DAY-5(Apache Kafka)

1. Setting up a Kafka Producer:
   a) Write a Python program to create a Kafka producer.
   b) Configure the producer to connect to a Kafka cluster.
   c) Implement logic to send messages to a Kafka topic.

2. Setting up a Kafka Consumer:
   a) Write a Python program to create a Kafka consumer.
   b) Configure the consumer to connect to a Kafka cluster.
   c) Implement logic to consume messages from a Kafka topic.

3. Creating and Managing Kafka Topics:
   a) Write a Python program to create a new Kafka topic.
   b) Implement functionality to list existing topics.
   c) Develop logic to delete an existing Kafka topic.

4. Producing and Consuming Messages:
   a) Write a Python program to produce messages to a Kafka topic.
   b) Implement logic to consume messages from the same Kafka topic.
   c) Test the end-to-end flow of message production and consumption.

5. Working with Kafka Consumer Groups:
   a) Write a Python program to create a Kafka consumer within a consumer group.
   b) Implement logic to handle messages consumed by different consumers within the same group.
   c) Observe the behavior of consumer group rebalancing when adding or removing consumers.

Submission Guidelines:

- Answer all the questions in a single Jupyter Notebook file (.ipynb).
- Include necessary code, comments, and explanations to support your answers and implementation.
- Ensure the notebook runs without errors and is well-organized.
- Create a GitHub repository to host your assignment files.
- Rename the Jupyter Notebook file using the format "date_month_topic.ipynb" (e.g., "12_July_Kafka.ipynb").
- Place the Jupyter Notebook file in the repository.

- Commit and push any additional files or resources required to run your code (if applicable) to the repository.
- Ensure the repository is publicly accessible.
- Submit the link to your GitHub repository as the assignment submission.

Grading Criteria:

1. Understanding and completeness of answers: 40%
2. Clarity and depth of explanations: 25%
3. Correct implementation and evaluation of optimizer techniques: 15%
4. Analysis and comparison of different optimizers: 10%
5. Proper code implementation and organization: 10%

Note:- Create your assignment in Jupyter notebook and upload it to GitHub & share that uploaded assignment file link through your dashboard. Make sure the repository is public.