DAA Lab - Session 1 - Intro with Sequential Search

Introduction to the lab environment.

**Brute Force:** Implementation of Sequential Search algorithm

Demonstrate the usage of lab environment using a sample program implementing Sequential Search algorithm searching for an integer in an array of integers

Note: A video of the intro session is available at <https://youtu.be/jN30GM61MBQ> under the title

“Introductory session on the lab in Design and Analysis of Algorithms”.

**Problem Definition:** Search for an integer in an array of integers using Sequential Search algorithm. Print the index (0-based) of the first occurrence of the integer in the array and the execution time.

**Input:** Input begins with n (1 ≤ n ≤ 220) of number of integers. The following n lines has an integer per line (-220 ≤ integer ≤ 220). The following line has an integer to be searched.

**Output:** Print the index (0-based) of the first integer matched by Sequential Search (print “-1” in case of unsuccessful search) in the first line and print the time taken (in seconds) in a new line upto 6 decimal places.

**Sample Input:**

6

999999

0

1234

-999999

1234

-1234

1234

**Sample Output:**

2

0.000000 sec.

Algorithm:

**Algorithm SequentialSearch(A[0..n-1], K)**

//Searches for a key in an array using sequential search.

//Input: An array A[0..n-1] and a search key K.

//Output: The index of the **first** element of A that matches K

// or -1 if there are no matching elements.

**i ← 0**

**while (i < n) do**

**if (A[i] = K)**

**return i**

**i ← i + 1**

**endwhile**

**return -1**

**Practice-Problems:**

1. Instead of the first occurrence, print the index (0-based) of the last occurrence of the integer in the array and the execution time.
2. Print indices (0-based) of all occurrences of the integer in the array and the execution time.
3. Search name in an array of names where a name is a string of characters of any length.
4. Search a key in a matrix of elements with r rows and c columns.