Data Analytics with Cognos

**WEBSITE TRAFFIC ANALYSIS**

**GROUP 10**

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**Project Objective:**

The objective of this project is to analyze website user data to identify areas for improvement and enhance the overall user experience. This will be achieved through a multi-phase approach that includes the design thinking process and the integration of data analysis using IBM Cognos and Python.

**Design Thinking Process:**

Empathize: Understand user needs, pain points, and behaviors through surveys, user interviews, and user analytics.

Define: Define the problem areas and goals for improving the website user experience. Prioritize areas based on user feedback and analytics.

Ideate: Brainstorm potential solutions to the defined problem areas. Generate ideas to address user pain points.

Prototype: Create low-fidelity prototypes of the proposed changes. These could be wireframes or mock-ups to visualize potential improvements.

Test: Conduct user testing with the prototypes to gather feedback. Use this feedback to refine the solutions.

**Development Phases:**

**Data Collection:**

Collect user data from various sources such as website analytics, user surveys, and user interviews.

Combine and store the data in a structured format for analysis.

**Data Analysis:**

Use IBM Cognos for data analysis. Cognos can be employed to create dashboards and reports for a comprehensive analysis of user behavior.

Analyze user interactions, user paths, bounce rates, conversion rates, and other relevant metrics.

Identify trends and patterns in the data.

**Data Visualization:**

Utilize IBM Cognos to create visualizations such as bar charts, line graphs, and heatmaps to represent the data.

Visualize user behavior over time, geographical data, and device-specific data to gain insights.

**Python Code Integration:**

Use Python for advanced data analysis, machine learning, or to perform tasks that are not easily achievable in Cognos.

Integrate Python scripts or packages to perform deep analysis on specific aspects of user data.

Insights and Recommendations:

Based on the analysis, provide insights into the areas where the website can be improved.

Offer recommendations for changes or enhancements based on the findings.

Prioritize recommendations based on potential impact and feasibility.

**How Insights Can Help Website Owners:**

Improved User Experience: Insights gained from the analysis will provide a clear understanding of user behavior and preferences. Website owners can make data-driven decisions to enhance the overall user experience by addressing pain points and optimizing the user journey.

Increased Engagement: By analyzing user interactions and content preferences, website owners can tailor content and features to keep users engaged and on the site longer.

Higher Conversions: Understanding the conversion funnel and drop-off points can lead to optimizations that increase conversion rates.

Optimized Content: Data analysis can reveal what types of content are most popular and effective. Website owners can create more of this content to better serve their audience.

Targeted Marketing: Analysis can help identify the demographics and interests of the website's audience. This information can be used for more precise and effective marketing strategies.

Better Decision-Making: Data-driven insights enable website owners to allocate resources more effectively, prioritize development efforts, and make informed decisions that lead to a better user experience.

In summary, this project aims to use the design thinking process, data analysis, and visualization tools like IBM Cognos, and Python code integration to gain valuable insights into user behavior. These insights will empower website owners to make informed changes and improvements that enhance the overall user experience, ultimately leading to increased user satisfaction, engagement, and conversion rates.

**SOURCE CODE:**

**# Import necessary libraries**

import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns

**# Load the dataset (replace 'dataset.csv' with your actual file path)**

data = pd.read\_csv('dataset.csv')

**# Check the first few rows of the dataset to understand its structure**

print(data.head())

**# Summary statistics**

print(data.describe())

**# Line chart for Daily Visitors and Pageviews**

plt.figure(figsize=(12, 6))

plt.plot(data['Date'], data['Visitors'], label='Visitors')

plt.plot(data['Date'], data['Pageviews'], label='Pageviews')

plt.title('Daily Visitors and Pageviews Over Time')

plt.xlabel('Date')

plt.ylabel('Count')

plt.legend()

plt.grid(True)

plt.show()

**# Distribution of Bounce Rate**

plt.figure(figsize=(8, 6))

sns.histplot(data['Bounce Rate'], bins=20, kde=True)

plt.title('Distribution of Bounce Rate')

plt.xlabel('Bounce Rate')

plt.ylabel('Frequency')

plt.grid(True)

plt.show()

**# Conversion Rate Over Time**

plt.figure(figsize=(12, 6))

plt.plot(data['Date'], data['Conversion Rate'])

plt.title('Conversion Rate Over Time')

plt.xlabel('Date')

plt.ylabel('Conversion Rate')

plt.grid(True)

plt.show()