaning and preprocessing data
   * d) Managing cloud infrastructure
4. **In business decision-making, how does data analysis provide value?**
   * a) By collecting data from multiple sources
   * b) By visualizing raw data without context
   * c) By extracting insights to improve business strategies
   * d) By creating big datasets for future use
5. **Which of the following skills is NOT essential for a data analyst?**
   * a) Data visualization
   * b) Statistical knowledge
   * c) Programming skills
   * d) Artistic drawing

### **Practical Exercises for Data Analysis**

#### **1. Classify Data into the Four Types of Data Analysis**

**Instructions**:

1. **Choose a Dataset or Real-World Example**: Select a dataset like the [Titanic dataset](https://github.com/datasciencedojo/datasets/blob/master/titanic.csv) or a real-world example like sales data from an e-commerce site.
2. **Apply Each Type of Analysis**:
   * **Descriptive Analysis**: Summarize historical data. For example, calculate and interpret the average age of Titanic passengers or the survival rate of passengers.
   * **Diagnostic Analysis**: Investigate reasons behind certain outcomes. For instance, explore why certain passenger groups had higher survival rates by analyzing factors such as passenger class and age.
   * **Predictive Analysis**: Build a model to forecast future outcomes. For example, use logistic regression to predict the likelihood of survival for new passengers based on historical data.
   * **Prescriptive Analysis**: Provide actionable recommendations. For instance, suggest safety improvements based on the patterns observed in the survival analysis.

**Resources**:

* **Types of Data Analysis Explained**:[4 Types of Data Analytics - A Quick View](https://youtu.be/tIVXbHFnaVw?si=wY6WdaP9gqlzoLDh) – Overview of the four main types of data analysis.

#### **3. Perform Basic Descriptive Analysis**

**Instructions**:

1. **Download a Simple Dataset(Excel data)**: For instance, use the Sales Data, which includes sales figures for a week.
2. **Calculate Descriptive Statistics**:
   * **Mean**: Compute the average sales.
   * **Median**: Find the middle value of sales data.
   * **Mode**: Determine the most frequently occurring sales value.
   * **Standard Deviation**: Measure the spread of sales data.
3. **Create Visualizations**: Generate bar charts or histograms to visually represent the descriptive statistics.
4. **Present Findings**: Summarize and present your findings, explaining how the descriptive statistics provide insights into the dataset.

**Resources**:

* **Descriptive Statistics in Excel**: [Descriptive Statistics in Excel](https://www.youtube.com/watch?v=0JtN3tGmsqc) – How to calculate basic statistics using Excel.
* **Creating Visualizations with Google Sheets**: [Data Visualization in Google Sheets](https://www.youtube.com/watch?v=wmyZ5y_WBzM) – Guide to creating visualizations in Google Sheets.
* **Descriptive Analysis with Python**: [Descriptive Statistics with Python](https://www.youtube.com/watch?v=kwb-V30cqCc) – Tutorial on performing descriptive analysis using Python.

#### **4. Research and Present a Real-World Example of Data Analytics**

**Instructions**:

1. **Choose a Company or Organization**: Select an organization that effectively uses data analytics. For instance, you could look at how Netflix utilizes data analytics to enhance user experience and recommend content.
2. **Describe the Problem**: Explain the business challenge or problem the organization faced.
3. **Type of Data Analysis Employed**: Detail how different types of data analysis (descriptive, diagnostic, predictive, prescriptive) were used to address the problem.
4. **Results Achieved**: Discuss the outcomes and how data analytics helped solve the problem.
5. **Presentation**: Prepare a report or slide presentation summarizing your findings.

**Resources**:

* **How Netflix Uses Data**: Forbes Article on Netflix Data Use – Insight into how Netflix leverages data analytics.

#### **5. Interview a Data Analyst (or Research Online Profiles)**

**Instructions**:

1. **Find a Data Analyst**: Search for a data analyst on LinkedIn or another career-related website. For example, look up profiles of data analysts to understand their roles.
2. **Summarize Key Responsibilities**:
   * **Daily Tasks**: List the specific tasks a data analyst performs daily, such as data cleaning, analysis, and reporting.
   * **Tools Used**: Identify the tools and technologies they use (e.g., SQL, Python, Excel).
   * **Industries**: Note the industries they work in (e.g., finance, healthcare, technology).
3. **Create a Summary Report**: Compile a one-page summary report of your findings.

**Resources**:

* **LinkedIn Data Analyst Profiles**: [LinkedIn Search for Data Analysts](https://www.linkedin.com/search/results/people/?keywords=data%20analyst) – Explore profiles to gather information on data analyst roles and responsibilities.