**🚀 Lab: Real-time Stock Price Stream (Kinesis → Firehose → S3)**

**1️⃣ Create S3 bucket**

This will be the landing zone for all streamed stock prices.

* Console: S3 → **Create bucket** → name like stock-stream-bucket-<yourid> → region = same as your Kinesis (e.g., ap-south-1).
* CLI:
* aws s3api create-bucket --bucket stock-stream-bucket-1234 \
* --region ap-south-1 \
* --create-bucket-configuration LocationConstraint=ap-south-1

**2️⃣ Create Kinesis Data Stream**

This stream receives the stock price updates.

* Console: Kinesis → **Create data stream** → Name = stock-data-stream → Shard count = 1.
* CLI:
* aws kinesis create-stream --stream-name stock-data-stream --shard-count 1

**3️⃣ Create IAM Role for Firehose**

Firehose needs to **read from the Kinesis Data Stream and write to S3**.

* IAM → Roles → Create Role → Service = **Firehose**.
* Attach permissions for S3 + Kinesis + CloudWatch logs.
* Role name: FirehoseStockRole.

**4️⃣ Create Kinesis Firehose Delivery Stream**

This will read from your stock-data-stream and dump to S3.

* Console: Kinesis → Firehose → Create delivery stream
  + Name: stock-firehose
  + Source: **Kinesis Data Stream** → select stock-data-stream
  + Destination: **S3** → bucket stock-stream-bucket-1234
  + Prefix: stocks/!{timestamp:yyyy/MM/dd}/
  + Buffer size = 1MB or Buffer interval = 60s (for quick delivery)
  + IAM Role = FirehoseStockRole

**5️⃣ Create IAM User/Role for Producer Application (NO NEED TO USE THIS STEP IF USING AWS CLI)**

~~This role needs permission to put records into Kinesis:~~

~~{~~

~~"Version":"2012-10-17",~~

~~"Statement":[~~

~~{~~

~~"Effect":"Allow",~~

~~"Action":["kinesis:PutRecord","kinesis:PutRecords"],~~

~~"Resource":"arn:aws:kinesis:ap-south-1:YOUR\_ACCOUNT\_ID:stream/stock-data-stream"~~

~~}~~

~~]~~

~~}~~

~~Attach this to your EC2/Cloud9/laptop AWS CLI user.~~

**6️⃣ Install Dependencies Locally**

Your app will use Python and yfinance:

pip install boto3 yfinance

**7️⃣ Producer Application: Real-time Stock Streamer**

As per the saved file ***Kinesis\_Producer.py***

**8️⃣ Validate the Flow**

* **Kinesis Data Stream** → Monitoring → check “Incoming Records”.
* **Firehose** → Monitoring → check “Delivery to S3 Success”.
* **S3** → Open your bucket → see stock JSON files appear in stocks/yyyy/MM/dd/.