Fibonacci Sequence Provider Service

Technical Design Document

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Overview

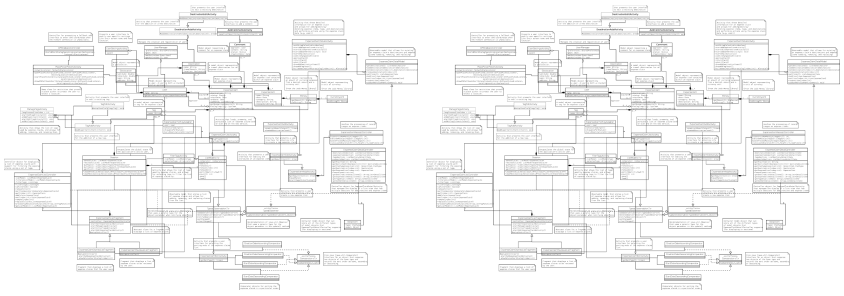
The Fibonacci sequence[1] is a sequence of numbers where each number is the sum of the two that immediately precede it.

Prior Work

A group of interns has, to date, performed work on manually computing the sequence, indexed from 0 to 2147483647. Although useful, this approach is not scalable and appears to degrade if the process hangs. To mitigate this issue, we aim to automate this process by removing (somewhat) expensive labour from the equation and provide a service that clients may use to compute the fibonacci sequence.

Implementation

The architecture of the Fibonacci Sequence Provider Service (FSPS) is quite simple



[1] https://en.wikipedia.org/wiki/Fibonacci_number

Service Level Agreements and Objectives (SLA + SLO)

We aim to have a p95 of 1.0ms for any requests to the FSPS, while having a p99 of 2.0ms for requests. Batched requests may also be covered under this SLO.

Uptime for the service can be guaranteed at eleven nines. This is achieved by distributing FSPS workers geographically across a number of multi-region data centers provided by AWS[2]. We use a multi-agent machine learning service to best allocate CDNs to serve clients of FSPS.

[2] https://aws.amazon.com/about-aws/global-infrastructure/regions_az/