ASSIGNMENT 5: PART A

TASK A:
Explore & Build a Use Case:
Read an overview of AWS Kinesis, and check how it works. Now, build a use case based on a hypothetical scenario, where you can use AWS Kinesis, and any other required AWS service(s). The use case should be unique (not copied from online sources/ friends/ colleagues), and it should reflect your understanding of AWS or any other cloud services.

You need to write about your hypothetical scenario and the use case in two paragraphs (less than 1 page). In addition, you need to provide a block diagram or activity diagram or workflow of the use case.

Amazon Kinesis:

Real-time, streaming data can be easily gathered, processed, and analysed using Amazon Kinesis [1], allowing you to quickly respond to new information and gain timely insights. With the freedom to select the tools that best meet your application's needs, Amazon Kinesis provides essential features for processing streaming data at any scale economically. You may ingest real-time data for machine learning, analytics, and other applications with Amazon Kinesis, including video, audio, application logs, website clickstreams, and IoT telemetry data. Instead of needing to wait until all of your data has been gathered before processing can start, Amazon Kinesis lets you to process and analyse data as it comes in and respond immediately.

Every day, Netflix processes several terabytes of log data using Kinesis [2]. Netflix, for instance, required a centralised programme that continuously records data. It created Dredge, which quickly processes data as it streams through Kinesis and instantaneously enriches content with metadata. Now loading data into a database to be retrieved and processed later is unnecessary.

Kinesis offers a number of services, including:
Kinesis Streams, which permits low latency data streaming. [1]
Kinesis Analyses: Kinesis Analytics use SQL to carry out real-time analytics on data streams received through Kinesis Streams. [1]
Kinesis Firehose: To load data streams, Kinesis Firehose connects to a number of AWS services, including S3, DynamoDB, and Redshift. [1]

Amazon Kinesis Use-case study: Thief detection at house.

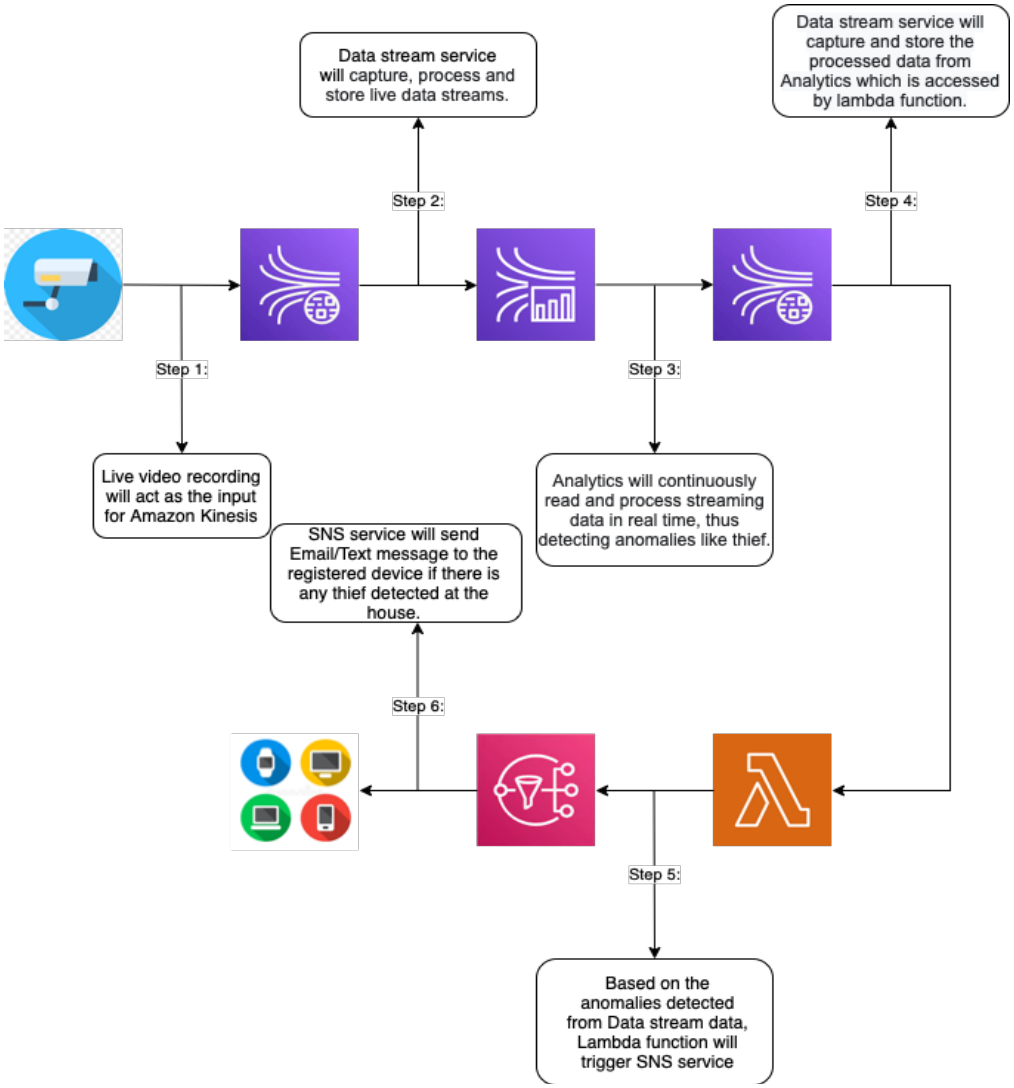

***Figure 1**. Workflow diagram [3] of thief detection using Amazon Kinesis and other AWS services.*

Background of case study: Considering that they increase public safety, security cameras should be installed everywhere. When someone is aware that their behaviour is being captured on camera, they are much less likely to try to harm you. You and your stuff are both safe thanks to cameras. If a criminal is captured on camera, the police can identify them. Police are able to quickly resolve criminal cases with tangible evidence and prevent crimes from happening by using surveillance cameras. Theft and vandalism are other things that surveillance cameras help to prevent. When there are cameras recording you, it is quite tough to get away with taking something. Due of this, thieves are frequently apprehended. The thief will be apprehended either before or after performing the crime thanks to surveillance cameras.

Application of case study using Amazon Kinesis:

The above figure 1. explains the flow of how using Kinesis and other AWS services thieves can be detected. This is similar to detecting anomalies (here it is a thief). Initially, raw data from video surveillance will be capture, processed and stored by Data Stream service. This data is used by Analytics service to detect any kind of anomalies (like thief) in the data. Now processed data from Analytics is accessed and store in Data Stream once again. The Lambda function will access this data and trigger SNS service when an anomaly (thief) is detected at the door. The SNS service will then send the notification to the registered device in subscribed format.

REFERENCES :

[1] "Amazon Kinesis - Process & Analyze Streaming Data - Amazon Web Services", *Amazon Web Services, Inc.*, 2022. [Online]. Available: https://aws.amazon.com/kinesis/. [Accessed: 21- Jul- 2022]

[2] S. Özal, "How and Why You Should Use Amazon Kinesis for Your Data Streams", *Blog.thundra.io*, 2022. [Online]. Available: https://blog.thundra.io/how-and-why-you-should-use-amazon-kinesis-for-your-data-streams. [Accessed: 21- Jul- 2022]

[3] Draw.io, "Flowchart Maker & Online Diagram Software," draw o, [Online]. Available: https://app.diagrams.net/. [Accessed: 21-Jul-2022].