

Recitation 3

- 2.7. (1) a. $O(N)$
b.

N	Running Time (ms)
0	0.00000
500	0.00000
1000	0.00000
1500	0.00000
2000	0.00000
2500	0.00000
3000	0.00100
3500	0.00000
4000	0.00000
4500	0.00000
5000	0.00000
5500	0.00100
6000	0.00000
6500	0.00000
7000	0.00000
7500	0.00000
8000	0.00000
8500	0.00100
9000	0.00000
9500	0.00000

- c. Consistent

- (2) a. $O(N^2)$
b.

N	Running Time (ms)
0	0.00000
500	0.01200
1000	0.01000
1500	0.00200
2000	0.00500
2500	0.00800
3000	0.00000
3500	0.00000

4000	0.00000
4500	0.00000
5000	0.00000
5500	0.00000
6000	0.00000
6500	0.00000
7000	0.00000
7500	0.00000
8000	0.00000
8500	0.00000
9000	0.00000
9500	0.00000

c. Consistent

(3) a. $O(N^3)$

b.

N	Running Time (ms)
0	0.00000
500	0.11900
1000	0.93600
1500	0.00000
2000	0.00000
2500	0.00000
3000	0.00000
3500	0.00000
4000	0.00000
4500	0.00000
5000	0.00000
5500	0.00000
6000	0.00000
6500	0.00000
7000	0.00000
7500	0.00000
8000	0.00000
8500	0.00000
9000	0.00000
9500	0.00000

c. Consistent

(4) a. $O(N^2)$

b.

N	Running Time (ms)
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0	0.00000
50	0.00200
100	0.00300
150	0.00000
200	0.00000
250	0.00000
300	0.00000
350	0.00000
400	0.00000
450	0.00000
500	0.00000
550	0.00000
600	0.00100
650	0.00000
700	0.00000
750	0.00000
800	0.00000
850	0.00000
900	0.00000
950	0.00000

c. Consistent

(5) a. $O(N^5)$
b.

N	Running Time (ms)
0	0.00000
50	0.04100
100	0.97300
150	0.00200
200	0.00400
250	0.00900
300	0.01500
350	0.02500
400	0.04100
450	0.06500
500	0.08500
550	0.12700
600	0.13300
650	0.17400
700	0.23400
750	0.27100
800	0.33900

850	0.39800
900	0.42900
950	0.52000

c. Consistent

(6) a. $O(N^5)$

b.

N	Running Time (ms)
0	0.00000
50	0.01100
100	0.01300
150	0.06500
200	0.01600
250	0.02400
300	0.03700
350	0.06400
400	0.09500
450	0.12700
500	0.17700
550	0.23100
600	0.30300
650	0.38300
700	0.47000
750	0.57600
800	0.73700
850	0.96300
900	1.10400
950	1.23100

c. Consistent

2.8 a. See Random.java

- b.
- (1). $O(N)$
 - (2). $O(N^2)$
 - (3). $O(N^2)$