

Space Complexity

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Space Complexity = Input Space + Auxiliary Space

Input space is the input data on which the specific operation is done.

Eg : Input array : $O(n)$: n is the number of elements

Auxiliary Space is the extra variables required to perform that operation.eg :
in linear search , key and loop variable

Input data :

Int arr[50]

Int arr[75]

Int arr[100]

Auxiliary space :

key , i ; loop var.

key , i

The auxiliary space is constant irrespective of the input space, hence we can say that auxiliary space is $O(1)$

In linear Search :

Input space : $O(n)$

Aux space : $O(1)$

Total Space complexity : input + Aux

$O(n) + O(1)$ (as it is constant)

$O(n+1)$

$O(n)$

+1 is discarded

Space Complexity : Only Aux space is considered

Hence in case of linear search Aux space is $O(1)$