

Data Structures: Quiz #9, April 14, 2010

SOLUTION

1. What order is an algorithm that has a growth rate function of

(a) $8 * n^3 - 9 * n$?

Solution: $O(8 * n^3 - 9 * n) = O(8 * n^3) = O(n^3)$ since $-9 * n$ is lower order and the constant factor 8 can be ignored.

(b) $7 * \log_2 n + 20$?

Solution: $O(7 * \log_2 n + 20) = O(7 * \log_2 n) = O(\log_2 n)$ since 20 is lower order and the constant factor of 7 can be ignored.

2. Trace through the selection sort as it sorts the following array into ascending order.

20 80 40 25 60 40

Solution:

20 40 40 25 60 80

20 40 40 25 60 80

20 25 40 40 60 80

20 25 40 40 60 80

20 25 40 40 60 80