Design and Analysis of Algorithms

Vandana M L
Department of Computer Science & Engineering

DESIGN AND ANALYSIS OF ALGORITHMS

Performance Analysis Vs Performance Measurement

Slides courtesy of **Anany Levitin**

Vandana M L
Department of Computer Science & Engineering

Design and Analysis of Algorithms

Performance Evaluation of Algorithm

- Performance Analysis
  - Machine Independent
  - Prior Evaluation
- Performance Measurement
  - Machine Dependent
  - Posterior Evaluation

Performance Analysis of Sequential search :Worst Case

```
ALGORITHM SequentialSearch(A[0..n-1], K)
  //Searches for a given value in a given array by sequential search
  //Input: An array A[0..n-1] and a search key K
  //Output: Returns the index of the first element of A that matches K or –1 if there are no matching elements
  i ←0
  while i < n and A[i] ǂ K do
        i ← i + 1
  if i < n          //A[i] = K
        return i
  else
        return -1
```

Basic operation: A[i] ǂ K

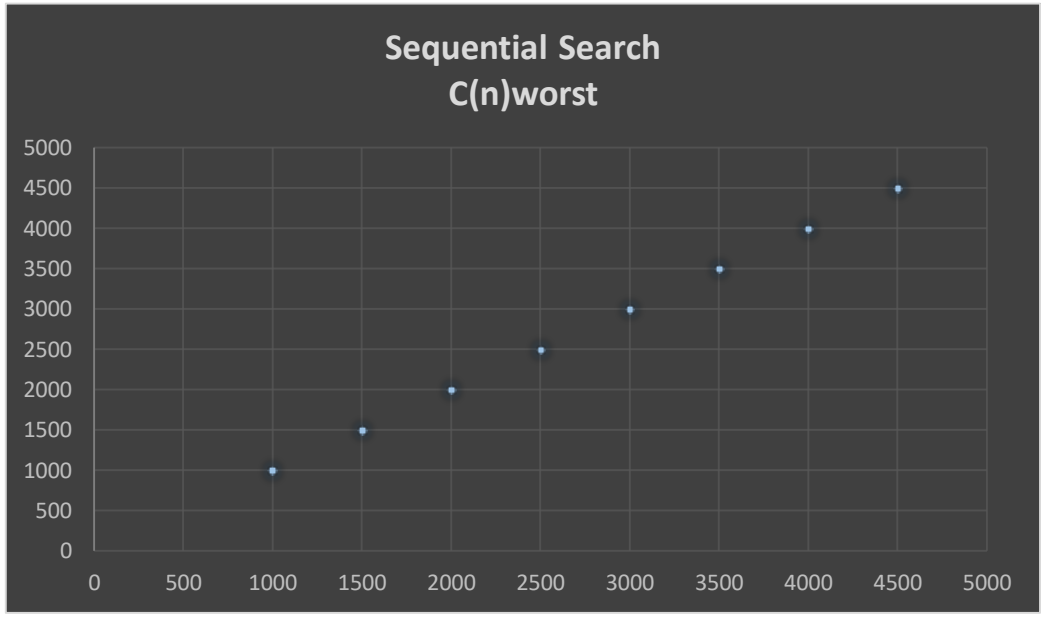
Basic operation count: n

Time Complexity: $T(n) \in O(n)$

Design and Analysis of Algorithms

Performance Analysis of Sequential Search

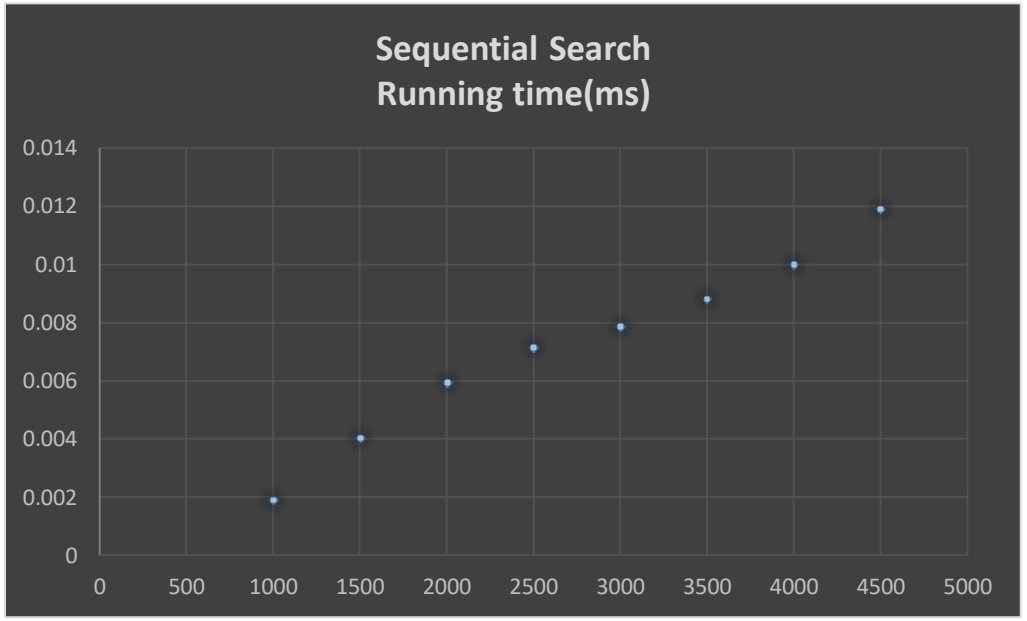
Input Size	Sequential Search C(n)worst
1000	1000
1500	1500
2000	2000
2500	2500
3000	3000
3500	3500
4000	4000
4500	4500



Design and Analysis of Algorithms

Performance Measurement of Sequential Search

Input Size	Sequential Search Actual Running Time(ms)
1000	0.001907
1500	0.004053
2000	0.00596
2500	0.007153
3000	0.007868
3500	0.008821
4000	0.010014
4500	0.011921



THANK YOU

Vandana M L
Department of Computer Science & Engineering

vandanamd@pes.edu