LAB 4

DISTRIBUTED SOFTWARE SYSTEMS

SCENARIO: producer consumer with KAFKA

I will start a Kafka broker and create a topic called ‘test-topic’, and then implement a Kafka producer and a kafka consumer, eachother will communicate by the ‘test-topic’ created before and the program will print the messages at the output, finally for testing I will verify that the producer and consumer are working correctly by checking the messages in the Kafka topic.

KAFKA PRODUCER

```python
# Kafka Producer Class
class KafkaProducer:
    def __init__(self, topic):
        self.topic = topic
        self.producer_config = {
            'bootstrap.servers': 'localhost:9092',  # Adjust the address and port based on your configuration.
        }
        self.producer = Producer(self.producer_config)

    def send_message(self, message):
        self.producer.produce(self.topic, value=message)
        self.producer.flush()

    def run(self):
        while True:
            message = "Hello, Kafka!"
            self.send_message(message)
            print(f"Sent: {message}")
            time.sleep(1)  # Wait for 1 second between messages
```

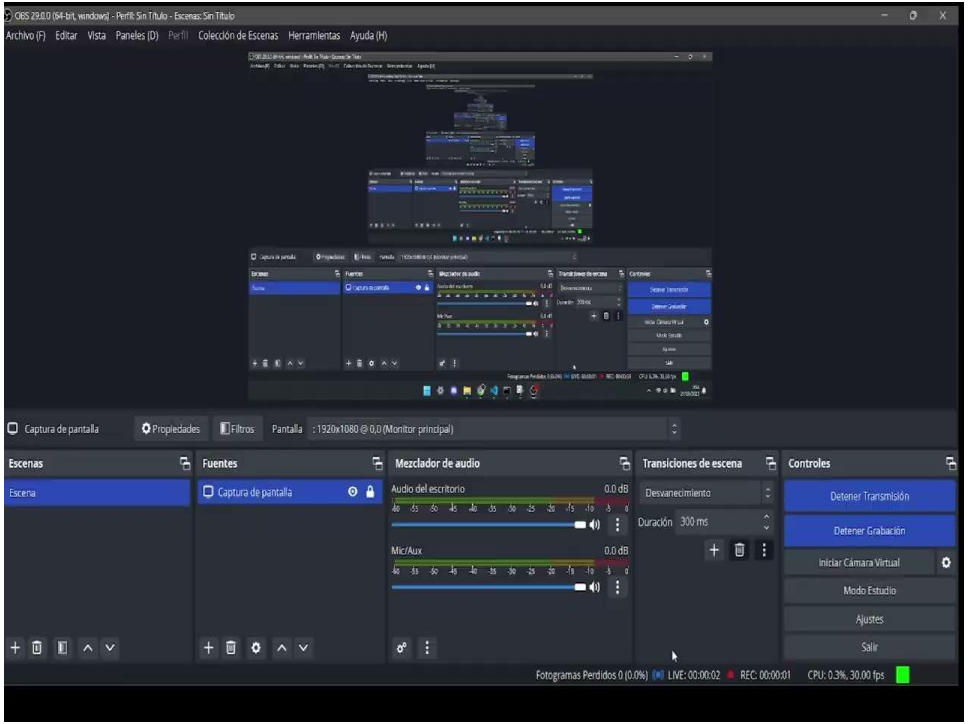
KAFKA CONSUMER

```python
# Kafka Consumer Class
class KafkaConsumer:
    def __init__(self, topic):
        self.topic = topic
        self.consumer_config = {
            'bootstrap.servers': 'localhost:9092',  # Adjust the address and port based on your configuration.
            'group.id': 'my-group',  # Provide a unique group ID.
            'auto.offset.reset': 'earliest'  # Start from the beginning of the topic.
        }
        self.consumer = Consumer(self.consumer_config)

    def consume_messages(self):
        self.consumer.subscribe([self.topic])
        while True:
            msg = self.consumer.poll(1.0)  # Wait for 1 second for messages.
            if msg is None:
                continue
            if not msg.error():
                print(f"Received message: {msg.value().decode('utf-8')}")
            elif msg.error().code() == KafkaError._PARTITION_EOF:
                print("Reached end of partition")
            else:
                print(f"Error while consuming: {msg.error()}")
```

MAIN

```python
if __name__ == "__main__":
    # Define the topic name
    topic = 'test-topic'

    # Create KafkaProducer and KafkaConsumer instances
    producer = KafkaProducer(topic)
    consumer = KafkaConsumer(topic)

    # Start producer and consumer in separate threads
    producer_thread = threading.Thread(target=producer.run, daemon=False)
    consumer_thread = threading.Thread(target=consumer.run, daemon=False)

    producer_thread.start()
    consumer_thread.start()

    producer_thread.join()
    consumer_thread.join()

    # Wait for 5 seconds before the main program exits
    time.sleep(5)
```

TESTING


Archivo (F) Editar Vista Paneles (D) Perfil Colección de Escenas Herramientas Ayuda (H)
Captura de pantalla
Propiedades
Filtros
Pantalla : 1920x1080 @ 0,0 (Monitor principal)
Escenas
Escena
Fuentes
Captura de pantalla
Mezclador de audio
Audio del escritorio
0.0 dB
Mic/Aux
0.0 dB
Transiciones de escena
Desvanecimiento
Duración 300 ms
Controles
Detener Transmisión
Detener Grabación
Iniciar Cámara Virtual
Modo Estudio
Ajustes
Salir
Fotogramas Perdidos 0 (0.0%)
LIVE: 00:00:02
REC: 00:00:01
CPU: 0.3%, 30.00 fps