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| **Linear Search Algorithm:**  Given an array **arr[]** of **N** elements, the task is to write a function to search a given element**x** in **arr[]**.  ***Input:****arr[] = {10, 20, 80, 30, 60, 50,110, 100, 130, 170}, x = 110;* ***Output:****6* ***Explanation:****Element x is present at index 6*  ***Input:****arr[] = {10, 20, 80, 30, 60, 50,110, 100, 130, 170}, x = 175;* ***Output:****-1* ***Explanation:****Element x is not present in arr[].*  Approach :-- 1    Approach:-2    **Time complexity: O(N).** **Auxiliary Space: O(1).** | **Binary Search :**  Given a sorted array **arr[]** of **n** elements, write a function to search a given element **x** in**arr[]**and return the index of x in the array. Consider array is 0 base index  ***Input:****arr[] = {10, 20, 30, 50, 60, 80, 110, 130, 140, 170}, x = 110* ***Output:****6* ***Explanation:****Element x is present at index 6.*  ***Input:****arr[] = {10, 20, 30, 40, 60, 110, 120, 130, 170}, x = 175* ***Output:****-1* ***Explanation:****Element x is not present in arr[].*  *Approach :--1*    **Approach :-2**    **Time Complexity:** O(log n) **Auxiliary Space:** O(1) |