Producer-Worker with ZMQ Pipelines

CS403/534 - Distributed Systems
Assignment #4 for Spring 2020 - In-Class

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Abstract

You are required to implement a multithreaded zmq worker to perform tasks sent by producer thread. They use pipeline sockets (a.k.a., PUSH-PULL sockets). The client threads sent their results to the result collector thread. The further details are given in the subsequent sections of this document.

1 Producer and Result Collector

The Python implementations of both Producer and Result Collector threads are given in "producer.py". The Producer thread generates a list of random integers and pipelines them in batches using a `PUSH` socket and indicates whether the maksimum or the minimum of the list is to be found.

The Result Collector thread receives workers' partial results through a `PULL` socket and then combine them into global minimum or maksimum.

The port numbers used by the producer and result collector are provided in the Python codes.

2 Worker

You are asked to develop the worker threads that receive the workload batches, compute the minimum or the maksimum for the batch, send the partial results back to the Result Collector thread using a different socket. You are required to create 10 worker threads, each of which checks for further batch to process in the pipeline immediately after it is done with a batch.

3 Notes

- You can work in groups of two.

- Compress your Python code using winzip, name it as "cs403-534_assign04_yourname.zip" and submit it to SUCourse.