

## Hashing Comparison Report

After comparing the results of loadfactors 0.5, 0.75 and 0.9 for all algorithms:

- Higher values decrease the space overhead but increase the lookup cost
- 0.75 LF gives the optimal result based on time and space

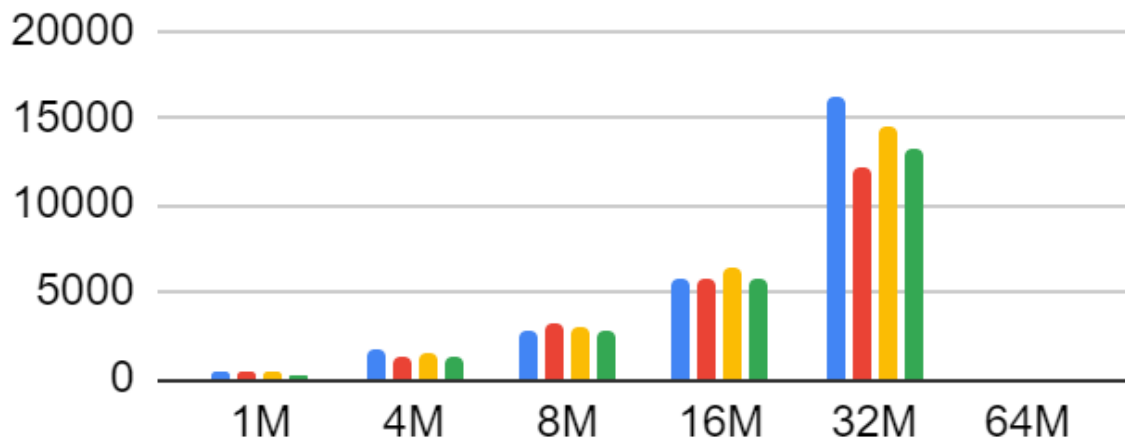
**Cuckoo Hashing results for different load factors:**

Cuckoo	Time(msec)	Space	Time(msec)	Space	Time(msec)	Space
	LF=0.5,k=2		LF=0.75, k=2		LF=0.9,k=2	
1M	381	78/227	337	128/124	387	178 / 416
4M	1801	639/1123	1214	464/724	1444	529 / 1215
8M	2801	510/1244	3131	413/689	3052	458 / 1347
16M	5666	1592/1962	5709	802 / 1827	6390	831 / 1269
32M	16190	1563/1988	12223	1541 / 1988	14569	1588 / 1988
64M	OOM	OOM	OOM	OOM	OOM	OOM

Cuckoo	Time(msec)	Space	Time(msec)	Space
	LF=0.9,k=2		LF=0.9,k=3	
1M	387	178 / 416	258	332 / 791
4M	1444	529 / 1215	1334	499 / 1121
8M	3052	458 / 1347	2846	508 / 1587
16M	6390	831 / 1269	5659	957 / 1346
32M	14569	1588 / 1988	13259	1821 / 1988
64M	OOM	OOM	OOM	OOM

For load factor=0.9, we have increased the number of hash tables from 2 to 3 and the performance of the algorithm has increased significantly as observed in the above table.

