POLITECNICO
MILANO 1863

Apache Kafka

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Exercise 1

- Implement a system with two (basic) consumers for the same topic
  - Consumer C1 prints records on the standard output
  - Consumer C2 processes each value (e.g., removes upper case letters) and stores the result to a new topic
    - Without delivery guarantees

DUE ELEMENTI LOGICI QUINDI DUE GRUPPI

- Consider a single instance for each consumer
  - What happens if one consumer fails? VEDERE IL MESSAGGIO DOVE SI è FERMATO
  - What happens if you restart it?

Exercise 2

- Now assume that you realize that consumer C2 is too slow
  - It cannot sustain the rate of messages added to the input topic

GIOCARE SULLE PARTIZIONI?

- How can you improve the performance of the system?

- Experiment with the system
  - What happens if one consumer fails?
  - What happens if you start multiple consumers?

Exercise 3

- Now you want C2 to guarantee exactly-once semantics
  - Each input message should be delivered to the output topic once and only once

ATOMIC FORWARDER

- Experiment with the system
  - What happens if one consumer fails?
  - What happens if you start multiple consumers?

Exercise 4

- Modify C2 to store and forward the overall number of messages received for each key

C2 RICORDA QUALCOSA QUINDI è STATEFULL
IN QUESTO CASO BISOGNA FARLO PER MEZZO DELLA MEMORIA

IN QUESTO CASO -> STORE DELLO STATE IN UN TOPIC A PARTE COSì FACCIO
DIVENTARE ANCHE QUESTA INFORMAZIONE FAULT TOLLERANT E POI QUANDO RESUME
ALLORA POI POSSO LEGGERE QUEL TOPIC E POI RIPARTO DA QUEL MOMENTO E VADO AVANTI

IL PROBLEMA è CHE POSSO CRASHIARE

- Consider a single instance of C2
  - What happens in the case of failure?
  - Does your implementation guarantee exactly-once semantics?

- How do your answers change in the case of multiple instances?