AU06 - Performance Analysis 3AHIT
CPU RAM TYP JAWA
Intel Core i7-3630QM 8,00 GB 64-BIT Build 1.8.0_60-b27
4x 2.4GHz
No Virtual Machine or Acceleration Tools used



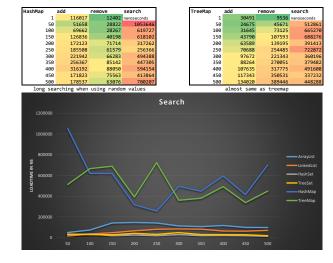
all times measured in nanoseconds using java package "system.nanotime"

ArrayList	add	remove	search				
1	504137	8595	nanoseconds				
50	49349	18688	181231				
100	73254	15609	469414				
150	141247	26128	339798				
200	145909	39727	242169				
250	140991	54951	225235				
300	112126	67822	227373				
350	106481	66924	220402				
400	117043	75563	157412				
450	98698	76717	240801				
500	97330	53155	343305				

LinkedList	add	remove	search
1	115589	15095	nanoseconds
50	15609	18859	76033
100	34553	31688	200646
150	47254	68892	241571
200	65898	80096	243281
250	80481	66027	197438
300	83816	87964	266929
350	81507	95705	218008
400	63418	94507	276807
450	62349	104172	224679
500	69619	146764	210097
	anakku akab'	la avanvuhan	

shSet	add	remove	search				
1	19714	19415	nanoseconds				
50	44303	24119	29378				
100	83346	13727	35023				
150	118070	14155	18474				
200	151682	13855	24931				
250	157455	18987	18303				
300	164383	22536	29763				
350	185550	12017	18859				
400	196925	12401	20099				
450	165836	12059	18559				
500	145695	14540	13471				

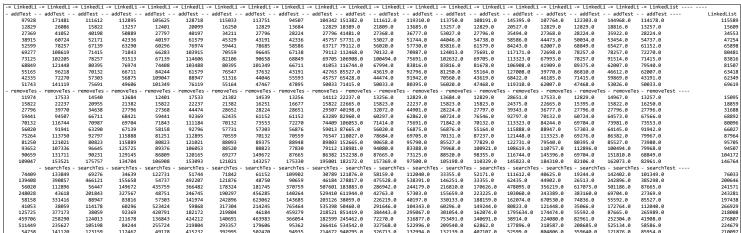
TreeSet	add	remove	search
1	183968	15523	nanoseconds
50	148560	53540	33313
100	226304	48451	29293
150	205735	46313	27240
200	225106	53839	41267
250	257692	53240	31260
300	281768	73425	48408
350	260814	48365	29592
400	218350	50931	28951
450	184438	48109	27497
500	184096	50546	17961
alre	ady sorted s	so easy to s	earch

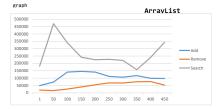


good ren	nove and	average	adding	times				pretty	stable	everywhe	re
					Ad	d					
350000 —											
300000 —								1			
250000 —							<				
SN N 2000000 — 1500000 — 1500000 —		$\overline{}$	_							_	LinkedList HashSet
ME 150000			d	=	_	_			<u></u>		TreeSet
100000 —						=	_	~	\leq		
50000 —								_		-	
0 —	_										
0 -											

Remove	
450000	
400000	
350000	
300000	ArrayList
2 250000	LinkedList HashSet
\$2 20000 \$2 20000	TreeSet
150000	
100000	
50000	
0	
50 100 150 200 250 300 350 400	450 500

