

CS224

Lab 6

Section 4

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MATRIX SIZE 1: 50

a) Direct Mapped Caches:

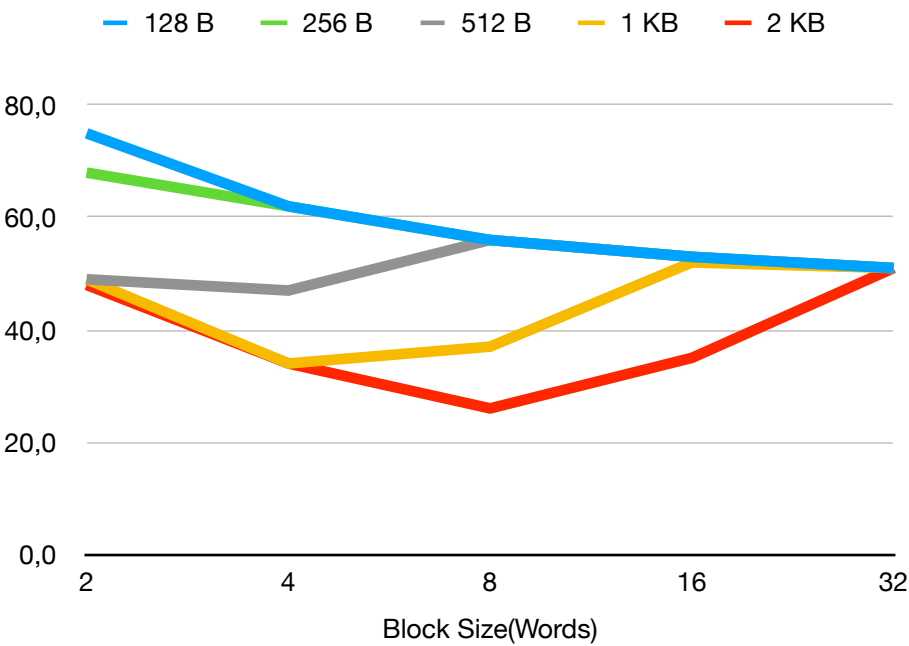
For Row-Major Addition:

Block Size \ Cache Size	128 B	256 B	512 B	1 KB	2 KB
2 words	Hit Rate: 25	Hit Rate: 32	Hit Rate: 51	Hit Rate: 51	Hit Rate: 52
	Miss Rate: 75	Miss Rate: 68	Miss Rate: 49	Miss Rate: 49	Miss Rate: 48
	# misses: 3759	# misses: 3409	# misses: 2513	# misses: 2604	# misses: 2455
4 words	Hit Rate: 38	Hit Rate: 38	Hit Rate: 52	Hit Rate: 66	Hit Rate: 66
	Miss Rate: 62	Miss Rate: 62	Miss Rate: 48	Miss Rate: 34	Miss Rate: 34
	# misses: 3132	# misses: 3132	# misses: 2398	# misses: 1721	# misses: 1724
8 words	Hit Rate: 44	Hit Rate: 44	Hit Rate: 44	Hit Rate: 63	Hit Rate: 74
	Miss Rate: 56	Miss Rate: 56	Miss Rate: 56	Miss Rate: 37	Miss Rate: 26
	# misses: 2819	# misses: 2819	# misses: 2819	# misses: 1843	# misses: 1324
16 words	Hit Rate: 47	Hit Rate: 47	Hit Rate: 47	Hit Rate: 48	Hit Rate: 65
	Miss Rate: 53	Miss Rate: 53	Miss Rate: 53	Miss Rate: 52	Miss Rate: 35
	# misses: 2662	# misses: 2662	# misses: 2662	# misses: 2663	# misses: 1775
32 words	Hit Rate: 49	Hit Rate: 49	Hit Rate: 49	Hit Rate: 49	Hit Rate: 49
	Miss Rate: 51	Miss Rate: 51	Miss Rate: 51	Miss Rate: 51	Miss Rate: 51
	# misses: 2584	# misses: 2584	# misses: 2585	# misses: 2586	# misses: 2584

