CS 224 – Computer Organization

Bilkent University

CS

Lab Report

Lab 6

Section 1

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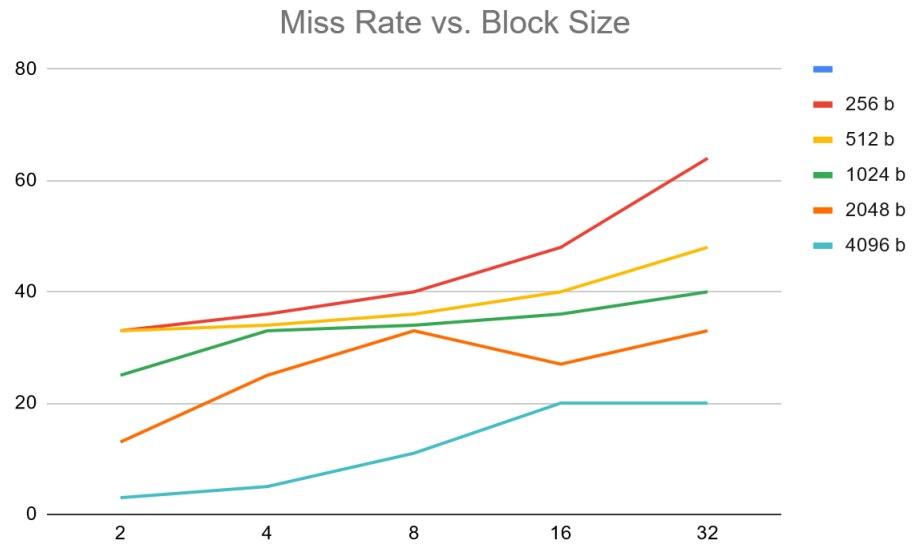
Wednesday, 1 December, 13:30-17:20

2.

a) Direct Mapped Cache

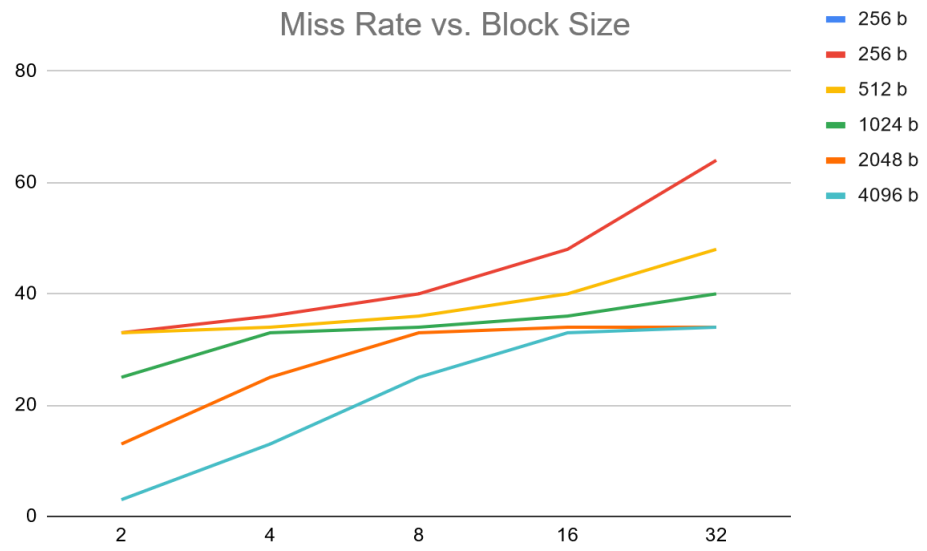
N = 50, Matrix Size 1

Block Size (words) / Cache Size (bytes)	2	4	8	16	32
256	MissRate 33% #ofMiss 10754	MissRate 36% #ofMiss 11387	MissRate 40% #ofMiss 12662	MissRate 48% #ofMiss 15212	MissRate 64% #ofMiss 20322
512	MissRate 33% #ofMiss 10430	MissRate 34% #ofMiss 10750	MissRate 36% #ofMiss 11384	MissRate 40% #ofMiss 12659	MissRate 48% #ofMiss 15209
1024	MissRate 25% #ofMiss 8068	MissRate 33% #ofMiss 10428	MissRate 34% #ofMiss 10748	MissRate 36% #ofMiss 11384	MissRate 40% #ofMiss 12659
2048	MissRate 13% #ofMiss 4088	MissRate 25% #ofMiss 8084	MissRate 33% #ofMiss 2084	MissRate 27% #ofMiss 2633	MissRate 33% #ofMiss 2097
4096	MissRate 3% #ofMiss 313	MissRate 5% #ofMiss 490	MissRate 11% #ofMiss 1002	MissRate 20% #ofMiss 1880	MissRate 20% #ofMiss 1881



