

Bilkent University
Computer Science Department
CS224 – COMPUTER ORGANIZATION
Lab Report
Lab 6
Section 4
Seçkin Alp Kargı
22001942
8/12/2023

Part A:

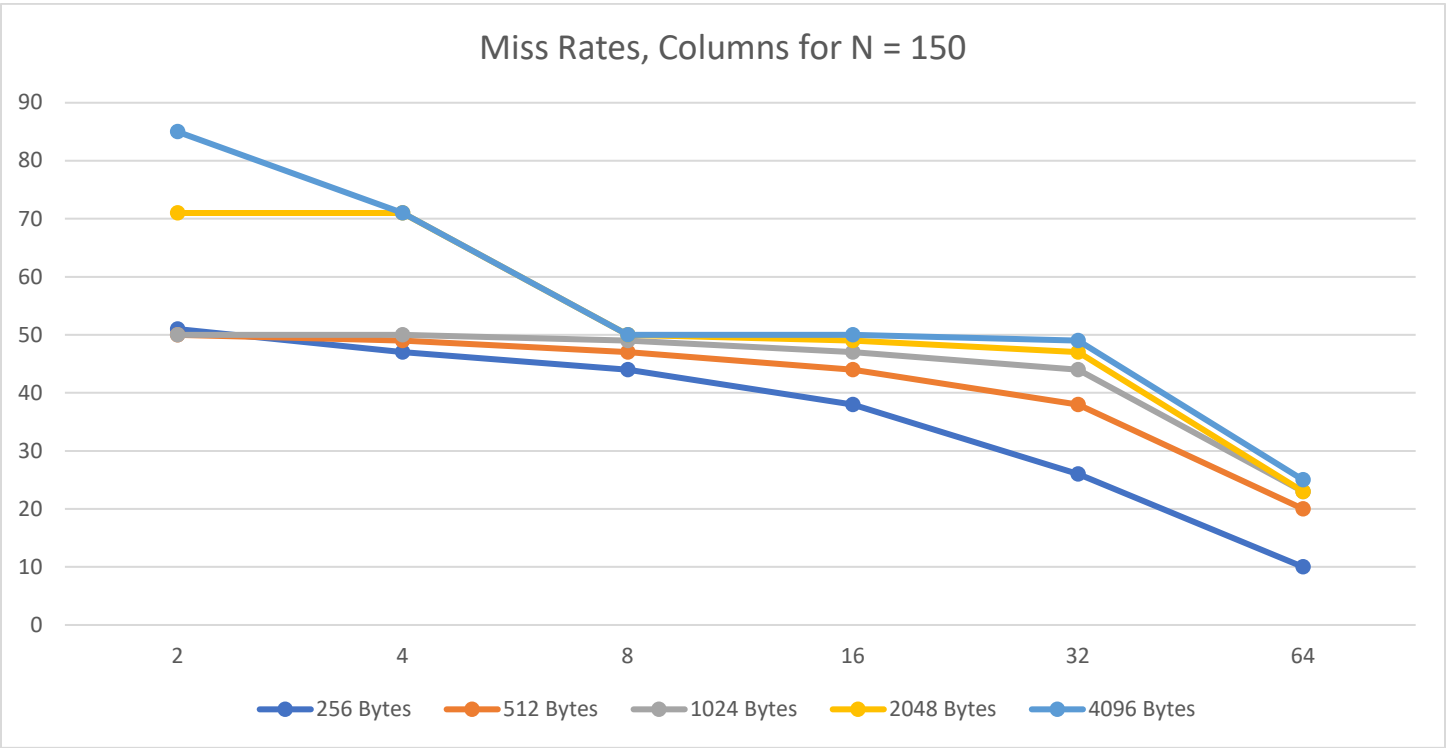
N = 150

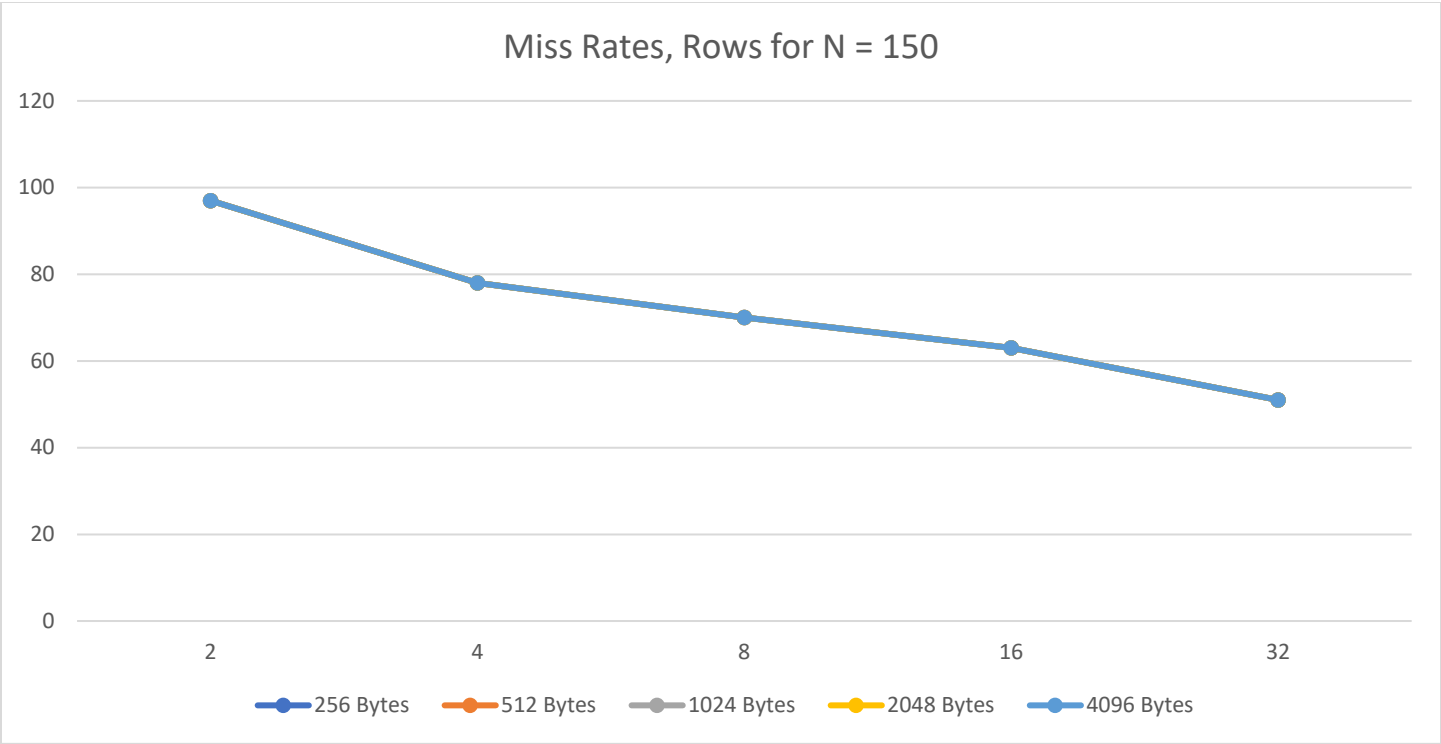
Column by Column

Cache Size (bytes)	Block Size (words)	2	4	8	16	32	64
256		Hit Rate: %49 Miss Rate: %51 Number Misses: 23369	Hit Rate: %47 Miss Rate: %53 Number Misses: 24079	Hit Rate: %44 Miss Rate: %56 Number Misses: 25491	Hit Rate: %38 Miss Rate: %62 Number Misses: 28326	Hit Rate: %26 Miss Rate: %74 Number Misses: 33993	Hit Rate: %10 Miss Rate: %90 Number Misses: 52412
512		Hit Rate: %50 Miss Rate: %50 Number Misses: 23009	Hit Rate: %49 Miss Rate: %51 Number Misses: 23364	Hit Rate: %47 Miss Rate: %53 Number Misses: 24074	Hit Rate: %44 Miss Rate: %56 Number Misses: 25490	Hit Rate: %38 Miss Rate: %62 Number Misses: 28326	Hit Rate: %20 Miss Rate: %80 Number Misses: 37216