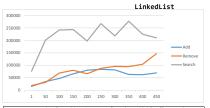
1	2	3	4	5	6	7	8	9	10	11 1	.2 1	13 1	4 1	5 1	6 1	7 1	8 1	9 20	sum
-= ArrayLis -	= ArrayLis	-= ArrayLis	-= ArrayLis	-= ArrayLis	-= ArrayLis	-= ArrayLis	-= ArrayLis -	= ArrayLis -	= ArrayLis -= Array	Lis -= ArrayL:	is -= ArrayL	is -= ArrayLi	is -= ArrayLi	s -= ArrayLi	s -= ArrayLi	is -= ArrayLi	s -= ArrayLi	is -= ArrayList	
- addTest	- addTest -	- addTest	addTest	addTest addTes	t addTest	addTest	addTest	addTest	addTest	addTest	addTest	addTest	addTest	ArrayList					
520430	543522	522141	521713	482370	488786	500759	473818	505890	481943 496055.0	481943.0	485365.0	513160.0	501614.0	713293.0	448588.0	478522.0	508029.0	480232.0	504137
43191	62434	50461	53454	41052	54309	51744	49605	43618	43618 79113.0	43191.0	80823.0	48750.0	43191.0	65428.0	42763.0	42764.0	58586.0	43191.0	49349
64145	76974	71415	79540	59441	79112	82534	76974	64572	77830 80823.0	59441.0	74836.0	62434.0	65855.0	73553.0	65000.0	76119.0	79112.0	64572.0	73254
123158	158224	142829	133849	116744	147962	141547	143257	163356	141546 151810.0	134705.0	156942.0	120165.0	141975.0	140691.0	125724.0	133421.0	143685.0	126152.0	141247
129573	159080	137270	191152	120592	151810	136843	150099	128290	154376 142830.0	115461.0	168915.0	110757.0	124442.0	136842.0	127862.0	112467.0	151810.0	125297.0	145909
147106	182599	136843	157370	148817	124013	145395	121021	124441	122303 141119.0	128718.0	150527.0	127435.0	127862.0	182599.0	117600.0	147534.0	131712.0	127007.0	140991
113751	173619	103060	97073	107764	108619	105198	112468	97073	102632 99211.0	96646.0	98356.0	110330.0	118027.0	112467.0	109902.0	104770.0	112467.0	111185.0	112126
109902	201844	63290	113751	114178	65000	112468	62862	109902	111612 85527.0	109047.0	120592.0	82106.0	99211.0	115889.0	67994.0	67566.0	70559.0	74409.0	106481
89375	236054	75263	122303	121448	76974	88092	118883	122731	119310 71843.0	130856.0	133422.0	74836.0	116317.0	118455.0	79967.0	86382.0	77830.0	77830.0	117043
53455	163356	78257	99211	125297	80395	54737	106909	107336	118027 74836.0	100066.0	133422.0	78257.0	125724.0	107336.0	85099.0	76974.0	79967.0	75264.0	98698
63290	117599	85527	119737	140692	70988	61151	79968	115033	119310 93224.0	119738.0	139836.0	88948.0	135987.0	121875.0	92369.0	85099.0	80396.0	85099.0	97330
- removeTes -	removeTes	- removeTes	- removeTes	- removeTes	- removeTes	- removeTes	- removeTes -	removeTes -	removeTes - remove	Tes - removeT	es - removeT	es - removeTe	es - removeTe	s - removeTe	s - removeTe	es - removeTe	s - removeTe	es - removeTest	-
5987	10263	9407	6842	5987	10263	10263	10263	6842	9835 11547.0	9835.0	11974.0	5987.0	6842.0	12402.0	6842.0	6415.0	10691.0	6842.0	8595
15395	24803	19671	19671	15395	20099	17961	19671	15395	18816 27796.0	19243.0	18816.0	14967.0	15822.0	23092.0	15395.0	15823.0	21809.0	14967.0	18688
14111	23948	15823	14112	14112	15395	15395	14540	14112	14539 20954.0	14967.0	21809.0	14112.0	14967.0	14967.0	14112.0	14539.0	15822.0	14112.0	15609
23092	39342	25658	23519	24375	25658	26513	25658	23092	24375 27368.0	25230.0	38060.0	23092.0	24375.0	30362.0	23092.0	24803.0	26086.0	23092.0	26128
31217	59441	46185	31217	41053	41908	33784	41908	30789	39770 46612.0	32928.0	38487.0	30790.0	41908.0	36777.0	34638.0	32500.0	40198.0	31218.0	39727