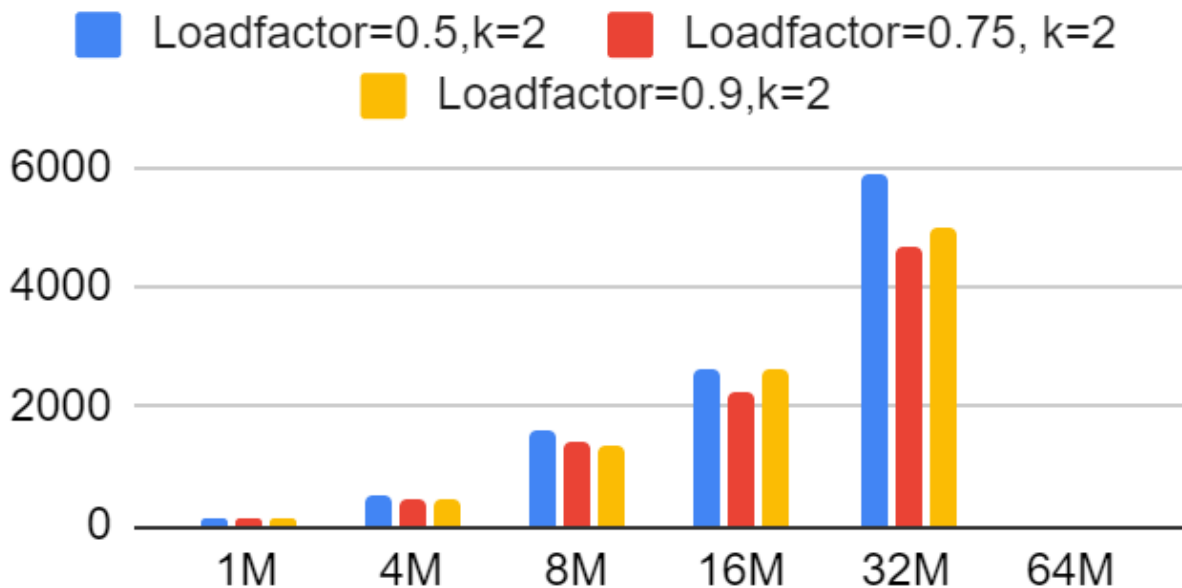
# Cuckoo Hashing



## Hashtable results for different load factors:

HashTable	Time(msec)	Space	Time(msec)	Space	Time(msec)	Space
	LF=0.5,k=2		LF=0.75, k=2		LF=0.9,k=2	
1M	114	296 / 763	108	225 / 965	101	225 / 965
4M	501	633 / 965	424	799 / 1005	433	800 / 999
8M	1585	648 / 1239	1410	513 / 689	1368	358 / 1347
16M	2644	846 / 1708	2265	902 / 1827	2595	731 / 1269
32M	5863	1327 / 2379	4650	1741 / 1988	4981	1388 / 1988
64M	OOM	OOM	OOM	OOM	OOM	OOM

## HashTable

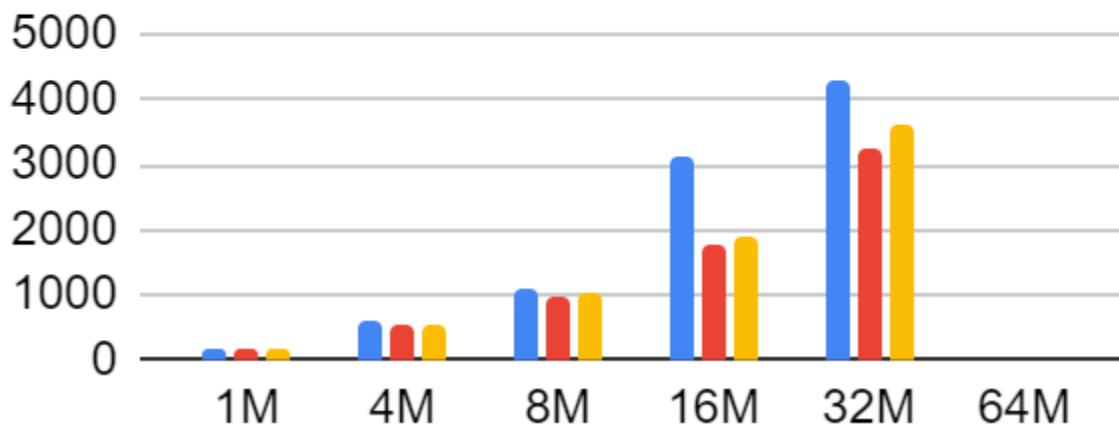


### HashMap results for different load factors:

HashMap	Time(msec)	Space	Time(msec)	Space	Time(msec)	Space
	LF=0.5,k=2		LF=0.75, k=2		LF=0.9,k=2	
1M	198	149 / 287	171	125 / 319	189	125 / 320
4M	622	238 / 650	521	208 / 1022	540	222 / 561
8M	1122	441 / 1281	983	370 / 777	1047	344 / 940
16M	3114	798 / 1628	1785	1163 / 1558	1880	1231 / 1734
32M	4307	1378 / 1913	3257	1122 / 1988	3644	1115 / 1988
64M	OOM	OOM	OOM	OOM	OOM	OOM

## HashMap

■ Loadfactor=0.5,k=2   ■ Loadfactor=0.75, k=2  
■ Loadfactor=0.9,k=2



## HashSet results for different load factors:

HashSet	Time(msec)	Space	Time(msec)	Space	Time(msec)	Space
	LF=0.5,k=2		LF=0.75, k=2		LF=0.9,k=2	
1M	194	150 / 323	133	126 / 328	148	122 / 330
4M	481	248 / 1048	429	230 / 582	544	196 / 467
8M	1122	428 / 960	989	329 / 820	1003	350 / 924
16M	2198	752 / 1585	1867	1158 / 1551	2498	1229 / 1638
32M	4099	1430 / 1826	3120	1133 / 1988	3846	1164 / 1557
64M	OOM	OOM	OOM	OOM	OOM	OOM

## HashSet

