1541 Intro to Computer Architecture: Project 2

Group Members: Austin Linder, Mathew Salami, Kevin Carr

**Experiment 1:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Sample\_large1.tr - Miss Rates | | | | | | |
|  | Direct Map | | | | | |
| 4KB | | 16KB | | 64KB | |
| I | D | I | D | I | D |
| 4B | 0.008642 | 0.3743 | 5.556e-5 | 0.3337 | 1.780e-5 | 0.2208 |
| 16B | 0.00691 | 0.3141 | 1.812e-5 | 0.2647 | 4.804e-6 | 0.1412 |
|  | | | | | | |
|  | 4-Way Associative | | | | | |
| 4KB | | 16KB | | 64KB | |
| I | D | I | D | I | D |
| 4B | 0.1069 | 0.4197 | 1.780e-5 | 0.3431 | 1.780 | 0.2901 |
| 16B | 0.009374 | 0.3818 | 5.274e-6 | 0.2817 | 4.804e-6 | 0.2206 |

|  |  |  |  |
| --- | --- | --- | --- |
| Sample\_large1.tr - Total Execution Cycles | | | |
|  | Direct Mapped | | |
| 4KB | 16KB | 64KB |
| 4B | 1954118075 | 1716115515 | 1162665595 |
| 16B | 1650908395 | 1388068075 | 779835355 |
|  | | | |
|  | 4-Way Associative | | |
| 4KB | 16KB | 64KB |
| 4B | 2231263675 | 1763864955 | 1502614475 |
| 16B | 1978817995 | 1465500395 | 1167075435 |

Findings:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sample\_large2.tr – Miss Rates | | | | | | | |
|  | Direct Map | | | | | | |
| 4KB | | | 16KB | | 64KB | |
| I | | D | I | D | I | D |
| 4B | 5.606e-5 | | 0.5879 | 5.904e-6 | 0.5453 | 5.904e-6 | 0.4848 |
| 16B | 1.796e-5 | | 0.5653 | 1.569e-6 | 0.5410 | 1.569e-6 | 0.5030 |
|  | | | | | | | |
|  | 4-Way Associative | | | | | | |
| 4KB | | | 16KB | | 64KB | |
| I | D | | I | D | I | D |
| 4B | 5.904e-6 | 0.6204 | | 5.904e-6 | 0.5802 | 1.569e-6 | 0.5325 |
| 16B | 1.570e-6 | 0.6051 | | 1.569e-6 | 0.5629 | 1.5693e-6 | 0.5325 |

|  |  |  |  |
| --- | --- | --- | --- |
| Sample\_large2.tr – Execution Time | | | |
|  | Direct Mapped | | |
| 4KB | 16KB | 64KB |
| 4B | 3100969355 | 2573746235 | 1829292715 |
| 16B | 3342154875 | 303935455 | 2483921995 |
|  | | | |
|  | 4-Way Associative | | |
| 4KB | 16KB | 64KB |
| 4B | 3649087835 | 3060527755 | 2992607515 |
| 16B | 3577136555 | 3328524075 | 2992607515 |

Experiment 2:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | L2 Miss Rate | | Total Execution Time | |
|  | Trace 1 | Trace 2 | Trace 1 | Trace 2 |
| 512KB, 4-Way | 0.2093 | 0.7380 | 414757805 | 1844992985 |
| 512KB, 8-Way | 0.2084 | 0.7439 | 447965961 | 2066107269 |
| 1MB, 8-Way | 0.1848 | 0.5731 | 430900059 | 1612970779 |

Findings: