



Linear Search



Linear Search



- Linear search is a very simple search.
- In this type of search, a sequential search is made over all items one by one.
- Every item is checked and if a match is found then that particular item is returned.
- otherwise the search continues till the end of the data collection.
- Linear search is comparatively slower than binary search.



Algorithm

Linear Search (Array A, Value x)

Step 1: Set i to 1

Step 2: if $i > n$ then go to step 7

Step 3: if $A[i] = x$ then go to step 6

Step 4: Set i to $i + 1$

Step 5: Go to Step 2

Step 6: Print Element x Found at index i and go to step 8

Step 7: Print element not found

Step 8: Exit



Pseudocode



```
procedure linear_search (list, value)
  for each item in the list
    if match item == value
      return the item's location
    end if
  end for
end procedure
```



Steps for linear search



A simple approach is to do linear search:

- Start from the leftmost element of `arr[]` and one by one compare `x` with each element of `arr[]`
- If `x` matches with an element, return the index.
- If `x` doesn't match with any of elements, return `-1`.



Simple code for linear search



```
int search(int arr[], int n, int x)
{
    int i;
    for (i = 0; i < n; i++)
        if (arr[i] == x)
            return i;
    return -1;
}
```