

# **Victim cache and skewed associative cache**

## **What is our topic ?**

Our topic is to implement and compare victim cache and set associative cache, which basically follows the RISC instructions set architecture.

## **How we will start this Project?**

Firstly, we hope to apply the concepts learnt in our course : How cache works, Different types of cache misses, different miss rate patterns and why do they arrive .We will then examine the previous research done on this topic till date and try to understand the mapping for which we get the best performance and efficiency and minimum conflict miss penalties. After this we will try to implement our model and compare the results.

## **Why this topic ?**

As we know the cache is one of the most important part of computer memory, especially in today's time where the primary importance in computer is fast-processing. As a student, knowing about different types of cache their functionality and change in their performance on slight tweaks will teach us a lot and will greatly improve our understanding. Choosing this topic also helps us learn about what makes a cache efficient. All this needs a clear understanding different types of cache(victim cache and skewed associative cache specifically), predicting hit and miss ratios , fetch time and similar topics. For implementation of the idea,the developed cache schemes are to be analyzed and simulated using a functional simulator and the obtained results are analyzed for performance ,e.g. the mapping for which ,we get the best performance and efficiency and minimum conflict miss penalties and rates and access rates to next level of cache .

### **Abstract:**

Speed is a major limiting factor for the performance of computer, to increase which cache was introduced in the first place. Still, there are misses and miss penalties in cache, some being dependent on the situation of the data being accessed or on the capacity (capacity and conflict miss), while some occur every time, when we try to map the data directly (e.g. compulsory miss). Our project revolves around the idea of victim and skewed associative cache, which follow the basic RISC instruction set architecture, and focuses on the conflict misses.

Here we talk about comparing Skewed associative cache with Victim cache. A two-way skewed-associative cache has the same hardware complexity as a two-way set-associative cache, yet simulations show that it typically exhibits the same hit ratio as a four-way set associative cache with the same size, while a Victim cache enables the direct mapped and fully associative modules during cache operation.

Being a student of this course we think that this is a topic of great interest because of the fact that in this course we talk about an increase in the efficiency of computer systems multiple times. And clearly this efficiency is greatly affected by the type of cache we use. We hope that our conclusions are correct and help increase our own understanding.

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