Case Analysis

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1 Linear Search Algorithm

Suppose we have an array:

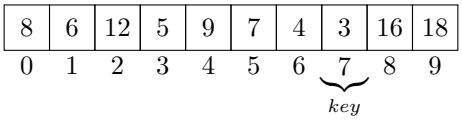

Figure 1: Searching for key = 3 after 7 steps

Algorithm 1 Linear Search Algorithm

```
1: procedure LinearSearch(A, n, x)
2:     for i ← 0 to n − 1 do
3:         if A[i] = x then
4:             Return i
5:         end if
6:     end for
7:     Return −1
8: end procedure
```

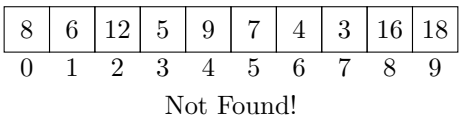

Figure 2: Searching for key = 0 after 10 steps

Best Case $\implies$ Searching key element is present at index 0. Then it will take $O(1)$.
Worst Case $\implies$ Either the element is absent or its at last index. Then it will take $O(n)$.