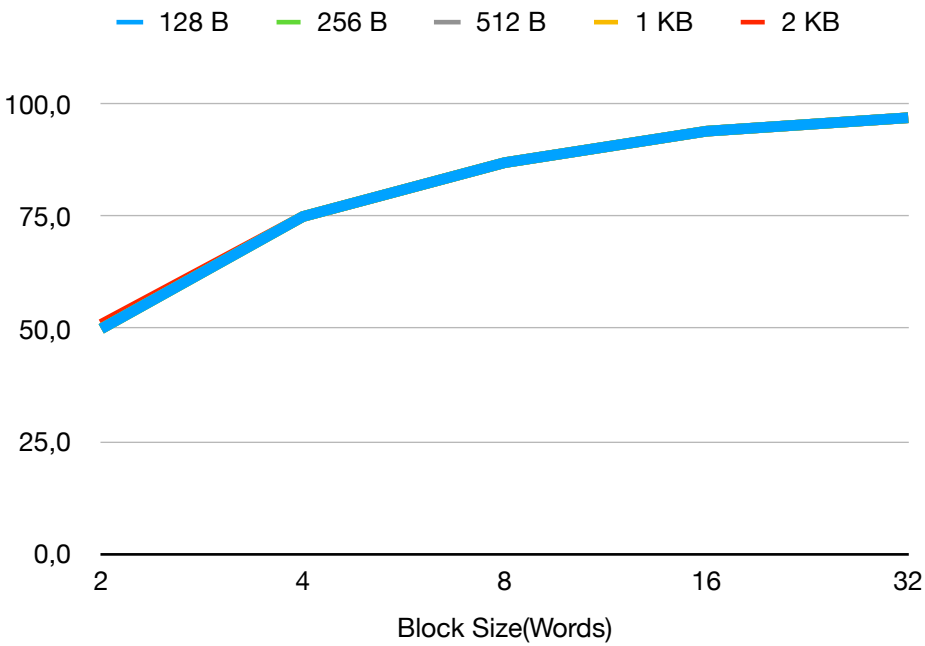
For Column-Major Addition:

Block Size \ Cache Size	128 B	256 B	512 B	1 KB	2 KB
2 words	Hit Rate: 50	Hit Rate: 50	Hit Rate: 50	Hit Rate: 50	Hit Rate: 51
	Miss Rate: 50	Miss Rate: 50	Miss Rate: 50	Miss Rate: 50	Miss Rate: 49
	# misses: 2508	# misses: 2508	# misses: 2508	# misses: 2508	# misses: 2504
4 words	Hit Rate: 75	Hit Rate: 75	Hit Rate: 75	Hit Rate: 75	Hit Rate: 75
	Miss Rate: 25	Miss Rate: 25	Miss Rate: 25	Miss Rate: 25	Miss Rate: 25
	# misses: 1256	# misses: 1259	# misses: 1259	# misses: 1256	# misses: 1256
8 words	Hit Rate: 87	Hit Rate: 87	Hit Rate: 87	Hit Rate: 87	Hit Rate: 87
	Miss Rate: 13	Miss Rate: 13	Miss Rate: 13	Miss Rate: 13	Miss Rate: 13
	# misses: 632	# misses: 632	# misses: 632	# misses: 632	# misses: 634
16 words	Hit Rate: 94	Hit Rate: 94	Hit Rate: 94	Hit Rate: 94	Hit Rate: 94
	Miss Rate: 6	Miss Rate: 6	Miss Rate: 6	Miss Rate: 6	Miss Rate: 6
	# misses: 319	# misses: 319	# misses: 319	# misses: 319	# misses: 319
32 words	Hit Rate: 97	Hit Rate: 97	Hit Rate: 97	Hit Rate: 97	Hit Rate: 97
	Miss Rate: 3	Miss Rate: 3	Miss Rate: 3	Miss Rate: 3	Miss Rate: 3
	# misses: 163	# misses: 163	# misses: 163	# misses: 163	# misses: 163

