

## Lab6- WebApi Handson

## Kafka Integration with C#:

Apache Kafka is a distributed event streaming platform used for high-performance data pipelines, streaming analytic, data integration, and mission-critical applications. It allows:

- Producers to send data (messages),
- Topics to categorize the data,
- Consumers to read it.

# Kafka Architecture Overview

- **Producer:** Sends messages to a topic.
- **Topic:** Logical channel for messages.
- **Partition:** Sub-division of a topic for load balancing.
- **Broker:** Kafka server storing data.
- **Consumer:** Reads messages from topics.
- **Zookeeper:** Manages Kafka brokers and cluster coordination.

### Starting Zookeeper:

[illegible]

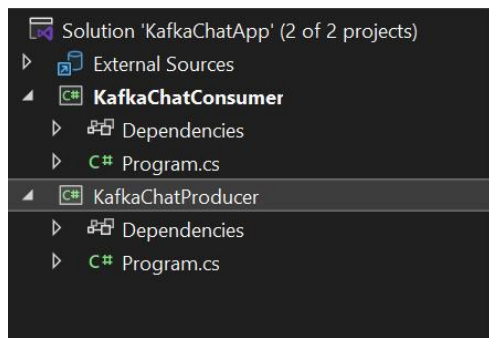
## Starting Kafka Server:

```
PS C:\Users\KIIIT> java -version
java 18.0.2 2022-07-19
Java(TM) SE Runtime Environment (build 18.0.2+9-g1)
Java HotSpot(TM) 64-Bit Server VM (build 18.0.2+9-g1, mixed mode, sharing)
PS C:\Users\KIIIT> cd c:\kafka
PS C:\kafka> .\bin\windows\kafka-server-start.bat .\config\server.properties
[2025-07-19 10:50:05,194] INFO Registered kafka.type=kafka.Log4jController.MBean (kafka.utils.Log4jControllerRegistrations)
[2025-07-19 10:50:05,589] INFO Setting -Djdk.tls.rejectClientInitiatedRenegotiation=true to disable client-initiated TLS renegotiation (org.apache.zookeeper.common.XS990util)
[2025-07-19 10:50:05,611] INFO starting (kafka.server.KafkaServer)
[2025-07-19 10:50:05,612] INFO Connecting to zookeeper on localhost:2181 (kafka.server.KafkaServer)
[2025-07-19 10:50:05,640] INFO [ZooKeeperClient Kafka server] Initializing a new session to localhost:2181. (kafka.zookeeper.ZooKeeperClient)
[2025-07-19 10:50:05,733] INFO Client environment:zookeeper.version=3.8.4-9316c2a7a97e1666d8f45934d36f35cc436c, built on 2024-02-12 22:16 UTC (org.apache.zookeeper.ZooKeeper)
[2025-07-19 10:50:05,733] INFO Client environment:host.name=18.186.248 (org.apache.zookeeper.ZooKeeper)
[2025-07-19 10:50:05,733] INFO Client environment:java.version=18.0.2 (org.apache.zookeeper.ZooKeeper)
[2025-07-19 10:50:05,734] INFO Client environment:java.vendor=Oracle Corporation (org.apache.zookeeper.ZooKeeper)
[2025-07-19 10:50:05,734] INFO Client environment:java.home=C:\Program Files\Java\jdk-18.0.2 (org.apache.zookeeper.ZooKeeper)
```

## Creating a Kafka Topic:

```
PS C:\Users\KIIT> java --version
java 18.0.2 2022-07-19
Java(TM) SE Runtime Environment (build 18.0.2+9-61)
Java HotSpot(TM) 64-Bit Server VM (build 18.0.2+9-61, mixed mode, sharing)
PS C:\Users\KIIT> cd c:\kafka
PS C:\kafka> .\bin\windows\kafka-topics.bat --create --topic chat-topic --bootstrap-server localhost:9092 --partitions 1 --replication-factor 1
Created topic chat-topic.
PS C:\kafka>
```

## Solution directory for hands on 1:



## **1. Creating a Chat Application which uses Kafka as a streaming platform and consuming the chat messages in the command prompt's output.**

### Chat in Producer

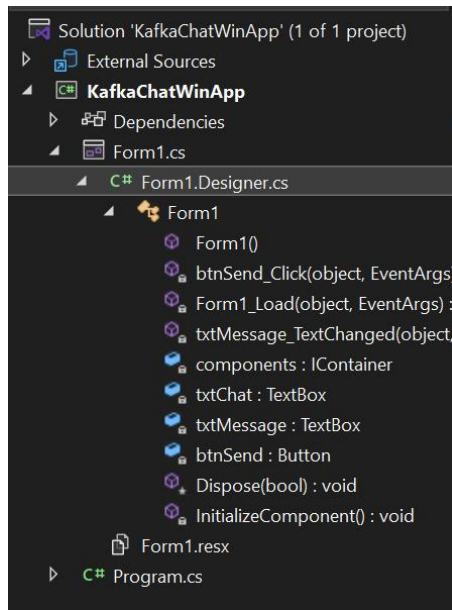
```
=== Kafka Chat Producer ===
You: HI there!!
[Sent] HI there!!
You: How are You??
[Sent] How are You??
You: Hope Everything is Good!
[Sent] Hope Everything is Good!
You: okay BYE!!
[Sent] okay BYE!!
You: exit
Producer closed.

C:\Users\KIIT\OneDrive\Desktop\Cognizant\KafkaChatApp\KafkaChatProducer\bin\Debug\net8.0\KafkaChatProducer.exe (process 30712) exited with code 0 (0x0).
To automatically close the console when debugging stops, enable Tools->Options->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . .|
```

### Output in Consumer

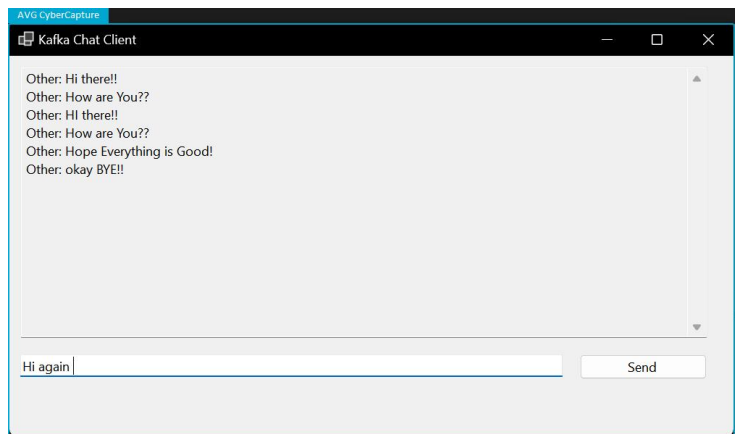
```
=== Kafka Chat Consumer ===
Other: Hi there!!
Other: How are You??
Other: HI there!!
Other: How are You??
Other: Hope Everything is Good!
Other: okay BYE!!
|
```

## Solution directory for hands on 1:



## **2. Create a Chat Application using C# Windows Application using Kafka and consume the message in different client applications.**

### Chat client



Other: Hi there!!  
Other: How are You??  
Other: Hi there!!  
Other: How are You??  
Other: Hope Everything is Good!  
Other: okay BYE!!  
Other: Hi again  
Other: What You doing  
You: What You doing