Here are the detailed notes on **Kafka Console Producer CLI** based on the transcript, written in Hinglish (Latin script).

Kafka Console Producer CLI

Is lecture mein hum seekhenge ki **Kafka Topics** ke andar data (messages) kaise bhejein using CLI (Command Line Interface). Hum do tareeke cover karenge:

1. **Without Key:** Data partitions mein distribute hoga.
2. **With Key:** Same key hamesha same partition mein jayegi.

1. Prerequisites (Setup)

Producer start karne se pehle, humein ek topic chahiye. Agar topic nahi hai, toh pehle create karein. *Example Topic Name:* `first_topic`

```
# Command to create a topic
kafka-topics.sh --bootstrap-server <YOUR_SERVER> --create --topic first_topic --partitions 1
```

2. Basic Producer (Sending Data without Keys)

Sabse pehle hum simple text messages bhejenge. Is case mein **Key = Null** hoti hai.

Command:

```
kafka-console-producer.sh --bootstrap-server <YOUR_SERVER> --topic first_topic --producer.config playground.
config
```

(Note: Localhost par `--producer.config` ki zarurat nahi hoti)

Interactive Shell: Jab aap command run karenge, toh aapko ek arrow (`>`) dikhega. Iska matlab producer ready hai.

- Type: `hello world` -> Enter (Message Sent)
- Type: `my name is Stephane` -> Enter (Message Sent)
- **Exit:** `Ctrl + C` dabayein producer band karne ke liye.

Text Diagram: Basic Flow

```
[ Terminal ]                [ Kafka Cluster ]
  > hello world    ----->   (Topic: first_topic)
  > I love Kafka   ----->   (Appended to Log)
```

3. Producer with Properties (Safety Settings)

Hum producer ko extra settings (properties) ke sath bhi chala sakte hain. Ek common property hai `acks=all`.

- **acks=all:** Iska matlab Producer tab tak wait karega jab tak saare Brokers (Leader + Replicas) data confirm na kar dein.

Command:

```
kafka-console-producer.sh --bootstrap-server <YOUR_SERVER> --topic first_topic --producer-property acks=all
```

User Experience: Terminal par kuch alag nahi dikhega, lekin background mein data safety badh gayi hai.

[Image of Kafka broker architecture]

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4. Producing to a Non-Existent Topic (Important Behavior)

Agar aap aise topic par data bhejte hain jo exist nahi karta (`new_topic`), toh kya hoga?

Scenario A: Conduktor Cloud / Production (Strict Mode)

- **Result:** Error aayega (`Topic not in metadata`).
- **Reason:** Production mein **Auto Create Topic** disable hota hai taaki galti se naye topics na ban jayein.

Scenario B: Localhost (Default Mode)

- **Result:** Pehle ek warning aayegi (`Leader not available`), phir Kafka automatically topic create kar dega.
- **Default Settings:** Usually 1 Partition ke saath create hota hai (ye `server.properties` mein change kar sakte hain).
- **Best Practice:** Hamesha Topic ko pehle explicitly create karein, auto-create par depend na karein.

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5. Producing with Keys (Key-Value Pairs)

Ab hum messages ke sath **Keys** bhejenge.

- **Logic:** Kafka ensure karta hai ki **Same Key** wala data hamesha **Same Partition** mein jaye (Ordering ke liye).

Humein producer ko batana padega ki:

1. Humein Key parse karni hai (`parse.key=true`).
2. Key aur Value ke beech mein separator kya hai (`key.separator=:`).

Command:

```
kafka-console-producer.sh --bootstrap-server <YOUR_SERVER> --topic first_topic --property parse.key=true --p
roperty key.separator=:
```

Interactive Shell (Input Format): Ab aapko `key:value` format mein type karna hoga.

- Type: `example key:example value` -> Enter
- Type: `name:Stephane` -> Enter
- Type: `id_123:user data` -> Enter

[Image of Kafka message structure]

Important Notes:

- Agar aap separator (`:`) bhool gaye, toh `Exception` aayega aur Producer crash ho jayega.
- **Verification:** Agar aap UI (Conduktor) mein dekhenge, toh ab "Key" column mein data dikhega (pehle Null tha).

Text Diagram: Key Handling

```
Input:   "name:Stephane"
            |       |
            v       v
          Key     Value

Kafka Logic: Hash(Key) -> Decide Partition
Result: All messages with key "name" go to same partition.
```

Summary Checklist

- ☑ **Simple Producer:** `kafka-console-producer.sh` use karke text bhejna.
- ☑ **Exit:** `Ctrl + C` se bahar aana.

- ☑️ **Acks:** `--producer-property acks=all` safety ke liye.
- ☑️ **Non-Existent Topic:** Production mein error deta hai, Localhost par auto-create karta hai.
- ☑️ **Keys:** `--property parse.key=true` aur `--property key.separator=:` use karna ordering ke liye.

Next Step: Producer seekh liya! Ab data read karne ke liye **Kafka Console Consumer CLI** ke notes chahiye?