Exercise 2: Simple Producer and Simple Consumer

Introduction

In this exercise, you will run a Java client application that produces messages to and consumes messages from an Apache Kafka® cluster.

Prerequisites

This document assumes that you already have:

Gradle installed

Java 11 installed and configured as the current java version for the environment

Kafka cluster is up and running.

Create Project

Create a new directory anywhere you'd like for this project:

```
mkdir kafka-java-getting-started && cd kafka-java-getting-started
```

Create the following Gradle build file for the project, named `build.gradle`:

```
buildscript {
  repositories {
    mavenCentral()
  }
  dependencies {
    classpath "com.github.jengelman.gradle.plugins:shadow:4.0.3"
  }
```

```
}

plugins {
    id "java"
    id "idea"
    id "eclipse"
}

sourceCompatibility = "1.11"
targetCompatibility = "1.11"
version = "0.0.1"

repositories {
    mavenCentral()

    maven {
        url "https://packages.confluent.io/maven"
    }
}

apply plugin: "com.github.johnrengelman.shadow"

dependencies {
    implementation group: 'org.slf4j', name: 'slf4j-nop', version: '1.7.36'
    implementation group: 'org.apache.kafka', name: 'kafka-clients', version: '3.1.0'
}
```

```
jar {
    manifest {
        attributes('Main-Class': 'examples.SimpleProducer')
    }
}
```

Build Producer

Create a directory for the Java files in this project:

```
mkdir -p src/main/java/examples
```

Paste the following Java code into a file located at `src/main/java/examples/SimpleProducer.java`

```
Package examples;

//import util.properties packages

import java.util.Properties;


//import simple producer packages

import org.apache.kafka.clients.producer.Producer;


//import KafkaProducer packages

import org.apache.kafka.clients.producer.KafkaProducer;


//import ProducerRecord packages

import org.apache.kafka.clients.producer.ProducerRecord;


//Create java class named “SimpleProducer”

public class SimpleProducer {
```

```
public static void main(String[] args) throws Exception{

  // Check arguments length value
  if(args.length == 0){
    System.out.println("Enter topic name”);
    return;
  }

  //Assign topicName to string variable
  String topicName = args[0].toString();

  // create instance for properties to access producer configs
  Properties props = new Properties();

  //Assign localhost id
  props.put("bootstrap.servers", “localhost:9092");

  //Set acknowledgements for producer requests.
  props.put("acks", “all");

  //If the request fails, the producer can automatically retry,
  props.put("retries", 0);

  //Specify buffer size in config
  props.put("batch.size", 16384);

  //Reduce the no of requests less than 0
  props.put("linger.ms", 1);

  //The buffer.memory controls the total amount of memory available to the producer for buffering.
```

```
    props.put("buffer.memory", 33554432);

    props.put("key.serializer",
      "org.apache.kafka.common.serialization.StringSerializer");

    props.put("value.serializer",
      "org.apache.kafka.common.serialization.StringSerializer");

    Producer<String, String> producer = new KafkaProducer
      <String, String>(props);

    for(int i = 0; i < 10; i++)
      producer.send(new ProducerRecord<String, String>(topicName,
        Integer.toString(i), Integer.toString(i)));
          System.out.println("Message sent successfully");
          producer.close();
  }
}
```

You can test the code before preceding by compiling with:

```
gradle build
```

And you should see:

```
BUILD SUCCESSFUL
```

Produce Messages

To build a JAR that we can run from the command line, first run:

```
gradle shadowJar
```

And you should see:

```
BUILD SUCCESSFUL
```

Run the following command to build and execute the producer application, which will produce some random data events to the Hello-Kafka topic.

```
java -cp "build/libs/kafka-java-getting-started-0.0.1.jar; /path/to/kafka/kafka_2.12-3.1.0/libs/*" examples.ProducerExample Hello-Kafka
```

You should see output that resembles:

```
Message sent successfully

To check the above output open new terminal and type Consumer CLI command to receive messages.

>> bin/kafka-console-consumer.sh --bootstrap-server localhost:2181 --topic Hello-Kafka --from-beginning
1
2
3
4
5
6
7
8
9
10
```

SimpleConsumer Application

Paste the following Java code into a file located at src/main/java/examples/SimpleConsumer.java

```
Package examples;

import java.util.Properties;

import java.util.Arrays;

import org.apache.kafka.clients.consumer.KafkaConsumer;

import org.apache.kafka.clients.consumer.ConsumerRecords;

import org.apache.kafka.clients.consumer.ConsumerRecord;


public class SimpleConsumer {

  public static void main(String[] args) throws Exception {

    if(args.length == 0){

      System.out.println("Enter topic name");

      return;

    }
```

```
//Kafka consumer configuration settings
String topicName = args[0].toString();
Properties props = new Properties();

props.put("bootstrap.servers", "localhost:9092");
props.put("group.id", "test");
props.put("enable.auto.commit", "true");
props.put("auto.commit.interval.ms", "1000");
props.put("session.timeout.ms", "30000");
props.put("key.deserializer",
   "org.apache.kafka.common.serialization.StringDeserializer");
props.put("value.deserializer",
   "org.apache.kafka.common.serialization.StringDeserializer");
KafkaConsumer<String, String> consumer = new KafkaConsumer
   <String, String>(props);

//Kafka Consumer subscribes list of topics here.
consumer.subscribe(Arrays.asList(topicName))

//print the topic name
System.out.println("Subscribed to topic " + topicName);
int i = 0;

while (true) {
   ConsumerRecords<String, String> records = consumer.poll(100);
   for (ConsumerRecord<String, String> record : records)

   // print the offset,key and value for the consumer records.
   System.out.printf("offset = %d, key = %s, value = %s\n",
      record.offset(), record.key(), record.value());
```

```
    }
  }
}
```

Once again, you can compile the code before preceding by with:

```
gradle build
```

And you should see:

```
BUILD SUCCESSFUL
```

Consume Messages

From another terminal, run the following command to run the consumer application which will read the messages from the Hello-Kafka topic and write the information to the terminal.

```
java -cp "build/libs/kafka-java-getting-started-0.0.1.jar; /path/to/kafka/kafka_2.12-3.1.0/libs/*" examples.ProducerExample Hello-Kafka
```

Input − Open the producer CLI and send some messages to the topic. You can put the smple input as 'Hello Consumer'.

Output − Following will be the output.

```
Subscribed to topic Hello-Kafka
offset = 3, key = null, value = Hello Consumer
```