CS224
Lab No: 6
Section No: 06
Barış Tan Ünal
22003617

CS224 LAB 6 CACHE SIMULATOR REPORT

PART A.1) COLUMN WISE COPY

100x100 MATRIX

Block Size (words) / Cache Size (bytes)	128 words	256 words	512 words	1024 words	2048 words
8 MB	77% 15.644	39% 7.859	52% 10.582	75% 15.202	98% 20.002
16 MB	77% 19.620	38% 7.903	20% 4.003	10% 2.003	17% 3.503
32 MB	76% 15.644	37% 7.835	20% 4.003	10% 2.043	15% 3.002
64 MB	29% 5.822	15% 3.051	8% 1.626	5% 1.013	3% 607
128 MB	2% 160	1% 81	1% 41	1% 22	1% 13

Table 1.1, Miss rates and miss counts for given block and cache sizes
with LRU replacement policy for 100x100 matrix while performing column-wise copying.

60x60 MATRIX

Block Size (words) / Cache Size (bytes)	64 words	128 words	256 words	512 words	1024 words
4 MB	89% 6.757	45% 3.424	23% 1.743	12% 903	95% 7.202
8 MB	89% 6.756	45% 3.420	23% 1.743	12% 903	44% 3.342
16 MB	77% 5.843	39% 2.953	20% 1.525	11% 835	44% 3.314
32 MB	3% 117	2% 60	1% 31	1% 17	1% 10
64 MB	2% 117	1% 59	1% 31	1% 16	1% 10

Table 1.2, Miss rates and miss counts for given block and cache sizes
with LRU replacement policy for 60x60 matrix while performing column-wise copying.

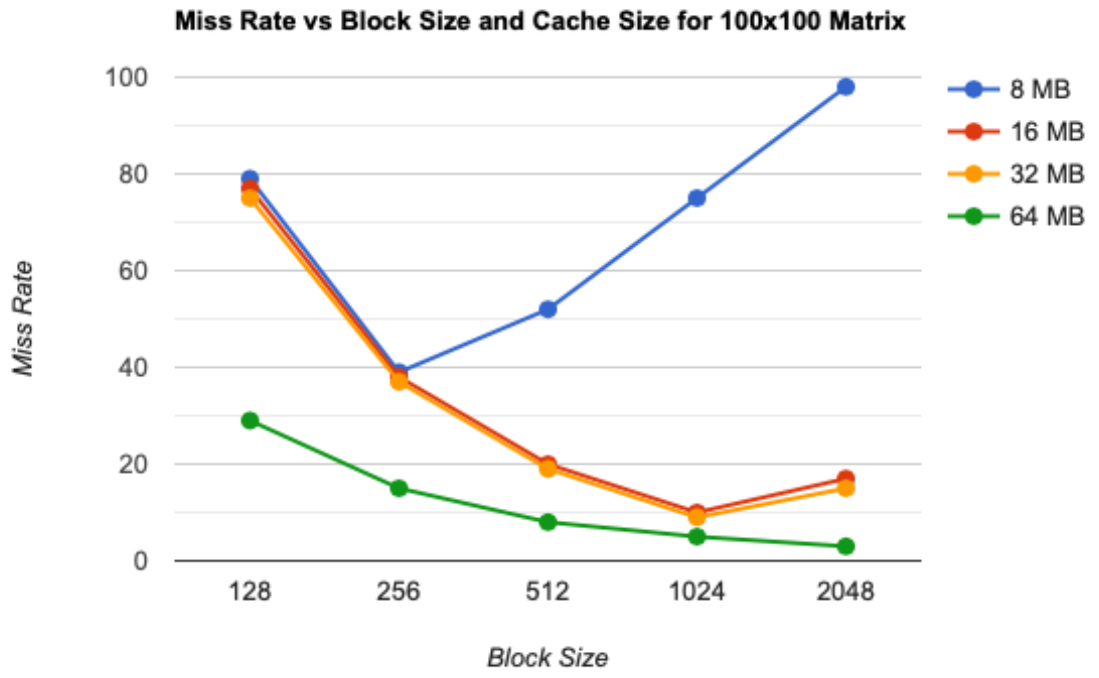

Table 2.1, Miss rate vs block size and cache size line chart for 100x100 matrix while performing column-wise copying.

