

## 1 Q1.2

Initialization: Before the first iteration starts, no elements have been checked, thus subarray of checked items is empty, so the invariant holds.

Maintenance: During the loop, after each iteration  $i$ , the algorithm has checked the  $i$  elements. If item is found in any of these elements, the function returns True and terminates. Otherwise, the algorithm proceeds to the next iteration. The invariant holds.

Termination: When the loop finishes, if the element  $x$  was found, the search ends (invariant still holds). If the loop terminates without finding  $x$ , the invariant ensures  $x$  is not present in the list.