CS224

Lab 6

Section 2

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PART1
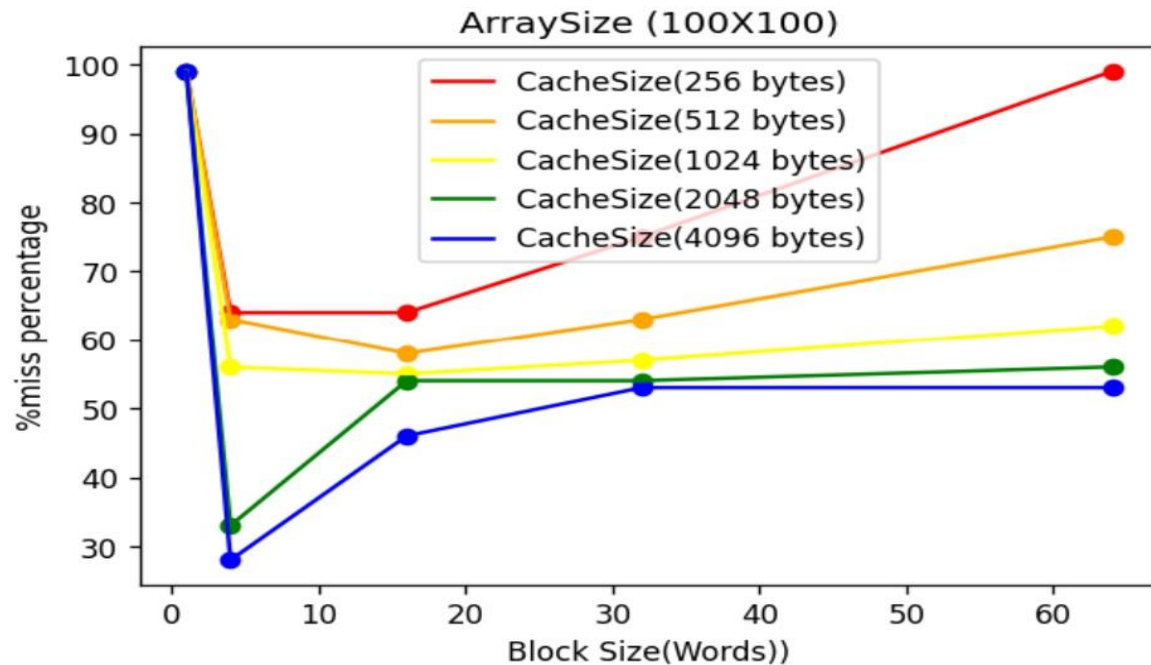
A)

BLOCK SIZE(Word) Cache Sıze(bytes)	1	4	16	32	64
256	Miss Rate: %99 #Misses:20057	Miss Rate: %25 #Misses:5015	Miss Rate: %6 #Misses:1255	Miss Rate: %49 #Misses:9989	Miss Rate: %99 #Misses:20003
512	Miss Rate: %99 #Misses:20057	Miss Rate: %25 #Misses:5023	Miss Rate: %6 #Misses:1255	Miss Rate: %3 #Misses:629	Miss Rate: %74 #Misses:14980
1024	Miss Rate: %99 #Misses:20057	Miss Rate: %25 #Misses:5015	Miss Rate: %6 #Misses:1255	Miss Rate: %3 #Misses:629	Miss Rate: %51 #Misses:10330
2048	Miss Rate: %99 #Misses:20057	Miss Rate: %25 #Misses:5015	Miss Rate: %6 #Misses:1255	Miss Rate: %3 #Misses:629	Miss Rate: %76 #Misses:15322
4096	Miss Rate: %99 #Misses:20057	Miss Rate: %25 #Misses:5015	Miss Rate: %6 #Misses:1255	Miss Rate: %3 #Misses:629	Miss Rate: %2 #Misses:316

(Row Major Copy – Matrix Size 100X100)

BLOCK SIZE(Word) / Cache Sıze(bytes)	1	4	16	32	64
256	Miss Rate: %99 #Misses:20057	Miss Rate: %64 #Misses:12978	Miss Rate: %64 #Misses:12970	Miss Rate: %75 #Misses:15160	Miss Rate: %99 #Misses:20003
512	Miss Rate: %99 #Misses:20057	Miss Rate: %63 #Misses:12750	Miss Rate: %58 #Misses:11803	Miss Rate: %63 #Misses:12737	Miss Rate: %75 #Misses:15084
1024	Miss Rate: %99 #Misses:20057	Miss Rate: %56 #Misses:11378	Miss Rate: %55 #Misses:11212	Miss Rate: %57 #Misses:11526	Miss Rate: %62 #Misses:12620
2048	Miss Rate: %99 #Misses:20057	Miss Rate: %33 #Misses:6580	Miss Rate: %54 #Misses:10922	Miss Rate: %54 #Misses:10925	Miss Rate: %56 #Misses:11395
4096	Miss Rate: %99 #Misses:20057	Miss Rate: %28 #Misses:5740	Miss Rate: %46 #Misses:9303	Miss Rate: %53 #Misses:10625	Miss Rate: %53 #Misses:10774