1024		Hit Rate: %50 Miss Rate: %50 Number Misses: 22832	Hit Rate: %50 Miss Rate: %50 Number Misses: 23009	Hit Rate: %49 Miss Rate: %51 Number Misses: 23364	Hit Rate: %47 Miss Rate: %53 Number Misses: 24074	Hit Rate: %44 Miss Rate: %56 Number Misses: 25490	Hit Rate: %23 Miss Rate: %77 Number Misses: 34341
2048		Hit Rate: %71 Miss Rate: %29 Number Misses: 13416	Hit Rate: %50 Miss Rate: %50 Number Misses: 22832	Hit Rate: %50 Miss Rate: %50 Number Misses: 23009	Hit Rate: %49 Miss Rate: %51 Number Misses: 23364	Hit Rate: %47 Miss Rate: %53 Number Misses: 24074	Hit Rate: %23 Miss Rate: %77 Number Misses: 32314
4096		Hit Rate: %85 Miss Rate: %15 Number Misses: 6772	Hit Rate: %71 Miss Rate: %29 Number Misses: 13416	Hit Rate: %50 Miss Rate: %50 Number Misses: 22832	Hit Rate: %50 Miss Rate: %50 Number Misses: 23009	Hit Rate: %49 Miss Rate: %51 Number Misses: 23364	Hit Rate: %25 Miss Rate: %75 Number Misses: 30213

Row by Row

Cache Size (bytes)	Block Size (words)	2	4	8	16	32
256		Hit Rate: %97 Miss Rate: %3 Number Misses: 1423	Hit Rate: %94 Miss Rate: %06 Number Misses: 2835	Hit Rate: %88 Miss Rate: %12 Number Misses: 5654	Hit Rate: %75 Miss Rate: %25 Number Misses: 11302	Hit Rate: %51 Miss Rate: %49 Number Misses: 22594
