**Project 1: Website Traffic Analysis**

# Phase 1: Problem Definition and Design Thinking

Problem Definition:

The project at hand involves the analysis of website traffic data to gain valuable insights into user behaviour, identify popular pages, and understand the sources of traffic. The ultimate goal is to assist website owners in improving the user experience by gaining a deeper understanding of how visitors interact with the site. This project involves defining clear analysis objectives, collecting website traffic data from various sources, utilizing IBM Cognos for data visualization, and integrating Python code for more advanced analysis.

Design Thinking:

**1. Define Analysis Objectives:**

* **Objective 1:** Identify Popular Pages - Determine which pages on the website receive the most traffic and engagement.
* **Objective 2:** Analyze Traffic Trends - Understand how website traffic fluctuates over time and identify any recurring patterns or trends.
* **Objective 3:** Assess User Engagement - Measure user engagement metrics such as session duration, bounce rate, and click-through rates.
* **Objective 4:** Explore Traffic Sources - Analyze the sources of traffic, including organic search, referrals, social media, and direct traffic.

**2. Data Collection:**

* **Data Sources:** Define the sources of data that will be used for analysis. This may include Google Analytics, server logs, and any other relevant data repositories.
* **Data Collection Methods:** Specify how data will be collected, including the frequency of data retrieval and the tools or scripts that will be used for data extraction.

**3. Visualization:**

* **IBM Cognos:** Utilize IBM Cognos as the primary tool for data visualization. Plan to create interactive and informative dashboards and reports to present the insights derived from the analysis.
* **Key Visualizations:** Identify the specific visualizations that will be used to communicate the findings effectively. This may include line charts, bar graphs, heatmaps, and pie charts.

**4. Python Integration:**

* **Machine Learning:** Consider the integration of machine learning models if appropriate for the project objectives. For instance, predictive models can be used to forecast future traffic trends or identify user behavior patterns.
* **Python Libraries:** Specify the Python libraries that will be utilized for data analysis, including Pandas, NumPy, Matplotlib, and scikit-learn.

**5. Project Workflow:**

* Define the workflow and steps involved in the project. This includes data collection, preprocessing, exploratory data analysis (EDA), data visualization, and machine learning (if applicable).
* Establish a timeline for each phase of the project to ensure that it progresses smoothly and stays on track.

**6. Data Privacy and Ethics:**

Consider data privacy and ethics throughout the project. Ensure that data is handled and stored securely, and that any personally identifiable information (PII) is anonymized or removed.

**7. Stakeholder Engagement:**

* Identify key stakeholders, including website owners, marketing teams, and executives, who will benefit from the insights generated by this project.
* Plan for regular updates and communication to keep stakeholders informed about project progress and findings.

By following this design thinking process, we will ensure a structured and well-planned approach to the website traffic analysis project. This will help us achieve our objectives of providing actionable insights to enhance the user experience and drive improvements in website performance.