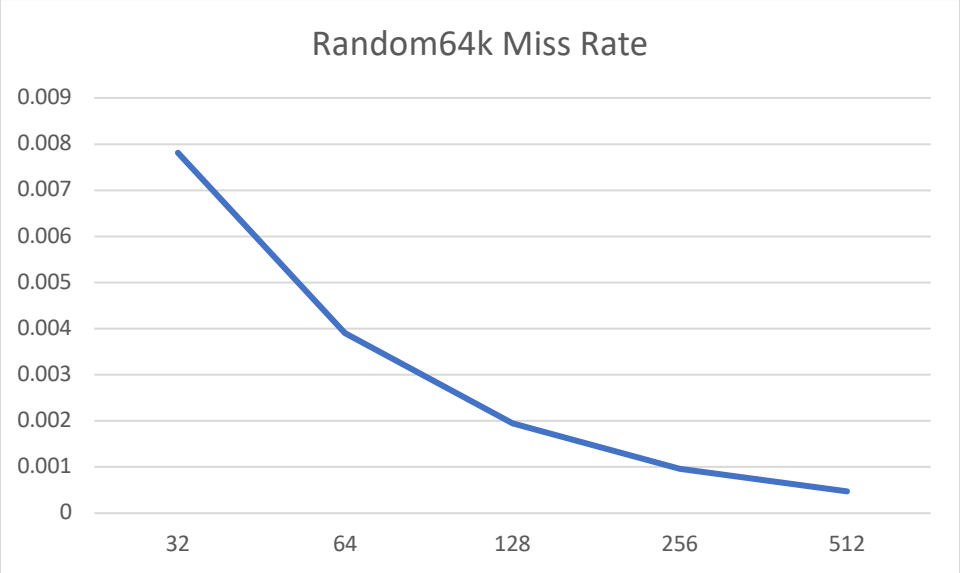
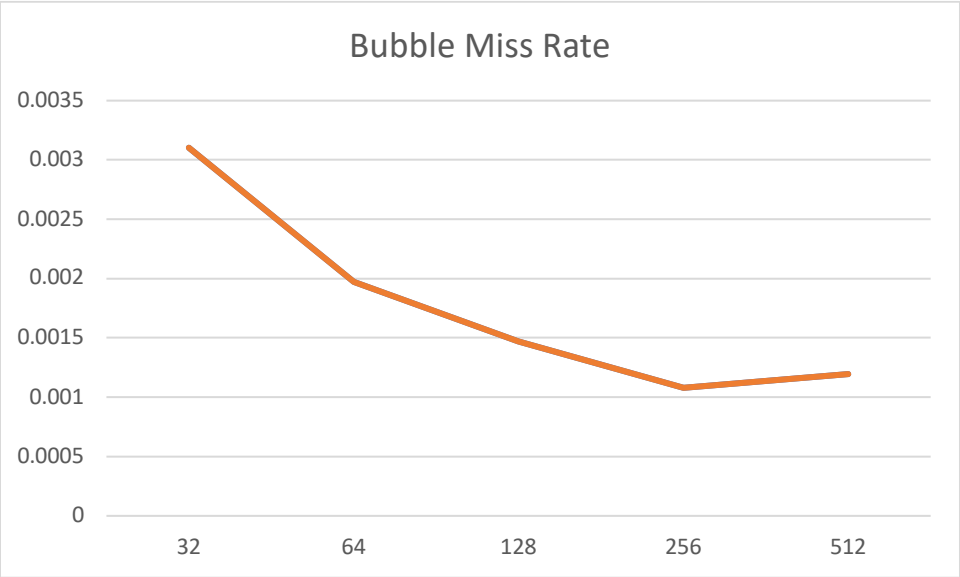
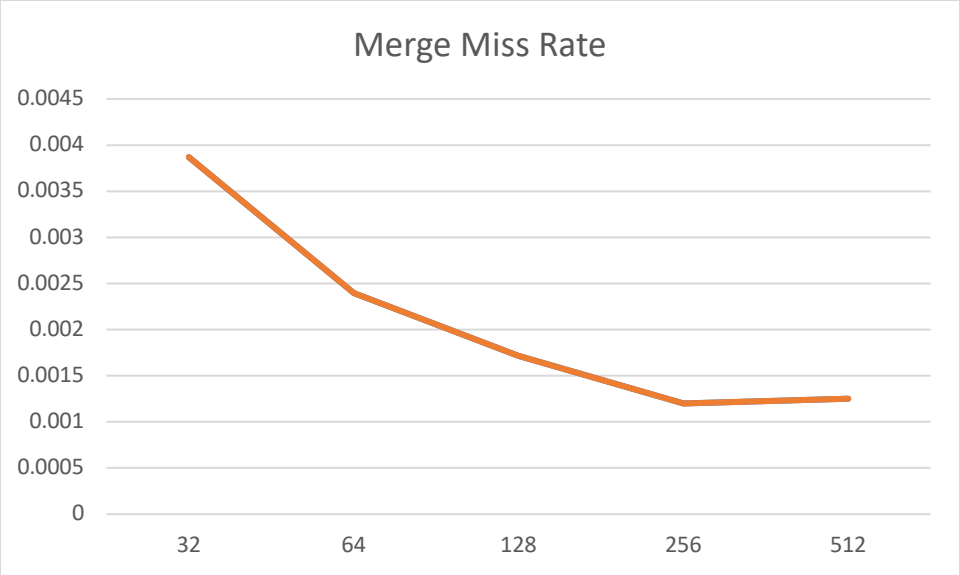
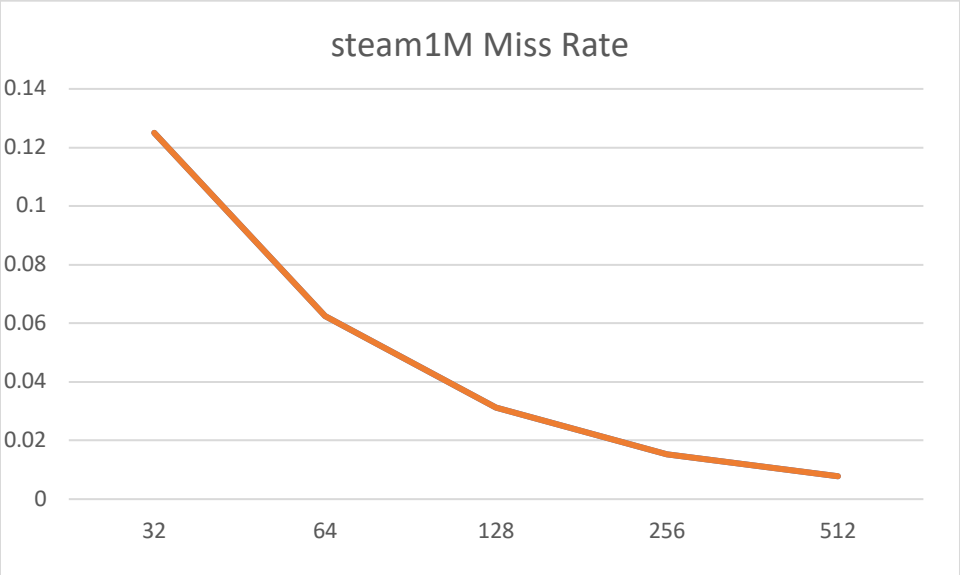
1.


