Linear Search

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Int arr[9]

[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
33	55	88	77	44	11	66	22	99

1) Get the key from the user.
2) Start the traversal from the 1st element of the array(0th Index).
3) Compare the key to search with each element of the array.
   a. If the match is found, return the corresponding index.
   b. Else, continue the search till the last index of the array

```
for(i=0; i<SIZE; i++)
{
    if(key == arr[i])
        return i;
}
```

Key = 11
Key found at index 5
Comparisons = 6

Average Case Time Complexity
O(n/2)
O(n) as we discard 1/2

Big Theta
$\Theta(n)$

Key = 33
Key found at index 0
Comparisons = 1

Best Case Time Complexity
Order Of(1)
O(1)

Big Omega
$\Omega(1)$

Key = 99
Key found at index 8
Comparisons = 9

Worst Case Time Complexity
Order Of(n)
O(n)
N : no. of elements in the array

Big Oh
$O(n)$

Key = 25
Key not found
Comparisons = 9

Worst Case Time Complexity
O(n)

Big Oh
$O(n)$