(Column Major Copy – Matrix Size 100X100)

Column Major(Plot)

ArraySize (100X100)

Legend:
- CacheSize(256 bytes) — red
- CacheSize(512 bytes) — orange
- CacheSize(1024 bytes) — yellow
- CacheSize(2048 bytes) — green
- CacheSize(4096 bytes) — blue

Y-axis: %miss percentage
X-axis: Block Size(Words))

GOOD PAIR	MEDIUM PAIR	BAD PAIR
Block Size: 4	Block Size:16	Block Size:1
Cache Size: 4096byte	Cache Size:1024	Cache Size:1024
Miss Rate: %28	Miss Rate:%55	Miss Rate:%99

B)

	GOOD Block Size: 4 word CacheSize:4096bytes	MED Block Size: 16 word CacheSize:1024bytes	BAD Block Size: 1 word CacheSize:1024bytes
Direct Mapped	Miss Rate: %28 #Misses:5740	Miss Rate: %55 #Misses:11212	Miss Rate: %99 #Misses:20057
Fully Ass. LRU	Miss Rate:%25 #Misses:5015	Miss Rate: %53 #Misses:10630	Miss Rate:%99 #Misses:20057
Fully Ass. Random	Miss Rate:%32 #Misses:6480	Miss Rate:%56 #Misses:11229	Miss Rate:%99 #Misses:20057

C)

SET SIZE	GOOD Block Size: 4 word CacheSize:4096bytes	MED Block Size: 16 word CacheSize:1024bytes	BAD Block Size: 1 word CacheSize:1024bytes
4	Miss Rate: %25 #Misses: 5015	Miss Rate: %53 #Misses: 10630	Miss Rate: %99 #Misses:20057

8	Miss Rate: %25 #Misses: 5015	Miss Rate: %53 #Misses: 10630	Miss Rate: %99 #Misses:20057
16	Miss Rate: %25 #Misses: 5015	Miss Rate: %53 #Misses: 10630	Miss Rate: %99 #Misses:20057
32	Miss Rate: %25 #Misses: 5015	X (Not possible)	Miss Rate: %99 #Misses:20057

PART 2

A)

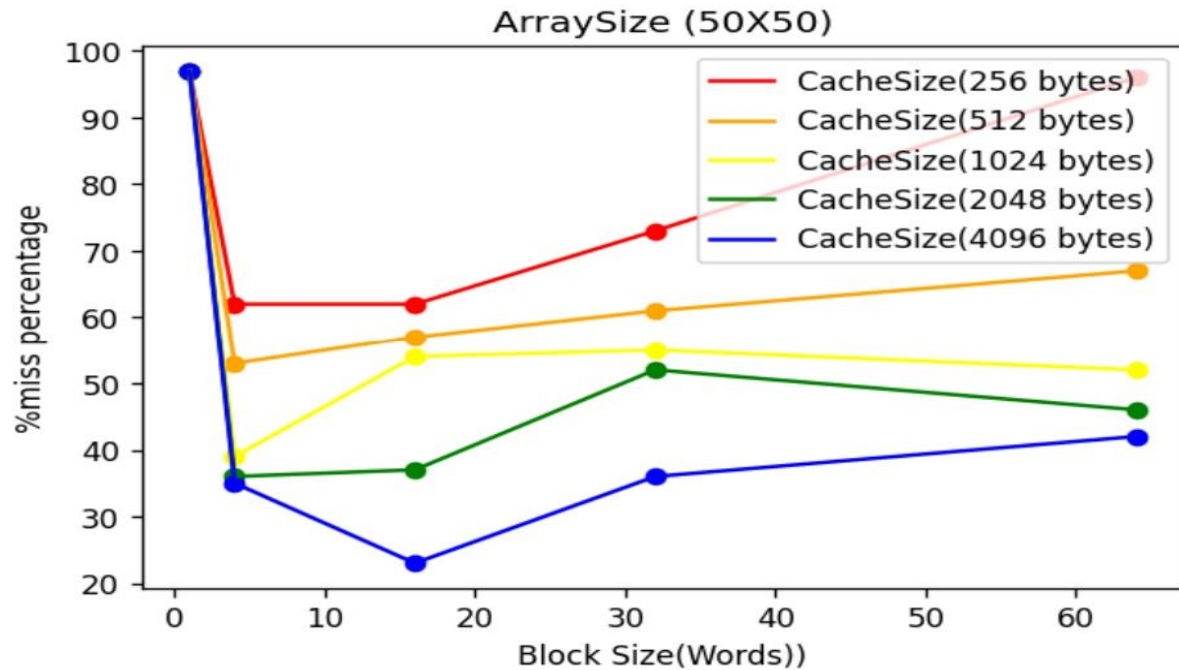| BLOCK SIZE(Words) Cache Sıze(bytes)	1	4	16	32	64
256	Miss Rate: %97 #Misses:5057	Miss Rate: %24 #Misses:1265	Miss Rate: %30 #Misses:12970	Miss Rate: %60 #Misses:3125	Miss Rate: %96 #Misses:5003
512	Miss Rate: %97 #Misses:5057	Miss Rate: %24 #Misses:1265	Miss Rate: %6 #Misses:319	Miss Rate: %72 #Misses:3749	Miss Rate: %49 #Misses:2584
1024	Miss Rate: %97 #Misses:5057	Miss Rate: %24 #Misses:1265	Miss Rate: %6 #Misses:319	Miss Rate: %3 #Misses:161	Miss Rate: %2 #Misses:82
2048	Miss Rate: %97 #Misses:5057	Miss Rate: %24 #Misses:1265	Miss Rate: %6 #Misses:319	Miss Rate: %3 #Misses:161	Miss Rate: %38 #Misses:1960
4096	Miss Rate: %97 #Misses:5057	Miss Rate: %24 #Misses:1265	Miss Rate: %6 #Misses:319	Miss Rate: %3 #Misses:161	Miss Rate: %66 #Misses:3436

