

**Design and Analysis of Algorithms (CSC311) – Spring 2017**

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**Tutorial 1 (Introduction)**

Thu. Feb. 16th, 2017

Use the pseudocode conventions presented in lecture (see Introduction) to describe the algorithms.

1. Rewrite the insertion sort procedure (see Introduction) to sort into non-increasing instead of non-decreasing order.
2. Consider the following searching problem:  
**Input:** A sequence of  $n$  numbers  $A = \langle a_1, a_2, \dots, a_n \rangle$  and a value  $v$ .  
**Output:** An index  $i$  such that  $v = A[i]$  or the special value NIL if  $v$  does not appear in  $A$ .  
Write pseudocode for linear search, which scans through the sequence.
3. Consider the problem of adding two  $n$ -bit binary integers, stored in two  $n$ -element arrays  $A$  and  $B$ . The sum of the two integers should be stored in binary form in an  $(n + 1)$ -element array  $C$ . State the problem formally and write pseudocode for adding the two integers.