Kinesis Video Streams

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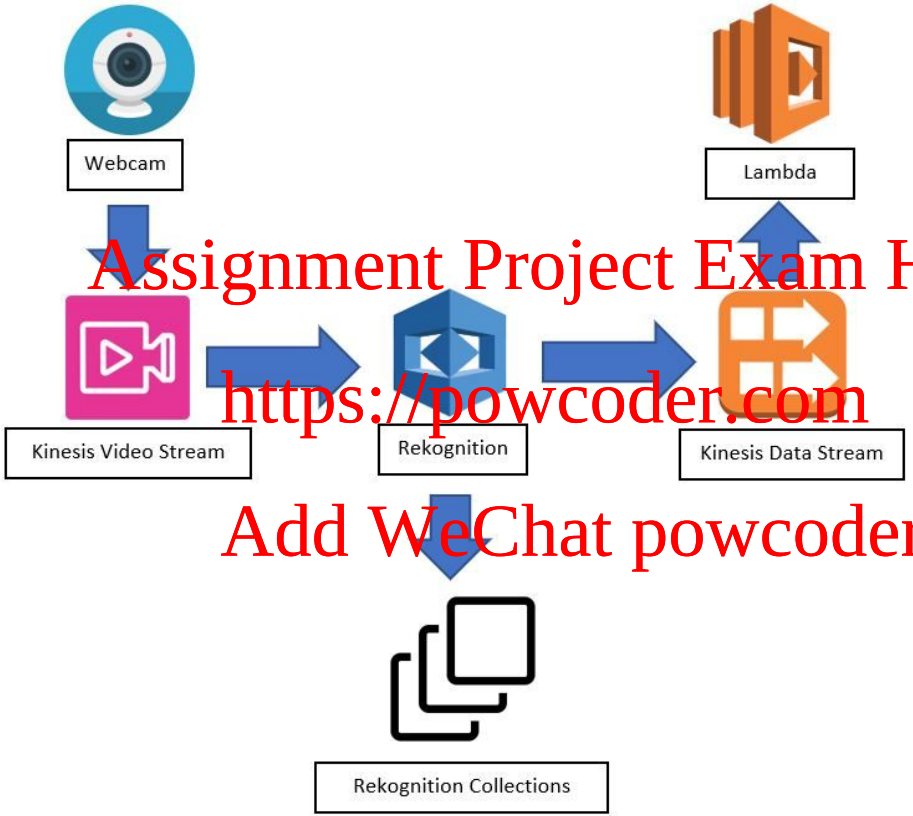


What is kinesis?

1. Enables you to deal with streaming data
2. Generates insights from incoming data in seconds or minutes
3. Scalable
4. Can handle any amount of data with low latencies.

