CS3219 OTOT Task D

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Task D-1

1. Create a docker compose project containing 6 docker containers, 3 for kafka brokers and 3 for zookeeper nodes
2. Create the containers by using the docker-compose.yml file in this repo
    - . `docker compose up -d`
3. Verify that the containers are running
    - . `docker ps`

```
PS C:\Users\alext> docker ps
CONTAINER ID   IMAGE                              COMMAND                  CREATED          STATUS          PORTS     NAMES
fe9967266e7e   confluentinc/cp-kafka:latest       "/etc/confluent/dock…"   29 minutes ago   Up 29 minutes             kafka-kafka-1-1
3e79511cca79   confluentinc/cp-kafka:latest       "/etc/confluent/dock…"   29 minutes ago   Up 29 minutes             kafka-kafka-2-1
2b4a681fb630   confluentinc/cp-kafka:latest       "/etc/confluent/dock…"   29 minutes ago   Up 29 minutes             kafka-kafka-3-1
a3ab5cac8795   confluentinc/cp-zookeeper:latest   "/etc/confluent/dock…"   29 minutes ago   Up 29 minutes             kafka-zookeeper-3-1
6da769db1f0f   confluentinc/cp-zookeeper:latest   "/etc/confluent/dock…"   29 minutes ago   Up 29 minutes             kafka-zookeeper-1-1
40a8105bc61d   confluentinc/cp-zookeeper:latest   "/etc/confluent/dock…"   29 minutes ago   Up 29 minutes             kafka-zookeeper-2-1
```

1. Create a new topic
    1. `docker run --net=host --rm confluentinc/cp-kafka:latest kafka-topics --create --topic topic1 --partitions 3 --replication-factor 3 --if-not-exists --bootstrap-server localhost:39092`

```
PS C:\Users\alext> docker run --net=host --rm confluentinc/cp-kafka:latest kafka-topics --create --topic topic1 --partitions 3
--replication-factor 3 --if-not-exists --bootstrap-server localhost:39092
Created topic topic1.
PS C:\Users\alext>
```

2. Check that the topic has been created successfully
    1. `docker run --net=host --rm confluentinc/cp-kafka:latest kafka-topics --list --bootstrap-server localhost:39092`

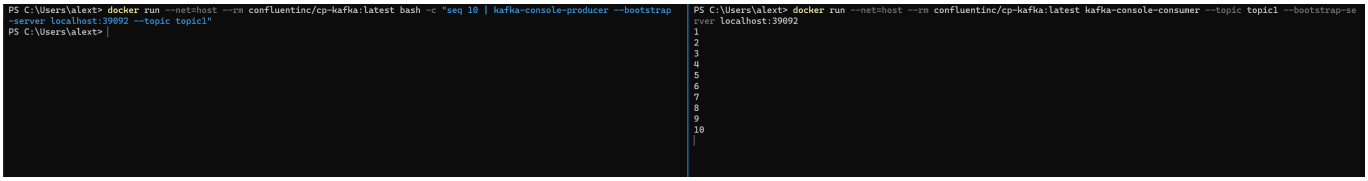
```
PS C:\Users\alext> docker run --net=host --rm confluentinc/cp-kafka:latest kafka-topics --list --bootstrap-server localhost:390
92
topic1
PS C:\Users\alext>
```

3. Start another shell and begin listening for incoming messages on `topic1` by using `kafka-console-consumer`
    1. `docker run --net=host --rm confluentinc/cp-kafka:latest kafka-console-consumer --topic topic1 --bootstrap-server localhost:39092`
    2. Now, any messages published to `topic1` will be displayed on this shell.

```
PS C:\Users\alext> docker run --net=host --rm confluentinc/cp-kafka:latest kafka-console-consumer --topic topic1 --bootstrap-se
rver localhost:39092
```

4. Send messages to the message broker using `kafka-console-producer`

1. For this, we will send 10 messages from `1` to `10` by starting `kafka-console-producer` and echoing the values into the shell
2. `docker run --net=host --rm confluentinc/cp-kafka:latest bash -c "seq 10 | kafka-console-producer --bootstrap-server localhost:39092 --topic topic1"`



5. The messages `1` to `10` should be displayed on the shell that is consuming the message and it will be waiting for further messages published to `topic1`.

Task D-2

1. Describe current cluster
    1. `docker run --net=host --rm confluentinc/cp-kafka:latest kafka-topics --describe --topic topic1 --bootstrap-server localhost:39092`
    2. Currently, broker 3 is the leader of partition 2, with all brokers being in-sync replicas.

```
PS C:\Users\alext> docker run --net=host --rm confluentinc/cp-kafka:latest kafka-topics --describe --topic topic1 --bootstrap-server localhost:39092
Topic: topic1   TopicId: 8eeh5Lv2T46TbDAjnmUrcA PartitionCount: 3       ReplicationFactor: 3    Configs:
        Topic: topic1   Partition: 0    Leader: 2       Replicas: 2,3,1 Isr: 2,3,1
        Topic: topic1   Partition: 1    Leader: 3       Replicas: 3,1,2 Isr: 3,1,2
        Topic: topic1   Partition: 2    Leader: 1       Replicas: 1,2,3 Isr: 1,2,3
PS C:\Users\alext>
```

2. Kill broker 3
3. Describe cluster again
    1. `docker run --net=host --rm confluentinc/cp-kafka:latest kafka-topics --describe --topic topic1 --bootstrap-server localhost:29092`
    2. Broker 3 is killed and broker 1 takes over as the leader for partition 1.
    3. In-sync replicas are left with broker 1 and 2 as 3 is dropped from the cluster.

```
PS C:\Users\alext> docker run --net=host --rm confluentinc/cp-kafka:latest kafka-topics --describe --topic topic1 --bootstrap-server localhost:29092
Topic: topic1   TopicId: 8eeh5Lv2T46TbDAjnmUrcA PartitionCount: 3       ReplicationFactor: 3    Configs:
        Topic: topic1   Partition: 0    Leader: 2       Replicas: 2,3,1 Isr: 2,1
        Topic: topic1   Partition: 1    Leader: 1       Replicas: 3,1,2 Isr: 1,2
        Topic: topic1   Partition: 2    Leader: 1       Replicas: 1,2,3 Isr: 1,2
PS C:\Users\alext>
```