47895	76119	56875	62007	48323	50461	60296	48751	49178	49606 53455.0	52171.0	54310.0	48751.0	47468.0	46612.0	44474.0	51743.0	50889.0	49606.0	54951
70559	109046	67994	82961	56875	59869	58585	57730	55592	59013 65000.0	58158.0	57302.0	56020.0	60724.0	63718.0	57731.0	62007.0	78257.0	55592.0	67822
61579	105198	64572	59441	65855	65427	60724	61579	59013	65856 61152.0	59014.0	69277.0	58585.0	67994.0	59014.0	59014.0	59014.0	67138.0	59013.0	66924
69277	114605	68849	73553	73980	69705	70987	70987	68849	74836 69277.0	68422.0	68849.0	70560.0	72697.0	86809.0	69276.0	75691.0	73553.0	70132.0	75563
80395	36349	80395	79967	82534	83389	80822	80395	80822	82105 79967.0	82106.0	80395.0	80395.0	83816.0	81251.0	80395.0	89803.0	76546.0	80395.0	76717
94080	43191	30362	74408	44902	31217	38060	40198	94935	40198 29507.0	96218.0	40197.0	100067.0	26941.0	105625.0	32500.0	94935.0	39770.0	42763.0	53155
- searchTes -	searchTes	- searchTes	- searchTes	- searchTes	- searchTes	- searchTes	- searchTes -	searchTes -	searchTes - search	Tes - searchTe	es - searchT	es - searchTe	es - searchTe	s - searchTe	s - searchTe	s - searchTe	s - searchTe	es - searchTest	-
131284	212534	208685	39770	278817	347666	219803	111613	43619	218520 251021.0	100922.0	340397.0	203553.0	47895.0	82105.0	209969.0	236054.0	307041.0	165494.0	181231
212534	429772	816353	776583	343817	175758	343390	519575	511022	565332 49605.0	333554.0	125724.0	665398.0	729115.0	553786.0	165921.0	367765.0	122731.0	124014.0	469414
368192	450298	457996	267698	274113	620069	101349	408818	343390	106053 129145.0	233916.0	270693.0	268982.0	679082.0	878360.0	593983.0	501614.0	269409.0	913426.0	339798
156514	134704	432765	82534	226218	299343	392568	74409	492634	130000 579871.0	122304.0	181317.0	372042.0	54309.0	447733.0	616648.0	401120.0	597832.0	230923.0	242169
62862	488785	103915	144113	238619	80395	405397	202271	140691	385298 113323.0	270264.0	108619.0	94935.0	191580.0	33784.0	51316.0	551219.0	29935.0	158652.0	225235
132139	101350	443029	267271	247172	70987	123158	263422	416515	208685 212534.0	35066.0	415660.0	455430.0	89376.0	152237.0	59014.0	138553.0	620069.0	59441.0	227373
139836	259146	378028	149244	44046	447732	115889	408390	47039	214672 472962.0	828754.0	287798.0	157797.0	578588.0	398127.0	354081.0	1119973.0	471680.0	66283.0	220402
231349	55592	73981	109474	184737	269837	268982	109047	170626	100494 646154.0	360068.0	401548.0	156514.0	115888.0	82534.0	164639.0	137698.0	398554.0	166349.0	157412
385298	343390	125725	289936	178323	268126	73125	400693	263423	79967 438324.0	205692.0	132139.0	650431.0	768458.0	165494.0	94508.0	120165.0	226218.0	123158.0	240801
223652	469969	542240	93225	108192	166350	368621	546944	632043	281811 1199513.	774445.0	531121.0	854412.0	203553.0	392568.0	355363.0	132567.0	452864.0	281383.0	343305
									= LinkedLi -= Linke										
- addTest			- addTest -					addTest									addTest	addTest	LinkedList
97928	171481	111612	112895	105625	128718	115033	113751	94507	104342 151382.0	111612.0	119310.0	113750.0	108191.0	145395.0	107764.0	122303.0	144968.0	114178.0	115589
12829	26086	15822	13257	12401	20099	16250	12829	13684	12829 18389.0	21809.0	13685.0	13257.0	12829.0	20527.0	12829.0	12829.0	18816.0	13257.0	15609