Random64k Miss Rate
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
32
64
128
256
512


Bubble Miss Rate
0.0035
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
32
64
128
256
512





Random64k	Accesses	Hits	Misses	Writebacks
32	262144	260096	2048	0
64	262144	261120	1024	0
128	262144	261632	512	0
256	262144	259802	254	0
512	262144	253631	124	0

Bubble	Accesses	Hits	Misses	Writebacks
32	6322343	6302726	19617	6545
64	6322343	6309889	12454	3935
128	6322343	6313038	9305	2609
256	6322343	6202261	6824	1903
512	6322343	6314802	7541	1705

Merge	Accesses	Hits	Misses	Writebacks
32	7678430	7648727	29703	12571
64	7678430	7660054	18376	7285
128	7678430	7665234	13196	4576
256	7678430	7636195	9209	3041
512	7678430	7668811	9619	2489

stream1M	Accesses	Hits	Misses	Writebacks
32	262144	229376	32768	0
64	262144	245760	16384	0
128	262144	253952	8192	0
256	262144	254142	4024	0
512	262144	260096	2048	0

Random64k	Miss rate
32	0.0078125
64	0.00390625
128	0.00195313
256	0.00096893
512	0.00047302

Bubble	Miss Rate
32	0.00310281
64	0.00196984
128	0.00147176
256	0.00107935
512	0.00119275

Merge	Miss Rate
32	0.00386837
64	0.0023932
128	0.00171858
256	0.00119933
512	0.00125273

stream1M	Miss Rate
32	0.125
64	0.0625
128	0.03125
256	0.01535034
512	0.0078125

Bytes	Total Miss Rate
32	0.13978367
64	0.07076929
128	0.03639347
256	0.01859796
512	0.01073101

2.

512 Bytes	Overall	Read	Write
Random64k	0.00049178	0.0004881	0
Merge	0.00125273	0.00130929	0.00092619
Bubble	0.00026968	0.00122008	0.00095683
Stream1M	0.0078125	0.0078125	0

3. Random64k = 0
   Bubble = 512 * 1705 = 872860
   Stream1M = 0 =
   Merge = 512 * 2489 = 1274368
   Writeback * 512
4. Misses * 512
   Random64k = 512 * 124 = 63488
   Bubble = 512 * 7541 = 3860992
   Stream1M = 512 * 2048 = 1048576
   Merge = 512 * 9619 = 4924928

Summary of data structures

Each cache line is a data structure that is dynamically allocated for each field in the cache data structure such as tag, dirty_bit, etc. At each index of the cache, there's an amount of ways allocated for each index.