For Row-Major Addition:



For Column-Major Addition:



b) Fully Associative Caches:

	Direct Mapped	Fully Associative-LRU	Fully Associative-Random
Poor: 2 words 128 MB	Hit Rate: 25	Hit Rate: 25	Hit Rate: 27
	Miss Rate: 75	Miss Rate: 75	Miss Rate: 73
	# misses: 3759	# misses: 3759	# misses: 3702
Medium: 4 words 512 MB	Hit Rate: 52	Hit Rate: 25	Hit Rate: 48
	Miss Rate: 48	Miss Rate: 75	Miss Rate: 52
	# misses: 2398	# misses: 3132	# misses: 2609
Good: 8 words 2 KB	Hit Rate: 74	Hit Rate: 87	Hit Rate: 78
	Miss Rate: 26	Miss Rate: 13	Miss Rate: 22
	# misses: 1324	# misses: 667	# misses: 1117

c) N-way Set Associative Caches:

	N: 2	N: 4	N: 8	N: 16
Poor: 2 words 128 MB	Hit Rate: 25	Hit Rate: 25	Hit Rate: 25	Hit Rate: 25
	Miss Rate: 75	Miss Rate: 75	Miss Rate: 75	Miss Rate: 75
	# misses: 3759	# misses: 3759	# misses: 3759	# misses: 3759
Medium: 4 words 512 MB	Hit Rate: 40	Hit Rate: 38	Hit Rate: 38	Hit Rate: 38
	Miss Rate: 3006	Miss Rate: 62	Miss Rate: 62	Miss Rate: 62
	# misses: 3006	# misses: 3132	# misses: 3132	# misses: 3132
Good: 8 words 2 KB	Hit Rate: 83	Hit Rate: 86	Hit Rate: 87	Hit Rate: 87
	Miss Rate: 27	Miss Rate: 24	Miss Rate: 13	Miss Rate: 13
	# misses: 865	# misses: 690	# misses: 667	# misses: 668

MATRIX SIZE 2: 100

a) Direct Mapped Caches:

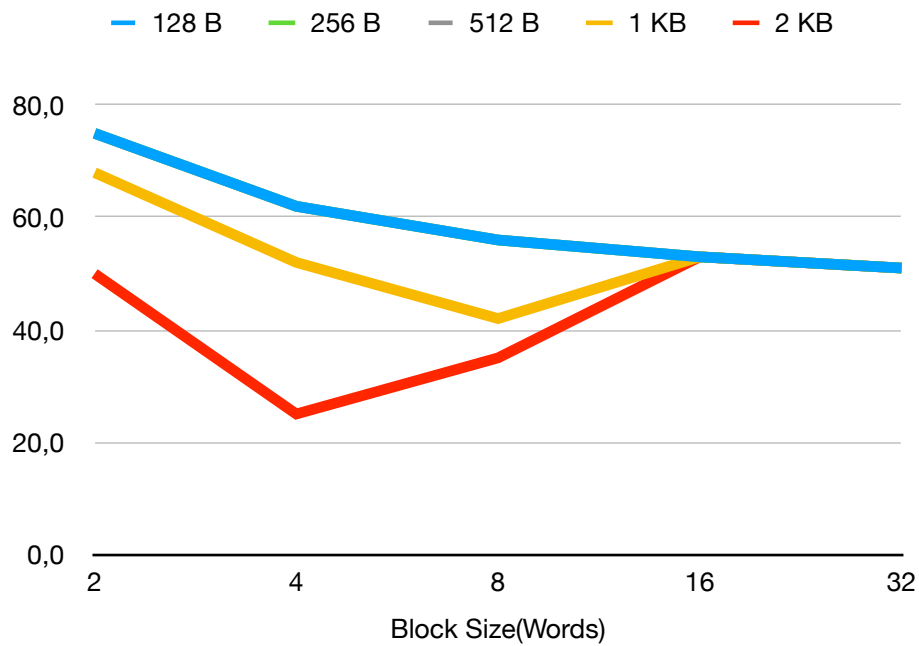
For Row-Major Addition:

Block Size \ Cache Size	128 B	256 B	512 B	1 KB	2 KB
2 words	Hit Rate: 25	Hit Rate: 25	Hit Rate: 25	Hit Rate: 32	Hit Rate: 50
	Miss Rate: 75	Miss Rate: 75	Miss Rate: 75	Miss Rate: 68	Miss Rate: 50
	# misses: 15009	# misses: 15015	# misses: 15009	# misses: 13069	# misses: 9999
4 words	Hit Rate: 38	Hit Rate: 38	Hit Rate: 38	Hit Rate: 48	Hit Rate: 75
	Miss Rate: 62	Miss Rate: 62	Miss Rate: 62	Miss Rate: 52	Miss Rate: 25
	# misses: 12507	# misses: 12507	# misses: 12507	# misses: 10407	# misses: 5002
8 words	Hit Rate: 44	Hit Rate: 44	Hit Rate: 44	Hit Rate: 58	Hit Rate: 65
	Miss Rate: 56	Miss Rate: 56	Miss Rate: 56	Miss Rate: 42	Miss Rate: 35
	# misses: 11256	# misses: 11256	# misses: 11256	# misses: 12509	# misses: 10411
16 words	Hit Rate: 47	Hit Rate: 47	Hit Rate: 47	Hit Rate: 47	Hit Rate: 47
	Miss Rate: 53	Miss Rate: 53	Miss Rate: 53	Miss Rate: 53	Miss Rate: 53
	# misses: 10631	# misses: 10630	# misses: 10631	# misses: 10631	# misses: 10631
32 words	Hit Rate: 49	Hit Rate: 49	Hit Rate: 49	Hit Rate: 49	Hit Rate: 49
	Miss Rate: 51	Miss Rate: 51	Miss Rate: 51	Miss Rate: 51	Miss Rate: 51
	# misses: 10319	# misses: 10319	# misses: 10319	# misses: 10319	# misses: 10319

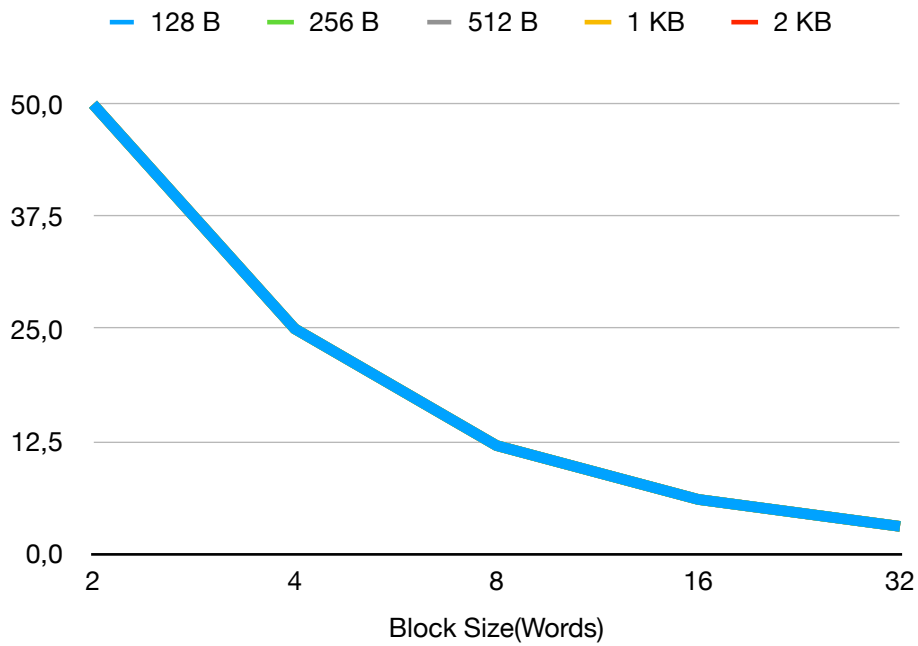
For Column-Major Addition:

