Assignment 5:

Simulating an IoT-Fog-Cloud ecosystem using Kafka, OpenWhisk and CouchDB

- Let's assume an IoT system including two sensors measuring temperate.
- There are two functions (A and B) hosted by the edge nodes periodically reading the data generated by the sensors. They check the data, add a producer_id and timestamp to the read data and hand it to the Kafka. In other words, the Kafka are receiving a data stream. The Kafka has a buffer in which the items (including sensor's data, producer_id, and timestamp) of the data stream are inserted.
- There are two consumers functions (C and D) implemented in OpenWhisk which are periodically invoked and pick one item from the Kafka buffer. They then add a consumer_id to the item. Finally the item are imported to a CouchDB data base.
- Write a webpage to retrieve the data from the CouchDB. It should be able to list the following queries:

1. All the sensors' data having a temperature lower than X or higher than Y.
2. All the sensors' data coming from the first sensor in the period [start-time, finish-time] that are served by the second consumer.
3. All the sensor's data in the period [start-time, finish-time] having the same value.

- To simulate the sensors data you can produce a random real number in the range of [0.00 to 40.00].