

Deliverable 3:

1. Describe the following:

- **Sink and Source connectors.**
 - Source Connectors provide data to kafka, whereas sink connectors take data out of kafka.
- **The applications/advantages of using Kafka Connectors with data storage.**
 - The application of kafka connectors is that they can be used to import/export data from outside systems. The main advantage of using kafka connectors is that they are flexible and modular.
- **How do Kafka connectors maintain availability?**
 - The connector interfaces with outside technology and mediates the data into kafka connect.
- **List the popular Kafka converters for values and the properties/advantages of each.**
 - Avro: Serializes record keys and values, it is very compact and efficient. Checks to make sure every record has a proper structure
 - Protobuf: Ensures signals don't get lost between other apps, it processes information very quickly
 - String: able to define conversion between strings and objects and control their behavior.
 - JSON: defines which JSON converter is used to convert an object.
 - ByteArray: returns an array of bytes

2. Search the internet to answer the following question:

- **What's a Key-Value (KV) database?**
 - It uses a key-value method to store data, it can store, retrieve, and manage arrays of data, essentially it's a hash table
- **What are KV databases' advantages and disadvantages?**
 - Advantages
 - Scalability: scalable because it's able to take a lot of requests
 - Speed: able to process constant requests for read and writes
 - Flexibility
 - Disadvantages
 - Only optimized for data with a single key and value
 - Not very well made for reading/looking up data
- **List some popular KV databases.**
 - Redis

- ScyllaDB
 - Amazon DynamoDB
 - Azure table storage
3. **Video of Kafka connectors, producers' python script, a proof of successfully stored data into data storage.**
 - a. In file
 4. **List some possible applications that can be implemented by using the uploaded dataset.**
 - a. This dataset could be usable in various artificial intelligence applications, such as detecting weather patterns, detecting moving obstacles, etc. uploading the dataset to the cloud helps by allowing anyone from anywhere in the world to access this dataset.