Practice №4. Apache Kafka workshop.

Ex.1 *Create a Kafka topic, producer, and consumer.*

```
student@superset:~$ sudo docker compose -f kafka.yml up -d
[+] Running 2/2
 ✔ Container zoo1    Running
 ✔ Container kafka1  Started
student@superset:~$ sudo docker exec -t kafka1 bash
[appuser@kafka1 ~]$ exit
^C
student@superset:~$
```

```
[appuser@kafka1 ~]$ kafka-topics --create --topic logs_text --partitions 1 --replication-factor 1 --bootstrap-server kafka1:9092
WARNING: Due to limitations in metric names, topics with a period ('.') or underscore ('_') could collide. To avoid issues it is best to use eit
her, but not both.
Error while executing topic command : Topic 'logs_text' already exists.
[2025-03-06 12:45:36,971] ERROR org.apache.kafka.common.errors.TopicExistsException: Topic 'logs_text' already exists.
 (kafka.admin.TopicCommand$)
[appuser@kafka1 ~]$ kafka-topics --list --bootstrap-server kafka1:9092
__consumer_offsets
logs_text
[appuser@kafka1 ~]$ kafka-topics --describe --topic logs_text --bootstrap-server kafka1:9092
Topic: logs_text        TopicId: nCF4Px-JQDSG1gJfajsE_g PartitionCount: 1       ReplicationFactor: 1    Configs:
        Topic: logs_text        Partition: 0    Leader: 1       Replicas: 1     Isr: 1
```

```
[appuser@kafka1 ~]$ kafka-console-producer --broker-list kafka1:9092 --topic logs_text
>really important text
>some other info
>blah blah blah
>
```

```
[appuser@kafka1 ~]$ kafka-console-consumer --bootstrap-server kafka1:9092 --topic logs_text
really important text
some other info
blah blah blah
```

As we can see, everything worked correctly and consumer received the text data from the producer. Now, let us send the consumer data from a file:

```
student@superset: $ cat ~/kafka/alice_in_wonderland.txt | sudo docker exec -i kafka1 kafka-console-producer --broker-list localhost:9092 --topic
 logs_text
student@superset: $
```

```
[appuser@kafka1 ~]$ kafka-console-consumer --bootstrap-server kafka1:9092 --topic logs_text
Alice's Adventures in Wonderland

                ALICE'S ADVENTURES IN WONDERLAND

                          Lewis Carroll

               THE MILLENNIUM FULCRUM EDITION 3.0



                             CHAPTER I

                      Down the Rabbit-Hole
```

Ex.2 *Sending messages from Flume to Kafka.*

For this, first we make a configuration file containing the following code:

```
a1.channels = memcha1 memcha2
a1.sources = streaming-txt-source
a1.sinks = kafka-sink logger-sink

a1.channels.memcha1.type = memory
a1.channels.memcha1.capacity = 10000
a1.channels.memcha1.transactionCapacity = 100
a1.channels.memcha1.byteCapacityBufferPercentage = 20
a1.channels.memcha1.byteCapacity = 800000

a1.channels.memcha2.type = memory
a1.channels.memcha2.capacity = 10000
a1.channels.memcha2.transactionCapacity = 100
a1.channels.memcha2.byteCapacityBufferPercentage = 20
a1.channels.memcha2.byteCapacity = 800000

a1.sources.streaming-txt-source.type = spooldir
a1.sources.streaming-txt-source.channels = memcha1 memcha2
a1.sources.streaming-txt-source.spoolDir = /home/student/kafka/spool
a1.sources.streaming-txt-source.fileHeader = true

a1.sinks.kafka-sink.type = org.apache.flume.sink.kafka.KafkaSink
a1.sinks.kafka-sink.channel = memcha1
a1.sinks.kafka-sink.kafka.topic = stream-text
a1.sinks.kafka-sink.kafka.bootstrap.servers = localhost:9092
a1.sinks.kafka-sink.kafka.flumeBatchSize = 5
a1.sinks.kafka-sink.kafka.producer.acks = 1
a1.sinks.kafka-sink.kafka.producer.linger.ms = 1

a1.sinks.logger-sink.type = logger
a1.sinks.logger-sink.channel = memcha2
```