N = 100, Matrix Size 2

Block Size (words) / Cache Size (bytes)	2	4	8	16	32
256	MissRate 30% #ofMiss 2733	MissRate 31% #ofMiss 2900	MissRate 35% #ofMiss 3234	MissRate 42% #ofMiss 3831	MissRate 54% #ofMiss 4965
512	MissRate 33% #ofMiss 2100	MissRate 30% #ofMiss 2731	MissRate 31% #ofMiss 2897	MissRate 34% #ofMiss 3150	MissRate 37% #ofMiss 3368
1024	MissRate 12% #ofMiss 1081	MissRate 33% #ofMiss 2099	MissRate 30% #ofMiss 2726	MissRate 30% #ofMiss 2784	MissRate 28% #ofMiss 2556
2048	MissRate 6% #ofMiss 535	MissRate 12% #ofMiss 1099	MissRate 33% #ofMiss 2085	MissRate 27% #ofMiss 2633	MissRate 34% #ofMiss 11384
4096	MissRate 3% #ofMiss 2068	MissRate 13% #ofMiss 4104	MissRate 25% #ofMiss 8084	MissRate 33% #ofMiss 10428	MissRate 34% #ofMiss 10748



b) Fully Associative Caches

N = 50, Matrix Size 1

	Good Hit Rate Cache Size: 4096 Block Size: 2	Medium Hit Rate Cache Size: 1024 Block Size: 8	Low Hit Rate Cache Size: 256 Block Size: 32
Direct Mapped	MissRate 3% #ofMiss 313	MissRate 34% #ofMiss 2727	MissRate 54% #ofMiss 4965
Fully Asscoiate (LRU)	MissRate 3% #ofMiss 290	MissRate 30% #ofMiss 2730	MissRate 57% #ofMiss 5272
Fully Asscoiate Random	MissRate 3% #ofMiss 310	MissRate 30% #ofMiss 2727	MissRate 54% #ofMiss 4971

N = 100, Matrix Size 2

	Good Hit Rate Cache Size: 4096 Block Size: 2	Medium Hit Rate Cache Size: 1024 Block Size: 8	Low Hit Rate Cache Size: 256 Block Size: 32
Direct Mapped	MissRate 3% #ofMiss 2068	MissRate 34% #ofMiss 10748	MissRate 64% #ofMiss 20322
Fully Asscoiate (LRU)	MissRate 7% #ofMiss 2066	MissRate 34% #ofMiss 10748	MissRate 64% #ofMiss 20322
Fully Asscoiate Random	MissRate 6% #ofMiss 2052	MissRate 34% #ofMiss 10749	MissRate 63% #ofMiss 20094

c) N-way Set Associative Caches

N = 50, Matrix Size 1

	Good Hit Rate Cache Size: 4096 Block Size: 8	Medium Hit Rate Cache Size: 1024 Block Size: 16	Low Hit Rate Cache Size: 256 Block Size: 32
1	MissRate 15% #ofMiss 1027	MissRate 31% #ofMiss 2898	MissRate 54% #ofMiss 4947
2	MissRate 12% #ofMiss 1102	MissRate 31% #ofMiss 2898	MissRate 57% #ofMiss 5272
4	MissRate 11% #ofMiss 1050	MissRate 31% #ofMiss 2898	MissRate 57% #ofMiss 5272
8	MissRate 12% #ofMiss 1102	MissRate 31% #ofMiss 2898	MissRate 60% #ofMiss 4015

N = 100, Matrix Size 2

	Good Hit Rate Cache Size: 4096 Block Size: 8	Medium Hit Rate Cache Size: 1024 Block Size: 8	Low Hit Rate Cache Size: 256 Block Size: 32
1	MissRate 25% #ofMiss 8068	MissRate 34% #ofMiss 10748	MissRate 63% #ofMiss 20362
2	MissRate 25% #ofMiss 8072	MissRate 34% #ofMiss 10748	MissRate 64% #ofMiss 20322
4	MissRate 25% #ofMiss 8084	MissRate 34% #ofMiss 10748	MissRate 64% #ofMiss 20322
8	MissRate 25% #ofMiss 8084	MissRate 34% #ofMiss 10748	MissRate 64% #ofMiss 20322