constant graphs for add and remove function, highly fluctrating on search function

java.util.ArrayList
Adding the first element returns a strangely high loading time. The time needed to add a random number then is pretty average. The List got good removing times and actually stable search times, although there are much better alternatives. But it's job as a dynamic Array it does great



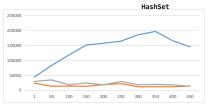
constant graphs for add and remove function, highly fluctrating on search function due to links

java.util.LinkedList

The linked list actually has the best average loading times if comparing all three functions (add, remove and search) only searching tends to return longer loading times but stays pretty much constant while fluctrating

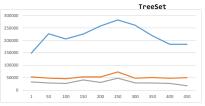
-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet -	-= HashSet	-= HashSet ·	-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet	-= HashSet	
- addTest -	- addTest -	- addTest -	- addTest -	- addTest -	- addTest -	- addTest	- addTest -	- addTest	- addTest -	 addTest 	addTest -	addTest	addTest	addTest	addTest	addTest -	addTest	addTest -	addTest	HashSet
15823	25658	24375	24375	15395	17960	17533	17105	16250	22664	26086.0	17960.0	17105.0	17105.0	18816.0	29507.0	17105.0	26941.0	18816.0	26086.0	19714
41481	47039	46184	42763	42336	42336	41908	41481	39770	57731	59868.0	42763.0	39770.0	41908.0	40625.0	47468.0	40625.0	47467.0	40625.0	45757.0	44303
72270	106053	85527	97928	68421	73553	92368	72270	67566	97501	124442.0	79968.0	71843.0	76974.0	68421.0	104343.0	73553.0	95790.0	75264.0	79540.0	83346
102204	152665	93652	158224	103060	112895	150100	93224	80395		165067.0	109046.0	98356.0	104770.0	84244.0	123159.0	114606.0	152665.0	107336.0	108619.0	118070
156514	181316	163783	111185	106481	126152	172337	205265	133422		163356.0	106909.0	104770.0	134705.0	165066.0	193290.0	119737.0	166777.0	146678.0	133849.0	151682
132139	215955	121448	154803	112895	142402	203126	181744	130429		184738.0	121875.0	116744.0	138981.0	175758.0	185593.0	128290.0	189014.0	223225.0	146678.0	157455
141974	225791	135132	142830	127862	153521	221514	151810	139837		186448.0	114178.0	123586.0	129573.0	153948.0	198850.0	140264.0	201844.0	231350.0	152238.0	164383
158652	251876	150954	157797	134277	169343	239047	168915	209113	215527	197994.0	127435.0	124441.0	132139.0	173192.0	232205.0	162501.0	223225.0	241186.0	168916.0	185550
154804	274541	170626	175757	147534	158224	246745	181744	265988	193291	230067.0	143257.0	141119.0	145395.0	184737.0	245461.0	158652.0	250165.0	280100.0	157369.0	196925
118027	209113	204837	128718	147106	124441	217238	154375	189014		223653.0	148817.0	171481.0	149672.0	162501.0	250593.0	134705.0	240330.0	230067.0	129145.0	165836
103488	171909	176185	108619	131711	115461	190725	127007	198422		195428.0	144113.0	144540.0	122731.0	139409.0	213389.0	110757.0	203554.0	233061.0	123159.0	145695
- removeTes		 removeTes 	- removeTes			 removeTes - 	removeTes												s - removeTest	
15822	28651	16250	16250	16251	24802	17961	11974	22664		27796.0	10263.0	14540.0	11118.0	12402.0	21382.0	15822.0	24803.0	22237.0	11546.0	19415
20954	27369	20098	17533	29935	17533	39342	20099	25231		28224.0	20954.0	21809.0	21382.0	18816.0	32072.0	16250.0	27796.0	26086.0	23947.0	24119
10264	17533	14112	11119	15822	10263	15822	14112	14540		16250.0	14967.0	18816.0	14967.0	12401.0	27369.0	10263.0	16678.0	10263.0	9408.0	13727
10690	16250	17960	11974	11119	11118	17106	14111	15395		25658.0	9836.0	10691.0	11118.0	13256.0	17105.0	10691.0	16678.0	10691.0	10263.0	14155
10690	18388	11546	11974	11118	11546	17960	12829	17105		17105.0	10691.0	11546.0	13684.0	17105.0	17106.0	10691.0	17533.0	15395.0	10690.0	13855
14967	24375	15823	15395	18816	18388	25658	14112	21382		24375.0	14112.0	15395.0	14540.0	14967.0	24803.0	17105.0	24375.0	15394.0	13684.0	18987
17533	30789	17533	17105	22665	18388	30362	16677	26086		30362.0	16250.0	17961.0	17533.0	16677.0	29079.0	16678.0	29934.0	17106.0	17533.0	22536
10263	10691	11119	13257	11546	10691	10691	11119	15822		17533.0	11974.0	12829.0	10691.0	10691.0	19243.0	10690.0	18816.0	11118.0	10691.0	12017
11118	10691	11546	11118	11119	10691	11118	15822	15823		17960.0	11118.0	11546.0	10690.0	10691.0	10691.0	10263.0	17105.0	10691.0	9836.0	12401
10691	10691	12401	11974	11546	10690	10263	11118	15395		17105.0	10263.0	11546.0	10691.0	10691.0	10691.0	10691.0	12829.0	11546.0	10690.0	12059
10691	17105	11973	11546	18816	11119	16250	16250	16250		16677.0	10690.0	14968.0	11118.0	13257.0	11119.0	10691.0	10691.0	11974.0	10691.0	14540
 searchTes 		 searchTes 	 searchTes 			 searchTes - 	searchTes				s - searchTes								s - searchTest	
25231	32073	20954	25230	33783	24375	36776	35921	29934		37632.0	21809.0	26513.0	24375.0	31217.0	38059.0	21809.0	29079.0	29934.0	31217.0	29378
41908	29507	43619	36777	28651	26513	30789	37632	37205		40625.0	29934.0	29507.0	27368.0	30362.0	48322.0	25658.0	27796.0	46185.0	40625.0	35023
22237	14967	17961	20954	15395	15394	16250	20954	19671		21810.0	14967.0	14540.0	15395.0	18388.0	22237.0	14112.0	14112.0	22664.0	21809.0	18474
27797	21809	27797	26513	21809	21382	23092	27368	25658		25658.0	18815.0	17961.0	17960.0	20526.0	28652.0	17960.0	17533.0	29507.0	26941.0	24931
16677	24803	14967	16677	12829	14540	20954	20526	20527	20526	12829.0	12829.0	11974.0	13256.0	14967.0	18388.0	14540.0	13256.0	20526.0	20098.0	18303
32500	35921	32500	29079	24376	25231	32073	30789	28651		28224.0	23092.0	27368.0	27796.0	20954.0	26513.0	28651.0	27369.0	30362.0	30362.0	29763
15823	14967	20954	21809	13684	14967	22665	21809	20954		20526.0	13257.0	23520.0	22237.0	19671.0	20526.0	22237.0	23948.0	21810.0	23092.0	18859
14539	25231	24375	14539	20526	15394	20954	23520	20527		18388.0	12829.0	19671.0	17961.0	21381.0	18816.0	20954.0	19671.0	20099.0	21809.0	20099
15395	14968	24803	27796	13256	15395	21809	15822	21382	14967	20954.0	12402.0	15823.0	14967.0	22237.0	19672.0	21382.0	11547.0	11546.0	14967.0	18559
10691	14540	15822	11118	16250	12829	14112	15823	13685	9835	13257.0	12829.0	27796.0	27368.0	14968.0	16250.0	14539.0	9408.0	9836.0	14112.0	13471

