DAA Assignment 1

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Linear Search

1. ***Algorithm***

Step1 Start.
Step 2: Input array elements.
Step 3: Input Key to be searched.
Step 4: Set i to 0.
Step 5: if a[i] = key go to **step** 8.
Step 6: Increment i (i++).
Step 7: if i<=len of array, go to **step** 5 else go to **step** 9.
Step 8: Print element found at location i+1 go to **step**10.
Step 9: Print element not found.
Step 10: Exit.

2. ***Time Complexity***

> Best Case : O(1) (if element found in first iteration)
> Worst Case : O(n) (if element found in last iteration/ not found)

3. ***Space Complexity : O(1)***

4. ***Code Implementation :***

```
#include<iostream>
using namespace std;
int main()
{
  int n,x;
  cout<<"Array Size: ";
  cin>>n;
  int a[n];
  for(int i=0;i<n;i++)
        cin>>a[i];
  cout<<"Element to Search: ";
  cin>>x;
  for(int i=0;i<n;i++)
  {
    if(a[i]==x)
    {
      cout<<"Element found at position "<<i+1<<endl;
      return 0;
    }
  }
  cout<<"Element not found"<<endl;
  return 0;
}
```

Output: