

A Serverless Real-Time Data Streaming Architecture for Synchronous Online Math Competition

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Abstract

During the synchronous online math competition, a high volume of data is continuously generated and collected from the user at every event. Those valuable data can be processed and analyzed to support many decisions in a second such as user state, cheating detection, online help desk, etc. In addition, enormous demands from different roles accessing those data, such as data analysts, data scientists, and executives, have increased recently. This paper presents a new architecture for synchronous real-time data streaming for online testing. Also, this paper identifies three challenges that need to be addressed: First, most online testing organizations rely on open-source frameworks for big data processing and streaming - Hadoop and Kafka. Second, we add the serverless architecture for synchronous real-time data streaming to an open-source learning management system, Moodle, to meet the synchronized online test requirement. Third, we discuss the benefit of the architecture in terms of high availability, cost, and technologies.

Keywords: Serverless, Real-time Data Streaming Architecture, Synchronous Online Math Competition, Open-Source Big Data Processing Framework, Open-Source Data Streaming Framework

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