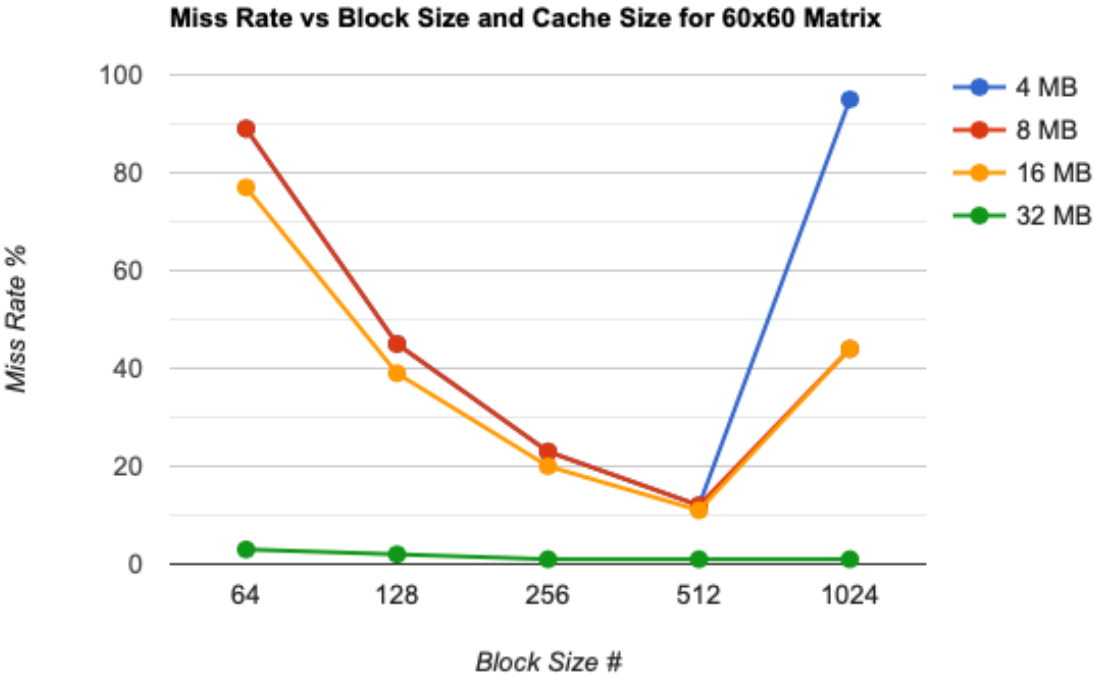

Table 2.2, Miss rate vs block size and cache size line chart for 60x60 matrix while performing column-wise copying.

PART A.2) ROW WISE COPY

100x100 MATRIX

Block Size (words) / Cache Size (bytes)	128 words	256 words	512 words	1024 words	2048 words
8 MB	99% 161	94% 1.252	52% 10.531	75% 15.202	98% 20.002
16 MB	2% 161	1% 82	1% 43	1% 24	12% 2.414
32 MB	2% 161	1% 82	1% 43	1% 24	10% 1.934
64 MB	2% 160	1% 81	1% 42	1% 22	1% 12
128 MB	2% 159	1% 81	1% 42	1% 21	1% 9

Table 2.1, Miss rates and miss counts for given block and cache sizes
with LRU replacement policy for 100x100 matrix while performing row-wise copying.

60x60 MATRIX

Block Size (words) / Cache Size (bytes)	64 words	128 words	256 words	512 words	1024 words
4 MB	2% 118	1% 61	1% 132	3% 258	5% 7.202
8 MB	2% 118	1% 61	1% 32	3% 228	45% 3.395
16 MB	77% 5.843	39% 2.953	20% 1.525	11% 835	44% 3.314
32 MB	2% 117	1% 61	1% 31	1% 17	1% 10
64 MB	2% 116	1% 59	1% 31	1% 17	1% 10

Table 2.2, Miss rates and miss counts for given block and cache sizes
with LRU replacement policy for 60x60 matrix while performing row-wise copying.

PART B)

100x100 MATRIX

	Hit Rate: Good Cache Size: 64MB Block Size: 1024	Hit Rate: Medium Cache Size: 16MB Block Size: 256	Hit Rate: Poor Cache Size: 8MB Block Size: 1014
Direct Mapped	4% 814	39% 7.899	75% 15.334
Fully Associative LRU	10% 2002	39% 7.903	11% 2.182
Fully Associative Random	5% 1051	40% 8.104	21% 4.242

Table 3.1, Miss rates and miss counts for three types of caches for 100x100 matrix while performing column-wise copying.

60x60 MATRIX

	Hit Rate: Good Cache Size: 32MB Block Size: 64	Hit Rate: Medium Cache Size: 16MB Block Size: 128	Hit Rate: Poor Cache Size: 4MB Block Size: 64
Direct Mapped	1% 60	40% 3.010	89% 6.757
Fully Associative LRU	1% 59	45% 3.412	89% 6.761
Fully Associative Random	1% 60	34% 2.607	90% 6.782

Table 3.2, Miss rates and miss counts for three types of caches for 60x60 matrix while performing column-wise copying.

PART C)

100x100 MATRIX

N-Way Set Associative Cache Set Size	Hit Rate: Good Cache Size: 64MB Block Size: 512	Hit Rate: Medium Cache Size: 16MB Block Size: 128	Hit Rate: Poor Cache Size: 32MB Block Size: 64
1	7% 1.490	77% 15.664	88% 18.030
2	12% 2.419	77% 15.652	91% 18.591
4	19% 3.852	77% 15.664	95% 19.344
8	20% 4.003	77% 15.664	98% 20.004

Table 4.1, Miss rates and miss counts for three types of caches for 100x100 matrix while performing column-wise copying.

60x60 MATRIX

N-Way Set Associative Cache Set Size	Hit Rate: Good Cache Size: 64MB Block Size: 512	Hit Rate: Medium Cache Size: 16MB Block Size: 32	Hit Rate: Poor Cache Size: 32MB Block Size: 64
1	7% 1.490	43% 3.224	88% 18.030
2	12% 2.419	56% 4.254	91% 18.591
4	19% 3.852	64% 4.870	95% 19.344
8	20% 4.003	4% 336	98% 20.004

Table 4.2, Miss rates and miss counts for three types of caches for 60x60 matrix while performing column-wise copying.