AntidoteDB: A cloud database for developing scalable and consistent geo-replicated applications.

Abstract:
Cloud applications need to serve very large numbers of users, achieve low latency, and operate in the presence of failures. Distributed databases are necessary components in such systems and need to meet the scalability and availability requirements of these applications. According to the CAP theorem, it is impossible to provide both consistency and availability in the presence of network partitions. On one hand, databases that guarantee strong consistency are not available under network partitions. On the other hand, databases that adopt relaxed consistency models perform better and provide high availability, but they are challenging for programmers as they shift the burden of data correctness from the database to the application layer.

In this tutorial, we will introduce AntidoteDB, a geo-replicated, highly-available, transactional database that allows the development of highly available yet consistent applications. Using hands-on exercises, we will present AntidoteDB's key features including high-level replicated data types that are design to work correctly in the presence of concurrent updates and partial failure, and transactional causal consistency, which is the highest consistency model compatible with high availability. We will demonstrate how to use these properties to develop correct applications that deliver good performance by writing a sample application.

Additional material:
https://www.antidotedb.eu/
https://www.youtube.com/watch?v=oWUNCsFy-r0

Sara's bio:
Sara is a post-doctoral researcher in the Delys Inria team at Sorbonne Université, LIP6, Paris. Her PhD thesis at the Australian National University explored the design of resilient programming models for high-performance computing. She is currently interested in the design of high-level programming models for distributed systems.

Dimitrios' bio:
Dimitrios Vasilas is a PhD student in the Delys Inria team at Sorbonne Université, LIP6, and Scality. His thesis explores the design of querying engines for large-scale distributed storage systems.

Ilyas' bio:
Ilyas is a PhD student in Sorbonne Université, LIP6, part of the Delys INRIA team. His thesis interest is the design of highly available distributed systems, principally consistency protocols in case of replication between Cloud Datacenters and Edge devices. He is one of AntidoteDB's main developpers.

Pre-requisites:
Basic programming knowledge in Java would be helpful. Understanding of the basic concepts and challenges of large-scale distributed databases (geo-replication, performance-consistency tradeoff) is a plus.

Pre-requisite software:
- Java version 1.7 or higher
- Gradle build tool
- Docker and docker-compose
Installation instructions
(https://docs.google.com/document/d/1xIoBHshaH4pDsYuORMzU2_lleT2LeRgplG-7cp_5Yp8/edit?usp=sharing)