									-= TreeSet							-= TreeSet	-= TreeSet	-= TreeSet		
- addTest -	- addTest -	- addTest -	- addTest -	- addTest -	- addTest -	- addTest -	- addTest -	- addTest -	- addTest -	 addTest 	addTest	addTest -	addTest -	addTest	addTest -	addTest -	- addTest -	addTest	addTest	TreeSet
177896	189014	199278	191580	156086	196711	197995	198850	184310	147961	205692.0	165067.0	204409.0	191580.0	204409.0	199705.0	226218.0	159507.0	183027.0	172764.0	183968
100494	122731	179607	149244	103487	183883	174475	156086	162501	153093	165495.0	143258.0	176185.0	191152.0	159507.0	190296.0	124869.0	109047.0	122731.0	111612.0	148560
251448	236054	237765	260429	208686	259146	221514	180889	238620	168488	314310.0	238192.0	257863.0	270265.0	250166.0	249311.0	262567.0	170198.0	275824.0	201843.0	226304
227074	252304	224507	257863	190724	209968	181744	149244	210396		234771.0	166777.0	215955.0	202271.0	210396.0	200133.0	197567.0	191152.0	256153.0	250593.0	205735
260001	203126	283948	253159	169343	210396	248883	200987	230495		260857.0	246317.0	256153.0	288225.0	168060.0	257863.0	267699.0	197139.0	205264.0	275397.0	225106
307041	236909	309607	200133	208258	251449	289508	283093	274113	216810	293785.0	207830.0	304048.0	280955.0	203554.0	334410.0	288225.0	316449.0	337403.0	288225.0	257692
343390	298060	335693	211679	197567	272402	328423	307469	316449	206547	331416.0	218521.0	271547.0	304902.0	224080.0	336975.0	335264.0	342107.0	205692.0	260857.0	281768
376746	356219	218093	171054	301054	293785	208258	224080	201416	257435	307041.0	289508.0	199705.0	174046.0	225363.0	371613.0	267271.0	301482.0	207830.0	226646.0	260814
262568	212533	178323	122731	391712	206974	190725	201843	182172		182172.0	231777.0	195001.0	113750.0	178751.0	207403.0	137270.0	202271.0	216383.0	215100.0	218350
210824	141119	183455	120593	236054	147533	200560	197567	191152	215527	191152.0	206547.0	229639.0	129146.0	124014.0	213817.0	127007.0	139409.0	209541.0	210396.0	184438
231350	162501	230067	138981	132567	153948	206119	206547	203126	175757	217666.0	190725.0	199277.0	159935.0	153948.0	223225.0	133422.0	140264.0	182172.0	157370.0	184096
- removeTes	- removeTes	- removeTes	- removeTes	- removeTes	- removeTes	- removeTes	- removeTes	- removeTes	 removeTes 	- removeTe	s - removeTe	s - removeTe	s - removeTe:	s - removeTe	s - removeTe:	s - removeTes	- removeTes	s - removeTe	s - removeTest	
19672	13257	20527	12401	11974	16678	17106	15395	14540	13684	17533.0	20527.0	20527.0	27797.0	19243.0	21381.0	18388.0	13257.0	20527.0	13684.0	15523
61152	56020	71414	39343	52171	41480	59014	61579	45329		72270.0	41481.0	64145.0	67994.0	54737.0	79968.0	47039.0	55165.0	40197.0	48751.0	53540
70560	35494	65000	41908	40625	33355	42336	58158	56020		46612.0	44902.0	32072.0	52599.0	40626.0	53027.0	37204.0	38059.0	44474.0	35921.0	48451
62434	44474	38487	43191	41053	39770	48750	52599	54309		55592.0	43191.0	55592.0	47895.0	41481.0	59013.0	43191.0	45329.0	50889.0	41908.0	46313
76119	49177	59014	58586	41053	41053	47895	56020	61152	48322	62007.0	47467.0	55593.0	58586.0	63289.0	58586.0	70987.0	53455.0	45757.0	54737.0	53839
62862	43618	64145	62435	47467	41053	41908	59441	59869	49606	60724.0	46184.0	61579.0	44046.0	65855.0	67139.0	63289.0	42764.0	60297.0	43191.0	53240
86809	59868	63718	61580	59442	52599	59869	118027	116317	56020	79967.0	55165.0	53882.0	56020.0	62862.0	77401.0	60724.0	60724.0	100066.0	61579.0	73425
63718	50461	47895	44901	44046	47039	44474	41481	52171		59014.0	47895.0	46612.0	41053.0	46184.0	63717.0	42335.0	43191.0	65855.0	42763.0	48365
63290	46612	65428	46612	43191	62862	51744	41908	41480	46185	65855.0	59869.0	43191.0	50461.0	47467.0	67566.0	47039.0	44901.0	44902.0	47895.0	50931
60724	44902	53027	51316	42336	59869	38914	38060	41053	50889	62862.0	64145.0	41053.0	38914.0	44474.0	61579.0	42763.0	45330.0	40198.0	41908.0	48109
63718	46612	45757	48322	44047	67138	44902	59441	39770	45757	63718.0	71415.0	41053.0	70559.0	49606.0	59868.0	45756.0	45329.0	36349.0	42763.0	50546
- searchTes	 searchTes 	- searchTe	s - searchTe	s - searchTe	s - searchTe	s - searchTe	s - searchTe	s - searchTes	- searchTes	s - searchTe	s - searchTest									
35066	26514	44901	24803	25658	39770	37632	40197	35066		43618.0	45757.0	30362.0	45757.0	29935.0	41053.0	48323.0	30789.0	34638.0	31645.0	33313
30362	25658	33783	16677	35493	30790	31645	32928	36349		31217.0	34639.0	39342.0	42336.0	21382.0	48750.0	53881.0	34210.0	24375.0	23519.0	29293
34210	19671	33356	23947	29507	26941	23092	34211	23948	23519	28651.0	33783.0	37632.0	36776.0	24802.0	31218.0	41481.0	24803.0	18816.0	33783.0	27240
41052	34638	32928	40625	42763	56448	26941	35922	47040	54310	42764.0	53026.0	36776.0	32928.0	32073.0	56020.0	40198.0	33355.0	32500.0	24375.0	41267
34638	26086	19671	23520	37632	34638	23092	33356	38915	41053	30790.0	28651.0	40625.0	40625.0	26941.0	37632.0	31645.0	24803.0	19243.0	18389.0	31260
63290	60296	30362	46184	82533	38487	37204	30362	38487		47895.0	36349.0	29935.0	73125.0	32500.0	54310.0	28652.0	29934.0	85954.0	31645.0	48408
41053	19243	37204	21382	37204	29507	20098	27796	39770		32928.0	36776.0	30789.0	30362.0	18816.0	41908.0	30789.0	24802.0	31645.0	38487.0	29592
33783	26085	41480	23093	31217	33356	17960	49178	15822	17533	31644.0	16250.0	16250.0	33355.0	22237.0	31644.0	25658.0	19671.0	20099.0	17961.0	28951
39342	31645	9408	27368	38059	19671	26086	13257	32500	37632	25230.0	22237.0	32928.0	17533.0	37632.0	8980.0	8553.0	54737.0	20954.0	41480.0	27497
17961	12401	7270	18816	19244	15822	32927	11546	13256	30362	19243.0	32500.0	12829.0	8125.0	11546.0	12402.0	8552.0	19243.0	17533.0	31645.0	17961



