Theorem 1.1: Function sort(list, n) correctly sorts a set of $n \geq 1$ integers. The result remains in list[0], ..., list[n-1] s.t. list[0] $\leq$ list[1] $\leq$ ...... $\leq$ list[n-1]

Proof: We first prove the correctness of the inner loop.

Claim: The loop in lines 7-9 always finds out the 1st index having the min. value in the range [list[i], list[n-1]].

Proof: In line 6, initially, the min value index is initialized to i.

~~The proof is by induction on m, where $m = (n-1) - i$.~~

~~**Base Case:** $m = 0$ $\therefore i = (n-1)$. On line 7, j is initialized to $(n-1)+1 = n$ which is not less than n. $\therefore$ The loop doesn't proceed further and min index is i, which is correct (Easy to see)~~

~~**Induction Step:** Let, our claim holds for the value m. $\therefore$ The loop returns the 1st min index in the range [list[n-1-m], list[n-1]].~~

~~$\therefore$ Now, let's check for the value m+1. $(m+1) = (n-1) - i$, $\boxed{i = (n-1-m)-1}$~~

Claim: Before the next iteration of the loop, the 1st index having the min. value in the range [list[i], list[j]] has been found.

Proof: The proof is by induction on j, where $i < j < n$.

Base Case: $j = i+1$. In lines 8-9, we compare list[i] and list[j] and store the index of the min. value in min.

Induction Step: Let our claim hold for an arbitrary j.

$\therefore$ min stores the 1st index having the min. value in the range [list[i], list[j]].