

Practical-8

Aim: Install the Apache Kafka (Single Node) on Windows and perform practical on Kafka.

Perform following:

1. Create a topic “Mobile” with 2 Partitions and 3 Replication Factors.
2. Produce the messages: “Samsung”, “Nokia”, “Vivo”, “Sony”, “Xiaomi”.
3. Consume the messages.

Step 1: Starting Zookeeper

Open the command prompt

Goto C:\kafkaV2-13\bin\windows and run following command:

`.\zookeeper-server-start.bat ..\..\config\zookeeper.properties`

```

Administrator: C:\Windows\Sys
Microsoft Windows [Version 10.0.22631.4391]
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C:\kafka_2.13-3.9.0\bin\windows>. \zookeeper-server-start.bat ..\..\config\zookeeper.properties
[2024-11-18 11:16:16,987] INFO Reading configuration from: ..\..\config\zookeeper.properties (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:16,989] WARN ..\..\config\zookeeper.properties is relative. Prepend .\ to indicate that you're sure! (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:16,997] INFO clientPortAddress is 0.0.0.0:2181 (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:16,997] INFO secureClientPort is not set (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:16,997] INFO observerMasterPort is not set (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:16,998] INFO metricsProvider.className is org.apache.zookeeper.metrics.impl.DefaultMetricsProvider (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:17,001] INFO autopurge.snapRetainCount set to 3 (org.apache.zookeeper.server.DataDirCleanupManager)
[2024-11-18 11:16:17,002] INFO autopurge.purgeInterval set to 0 (org.apache.zookeeper.server.DataDirCleanupManager)
[2024-11-18 11:16:17,002] INFO Purge task is not scheduled. (org.apache.zookeeper.server.DataDirCleanupManager)
[2024-11-18 11:16:17,002] WARN Either no config or no quorum defined in config, running in standalone mode (org.apache.zookeeper.server.quorum.QuorumPeerMain)
[2024-11-18 11:16:17,004] INFO Log4j 1.2 jmx support not found; jmx disabled. (org.apache.zookeeper.jmx.ManagedUtil)
[2024-11-18 11:16:17,005] INFO Reading configuration from: ..\..\config\zookeeper.properties (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:17,005] WARN ..\..\config\zookeeper.properties is relative. Prepend .\ to indicate that you're sure! (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:17,006] INFO clientPortAddress is 0.0.0.0:2181 (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:17,007] INFO secureClientPort is not set (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:17,007] INFO observerMasterPort is not set (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:17,007] INFO metricsProvider.className is org.apache.zookeeper.metrics.impl.DefaultMetricsProvider (org.apache.zookeeper.server.quorum.QuorumPeerConfig)
[2024-11-18 11:16:17,007] INFO Starting server (org.apache.zookeeper.server.ZooKeeperServerMain)
[2024-11-18 11:16:17,029] INFO ServerMetrics initialized with provider org.apache.zookeeper.metrics.impl.DefaultMetricsProvider@2d3fcd8d (org.apache.zookeeper.server.ServerMetrics)
[2024-11-18 11:16:17,034] INFO ACL digest algorithm is: SHA1 (org.apache.zookeeper.server.auth.DigestAuthenticationProvider)
[2024-11-18 11:16:17,044] INFO zookeeper.DigestAuthenticationProvider.enabled = true (org.apache.zookeeper.server.auth.DigestAuthenticationProvider)
[2024-11-18 11:16:17,047] INFO zookeeper.snapshot.trust.empty : false (org.apache.zookeeper.server.persistence.FileTxnSnapLog)
[2024-11-18 11:16:17,062] INFO (org.apache.zookeeper.server.ZooKeeperServer)
[2024-11-18 11:16:17,062] INFO (org.apache.zookeeper.server.ZooKeeperServer)
[2024-11-18 11:16:17,063] INFO (org.apache.zookeeper.server.ZooKeeperServer)
[2024-11-18 11:16:17,063] INFO (org.apache.zookeeper.server.ZooKeeperServer)
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[2024-11-18 11:16:17,064] INFO (org.apache.zookeeper.server.ZooKeeperServer)
[2024-11-18 11:16:17,064] INFO (org.apache.zookeeper.server.ZooKeeperServer)
  
```

Step 2: Starting Kafka

Open another command prompt window and type the below command.