Block Size \ Cache Size	128 B	256 B	512 B	1 KB	2 KB
2 words	Hit Rate: 50	Hit Rate: 50	Hit Rate: 50	Hit Rate: 50	Hit Rate: 50
	Miss Rate: 50	Miss Rate: 50	Miss Rate: 50	Miss Rate: 50	Miss Rate: 50
	# misses: 10018	# misses: 10018	# misses: 10008	# misses: 10008	# misses: 10008
4 words	Hit Rate: 75	Hit Rate: 75	Hit Rate: 75	Hit Rate: 75	Hit Rate: 75
	Miss Rate: 25	Miss Rate: 25	Miss Rate: 25	Miss Rate: 25	Miss Rate: 25
	# misses: 5009	# misses: 5009	# misses: 5009	# misses: 5009	# misses: 5009
8 words	Hit Rate: 88	Hit Rate: 88	Hit Rate: 88	Hit Rate: 88	Hit Rate: 88
	Miss Rate: 12	Miss Rate: 12	Miss Rate: 12	Miss Rate: 12	Miss Rate: 12
	# misses: 2508	# misses: 2508	# misses: 2508	# misses: 2508	# misses: 2508
16 words	Hit Rate: 94	Hit Rate: 94	Hit Rate: 94	Hit Rate: 94	Hit Rate: 94
	Miss Rate: 6	Miss Rate: 6	Miss Rate: 6	Miss Rate: 6	Miss Rate: 6
	# misses: 1256	# misses: 1256	# misses: 1256	# misses: 1256	# misses: 1256
32 words	Hit Rate: 97	Hit Rate: 97	Hit Rate: 97	Hit Rate: 97	Hit Rate: 97
	Miss Rate: 3	Miss Rate: 3	Miss Rate: 3	Miss Rate: 3	Miss Rate: 3
	# misses: 631	# misses: 631	# misses: 631	# misses: 631	# misses: 631

For Row-Major Addition:



For Column-Major Addition:



b) Fully Associative Caches:

	Direct Mapped	Fully Associative-LRU	Fully Associative-Random
Poor: 2 words 128 MB	Hit Rate: 25	Hit Rate: 25	Hit Rate: 25
	Miss Rate: 75	Miss Rate: 75	Miss Rate: 75
	# misses: 15009	# misses: 15009	# misses: 15003
Medium: 4 words 512 MB	Hit Rate: 38	Hit Rate: 38	Hit Rate: 39
	Miss Rate: 62	Miss Rate: 62	Miss Rate: 61
	# misses: 12507	# misses: 12507	# misses: 12132
Good: 8 words 2 KB	Hit Rate: 65	Hit Rate: 44	Hit Rate: 59
	Miss Rate: 35	Miss Rate: 56	Miss Rate: 41
	# misses: 10411	# misses: 11256	# misses: 8287

c) N-way Set Associative Caches:

	N: 2	N: 4	N: 8	N: 16
Poor: 2 words 128 MB	Hit Rate: 25	Hit Rate: 25	Hit Rate: 25	Hit Rate: 25
	Miss Rate: 75	Miss Rate: 75	Miss Rate: 75	Miss Rate: 75
	# misses: 15009	# misses: 15009	# misses: 15009	# misses: 15009
Medium: 4 words 512 MB	Hit Rate: 38	Hit Rate: 38	Hit Rate: 38	Hit Rate: 38
	Miss Rate: 62	Miss Rate: 62	Miss Rate: 62	Miss Rate: 62
	# misses: 12507	# misses: 12507	# misses: 12507	# misses: 12507
Good: 8 words 2 KB	Hit Rate: 46	Hit Rate: 44	Hit Rate: 44	Hit Rate: 44
	Miss Rate: 54	Miss Rate: 56	Miss Rate: 56	Miss Rate: 56
	# misses: 10764	# misses: 11256	# misses: 11256	# misses: 11256