CS622A

Advanced Computer Architecture

Assignment 2

Memory Reuse and Sharing Profile Analysis

GROUP 16

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1 Introduction

In this assignment, we use PIN tool to instrument a set of parallel programs and collect thread-wise memory access trace and break it down to x86 machine accesses. Then with the resultin trace, we analyze the sharing profile and memory reuse for the given parallel programs.

2 Analysis Results

PART 1: Collection of machine-access traces

The results were varying across individual runs. Hence, we have collected 5 results for a particular program and picked *addrtrace.out* corresponding to the middle value (highlighted).

Programs	**Run 1**	**Run 2**	**Run 3**	**Run 4**	**Run 5**
prog1.c	**128988038**	128988149	128987956	128988046	128987901
prog2.c	2528955	2513452	2521172	**2524574**	2532314
prog3.c	**9508261**	9510696	9501049	9497081	9521463
prog4.c	1061544	1061507	1061492	1061525	**1061515**

Table 1: Machine accesses count across 5 runs

PART 4: Sharing profile analysis

	prog1.c	**prog2.c**	**prog3.c**	**prog4.c**
Private	5259461	5398166	3951778	1446388
2-Shared	11574350	3036461	1663059	1373402
3-Shared	3094660	336851	166320	170531
4-Shared	1378895	969678	627532	342146
5-Shared	1378895	969678	627532	342146
6-Shared	1378895	969678	627532	342146
7-Shared	1378895	969678	627532	342146
8-Shared	1378895	969678	627532	342146

Table 2: Sharing profile analyis for 8 threads

PART 2: Access distance analysis

PART 3: Access distance filtered by LRU cache