512		Hit Rate: %97 Miss Rate: %3 Number Misses: 1423	Hit Rate: %94 Miss Rate: %06 Number Misses: 2834	Hit Rate: %88 Miss Rate: %12 Number Misses: 5653	Hit Rate: %75 Miss Rate: %25 Number Misses: 11302	Hit Rate: %51 Miss Rate: %49 Number Misses: 22593
1024		Hit Rate: %97 Miss Rate: %3 Number Misses: 1423	Hit Rate: %94 Miss Rate: %06 Number Misses: 2835	Hit Rate: %88 Miss Rate: %12 Number Misses: 5655	Hit Rate: %75 Miss Rate: %25 Number Misses: 11302	Hit Rate: %51 Miss Rate: %49 Number Misses: 22594
2048		Hit Rate: %97 Miss Rate: %3 Number Misses: 1423	Hit Rate: %94 Miss Rate: %06 Number Misses: 2836	Hit Rate: %88 Miss Rate: %12 Number Misses: 5655	Hit Rate: %75 Miss Rate: %25 Number Misses: 11302	Hit Rate: %51 Miss Rate: %49 Number Misses: 22595
4096		Hit Rate: %97 Miss Rate: %3 Number Misses: 1423	Hit Rate: %94 Miss Rate: %06 Number Misses: 2835	Hit Rate: %88 Miss Rate: %12 Number Misses: 5654	Hit Rate: %75 Miss Rate: %25 Number Misses: 11302	Hit Rate: %51 Miss Rate: %49 Number Misses: 22594





Part B:

	Good Hit Rate Cache Size (bytes):4096 Block Size (words):2	Medium Hit Rate Cache Size (bytes):1024 Block Size (words):4	Low Hit Rate Cache Size (bytes):256 Block Size (words):32
LRU - Fully Associative	Hit Rate: %51 Miss Rate: %49 Number Misses: 22662	Hit Rate: %38 Miss Rate: %62 Number Misses: 28326	Hit Rate: %49 Miss Rate: %51 Number Misses: 23372
Random – Fully Associative	Hit Rate: %47 Miss Rate: %53 Number Misses: 24456	Hit Rate: %40 Miss Rate: %60 Number Misses: 54714	Hit Rate: %49 Miss Rate: %51 Number Misses: 23370
Direct Mapped	Hit Rate: %51 Miss Rate: %49 Number Misses: 22644	Hit Rate: %42 Miss Rate: %58 Number Misses: 26588	Hit Rate: %49 Miss Rate: %51 Number Misses: 23369

Part C:

	Good Hit Rate Cache Size (bytes):4096 Block Size (words):2	Medium Hit Rate Cache Size (bytes):1024 Block Size (words):4	Low Hit Rate Cache Size (bytes):256 Block Size (words):32
4	Hit Rate: %51 Miss Rate: %49 Number Misses: 11311	Hit Rate: %38 Miss Rate: %62 Number Misses: 28326	Hit Rate: %49 Miss Rate: %51 Number Misses: 23372
8	Hit Rate: %51 Miss Rate: %49 Number Misses: 22660	Hit Rate: %38 Miss Rate: %62 Number Misses: 28326	Hit Rate: %49 Miss Rate: %51 Number Misses: 23370
16	Hit Rate: %51 Miss Rate: %49 Number Misses: 22659	Hit Rate: %38 Miss Rate: %62 Number Misses: 28316	Hit Rate: %49 Miss Rate: %51 Number Misses: 23369

Part A:

