Proof of linear search algorithm, you can find the implementation **here** or go to the next url: https://github.com/DiegoMendezMedina/C_Algorithms/tree/master/Insertion-Sort/searching_problem.c.

Pseudocode-Search.

1. **for** i = 0 **to** n-1
2. **if** v == A[i]
3. return i
4. return 'N'

Loop invariant:
At the start of each iteration of the **for** loop of lines 1-3, **if** v == A[i] **i** is returned and the **for** loop breaks. Otherwhise at the end of the loop **'N'** is returned.

Initialization:
When i = 0, **if** A[0] = v; then **i** is return and the **for** loop breaks.

Maintenance:
If there's another iteration, that means that for the previous value of **i**: A[i] != v. If for the current value of **i** happens that A[i] = v then **i** is returned and the **for** loop breaks.

Termination:
When the loop finishes **i** had browsed all the posible positions of the array and v was not found then **'N'** is returned.