IBM Confluent Stream Processing using Apache Kafka Streams

Duration: 2 Days Course Code: STREAMSG

Overview:

Harness the power of continuous data processing by building high-performance, event-driven applications with the Apache Kafka® Streams API and ksqlDB.

Learn to design scalable, stateful stream architectures that execute low-latency joins, windowed aggregations, and real-time transformations. Transform reactive batch workflows into continuous data pipelines that deliver immediate operational insights and maximize business value.

Throughout the course, hands-on exercises reinforce the topics being discussed. Exercises include: Scaling a Kafka Streams Application Anatomy of a Kafka Streams ApplicationWorking With JSON Windowing & Aggregation Joining Two Streams Using the Processor API Integration Tests Using Embedded KafkaUsing JConsole to Monitor a Streams App Securing a Kafka Streams Application

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Virtual Learning

This interactive training can be taken from any location, your office or home and is delivered by a trainer. This training does not have any delegates in the class with the instructor, since all delegates are virtually connected. Virtual delegates do not travel to this course, Global Knowledge will send you all the information needed before the start of the course and you can test the logins.

Target Audience:

This course is designed for application developers, architects, DevOps engineers, and data scientists who need to interact with Kafka clusters to create real-time applications using Kafka Streams for filtering, transforming, enriching, aggregating, and joining data streams to discover anomalies, analyze behavior, or monitor complex systems.

Objectives:

- The lessons and activities in this course enable participants to build the skills to:
- Identify common patterns and use cases for real-time stream processing
- Describe the high-level architecture of Apache Kafka Streams
- Write real-time applications with the Kafka Streams API to filter, transform, enrich, aggregate, and join data streams
- Describe how Kafka Streams provide elastic, fault-tolerant and high-performance stream processing capabilities
- Test, secure, deploy, and monitor Kafka Streams applications

Prerequisites:

Attendees should be familiar with developing professional apps in Java (preferred), .NET, C#, Python, or another major programming language.

Attendees should also have a working knowledge of the Kafka client development. Participants are required to provide a laptop computer with unobstructed internet access to fully participate in the class.

Testing and Certification

- *None*

Follow-on-Courses:

- *None recommended*

Content:

Module1: Introduction to Kafka Streams

- Gain a better understanding of the fundamentals of Apache Kafka
- Delve into how Apache Kafka uses the group management protocol to balance resources
- Give a description of some Stream Processing concepts

Module 2: Working with Kafka Streams

- Describe the anatomy of a Kafka Streams application
- Write streams application employing components of the Kafka Streams DSL (Stateless/stateful transformations Optimizations)

Module 3: Complex Stateful Processing Operations

- Review the concept of time in Apache Kafka Streams
- Use the Kafka Stream stateful operations (Windowing, Aggregations, Joins)

Module 4: Advanced Concepts

- Handle late-arriving events
- Explore foreign key joins in Kafka Streams
- Use the Kafka Streams Processor API

Module 5: Testing, Monitoring, and Troubleshooting

- Perform testing with Apache Kafka Streams
- Evaluate monitoring options with Confluent Control Center, JMX metrics
- Discuss common errors and troubleshooting approaches

Module 6: Deployment

- Discuss deployment strategies (Parallelism, Capacity planning, Elasticity, Fault tolerance)

Module 7: Security

- Explore how to secure Kafka Streams applications (Security overview, Access Control Lists examples)

Additional Information:

Official course book provided to participants

Further Information:

For More information, or to book your course, please call us on Head Office Tel.: +974 40316639

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