PROJECT 1

Computer organization

REPORT

INTRODUCTION

Cache simulator

It is a memory system simulator. This simulator can emulate a system with multiple levels of instruction and data caches, each of which can be configured for different sizes and organizations. This simulator is ideal for fast cache simulation if the effect of cache performance on execution time is not needed.

Replacement policy Use LRU Policy

Caches that use set sizes greater than one must have a mechanism for determining which block to vacate from a set in order to make room for a new one. This Is called the replacement policy. This simulator allows two different replacement policies LRU, In LRU the block that was used farthest in the past is vacated.

INPUT

in this project, Enter three variables from the user

1 capacity KB

2 block size in bytes

3 associativity

HOW IT WORKS

After the user enter value, we convert the value to power so we use this equation

1-log(cache\_capacity)/log(2)

2-log(blocksize)/log(2)

3-log(associativity)/log(2)

after that we must verify user input

cache\_capacity >= 1 AND cache\_capacity <= 64

cache\_blocksize >= 4 AND cache\_blocksize <= 512

cache\_associativity >=1 AND cache\_associativity <= 512

We test the cases from cen214.trace file

The cache capacity is fixed 8 kilobytes

Block size 16, 128 and 512

Associative 1, 2 , 3 and 4

RESULTS

My simulation software works very well, there is no lag and its performance is fast

The results have been tested on static data from the file on gitHUB which are:

Cache size 8KB

associative 1,2,3,4

block size 16,128,512