(Row Major Copy – Matrix Size 50X50)

BLOCK SIZE(Words)	1	4	16	32	64

Cache Size(bytes)					
256	Miss Rate: %97 #Misses:5057	Miss Rate: %62 #Misses:3258	Miss Rate: %62 #Misses:3247	Miss Rate: %73 #Misses:3790	Miss Rate: %96 #Misses:5003
512	Miss Rate: %97 #Misses:5057	Miss Rate: %53 #Misses:2767	Miss Rate: %57 #Misses:2957	Miss Rate: %61 #Misses:3185	Miss Rate: %67 #Misses:3476
1024	Miss Rate: %97 #Misses:5057	Miss Rate: %39 #Misses:2040	Miss Rate: %54 #Misses:2807	Miss Rate: %55 #Misses:2885	Miss Rate: %52 #Misses:2732
2048	Miss Rate: %97 #Misses:5057	Miss Rate: %36 #Misses:1892	Miss Rate: %37 #Misses:1938	Miss Rate: %52 #Misses:2736	Miss Rate: %46 #Misses:2378
4096	Miss Rate: %97 #Misses:5057	Miss Rate: %35 #Misses:1814	Miss Rate: %23 #Misses:1211	Miss Rate: %36 #Misses:1863	Miss Rate: %42 #Misses:2202

(Column Major Copy – Matrix Size 50X50)

Column Major(Plot)

ArraySize (50X50)

GOOD PAIR	MEDIUM PAIR	BAD PAIR
Block Size: 16	Block Size:32	Block Size:1
Cache Size: 4096byte	Cache Size:1024	Cache Size:1024
Miss Rate: %23	Miss Rate:%55	Miss Rate:%97

B)

	GOOD Block Size: 16 word CacheSize:4096bytes	MED Block Size: 32 word CacheSize:1024bytes	BAD Block Size: 1 word CacheSize:1024bytes
Direct Mapped	Miss Rate: %23 #Misses:1211	Miss Rate: %55 #Misses:2885	Miss Rate: %97 #Misses:5057
Fully Ass. LRU	Miss Rate: %7 #Misses: 362	Miss Rate: %49 #Misses:2582	Miss Rate: %97 #Misses:5057
Fully Ass. Random	Miss Rate: %17 #Misses: 888	Miss Rate: %55 #Misses:2847	Miss Rate: %97 #Misses:5057

C)

SET SIZE	GOOD Block Size: 16 word CacheSize:4096bytes	MED Block Size: 32 word CacheSize:1024bytes	BAD Block Size: 1 word CacheSize:1024bytes

4	Miss Rate:%14 #Misses:734	Miss Rate: %49 #Misses:2582	Miss Rate: %97 #Misses:5057
8	Miss Rate: %7 #Misses: 362	Miss Rate: %49 #Misses:2582	Miss Rate: %97 #Misses:5057
16	Miss Rate: %7 #Misses: 362	X	Miss Rate: %97 #Misses:5057
32	Miss Rate: %7 #Misses: 362	X	Miss Rate: %97 #Misses:5057