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Assignment #2

CS 302 – 1004

1. Formal definitions:
   1. Big Oh – Notation for upper bound (worst case) to its growth rate of

if there are positive constant C and no Such that

* 1. Big Ω - Notation for lower bound (best case) to its growth rate of

if there are positive constants C and no such that

* 1. Big Θ - Notation for, when the upper bound and lower bound are the same within a constant factor.

, if and only if

when

1. Shor informal description:
   1. Big Oh – Notation for upper bound (worst case) to its growth rate of
   2. Big Ω - Notation for lower bound (best case) to its growth rate of
   3. Big Θ - Notation for, when the upper bound and lower bound are the same within a constant factor.
2. Growth rate order:
   1. Big O analysis for binary search for finding an element in sorted array is
   2. Because in Binary search there are comparisons, where *n* is the number of elements in the array. For sequential search Big-Oh is , where *n* is the number of elements.
3. Big-Oh for inserting a new element in an unsorted linked list is
4. Big-Oh for inserting a new element in sorted linked list is
5. Big-Oh of an algorithm to find if a number is prime is
6. –
7. –
8. –
9. –
   1. Algorithm 1 -
   2. Algorithm 2 -
10. –
    1. Algorithm 1 -
    2. Algorithm 2 -
11. –
    1. Algorithm 1 -
    2. Algorithm 2 -
12. –
    1. The space/time tradeoff principle says that one can often achieve a reduction in time if one is willing to sacrifice space or vice versa.
    2. Example of space/time tradeoff is a lookup table.
13. –
    1. Big-Oh for recursive algorithm in assignment #1 was,
    2. Big-Oh for dynamic algorithm in assignment #1 was,