N = 100

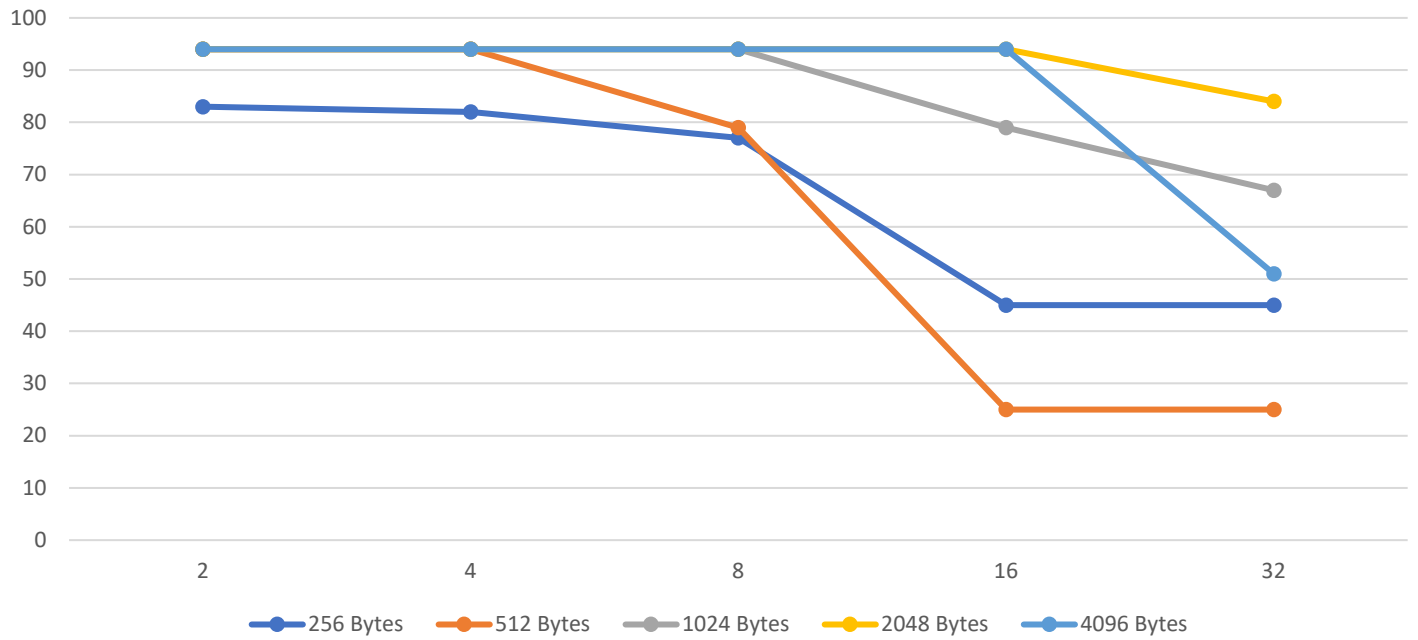
Column by Column

Cache Size (bytes)	Block Size (words)	2	4	8	16	32
256		Hit Rate: %73 Miss Rate: %27 Number Misses: 15192	Hit Rate: %94 Miss Rate: %6 Number Misses: 11212	Hit Rate: %94 Miss Rate: %6 Number Misses: 10313	Hit Rate: %94 Miss Rate: %6 Number Misses: 9412	Hit Rate: %94 Miss Rate: %6 Number Misses: 9792
512		Hit Rate: %82 Miss Rate: %18 Number Misses: 10242	Hit Rate: %94 Miss Rate: %6 Number Misses: 11200	Hit Rate: %94 Miss Rate: %6 Number Misses: 10213	Hit Rate: %94 Miss Rate: %6 Number Misses: 9451	Hit Rate: %94 Miss Rate: %6 Number Misses: 9852
1024		Hit Rate: %77 Miss Rate: %23 Number Misses: 9941	Hit Rate: %79 Miss Rate: %21 Number Misses: 9341	Hit Rate: %94 Miss Rate: %6 Number Misses: 10140	Hit Rate: %94 Miss Rate: %6 Number Misses: 9142	Hit Rate: %94 Miss Rate: %6 Number Misses: 9621
2048		Hit Rate: %45 Miss Rate: %55 Number Misses: 6124	Hit Rate: %25 Miss Rate: %75 Number Misses: 3561	Hit Rate: %79 Miss Rate: %21 Number Misses: 8510	Hit Rate: %94 Miss Rate: %6 Number Misses: 9051	Hit Rate: %94 Miss Rate: %6 Number Misses: 9892
4096		Hit Rate: %45 Miss Rate: %55 Number Misses: 6129	Hit Rate: %25 Miss Rate: %75 Number Misses: 3556	Hit Rate: %67 Miss Rate: %33 Number Misses: 8490	Hit Rate: %84 Miss Rate: %16 Number Misses: 8219	Hit Rate: %94 Miss Rate: %6 Number Misses: 9921

