

Csc656 Computer Organization and Architecture  
Prof. Dr Bill Hsu

Hasan Niftiyev  
916372553

Project 2  
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## System One:

To Compile : make

or javac sys1.java CacheSimulator.java

To Run : java sys1 Traces/sample.trace 16 -v ic1 ic2

```
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ make clean; make
rm -f *.class
javac -g sys1.java
javac -g kWayCacheSimulator.java
javac -g sys2.java
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys1 Traces/blowfish.xex 16 -v 0 10
0 1ff 2fe7f 0 0 0 0 2a
1 1ff 2fe7f 1 2fe7f 0 1 1
2 202 2fe7f 0 0 0 0 2a
3 201 2fe7f 0 0 0 0 2a
4 4a 202d 0 0 0 0 2a
5 4a 202d 1 202d 0 1 1
6 200 2fe7f 0 0 0 0 2a
7 200 2fe7f 1 2fe7f 0 1 1
8 200 2fe7f 1 2fe7f 0 1 1
9 201 2fe7f 1 2fe7f 0 1 1
10 201 2fe7f 1 2fe7f 0 1 1

direct-mapped, writeback, size = 16KB
loads 60773 stores 39227 total 100000
rmiss 356 wmiss 64 total 420
dirty rmiss 26 dirty wmiss 0
bytes read 6720 bytes written 416
read time 91333 write time 44347
total time 135680
miss rate 0.0042
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$
```

## System Two:

To Compile : make (optional)

or javac sys2.java kWayCacheSimulator.java (optional)

To Run : java sys2 Traces/sample.trace 16 4 -v ic1 ic2

```
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys2 Traces/blowfish.xex 16 4 -v 0 10
0 ff bf9fd 0 0 0 0 2a
1 ff bf9fd 1 0 0 bf9fd 0 1 1
2 2 bf9fe 0 0 0 0 2a
3 1 bf9fe 0 0 0 0 2a
4 4a 80b4 0 0 0 0 2a
5 4a 80b4 1 0 4 80b4 0 1 1
6 0 bf9fe 0 0 0 0 2a
7 0 bf9fe 1 0 6 bf9fe 0 1 1
8 0 bf9fe 1 0 7 bf9fe 0 1 1
9 1 bf9fe 1 0 3 bf9fe 0 1 1
10 1 bf9fe 1 0 9 bf9fe 0 1 1

4-way, writeback, size = 16KB
loads 60773 stores 39227 total 100000
rmiss 334 wmiss 62 total 396
dirty rmiss 0 dirty wmiss 0
bytes read 6336 bytes written 0
read time 87493 write time 44187
total time 131680
miss rate 0.00396
```

