



Introduction

In this lesson, you will be introduced to the concept of caching and why it is important for performance.

We'll cover the following ^

- What is caching?
- Caching dynamic data
- Caching static data

Before beginning this lesson, I want to ask you a question. When you visit a website and request certain data from the server, how long do you wait for the response?

5 seconds, 10 seconds, 15 seconds, 30 seconds? I know, I know, I am pushing it... 45 seconds? What? Still no response...

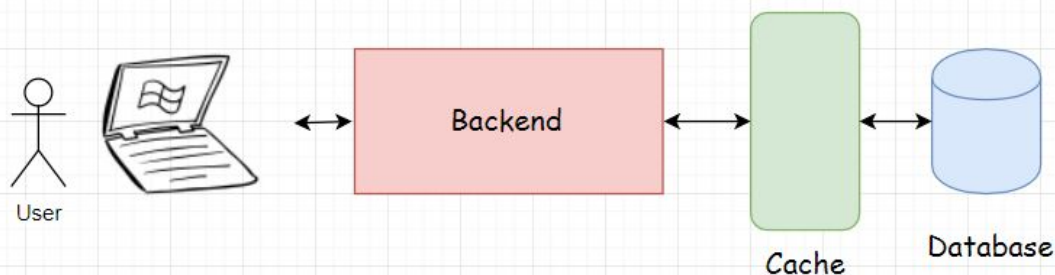
Then, you finally bounce off and visit another website for your answer. We are impatient creatures, and we want our answers quick. Caching is vital to applications to prevent users from bouncing off to other websites all the time.

What is caching?#



Caching is key to the performance of any kind of application. It ensures *low latency* and *high throughput*. An application with caching will certainly do better than an application without caching, simply because it returns the response in less time as opposed to the application without a cache implemented.

Implementing caching in a web application simply means copying frequently accessed data from the database, which is *disk-based* hardware, and storing it in *Random Access Memory (RAM)* hardware.



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Caching In A Web Application

RAM-based hardware provides faster access than disk-based hardware. As I said earlier, it ensures low latency and high throughput. Throughput means the number of network calls or *request-responses* between the client and the server within a stipulated time.

RAM-based hardware is capable of handling more requests than the *disk-based* hardware, on which the databases run.



Caching dynamic data#

With caching, we can cache both the *static* data and the *dynamic* data. Dynamic data is data that changes more often, and it has an expiry time, or a *TTL*. After the *TTL* ends, the data is purged from the cache, and the newly updated data is stored in it. This process is known as *cache invalidation*.

Caching static data#

Static data consists of images, font files, CSS, and other similar files. This is the kind of data that doesn't change often and can easily be cached on the client-side in their browser or local memory. It can also be stored, on the Content Delivery Networks(CDNs).

Caching also helps applications maintain their expected behavior during network interruptions.

In the next lesson, we will cover how to decide if we really need a cache in our applications.

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