



PROJECT PROPOSAL

DELHI TECHNOLOGICAL UNIVERSITY

Department of Applied Mathematics

IV Semester

Project Details

Topic: Cache Memory: Performance Issues

Subject: Computer Organization and Architecture (MC 206)

Project by

1. Name: Aneesh Panchal

Roll No.: 2K20/MC/21

2. Name: Ayushi Sagar

Roll No.: 2K20/MC/35

Project Supervisor

Ms. Sumedha Seniaray

Project Introduction

For the project we are doing a case study on a research paper named “Cache memory – An analysis on Performance issue.”

Here is an abstract from the research paper.

Cache Memory is an essential element in the computer that could affect the program execution because its access time is less than the access time of the other memories. It is the fastest component in the memory hierarchy and approaches the speed of CPU components.

Cache memory is infused in systems to overcome the gap created between the main memory and CPUs due to their performance issues. Since the speed of the processors is ever-increasing, so there is a need arises for a faster speed cache memory that can assist in bridging the gap between the speed of processor and memory.



Therefore, in this paper we will be studying architecture circumscribed with three improvement techniques namely victim cache, sub-blocks, and memory bank. These three techniques will be getting implemented one after another to improve and make the speed and performance of cache comparative to main memory.

Further in the paper some approaches are proposed as at level 1, using Victim Cache technique, it will decrease the rate of misses, at level 2, Subblocks Division technique further will reduce the penalty ratio of miss rate and then at level 3 Memory Bank Technique, it will be useful in further decreasing memory access time. Thus, using the above approaches, performance of Cache Memory can be improved several times.

In this paper, we will be studying different techniques (above described) that will be combined together, extracting out one by one and removing the limitations of previous one. This step-by-step architecture will be increasing the speed of cache memory considering all of techniques comprehensively where each one of them individually will be helpful in improving the performance of the memory.

Further, in the presented paper, different techniques and methodologies will be examined to assess the usefulness of proposed technology in improving performance.



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