

TIC3001 Task 4

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- Github: <https://github.com/keyule/3001-Task4>

View the markdown version for better formatting at:

<https://github.com/keyule/3001-Task4/blob/master/Report/report.md>

Task 4 - Pub-Sub Messaging with Kafka

1. Start the kafka cluster using docker compose

```
# docker-compose.yml provided in appendix cause length
docker-compose up -d
```

2. Verify its running

```
docker-compose ps
```

3. Create a new topic

```
docker-compose exec kafka-1 kafka-topics --create --topic test-topic --
partitions 1 --replication-factor 3 --bootstrap-server kafka-1:9092
```

4. Start a producer to send msgs

```
docker-compose exec kafka-1 kafka-console-producer --topic test-topic --
bootstrap-server kafka-1:9092
```

5. start a consumer

```
docker-compose exec kafka-1 kafka-console-consumer --topic test-topic --
from-beginning --bootstrap-server kafka-1:9092
```

6. Check the leader

```
docker-compose exec kafka-1 kafka-topics --describe --topic test-topic --
bootstrap-server kafka-1:9092
```

```
Task 4 >docker-compose exec kafka-1 kafka-topics --describe --topic test-topic --bootstrap-server kafka-1:9092
Topic: test-topic      TopicId: wIzddwTHTg6DCjzb3S28uA PartitionCount: 1      ReplicationFactor: 3      Configs:
Topic: test-topic      Partition: 0      Leader: 2      Replicas: 2,1,3 Isr: 2,1,3
Task 4 >|
```

7. Kill the leader

```
docker-compose stop kafka-2
```

8. Show that the leader changed

```
docker-compose exec kafka-1 kafka-topics --describe --topic test-topic --
bootstrap-server kafka-1:9092
```

```
Task 4> docker-compose stop kafka-2
[+] Running 1/1
- Container task4-kafka-2-1 Stopped 2.2s
Task 4 >docker-compose exec kafka-1 kafka-topics --describe --topic test-topic --bootstrap-server kafka-1:9092
Topic: test-topic      TopicId: wIzddwTHTg6DCjzb3S28uA PartitionCount: 1      ReplicationFactor: 3      Configs:
Topic: test-topic      Partition: 0      Leader: 1      Replicas: 2,1,3 Isr: 1,3
Task 4 >|
```

9. Check if topic still exists and we still can receive msgs

```
docker-compose exec kafka-3 kafka-topics --list --bootstrap-server kafka-
3:9094
```

```
docker-compose exec kafka-3 kafka-console-consumer --topic test-topic --
from-beginning --bootstrap-server kafka-3:9094
```

```
Task 4 >docker-compose exec kafka-3 kafka-topics --list --bootstrap-server kafka-3:9094
__consumer_offsets
test-topic
Task 4 >docker-compose exec kafka-3 kafka-console-consumer --topic test-topic --from-beginning --bootstrap-server kafka-
3:9094
test
test2
test3
|
```

Appendix

docker-compose.yml

```
version: '3'

services:
  zookeeper-1:
    image: zookeeper
    restart: always
    hostname: zookeeper-1
    ports:
```

```

    - '2181:2181'
  environment:
    ZOO_MY_ID: 1
    ZOO_SERVERS: server.1=zookeeper-1:2888:3888;2181 server.2=zookeeper-
2:2888:3888;2181 server.3=zookeeper-3:2888:3888;2181
  networks:
    - kafka-network

zookeeper-2:
  image: zookeeper
  restart: always
  hostname: zookeeper-2
  environment:
    ZOO_MY_ID: 2
    ZOO_SERVERS: server.1=zookeeper-1:2888:3888;2181 server.2=zookeeper-
2:2888:3888;2181 server.3=zookeeper-3:2888:3888;2181
  networks:
    - kafka-network

zookeeper-3:
  image: zookeeper
  restart: always
  hostname: zookeeper-3
  environment:
    ZOO_MY_ID: 3
    ZOO_SERVERS: server.1=zookeeper-1:2888:3888;2181 server.2=zookeeper-
2:2888:3888;2181 server.3=zookeeper-3:2888:3888;2181
  networks:
    - kafka-network

kafka-1:
  image: confluentinc/cp-kafka:latest
  hostname: kafka-1
  ports:
    - '9092:9092'
  environment:
    KAFKA_BROKER_ID: 1
    KAFKA_ZOOKEEPER_CONNECT: zookeeper-1:2181,zookeeper-2:2181,zookeeper-3:2181
    KAFKA_ADVERTISED_LISTENERS: PLAINTEXT://kafka-1:9092
    KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 3
  depends_on:
    - zookeeper-1
    - zookeeper-2
    - zookeeper-3
  networks:
    - kafka-network

kafka-2:
  image: confluentinc/cp-kafka:latest
  hostname: kafka-2
  ports:
    - '9093:9093'
  environment:
    KAFKA_BROKER_ID: 2

```

```
KAFKA_ZOOKEEPER_CONNECT: zookeeper-1:2181,zookeeper-2:2181,zookeeper-3:2181
KAFKA_ADVERTISED_LISTENERS: PLAINTEXT://kafka-2:9093
KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 3
```

```
depends_on:
```

- zookeeper-1
- zookeeper-2
- zookeeper-3

```
networks:
```

- kafka-network

```
kafka-3:
```

```
image: confluentinc/cp-kafka:latest
```

```
hostname: kafka-3
```

```
ports:
```

- '9094:9094'

```
environment:
```

```
KAFKA_BROKER_ID: 3
```

```
KAFKA_ZOOKEEPER_CONNECT: zookeeper-1:2181,zookeeper-2:2181,zookeeper-3:2181
```

```
KAFKA_ADVERTISED_LISTENERS: PLAINTEXT://kafka-3:9094
```

```
KAFKA_OFFSETS_TOPIC_REPLICATION_FACTOR: 3
```

```
depends_on:
```

- zookeeper-1
- zookeeper-2
- zookeeper-3

```
networks:
```

- kafka-network

```
networks:
```

```
kafka-network:
```

```
driver: bridge
```