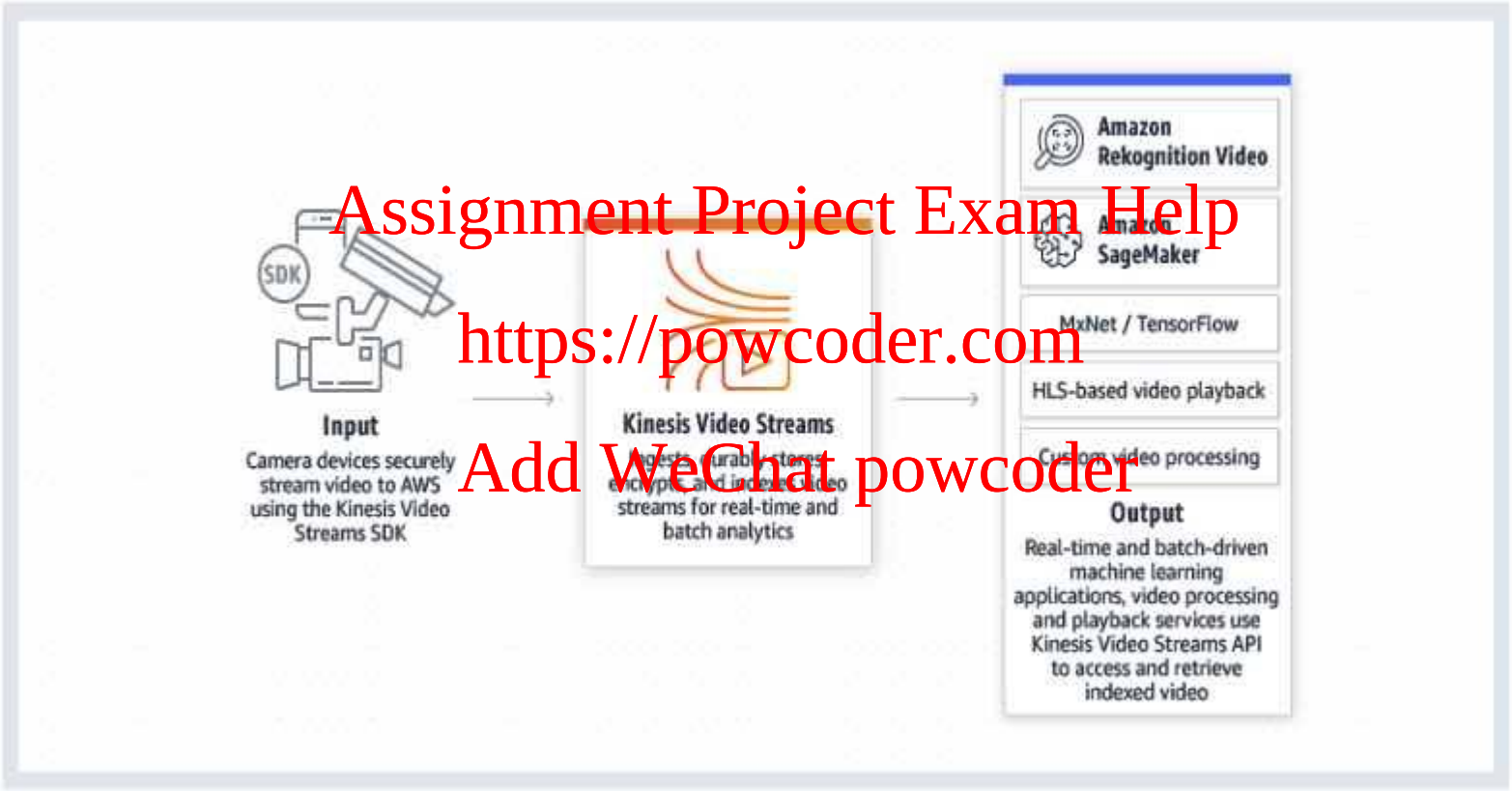
Variants of kinesis

1. Kinesis video stream: To securely stream video from connected devices to AWS.
2. Kinesis Data Firehouse: Capture, transform and load data into AWS stores like data lake, data store..
3. Kinesis Data Analytics: Transform and analyze streaming data in real time with Apache Flink.
4. Kinesis Data Streams: Continuously capture gigabytes of data/second from thousands of sources.

Kinesis Video Stream

1. Connect and stream from millions of devices
2. Durably store, encrypt, and index data - used in HW2
3. Build real-time and batch applications on data streams
4. Stream data more securely
5. Pay as you go

How it works?



Set up

1. Refer to the build and run sections in https://github.com/awslabs/amazon-kinesis-video-streams-producer-sdk-cpp
   GStreamer and JNI is NOT built by default, you MUST execute
   cmake .. -DBUILD_GSTREAMER_PLUGIN=ON -DBUILD_JNI=TRUE
2. Create a kinesis video stream in the aws console. Use the default configuration and enter your video stream name.
   https://us-east-2.console.aws.amazon.com/kinesisvideo/home?region=us-east-2#/
3. cd build and execute
4. AWS_ACCESS_KEY_ID=<your access key> AWS_SECRET_ACCESS_KEY=<your secret key> AWS_DEFAULT_REGION=us-east-2 ./kvs_gstreamer_sample <your_video_stream_name> -w 1280 -h 720 -b 200000
5. Under your Media Playback session in your stream in your video stream in aws console, you should be able to see the video streaming.
   https://us-east-2.console.aws.amazon.com/kinesisvideo/home?region=us-east-2#/streams/streamName/<yourv_video_stream_name>

Getting current image snapshot from KVS

1. Get byte stream from KVS

```
def get_byte_stream_from_kinesis():
    kinesis_client = boto3.client('kinesisvideo', region_name='us-east-1')
    response = kinesis_client.get_data_endpoint(
        StreamARN='<your video stream arn>', APIName='GET_MEDIA')
    video_client = boto3.client('kinesis-video-media', endpoint_url=response['DataEndpoint'], region_name='us-east-1')
    response = video_client.get_media(
        StreamARN='<your video stream arn>',
        StartSelector={'StartSelectorType': 'NOW'})

    payload = response['Payload']
    return payload
```


2. Write this to a file in chunks
3. Read the image from this file using cv2 library(python)

```
vidcap = cv2.VideoCapture(the_video_file_path_from_step2)
success, image = vidcap.read()
```

References

1. https://aws.amazon.com/kinesis/video-streams/
2. https://docs.aws.amazon.com/kinesisvideostreams/latest/dg/what-is-kinesis-video.html
3. https://github.com/awslabs/amazon-kinesis-video-streams-producer-sdk-cpp
4. https://github.com/awslabs/amazon-kinesis-video-streams-producer-sdk-cpp/tree/master/docs