## Measurements and results

1 : blowfish 2: mad	Benchmark 1 miss rate	Benchmark 1 tot. access time	Benchmark 2 tot. access time	Benchmark 2 tot. access time
System 1a ( 1KB - DirectMapped )	0.10598	1226880	0.13095	1473840
System 1b ( 2KB - DirectMapped )	0.053	587040	0.10227	1180480
System 2a ( 1KB 2-way )	0.06871	715520	0.10951	1248160
System 2b ( 1KB 4-way )	0.06816	705920	0.09977	1146640
System 2c ( 2KB 2-way )	0.04785	520720	0.09438	1094640
System 2d ( 2KB 4-way )	0.04547	489360	0.09127	1062400

```
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys1 Traces/blowfish.xex 1
```

```
direct-mapped, writeback, size = 1KB  
loads 60773 stores 39227 total 100000  
rmiss 9049 wmiss 1549 total 10598  
dirty rmiss 2565 dirty wmiss 923  
bytes read 169568 bytes written 55808  
read time 989893 write time 236987  
total time 1226880  
miss rate 0.10598
```

```
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys1 Traces/mad.xex 1
```

```
direct-mapped, writeback, size = 1KB  
loads 73901 stores 26099 total 100000  
rmiss 9573 wmiss 3522 total 13095  
dirty rmiss 2732 dirty wmiss 1346  
bytes read 209520 bytes written 65248  
read time 1058301 write time 415539  
total time 1473840  
miss rate 0.13095
```

```
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys1 Traces/blowfish.xex 2
```

```
direct-mapped, writeback, size = 2KB  
loads 60773 stores 39227 total 100000  
rmiss 4764 wmiss 536 total 5300  
dirty rmiss 676 dirty wmiss 112  
bytes read 84800 bytes written 12608  
read time 495973 write time 91067  
total time 587040  
miss rate 0.053
```

```
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys1 Traces/mad.xex 2
```

```
direct-mapped, writeback, size = 2KB  
loads 73901 stores 26099 total 100000  
rmiss 7378 wmiss 2849 total 10227  
dirty rmiss 2622 dirty wmiss 657  
bytes read 163632 bytes written 52464  
read time 873901 write time 306579  
total time 1180480  
miss rate 0.10227
```

```
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys2 Traces/blowfish.xex 1 2
```

```
2-way, writeback, size = 1KB  
loads 60773 stores 39227 total 100000  
rmiss 6312 wmiss 559 total 6871  
dirty rmiss 720 dirty wmiss 103  
bytes read 109936 bytes written 13168  
read time 623333 write time 92187  
total time 715520  
miss rate 0.06871
```

```
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys2 Traces/mad.xex 1 2
```

```
2-way, writeback, size = 1KB  
loads 73901 stores 26099 total 100000  
rmiss 7854 wmiss 3097 total 10951  
dirty rmiss 2308 dirty wmiss 1093  
bytes read 175216 bytes written 54416  
read time 886861 write time 361299  
total time 1248160  
miss rate 0.10951
```

```
Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$
```

```
[Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys2 Traces/blowfish.xex 1 4
```

```
4-way, writeback, size = 1KB  
loads 60773 stores 39227 total 100000  
rmiss 6302 wmiss 514 total 6816  
dirty rmiss 757 dirty wmiss 1  
bytes read 109056 bytes written 12128  
read time 625493 write time 80427  
total time 705920  
miss rate 0.06816
```

```
[Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys2 Traces/mad.xex 1 4
```

```
4-way, writeback, size = 1KB  
loads 73901 stores 26099 total 100000  
rmiss 7027 wmiss 2950 total 9977  
dirty rmiss 2012 dirty wmiss 1094  
bytes read 159632 bytes written 49696  
read time 797021 write time 349619  
total time 1146640  
miss rate 0.09977
```

```
[Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys2 Traces/blowfish.xex 2 2
```

```
2-way, writeback, size = 2KB  
loads 60773 stores 39227 total 100000  
rmiss 4486 wmiss 299 total 4785  
dirty rmiss 420 dirty wmiss 54  
bytes read 76560 bytes written 7584  
read time 453253 write time 67467  
total time 520720  
miss rate 0.04785
```

```
[Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys2 Traces/mad.xex 2 2
```

```
2-way, writeback, size = 2KB  
loads 73901 stores 26099 total 100000  
rmiss 6859 wmiss 2579 total 9438  
dirty rmiss 2310 dirty wmiss 685  
bytes read 151008 bytes written 47920  
read time 807421 write time 287219  
total time 1094640  
miss rate 0.09438
```

```
[Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys2 Traces/blowfish.xex 2 4
```

```
4-way, writeback, size = 2KB  
loads 60773 stores 39227 total 100000  
rmiss 4354 wmiss 193 total 4547  
dirty rmiss 315 dirty wmiss 5  
bytes read 72752 bytes written 5120  
read time 434293 write time 55067  
total time 489360  
miss rate 0.04547
```

```
[Hasans-MacBook-Pro:NiftiyevHasan-csc656-Project2 Ditdo$ java sys2 Traces/mad.xex 2 4
```

```
4-way, writeback, size = 2KB  
loads 73901 stores 26099 total 100000  
rmiss 6598 wmiss 2529 total 9127  
dirty rmiss 2363 dirty wmiss 540  
bytes read 146032 bytes written 46448  
read time 790781 write time 271619  
total time 1062400  
miss rate 0.09127
```