Then, we set up a new topic called `stream-text`

```
student@superset:~/kafka$ ./script.sh
part 1
part 2
part 3
part 4
part 5
part 6
part 7
part 8
part 9
part 10
```

```
2025-03-07 12:12:09,019 (lifecycleSupervisor-1-0) [INFO - org.apache.flume.instrumen
tation.MonitoredCounterGroup.register(MonitoredCounterGroup.java:119)] Monitored cou
nter group for type: SOURCE, name: streaming-txt-source: Successfully registered new
 MBean.
2025-03-07 12:12:09,019 (lifecycleSupervisor-1-0) [INFO - org.apache.flume.instrumen
tation.MonitoredCounterGroup.start(MonitoredCounterGroup.java:95)] Component type: S
OURCE, name: streaming-txt-source started
2025-03-07 12:12:09,030 (lifecycleSupervisor-1-1) [INFO - org.apache.kafka.common.ut
ils.AppInfoParser$AppInfo.<init>(AppInfoParser.java:119)] Kafka version: 2.7.2
2025-03-07 12:12:09,030 (lifecycleSupervisor-1-1) [INFO - org.apache.kafka.common.ut
ils.AppInfoParser$AppInfo.<init>(AppInfoParser.java:120)] Kafka commitId: 37a1cc36bf
4d76f3
2025-03-07 12:12:09,031 (lifecycleSupervisor-1-1) [INFO - org.apache.kafka.common.ut
ils.AppInfoParser$AppInfo.<init>(AppInfoParser.java:121)] Kafka startTimeMs: 1741338
729030
2025-03-07 12:12:09,031 (lifecycleSupervisor-1-1) [INFO - org.apache.flume.instrumen
tation.MonitoredCounterGroup.register(MonitoredCounterGroup.java:119)] Monitored cou
nter group for type: SINK, name: kafka-sink: Successfully registered new MBean.
2025-03-07 12:12:09,032 (lifecycleSupervisor-1-1) [INFO - org.apache.flume.instrumen
tation.MonitoredCounterGroup.start(MonitoredCounterGroup.java:95)] Component type: S
INK, name: kafka-sink started
2025-03-07 12:12:09,038 (kafka-producer-network-thread | producer-2) [INFO - org.apa
che.kafka.clients.Metadata.update(Metadata.java:279)] [Producer clientId=producer-2]
 Cluster ID: mgEhvFHRSGW9iajnnzUSTw
```

It is clear that the partitioned text was received by the consumer, since there are noticable cutoffs in the text:

```
[appuser@kafka1 ~]$ kafka-console-consumer --bootstrap-server kafka1:9092 --topic st
ream-text --from-beginning
Alice's Adventures in Wonderland                ALICE'S ADVENTURES IN WONDERLAND
                     Lewis Carroll                THE MILLENNIUM FULCRUM EDITION 3.0
                           CHAPTER I                          Down the Rabbit-Hole  Ali
ce was beginning to get very tired of sitting by her sisteron the bank, and of havin
g nothing to do:  once or twice she hadpeeped into the book her sister was reading,
but it had nopictures or conversations in it, `and what is the use of a book,'though
t Alice `without pictures or conversation?'  So she was considering in her own mind
(as well as she could,for the hot day made her feel very sleepy and stupid), whether
the pleasure of making a daisy-chain would be worth the troubleof getting up and pic
king the daisies, when suddenly a WhiteRabbit with pink eyes ran close by her.  Ther
e was nothing so VERY remarkable in that; nor did Alicethink it so VERY much out of
the way to hear the Rabbit say toitself, `Oh dear!  Oh dear!  I shall be late!'  (wh
en she thoughtit over afterwards, it occurred to her that she ought to havewondered
at this, but at the time it all seemed quite natural);but when the Rabbit actually T
OOK A WATCH OUT OF ITS WAISTCOAT-POCKET, and looked at it, and then hurried on, Alic
e started toher feet, for it flashed across her mind that she had neverbefore seen a
 rabbit with either a waistcoat-pocket, or a watch totake out of it, and burning wit
h curiosity, she ran across thefield after it, and fortunately was just in time to s
ee it popdown a large rabbit-hole under the hedge.  In another moment down went Alic
e after it, never onceconsidering how in the world she was to get out again.  The ra
bbit-hole went straight on like a tunnel for some way,and then dipped suddenly down,
 so suddenly that Alice had not amoment to think about stopping herself before she f
ound herselffalling down a very deep well.  Either the well was very deep, or she fe
ll very slowly, for she
had plenty of time as she went down to look about her and towonder what was going to
 happen next.  First, she tried to lookdown and make out what she was coming to, but
 it was too dark tosee anything; then she looked at the sides of the well, andnotice
d that they were filled with cupboards and book-shelves;here and there she saw maps
```

```
^CProcessed a total of 8 messages
```