Algorithms and Programming 1

Home Work 1

Spring 2015

1. Illustrate the operation of insertion sort on the array A= <31, 41, 59, 26, 41, 58>

2. Express the function $5n^3+ 100 n^2-5$ in terms of O- notation.

3.
    a. Write the Pseudocode for a sorting algorithms that works as the following: for sorting n numbers in an array A first it finds the smallest number in A then swap it with A[1] , then find the second smallest number and exchange it with A[2]. Continue in this manner for the first n-1 numbers of A.
    b. Give the worst-case running time of this sorting algorithm.

4. Rank the following functions based on their increasing order of growth;
    a. f2 =$3\sqrt{n}$
    b. f3 = $n^{3+\cos(n)}$
    c. f4 = $\log n^n$

5. Define Big Omega, Big theta and Big Oh bounds of a function.