What Makes **Google** Tick

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Introduction

Prior to the 21st century, the term *googol*, a little-known moniker for 10^{100} coined in 1938 by Milton Sirotta, was hardly ever used in the English language outside of trivia games. In 1998, Larry Page and Sergey Brin founded a company which claimed an alternative spelling of this word as its trademark, and were met with legendary success. A mere eight years later, the term *google* was added to the Oxford English Dictionary, and in 2013, one would be rather hard-pressed to find a living person who is unfamiliar with it. Today we are going to examine the technology stack that makes Google so great behind the scenes.

Server-side

Google's server-side code is written in Python, Java, and C++. In the days of the company's infancy, Sergey and Larry were quoted with the directive, "Python where we can, C++ where we must". This concept of platform-polygamy proved to be a good engineering decision as the company benefitted greatly from Python's speed and rapid developmental patterns in situations where memory management wasn't crucial.

Client-side

The client-side of most of Google's applications is written in JavaScript (what else?). The majority of their code is built on top of the open-source Closure framework, and Closure's compiler is normally used to optimize and minify completed scripts. This helps Google to gain a leg up on its competitors with lightning fast page loads and contributes to the extreme responsiveness often observed in its user interfaces.

Proprietary Software Solutions

One trend often observed in Google's endeavors is the "roll-your-own" approach with regards to the software components used throughout their applications. MapReduce, a Google-developed framework for distributed computing on clusters of computers, ensures that the millions of daily users will never encounter slow server responses. Google has also rolled it own

compressed databasing solution called BigTable, which provides high-performance relational querying capabilities for many of their applications.