constant graphs for remove and search function (almost same cause of hashes), add function raising constantly

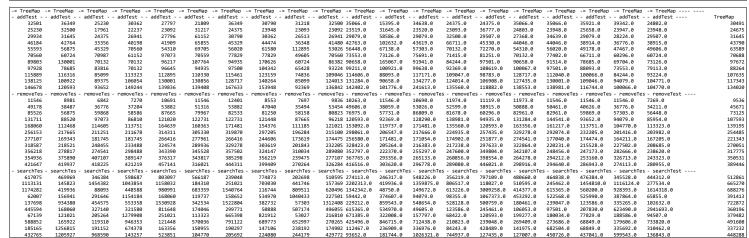
hashes), add function raising constantly
java.util.HashSet
Haybe the most useful option for a mass of files where adding an
element doesn't matter in time. Very good searching abilities and
therefor also good times for removing elements. The time needed to
add (a random object raises constantly.

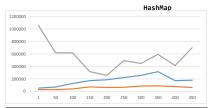


constant graphs for remove and search function (already sorted), add function staying constantly high

java.util.TreeSet
Almost same as HashSet but already sorted so search has even lower
loading times while only using each number once. Very useful in a
lot of situations. Only adding elements can be a problem again so
you may not use it to add and remove content a lot.

