Phase 4: Development Part 2

In this phase you will continue building your project. Please refer below the requirements technology wise:

Problem Statement Title : Website Traffic Analysis

1. Data Connection:
- Ensure that the dataset is properly formatted and accessible for connection with IBM Cognos.
- Check the data types and ensure format compatibility with IBM Cognos.
- Import the dataset into IBM Cognos, ensuring that all relevant fields and attributes are accurately imported.

2. Data Exploration:
- Conduct a thorough examination of the dataset structure, including the number of records, data types, and identification of any missing or incomplete data.
- Identify key attributes related to website traffic, such as timestamps, page views, unique visitors, referral sources, and geographical data.
- Verify the consistency and quality of the data for further analysis.

3. Traffic Analysis:
- Analyze trends over time to identify peak traffic periods, seasonal variations, and any significant fluctuations in website activity.
- Explore user demographics and behavior patterns to understand the target audience and their preferences.
- Perform segmentation analysis to distinguish between different user groups and their interactions with the website.

4. Visualization:
- Create line charts to depict temporal trends in website traffic over specific time intervals.
- Generate bar charts to compare different traffic metrics, such as page views, bounce rates, and conversion rates across various segments.
- Develop pie charts to illustrate the proportion of traffic from different referral sources or geographic locations.
- Utilize heat maps to visualize the distribution of user engagement on different sections of the website.

5. Python Code:
```python
import pandas as pd
import matplotlib.pyplot as plt

# Sample website traffic data
data = {
    'Date': ['2023-10-01', '2023-10-02', '2023-10-03', '2023-10-04', '2023-10-05'],
    'PageViews': [1000, 1200, 900, 1100, 950],
```

```
    'Visitors': [800, 900, 750, 950, 820]
}

# Create a DataFrame from the sample data
data = pd.DataFrame(data)

# Explore the data
print("First few rows of data:")
print(data.head())

print("\nData information:")
print(data.info())

# Perform basic analysis or visualization
# For example, plotting traffic over time
plt.figure(figsize=(10, 6))
plt.plot(data['Date'], data['PageViews'], label='Page Views')
plt.plot(data['Date'], data['Visitors'], label='Visitors')
plt.xlabel('Date')
plt.ylabel('Count')
plt.title('Website Traffic Over Time')
plt.legend()

# Show the plot
plt.show()
```

6. Dashboard Creation:
- Design an intuitive and comprehensive dashboard to present key metrics and insights in a visually appealing format.
- Include interactive elements that allow users to filter and drill down into specific aspects of the website traffic data.
- Incorporate widgets and visual components that provide an overview of website performance and traffic patterns at a glance.

7. Report Generation:
- Create detailed reports that encompass textual analysis, numerical summaries, and visual representations of the key findings from the traffic analysis.
- Include descriptive narratives that provide context and explanations for the observed trends and patterns in the website traffic data.
- Incorporate actionable recommendations based on the analysis to optimize website performance and enhance user engagement.