Goto C:\kafkaV2-13\bin\windows and run following command:

`.\kafka-server-start.bat ..\..\config\server.properties`

```
C:\Windows> Administrator: C:\Windows> x
```

```
Microsoft Windows [Version 10.0.22631.4391]
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```

```
C:\kafka-2.13-3.9.0\bin\windows> .\kafka-server-start.bat ..\.vconfig\server.properties
```

```
[2024-11-18 11:18:33,243] INFO Registered kafka:type=kafka.Log4jController MBean (kafka.utils.Log4jControllerRegistration$)
[2024-11-18 11:18:33,677] INFO Setting -D jdk.tls.rejectClientInitiatedRenegotiation=true to disable client-initiated TLS renegotiation (org.apache.zookeeper.r.common.X509Util)
[2024-11-18 11:18:33,844] INFO starting (kafka.server.KafkaServer)
[2024-11-18 11:18:33,845] INFO Connecting to zookeeper on localhost:2181 (kafka.server.KafkaServer)
[2024-11-18 11:18:33,886] INFO [ZooKeeperClient Kafka server] Initializing a new session to localhost:2181. (kafka.zookeeper.ZooKeeperClient)
[2024-11-18 11:18:33,895] INFO Client environment:zookeeper.version=3.8.4-9316c2a7a97fe1666d8f4593f34dd6fc36cccf436c, built on 2024-02-12 22:16 UTC (org.apache.zookeeper.ZooKeeper)
[2024-11-18 11:18:33,895] INFO Client environment:host.name=DivyPC (org.apache.zookeeper.ZooKeeper)
[2024-11-18 11:18:33,896] INFO Client environment:java.version=1.8_0_371 (org.apache.zookeeper.ZooKeeper)
[2024-11-18 11:18:33,896] INFO Client environment:java.vendor=Oracle Corporation (org.apache.zookeeper.ZooKeeper)
[2024-11-18 11:18:33,896] INFO Client environment:java.home=C:\Program Files\Java\jre-1.8_0_371 (org.apache.zookeeper.ZooKeeper)
[2024-11-18 11:18:33,896] INFO Client environment:java.class.path=C:\kafka-2.13-3.9.0\libs\activation-1.1.1.jar;C:\kafka-2.13-3.9.0\libs\caffeine-2.9.3-ged-2.6.1.jar;C:\kafka-2.13-3.9.0\libs\commons-lang-2.6.jar;C:\kafka-2.13-3.9.0\libs\commons-logging-1.2.jar;C:\kafka-2.13-3.9.0\libs\commons-beanutils-1.9.4.jar;C:\kafka-2.13-3.9.0\libs\commons-cli-1.4.jar;C:\kafka-2.13-3.9.0\libs\commons-collections-2.2.3.jar;C:\kafka-2.13-3.9.0\libs\commons-digester-2.1.jar;C:\kafka-2.13-3.9.0\libs\commons-io-2.14.0.jar;C:\kafka-2.13-3.9.0\libs\commons-lang3-3.12.0.jar;C:\kafka-2.13-3.9.0\libs\commons-logging-1.2.jar;C:\kafka-2.13-3.9.0\libs\commons-validator-1.7.jar;C:\kafka-2.13-3.9.0\libs\connect-api-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\connect-basic-auth-extension-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\connect-file-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\connect-json-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\connect-mirror-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\connect-mirror-client-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\connect-runtime-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\connect-transforms-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\error-prone-annotations-2.10.0.jar;C:\kafka-2.13-3.9.0\libs\hk2-api-2.6.1.jar;C:\kafka-2.13-3.9.0\libs\hk2-locator-2.6.1.jar;C:\kafka-2.13-3.9.0\libs\hk2-utils-2.6.1.jar;C:\kafka-2.13-3.9.0\libs\json-schema-annotations-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jsonschema-core-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jsonschema-databind-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jsonschema-dataformat-csv-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jsonschema-datatype-jdk8-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jsonschema-jaxrs-base-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jsonschema-jaxrs-json-provider-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jsonschema-module-afterburner-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jsonschema-module-javax-annotations-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jsonschema-module-scala-2.13-2.16.2.jar;C:\kafka-2.13-3.9.0\libs\jakarta.activation-api-1.2.2.jar;C:\kafka-2.13-3.9.0\libs\jakarta.annotation-api-1.3.5.jar;C:\kafka-2.13-3.9.0\libs\jakarta.inject-2.6.1.jar;C:\kafka-2.13-3.9.0\libs\jakarta.validation-api-2.0.2.jar;C:\kafka-2.13-3.9.0\libs\jakarta.ws.rs-api-2.1.6.jar;C:\kafka-2.13-3.9.0\libs\jaxb-annotation.xml.bind-api-2.3.1.jar;C:\kafka-2.13-3.9.0\libs\javassist-3.29.2-GA.jar;C:\kafka-2.13-3.9.0\libs\javax.activation-napi-1.2.0.jar;C:\kafka-2.13-3.9.0\libs\javax.annotation-api-1.3.2.jar;C:\kafka-2.13-3.9.0\libs\javax.servlet-api-3.1.0.jar;C:\kafka-2.13-3.9.0\libs\javax.ws.rs-api-2.1.1.jar;C:\kafka-2.13-3.9.0\libs\jaxb-api-2.3.1.jar;C:\kafka-2.13-3.9.0\libs\jersey-client-2.39.1.jar;C:\kafka-2.13-3.9.0\libs\jersey-common-2.39.1.jar;C:\kafka-2.13-3.9.0\libs\jersey-container-servlet-2.39.1.jar;C:\kafka-2.13-3.9.0\libs\jersey-container-servlet-core-2.39.1.jar;C:\kafka-2.13-3.9.0\libs\jersey-hk2-2.39.1.jar;C:\kafka-2.13-3.9.0\libs\jersey-server-2.39.1.jar;C:\kafka-2.13-3.9.0\libs\jersey-client-4.56.v20240826.jar;C:\kafka-2.13-3.9.0\libs\jersey-activation-api-4.56.v20240826.jar;C:\kafka-2.13-3.9.0\libs\jersey-http-4.56.v20240826.jar;C:\kafka-2.13-3.9.0\libs\jersey-jetty-4.56.v20240826.jar;C:\kafka-2.13-3.9.0\libs\jersey-server-4.56.v20240826.jar;C:\kafka-2.13-3.9.0\libs\jersey-util-4.56.v20240826.jar;C:\kafka-2.13-3.9.0\libs\jersey-servlets-4.56.v20240826.jar;C:\kafka-2.13-3.9.0\libs\jersey-util-4.56.v20240826.jar;C:\kafka-2.13-3.9.0\libs\lucene-2.5.1.jar;C:\kafka-2.13-3.9.0\libs\logback-simple-5.0.4.jar;C:\kafka-2.13-3.9.0\libs\jose4j-0.9.4.jar;C:\kafka-2.13-3.9.0\libs\jsr305-3.0.2.jar;C:\kafka-2.13-3.9.0\libs\kafka-clients-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\kafka-group-coordinator-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\kafka-group-coordinator-api-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\kafka-metadata-3.9.0.jar;C:\kafka-2.13-3.9.0\libs\k
```

Step 3: Perform following in Kafka:

Testing Kafka by Creating a Topic: As you have successfully started Kafka and Zookeeper, you can test them by creating new Topics and then Publishing and Consuming messages using the topic name. Topics are the virtual containers that store and organize a stream of messages under several categories called Partitions. Each Kafka topic is always identified by an arbitrary and unique name across the entire Kafka cluster.

In the below steps, you will learn how to create topics:

For creating a topic, open a new command prompt and write the below command:

goto C:\kafkaV2-13\bin\windows and run following command:

