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Programming Assignment 1



Discussion

PSUEDOCODE

+ LINEAR SEARCH & BINARY SEARCH CODE

SCREEN SHOTS

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[https://github.com/AhmadDumairi00/
FinalAssignmentSourceCodes](https://github.com/AhmadDumairi00/FinalAssignmentSourceCodes)

Important note: This file contains the linear & binary search algorithm in pseudo code and the code screenshots.

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Algorithm for Linear Search using Pseudo code:

Array = arr , Value we're searching for =Val, Number of array elements = n,

- 1) Declare a variable (counter) called j.
- 2) Give j initial value = 1.
- 3) Condition statement: If j is larger than n, (go to point #8)
- 4) Condition Statement: If arr[j] is equal to Val (go to point #7)
- 5) Change value of j from 1 to j+1
- 6) Compare the new value of j to the value of n (do point #3 again)
- 7) Print Val (which equals arr[j])
- 8) Print Val not found
- 9)End the program

Algorithm for Binary Search using Pseudo code:

1. Set "A" to sorted array
2. Set "NumOfElements" to (size of array)
3. Declare "ValueToSearch" as the value to search
4. Set "low" to "1"
5. Set "high" to "NumOfElements"
6. Check if "ValueToSearch" isn't found using loop (while)
7. Check if "high" is less than "lower"
8. Display "ValueToSearch" isn't available, & go to step 16
9. Set "med" to low+(high-lower)
10. Check if A[med] is smaller than "ValueToSearch"
11. Set low to med+1, & go to step 16
12. Check if A[med] is bigger than "ValueToSearch"
13. set "upper" to "mid - 1" then go to Step 16
14. check "A[mid]" is = ValueToSearch
15. print "ValueToSearch" is present at location
16. End program

Linear search code screen shots

```
FinalAssignmentCodes > src > part1 > LinearSearch > main(String[]):void
1 package part1;
2 import java.util.Scanner;
3
4 public class LinearSearch {
5     public static void main(String args[]) {
6         int counter, NumberOfElements, ValueToSearch, arr[];
7         @SuppressWarnings("resource")
8         Scanner in = new Scanner(System.in);
9         System.out.println("Enter number of elements:");
10        NumberOfElements = in.nextInt();
11        arr = new int[NumberOfElements];
12        System.out.println("Enter " + NumberOfElements + " elements:");
13        for (counter = 0; counter < NumberOfElements; counter++)
14            arr[counter] = in.nextInt();
15        System.out.println("Enter value to find:");
16        ValueToSearch = in.nextInt();
17        for (counter = 0; counter < NumberOfElements; counter++)
18        {
19            if (arr[counter] == ValueToSearch)
20            {
21                System.out.println(ValueToSearch + " Founded at location number: " + (counter + 1)); // We used j + 1 because the array index starts from 0
22                break;
23            }
24        }
25        if (counter == NumberOfElements)
26            System.out.println(ValueToSearch + " isn't found in this array");
27        }
28    }
29 }
```

```
FinalAssignmentCodes > src > part1 > LinearSearch > main(String[]):void
1 package part1;
2 import java.util.Scanner;
3
4 public class LinearSearch {

Console x
<terminated> LinearSearch [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (May 31, 2020, 3:59:51 AM)
Enter number of elements:
12
Enter 12 elements:
43
37
86
70
99
101
467
44456
66654
3
233
212
Enter value to find:
99
99 Founded at location number: 5
```

Binary search code screen shots

```
1 package part1;
2 import java.util.Scanner;
3 public class BinarySearch {
4     public static void main(String args[])
5     {
6
7         {
8             int counter, ElementsNumber, ValueToFind, arr[];
9             Scanner in = new Scanner(System.in);
10
11             System.out.println("Enter number of elements:");
12             ElementsNumber= in.nextInt();
13             arr = new int[ElementsNumber];
14             System.out.println("Enter " + ElementsNumber+ " elements:");
15             for (counter = 0; counter < ElementsNumber; counter++)
16
17                 arr[counter] = in.nextInt();
18             System.out.println("Enter value to find:");
19
20             ValueToFind = in.nextInt();
21             for (counter = 0; counter < ElementsNumber; counter++)
22             {
23                 if (arr[counter] == ValueToFind)
24                 {
25                     System.out.println(ValueToFind + " is present at location " + (counter + 1));
26                     break;
27                 }
28             }
29
30             if (counter == ElementsNumber)
31
32                 System.out.println(ValueToFind + " is not in the given array");
33         }
34     }
35 }
36
37
38
```

```
*BinarySearch.java x
FinalAssignmentCodes ▾ src ▾ part1 ▾ BinarySearch ▾ main(String[]) : void
1 package part1;
2 import java.util.Scanner;
3 public class BinarySearch {

Console x
<terminated> BinarySearch [Java Application] C:\Program Files\Java\jdk-13.0.2\bin\javaw.exe (May 31, 2020, 4:38:07 AM)
Enter number of elements:
10
Enter 10 elements:
5
87
89
74
53
55
90
9
76
44
Enter value to find:
74
74 is present at location 4
```