Algorithmics	Student information	Date	Number of session
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Activity 1. Some iterative models

N	tLoop1	tLoop2	tLoop3	tLoop4
100	0,00435	0,165	0,87	0,7
200	0,00896	0,583	3,37	4,9
400	0,01845	2,729	14,26	36,29
800	0,04335	12,639	63,74	271,34
1600	0,09648	49,7	254,1	2122
3200	0,208	223	1077,3	16999
6400	0,446	873	4497	Oot
12800	0,956	3937	18750	Oot
25600	2,036	17387	Oot	Oot
51200	4,445	Oot	Oot	Oot
Complexity	O(nlogn)	O(n^2logn)	O(n^2logn)	O(n^3)

The times of all of these make sense considering their complexities, but while loop2 and loop3 share the same complexity, their times are far from eachother. This is due to different constants in the loops, as the Complexity is simplified without these.

Activity 2. Creation of iterative models of a given time complexity

N	tLoop5	tLoop6	tLoop7
100	2,39	33,6	31,3
200	12	286,8	455,4
400	57,26	2547	6830
800	288	22331	Oot
1600	1343	Oot	Oot
3200	6384	Oot	Oot
6400	29801	Oot	Oot
Complexity	O(n^2log^2n)	O(n^3logn)	O(n^4)

The times are proportional to the complexity and problem size, and the proportions are as expected, with loop7 being the least efficient.

Activity 3. Two algorithms with different complexity

N	tLoop1	tLoop2	t1/t2
100	0,00435	0,165	0,026364
200	0,00896	0,583	0,015369
400	0,01845	2,729	0,006761
800	0,04335	12,639	0,003430
1600	0,09648	49,7	0,001941
3200	0,208	223	0,000933
6400	0,446	873	0,000511
12800	0,956	3937	0,000243
25600	2,036	17387	0,000117
51200	4,445	Oot	
Complexity	O(nlogn)	O(n^2logn)	

The quotient indicates that loop1 is the better algorithm, as it is the least complex, this makes sense knowing the complexities of both algorithms.

Activity 4. Two algorithms with the same complexity

N	tLoop3	tLoop2	t3/t2
100	0,87	0,165	5,27273
200	3,37	0,583	5,78045
400	14,26	2,729	5,22536
800	63,74	12,639	5,04312
1600	254,1	49,7	5,11268
3200	1077,3	223	4,83094
6400	4497	873	5,15120
12800	18750	3937	4,76251
25600	Oot	17387	
51200	Oot	Oot	
Complexity	O(n^2logn)	O(n^2logn)	

The quotient indicates that loop2 will be more efficient for larger problem sizes, but the Complexities are the same. The differences in time are caused by different constant and loop parameters, and this is not represented in the simplified O notation.

Activity 5. Same algorithm in different development environments

tLoop4 O(n^3)	Python	Java, no opt.	Java, opt.		
n	t41	t42	t43	t42/t41	t43/t42
200	26	4,9	0,0853	0,18846	0,01741
400	189	36,29	0,4306	0,19201	0,01187
800	1600	271,34	0,0264	0,16959	0,00010
1600	13833	2122	18,06	0,15340	0,00851
3200	Oot	16999	119,47		0,00703
6400	Oot	Oot	812		

From the quotient we can deduce that, obviously running a program in Java with optimization is better than not using optimization, and also, that both forms of Java are more efficient than python. The complexity is the same, because the algorithm is the same, so it doesn't affect these measurements.