

1. The running time of the body of the for-loop on lines (1) and (2) is 0. The loop goes around at most 100 times. Hence the for-loop takes $O(100)$ time, which is $O(1)$. Line (3) takes $O(1)$ time. Lines (4) and (5) take $O(n)$ time. Lines (6) to (8) take $O(1)$ time each. The while-loop on lines (9) to (12) goes around $n - i$ times. But we know from line (8) that $i = 1$. Thus it goes around $n - 1$ times. The body of the loop is a block. Line (10) is an if-statement that takes $O(1)$ time with no else-part. The if-part takes $O(1)$ time. Line (12) also takes $O(1)$ time. Thus the while-loop takes $O(1 + (3 + 1)(n - 1))$ time which is $O(n)$. Line (13) takes $O(1)$ time. Using the summation rule, we determine that the program takes $O(n)$ time.

