

Introduction

The purpose of this assignment is to define a technical term used in my academic field of computer science. This assignment contains a parenthetical definition, a sentence definition, and an expanded definition of the word, "cache". In computer science, it is often very useful to be able to explain technical terms to people with little knowledge of computer technology.

1) Term Chosen:

Cache

2) Situation:

A pitch to a group of scientists with little computer science background on why they should purchase my company's high-speed caches for their machines. The pitch would begin with an explanation of what a cache is in the first place.

3) Parenthetical Definition:

The program makes extensive use of caches (a small unit of memory that data can quickly be extracted from).

4) Sentence Definition:

A cache is a small piece of memory which normally holds data for a relatively short period of time. Data can be added to or removed from caches far more quickly than normal computer memory. Caches normally are filled with frequently or recently used data which make for faster program speed.

5) Expanded Definition:

By Negation

A cache is a small piece of memory that briefly hold data while a program runs. Caches hold small pieces of data such as letters and integers, not large files like songs, pictures, or other large data structures.

Compare and Contrast

Main memory, in contrast, holds larger units of data that might be needed by a program on a less frequent basis. Taking information out of main memory is also orders of magnitude slower than taking information out of the cache.

Analysis of parts

The central processing unit (CPU) is the place where math and other logical operations are performed by the program. When a piece of information needed by the CPU is not contained in the cache, the cache must retrieve that piece of information from main memory. This can be seen in figure 1.

Operating Principle

Reading from main memory is significantly slower than reading from a cache (Handy, 1998). For this reason, it is desirable for caches to hold on to information that the program can expect to need, such as frequently or recently used data (Mookerjee & Tan, 2002). This general principle is why caches make programs run faster.

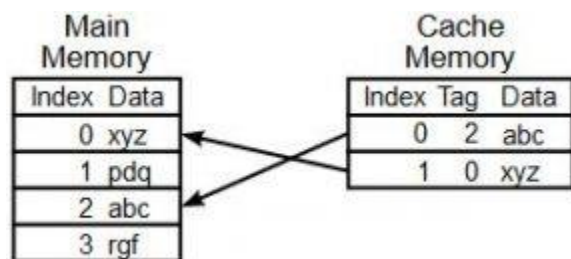


Figure 1: Simplified configuration of a cache extracting data from memory.

source: Cache (computing), n.d

Citations

Cache (computing). n.d. *In Wikipedia*. Retrieved January 30, 2017, from [https://en.wikipedia.org/wiki/Cache_\(computing\)](https://en.wikipedia.org/wiki/Cache_(computing))

Handy, J. (1998). *The cache memory book*. Morgan Kaufmann.

Mookerjee, V. S., & Tan, Y. (2002). Analysis of a least recently used cache management policy for Web browsers. *Operations Research*, 50(2), 345-357.