

Zookeeper

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[2024-12-08 20:13:22,376] INFO ServerMetrics initialized with provider org.apache.zookeeper.metrics.impl.DefaultMetricsProvider@4387b79e (org.apache.zookeeper.server.ServerMetrics)
[2024-12-08 20:13:22,384] INFO ACL digest algorithm is: SHA1 (org.apache.zookeeper.server.auth.DigestAuthenticationProvider)
[2024-12-08 20:13:22,384] INFO zookeeper.DigestAuthenticationProvider.enabled = true (org.apache.zookeeper.server.auth.DigestAuthenticationProvider)
[2024-12-08 20:13:22,395] INFO zookeeper.snapshot.trust.empty : false (org.apache.zookeeper.server.persistence.FileTxnSnapLog)
[2024-12-08 20:13:22,423] INFO (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,423] INFO _____ (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,423] INFO |__ / | | (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,423] INFO // _ _ | | _ _ _ _ _ _ _ _ (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,424] INFO // / \ / \ | / / \ \ / \ | ' \ / \ | ' _ | (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,424] INFO // _ | ( ) | | ( ) | | < | _ / | | | | _ / | | (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,424] INFO / _ _ | \ \ / \ | / \ \ | \ _ / \ _ | | (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,424] INFO | | (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,424] INFO | | (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,428] INFO Server environment:zookeeper.version=3.8.4-9316c2a7a97e1666d8f4593f34dd6fc36ecc436c, built on 2024-02-12 22:16 UTC (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,428] INFO Server environment:host.name=Linux (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,428] INFO Server environment:java.version=11.0.25 (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,429] INFO Server environment:java.vendor=Ubuntu (org.apache.zookeeper.server.ZooKeeperServer)
[2024-12-08 20:13:22,429] INFO Server environment:java.home=/usr/lib/jvm/java-11-openjdk-amd64 (org.apache.zookeeper.server.ZooKeeperServer)

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Kafka broker

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[~]
abdullah@linux: /usr/local/kafka

=List(range, cooperative-sticky)) has left group console-consumer-91173 through explicit 'LeaveGroup'; client reason: the consumer is being
closed (kafka.coordinator.group.GroupCoordinator)
[2024-12-08 20:40:13,429] INFO [GroupMetadataManager brokerId=0] Group console-consumer-91173 transitioned to Dead in generation 2 (kafka.co
ordinator.group.GroupMetadataManager)
[2024-12-08 20:41:46,512] INFO [NodeToControllerChannelManager id=0 name=forwarding] Node 0 disconnected. (org.apache.kafka.clients.NetworkC
lient)
[2024-12-08 21:28:38,851] INFO Creating topic transactions with configuration {} and initial partition assignment HashMap(0 -> ByteBuffer(0
)) (kafka.zk.AdminZKClient)
[2024-12-08 21:28:38,978] INFO [Controller id=0, targetBrokerId=0] Node 0 disconnected. (org.apache.kafka.clients.NetworkClient)
[2024-12-08 21:28:39,007] INFO [ReplicaFetcherManager on broker=0] Removed fetcher for partitions Set(transactions-0) (kafka.server.ReplicaF
etcherManager)
[2024-12-08 21:28:39,045] INFO [LogLoader partition=transactions-0, dir=/tmp/kafka-logs] Loading producer state till offset 0 with message f
ormat version 2 (kafka.log.UnifiedLogs)
[2024-12-08 21:28:39,049] INFO Created log for partition transactions-0 in /tmp/kafka-logs/transactions-0 with properties {} (kafka.log.LogM
anager)
[2024-12-08 21:28:39,050] INFO [Partition transactions-0 broker=0] No checkpointed highwatermark is found for partition transactions-0 (kafk
a.cluster.Partition)
[2024-12-08 21:28:39,051] INFO [Partition transactions-0 broker=0] Log loaded for partition transactions-0 with initial high watermark 0 (ka
fka.cluster.Partition)
[2024-12-08 22:06:48,338] INFO [GroupCoordinator 0]: Dynamic member with unknown member id joins group fraud-detection-group in Empty state.
Created a new member id rdkafka-8114878c-44ea-402c-b3f2-73164859ab14 and request the member to rejoin with this id. (kafka.coordinator.group
p.GroupCoordinator)
[2024-12-08 22:06:48,348] INFO [GroupCoordinator 0]: Preparing to rebalance group fraud-detection-group in state PreparingRebalance with old
generation 0 ( consumer offsets-14) (reason: Adding new member rdkafka-8114878c-44ea-402c-b3f2-73164859ab14 with group instance id None; c
lient reason: not provided) (kafka.coordinator.group.GroupCoordinator)
[2024-12-08 22:06:48,352] INFO [GroupCoordinator 0]: Stabilized group fraud-detection-group generation 1 (__consumer_offsets-14) with 1 memb
ers (kafka.coordinator.group.GroupCoordinator)
[2024-12-08 22:06:48,359] INFO [GroupCoordinator 0]: Assignment received from leader rdkafka-8114878c-44ea-402c-b3f2-73164859ab14 for group
fraud-detection-group for generation 1. The group has 1 members, 0 of which are static. (kafka.coordinator.group.GroupCoordinator)