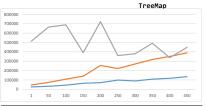
-= HashMap	-= HashMap	-= HashMap	-= HashMap	-= HashMap ·	-= HashMap -= HashMap	-= HashMap	-= HashMap	-= HashMap	-= HashMap	-= HashMap	-= HashMap	-= HashMap	-= HashMap	-= HashMap					
- addTest -	- addTest -	- addTest -	- addTest -	- addTest	- addTest addTest	addTest	addTest -	- addTest	addTest	addTest	addTest ·	addTest	addTest	addTest	HashMap				
111613	97073	192863	86382	107764	105625	119310	118027	112896	108619 116316.0	121876.0	114606.0	86382.0	84244.0	132994.0	107336.0	115033.0	93224.0	130856.0	116017
55165	49178	77830	42335	48751	36777	58158	59869	56020	32500 47895.0	47894.0	46185.0	38060.0	30789.0	47040.0	37632.0	73981.0	32072.0	49178.0	51658
73553	56448	94080	64145	65000	60724	75264	69704	76974	60724 69704.0	73553.0	84671.0	50460.0	60296.0	84672.0	70560.0	73553.0	56875.0	74409.0	69662
112895	99211	226646	101349	141547	105198	135987	118027	109474	118026 130000.0	123158.0	152665.0	109047.0	79967.0	135987.0	111185.0	153093.0	168488.0	123586.0	126836
158652	103487	277962	183882	165922	151810	165494	178751	162074	173192 167632.0	153948.0	172336.0	145396.0	94935.0	188158.0	143257.0	137271.0	144968.0	95362.0	172123
176613	150100	301482	200560	173191	139836	177468	183882	190725	161218 181744.0	170198.0	142402.0	150099.0	142402.0	176185.0	105626.0	187731.0	202271.0	103915.0	185508
203981	232205	261712	333555	207830	159935	197994	216383	206547	199277 191152.0	206119.0	260429.0	189441.0	118027.0	248028.0	153948.0	268982.0	257008.0	122304.0	221942
222369	277962	345528	283522	257008	283949	163356	237336	247600	245035 213389.0	183027.0	225791.0	265988.0	162501.0	223225.0	206975.0	390002.0	231349.0	188586.0	256367
295922	450726	361778	345528	355791	316022	215955	265561	238619	316022 287797.0	184310.0	358784.0	617076.0	170198.0	342107.0	278389.0	304903.0	393423.0	185593.0	316192
149244	224080	156941	187304	163783	232205	152665	160790	120593	170626 239903.0	121875.0	233488.0	323291.0	203981.0	112467.0	112895.0	180461.0	250166.0	229212.0	171823
127863	186876	301481	329278	136842	161218	132994	128290	154376	126152 129145.0	210823.0	140691.0	177040.0	180461.0	169343.0	125297.0	125725.0	148816.0	222369.0	178537
- removeTes	- removeTes	- removeTes	- removeTes	- removeTes -	 removeTes - removeTe 	s - removeTe	s - removeTes	- removeTe	s - removeTe	s - removeTe	s - removeTes	s - removeTe	s - removeTe	s - removeTest					
12401	14539	12402	13685	10264	12829	13684	12829	10264	11119 13256.0	14967.0	13684.0	13256.0	11546.0	13257.0	13684.0	13684.0	16250.0	12829.0	12402
32927	27796	32500	30790	25230	28224	28651	32500	22665	26941 29079.0	25231.0	30790.0	36776.0	22237.0	36349.0	31645.0	26941.0	32501.0	26086.0	28822
25658	28652	32928	33783	27796	24376	26513	28224	31645	23092 35494.0	25231.0	29507.0	47040.0	25230.0	25658.0	29080.0	18816.0	26513.0	21382.0	28267
36349	29079	50461	43618	47467	45330	36348	42336	36776	34211 57303.0	23092.0	39342.0	52172.0	27796.0	36349.0	74836.0	26514.0	38915.0	34211.0	40198
62007	104342	102204	77402	61152	64145	67566	61152	62862	54310 43618.0	43618.0	67566.0	65856.0	51744.0	63717.0	44046.0	39342.0	67566.0	55592.0	71714
61579	51316	65001	65001	67566	59013	59868	62862	65855	57730 64145.0	67138.0	63290.0	69277.0	61580.0	107336.0	64145.0	56020.0	70560.0	78257.0	61579
