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Partition Loop Invariant

Write a loop invariant for the `Partition` function, and then prove that the partition procedure is correct by showing that the loop invariant holds for initialization, maintenance, and termination.

1. Loop invariant (write a statement that can be easily proven true or false, that references the purpose of the loop, and references variables that change each iteration):

2. Initialization (show that the loop invariant is true before the loop starts):

3. Maintenance (show that the loop invariant holds when executing any iteration):

4. Termination (show that the loop invariant holds once the loop ends):