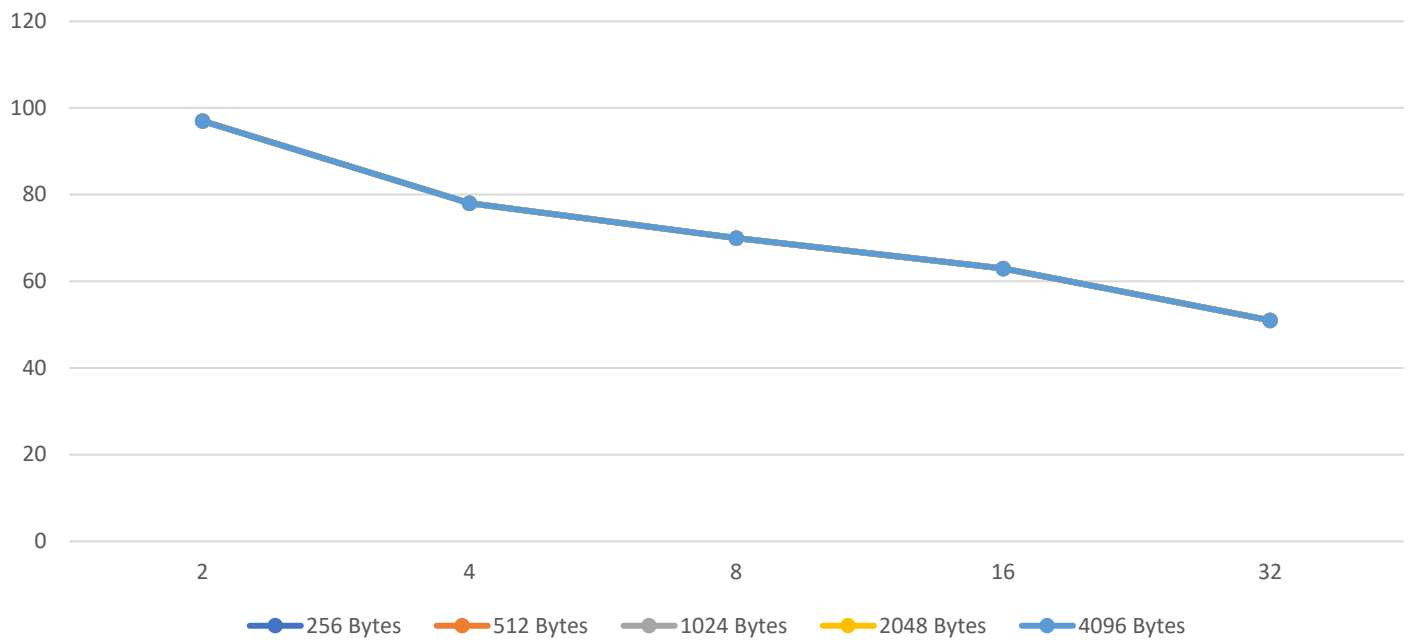
Row by Row

Cache Size (bytes)	Block Size (words)	2	4	8	16	32
256		Hit Rate: %47 Miss Rate: %53 Number Misses: 10093	Hit Rate: %27 Miss Rate: %73 Number Misses: 2581	Hit Rate: %15 Miss Rate: %85 Number Misses: 1392	Hit Rate: %9 Miss Rate: %91 Number Misses: 740	Hit Rate: %5 Miss Rate: %95 Number Misses: 290
512		Hit Rate: %47 Miss Rate: %53 Number Misses: 10093	Hit Rate: %27 Miss Rate: %73 Number Misses: 2580	Hit Rate: %15 Miss Rate: %85 Number Misses: 1393	Hit Rate: %9 Miss Rate: %91 Number Misses: 741	Hit Rate: %5 Miss Rate: %95 Number Misses: 290
1024		Hit Rate: %47 Miss Rate: %53 Number Misses: 10093	Hit Rate: %27 Miss Rate: %73 Number Misses: 2581	Hit Rate: %15 Miss Rate: %85 Number Misses: 1392	Hit Rate: %9 Miss Rate: %91 Number Misses: 742	Hit Rate: %5 Miss Rate: %95 Number Misses: 291
2048		Hit Rate: %47 Miss Rate: %53 Number Misses: 10093	Hit Rate: %27 Miss Rate: %73 Number Misses: 2581	Hit Rate: %15 Miss Rate: %85 Number Misses: 1391	Hit Rate: %9 Miss Rate: %91 Number Misses: 740	Hit Rate: %5 Miss Rate: %95 Number Misses: 291
4096		Hit Rate: %47 Miss Rate: %53 Number Misses: 10093	Hit Rate: %27 Miss Rate: %73 Number Misses: 2581	Hit Rate: %15 Miss Rate: %85 Number Misses: 1392	Hit Rate: %9 Miss Rate: %91 Number Misses: 740	Hit Rate: %5 Miss Rate: %95 Number Misses: 290

Miss Rates, Columns for N = 100



Miss Rates, Rows for N = 150



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	Good Hit Rate Cache Size (bytes):4096 Block Size (words):2	Medium Hit Rate Cache Size (bytes):1024 Block Size (words):4	Low Hit Rate Cache Size (bytes):256 Block Size (words):32
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8	Hit Rate: %51 Miss Rate: %49 Number Misses: 22660	Hit Rate: %38 Miss Rate: %62 Number Misses: 28326	Hit Rate: %49 Miss Rate: %51 Number Misses: 23370
16	Hit Rate: %51 Miss Rate: %49 Number Misses: 22659	Hit Rate: %38 Miss Rate: %62 Number Misses: 28316	Hit Rate: %49 Miss Rate: %51 Number Misses: 23369