67994	64572	70132	62862	66710	60297	68849	69277	81251	50888 66711.0	67566.0	75263.0	104343.0	62862.0	77829.0	65856.0	50461.0	73553.0	48323.0	66283
82533	94080	85099	78685	87237	88092	81678	91514	97501	65001 85526.0	91942.0	97928.0	109475.0	80823.0	397700.0	79540.0	78685.0	65856.0	71415.0	85142
87665	86382	93652	88092	91086	87237	91086	82106	86382	86809 65001.0	94507.0	89376.0	137698.0	50889.0	62862.0	85527.0	69704.0	88520.0	89803.0	88050
70559	100921	76974	85099	62862	63718	67139	94079	50461	83816 42336.0	74836.0	47895.0	44046.0	103915.0	41908.0	48323.0	112040.0	82533.0	104770.0	75563
52598	45757	66283	85955	50461	57303	83816	60724	55165	72698 50460.0	60297.0	50888.0	32927.0	66711.0	55592.0	32500.0	85955.0	88520.0	76546.0	63076
 searchTes 	- searchTes	- searchTes	 searchTes 	- searchTes -	 searchTes - searchTe 	s - searchTe	s - searchTes	- searchTe	s - searchTe	s - searchTe	s - searchTe	s - searchTe	s - searchTe	s - searchTest					
519574	1849515	451581	397272	1607047	301054	1562146	1848660	469114	1530501 2364815.0	1763561.0	508885.0	316449.0	424640.0	406252.0	272830.0	418226.0	391285.0	455003.0	1053646
342535	718852	2582908	611516	607668	729971	130001	78684	62863	332272 430199.0	282238.0	673523.0	1980799.0	103487.0	832175.0	61579.0	717997.0	350232.0	450298.0	619727
405396	543523	390430	1827706	461844	129146	82105	491351	1129808	719708 725694.0	335264.0	172336.0	114178.0	274541.0	359640.0	54310.0	794544.0	105626.0	603818.0	618102
457996	323291	275396	739807	292930	400692	144113	56448	143257	338686 88520.0	26514.0	229640.0	87238.0	311317.0	558062.0	1408625.0	92368.0	1240565.0	2660309.0	317262
266844	188587	737668	107336	280528	226218	273258	247172	153520	82533 639312.0	138554.0	466121.0	493062.0	76119.0	443456.0	60724.0	176612.0	325001.0	105198.0	256366
74409	361778	1320961	1088328	90231	194146	550365	953196	260857	49606 162928.0	221514.0	255298.0	450299.0	180034.0	321581.0	729116.0	1214052.0	284376.0	266416.0	494388
177040	276251	79113	125297	590562	167205	1473198	816353	633325	134705 590562.0	324574.0	52599.0	170198.0	151810.0	929248.0	242896.0	118454.0	1018196.0	511450.0	447305
1434711	266416	850136	486647	341252	738096	135132	393423	1124677	171054 118027.0	375890.0	356646.0	407534.0	183883.0	334409.0	141975.0	537964.0	688063.0	595693.0	594154
112895	456285	264706	79967	65428	854412	528128	448160	1261947	66711 194146.0	393423.0	465693.0	111185.0	522996.0	229639.0	89804.0	1005794.0	189870.0	59013.0	413864
1083196	1817015	279672	475956	87238	106909	185165	659411	2008168	299344 272403.0	476384.0	223652.0	133849.0	417798.0	333554.0	265560.0	747503.0	1340204.0	401975.0	700207





add and remove function raising slightly over time, search function starting high, then fluctrating java.util.HashMap
While easy to use due to keys and values maps got a lot of problems

While easy to use due to keys and values maps got a lot of problems with searching and removing random values. If you now what you search the time basically becomes null. Adding times are pretty much average and rise slightly with the number of elements



add and remove function raising over time, search function fluctrating (map but sorted)

java.util.TreeMap

Almost same as HashMap but with a treemap as base. The keys are sorted, therefor if you know their relation you got quite good searching times but finding random values in random keys still takes a lot of time