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kafka_producer.py

```
(fraud_env) abdullah@linux:~/PaySky/fraud_env/Real-time_Fraud_Detection$ python3 kafka_producer.py
Record successfully produced to transactions [0] at offset 10
Record successfully produced to transactions [0] at offset 11
Record successfully produced to transactions [0] at offset 12
Record successfully produced to transactions [0] at offset 13
Record successfully produced to transactions [0] at offset 14
```

kafka_consumer.py

```
abdullah@linux:~/PaySky/fraud_env/Real-time_Fraud_Detection$ python kafka_consumer.py
Record successfully produced to transactions [0] at offset 9
(fraud_env) abdullah@linux:~/PaySky/fraud_env/Real-time_Fraud_Detection$ python kafka_consumer.py
Waiting for messages...
Transaction: {'transaction_amount': 237, 'transaction_time': 19, 'customer_age': 56, 'location_risk_score': 53}
Fraud Detected: False
Inserted into MySQL: {'transaction_amount': 237, 'transaction_time': 19, 'customer_age': 56, 'location_risk_score': 53} with is_fraud = False
Transaction: {'transaction_amount': 1764, 'transaction_time': 23, 'customer_age': 70, 'location_risk_score': 80}
Fraud Detected: True
Inserted into MySQL: {'transaction_amount': 1764, 'transaction_time': 23, 'customer_age': 70, 'location_risk_score': 80} with is_fraud = True
Transaction: {'transaction_amount': 1941, 'transaction_time': 16, 'customer_age': 38, 'location_risk_score': 34}
Fraud Detected: False
Inserted into MySQL: {'transaction_amount': 1941, 'transaction_time': 16, 'customer_age': 38, 'location_risk_score': 34} with is_fraud = False
Transaction: {'transaction_amount': 732, 'transaction_time': 19, 'customer_age': 42, 'location_risk_score': 10}
Fraud Detected: False
Inserted into MySQL: {'transaction_amount': 732, 'transaction_time': 19, 'customer_age': 42, 'location_risk_score': 10} with is_fraud = False
Transaction: {'transaction_amount': 4942, 'transaction_time': 13, 'customer_age': 57, 'location_risk_score': 42}
Fraud Detected: True
Inserted into MySQL: {'transaction_amount': 4942, 'transaction_time': 13, 'customer_age': 57, 'location_risk_score': 42} with is_fraud = True
Transaction: {'transaction_amount': 3961, 'transaction_time': 7, 'customer_age': 70, 'location_risk_score': 64}
Fraud Detected: True
Inserted into MySQL: {'transaction_amount': 3961, 'transaction_time': 7, 'customer_age': 70, 'location_risk_score': 64} with is_fraud = True
Transaction: {'transaction_amount': 4121, 'transaction_time': 22, 'customer_age': 57, 'location_risk_score': 55}
Fraud Detected: True
Inserted into MySQL: {'transaction_amount': 4121, 'transaction_time': 22, 'customer_age': 57, 'location_risk_score': 55} with is_fraud = True
Transaction: {'transaction_amount': 1579, 'transaction_time': 14, 'customer_age': 32, 'location_risk_score': 92}
Fraud Detected: True
Inserted into MySQL: {'transaction_amount': 1579, 'transaction_time': 14, 'customer_age': 32, 'location_risk_score': 92} with is_fraud = True
Transaction: {'transaction_amount': 4908, 'transaction_time': 3, 'customer_age': 21, 'location_risk_score': 49}
Fraud Detected: True
Inserted into MySQL: {'transaction_amount': 4908, 'transaction_time': 3, 'customer_age': 21, 'location_risk_score': 49} with is_fraud = True
Transaction: {'transaction_amount': 223, 'transaction_time': 6, 'customer_age': 42, 'location_risk_score': 82}
Fraud Detected: True
Inserted into MySQL: {'transaction_amount': 223, 'transaction_time': 6, 'customer_age': 42, 'location_risk_score': 82} with is_fraud = True
Transaction: {'transaction_amount': 1670, 'transaction_time': 8, 'customer_age': 39, 'location_risk_score': 93}
Fraud Detected: True
Inserted into MySQL: {'transaction_amount': 1670, 'transaction_time': 8, 'customer_age': 39, 'location_risk_score': 93} with is_fraud = True
Transaction: {'transaction_amount': 574, 'transaction_time': 17, 'customer_age': 25, 'location_risk_score': 76}
```

Saved correctly to the MySQL fraud_database In the fraud_predictions Table

```
mysql> SELECT * FROM fraud_predictions;
+----+-----+-----+-----+-----+-----+
| id | transaction_amount | transaction_time | customer_age | location_risk_score | is_fraud |
+----+-----+-----+-----+-----+-----+
| 1 | 237 | 19 | 56 | 53 | 0 |
| 2 | 1764 | 23 | 70 | 80 | 1 |
| 3 | 1941 | 16 | 38 | 34 | 0 |
| 4 | 732 | 19 | 42 | 10 | 0 |
| 5 | 4942 | 13 | 57 | 42 | 1 |
| 6 | 3961 | 7 | 70 | 64 | 1 |
| 7 | 4121 | 22 | 57 | 55 | 1 |
| 8 | 1579 | 14 | 32 | 92 | 1 |
| 9 | 4908 | 3 | 21 | 49 | 1 |
| 10 | 223 | 6 | 42 | 82 | 1 |
| 11 | 1670 | 8 | 39 | 93 | 1 |
| 12 | 574 | 17 | 25 | 76 | 1 |
| 13 | 4115 | 3 | 27 | 4 | 1 |
| 14 | 2384 | 23 | 42 | 61 | 1 |
| 15 | 4869 | 20 | 62 | 24 | 1 |
+----+-----+-----+-----+-----+-----+
15 rows in set (0.00 sec)
```