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CIS 350

## Program 1: Simple Inventory Management Using Provided AVL Tree Source

### Time and Space Analysis

Function	Time	Space
num_products()	$O(n^2)$	$O(n)$
size()	$O(n^3)$	$O(n)$
print_product()	$O(n \log(n))$	$O(1)$
available()	$O(n^2)$	$O(n)$
in()	$O(\log n)$	$O(1)$
save()	$O(n)$	$O(n)$
open()	$O(n)$	$O(n)$
display()	$O(n^2)$	$O(n)$
out()	$O(\log n)$	$O(1)$
process()	$O(n^2)$	$O(1)$
print()	$O(n^2)$	$O(n)$
main()	$O(n^4)$	$O(n^2)$

### Tests

Type	Description	Status
File input	can find and open input file, transaction file, and output file	Pass
Process files	can read input file and execute commands, can read transaction file and apply actions to inventory	Pass

Utilize AVL tree correctly to manage inventory	can iterate through the tree, add and remove items, and accurately keep track of quantities of specific items	Pass
File output	can output to new inventory file and output files accurately	Pass