```
kafka-topics.bat --create --bootstrap-server localhost:9092 --replication-factor 3 --partitions 2 --
topic mobile
```

(Output: Created topic mobile.)

```
C:\kafka_2.13-3.9.0\bin\windows>kafka-topics.bat --create --bootstrap-server localhost:9092 --replication-factor 1 --partitions 2 --topic mobile
Created topic mobile.

C:\kafka_2.13-3.9.0\bin\windows>
```

Step 4: Open another CMD terminal

Start sending messages to the topic. Run this command to launch the producer:

Run following command:

```
C:\kafkaV2-13\bin\windows>kafka-console-producer.bat --topic mobile --bootstrap-server localhost:9092
```

Type in your messages (enter atleast five messages), and hit Enter. (Note: Don't close the terminal (CMD prompt))

```
C:\kafka_2.13-3.9.0\bin\windows>kafka-console-producer.bat --topic mobile --bootstrap-server localhost:9092
>Samsung
>Nokia
>Vivo
>Sony
>Xiaomi
>
```

Step 5: Open another CMD terminal

consume and see the messages which you/producer sent:

Run the following command:

```
C:\kafkaV2-13\bin\windows>kafka-console-consumer.bat --topic mobile --from-beginning --bootstrap-server localhost:9092
```

```
C:\kafka_2.13-3.9.0\bin\windows>kafka-console-consumer.bat --topic mobile --from-beginning --bootstrap-server localhost:9092
Samsung
Nokia
Vivo
Sony
Xiaomi
|
```

Producer:**Consumer:**

```
Administrator: C:\Windows\Sy... x + v
Microsoft Windows [Version 10.0.22631.4391]
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C:\kafka_2.13-3.9.0\bin\windows>kafka-console-producer.bat --topic mobile --bootstrap-server localhost:9092
>Samsung
>Nokia
>Vivo
>Sony
>Xiaomi
>
```

```
Administrator: C:\Windows\Sy... x + v
Microsoft Windows [Version 10.0.22631.4391]
(c) Microsoft Corporation. All rights reserved.

C:\kafka_2.13-3.9.0\bin\windows>kafka-console-consumer.bat --topic mobile --from-beginning --bootstrap-server localhost:9092
Samsung
Nokia
Vivo
Sony
Xiaomi
```

Step 6: List the topics

Command:

C:\kafkaV2-13\bin\windows>kafka-topics.bat --list --bootstrap-server localhost:9092

```
C:\kafka_2.13-3.9.0\bin\windows>kafka-topics.bat --list --bootstrap-server localhost:9092
__consumer_offsets
mobile
test
C:\kafka_2.13-3.9.0\bin\windows>
```