Find the smallest and second smallest element in an array

Question: Write an efficient C program to find smallest and second smallest element in an array.

Difficulty Level: Rookie

Algorithm:

```
1) Initialize both first and second smallest as INT_MAX
   first = second = INT_MAX
2) Loop through all the elements.
   a) If the current element is smaller than first, then update first
       and second.
   b) Else if the current element is smaller than second then update
    second
```

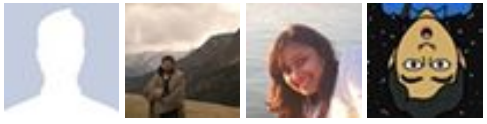
Implementation:

```
#include <stdio.h>
#include <limits.h> /* For INT_MAX */

/* Function to print first smallest and second smallest elements */
void print2Smallest(int arr[], int arr_size)
{
    int i, first, second;

    /* There should be atleast two elements */
    if (arr_size < 2)
    {
        printf(" Invalid Input ");
        return;
```

Google™ Custom Search

GeeksforGeeks

53,522 people like GeeksforGeeks.



Interview Experiences
Advanced Data Structures
Dynamic Programming
Greedy Algorithms
Backtracking
Pattern Searching
Divide & Conquer
Mathematical Algorithms
Recursion
Geometric Algorithms

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com

```
    }

    first = second = INT_MAX;
    for (i = 0; i < arr_size ; i ++)
    {
        /* If current element is smaller than first then update both
          first and second */
        if (arr[i] < first)
        {
            second = first;
            first = arr[i];
        }

        /* If arr[i] is in between first and second then update second
        else if (arr[i] < second && arr[i] != first)
            second = arr[i];
    }
    if (second == INT_MAX)
        printf("There is no second smallest element\n");
    else
        printf("The smallest element is %d and second Smallest element
               first, second);
}

/* Driver program to test above function */
int main()
{
    int arr[] = {12, 13, 1, 10, 34, 1};
    int n = sizeof(arr)/sizeof(arr[0]);
    print2Smallest(arr, n);
    return 0;
}
```

Output:

```
The smallest element is 1 and second Smallest element is 10
```

The same approach can be used to find the largest and second largest elements in an array.

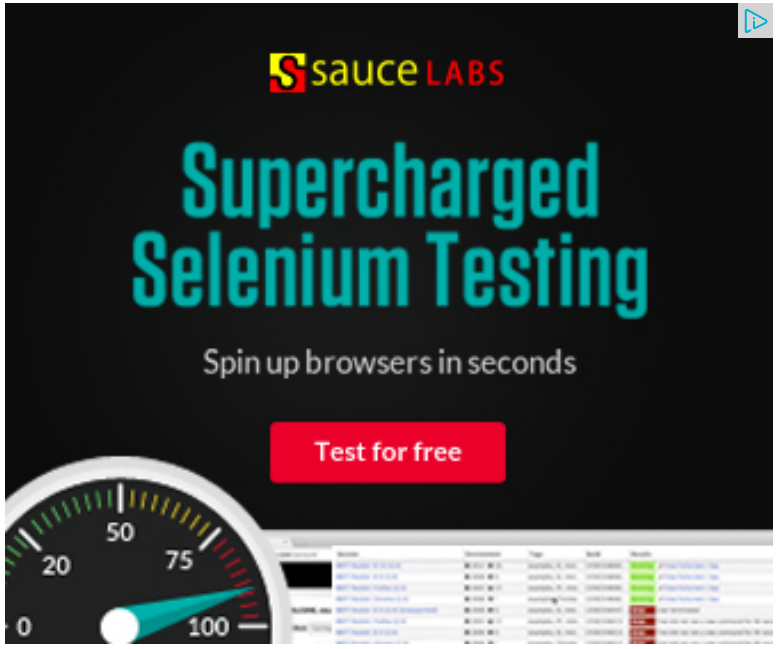
Time Complexity: O(n)

Please write comments if you find any bug in the above program/algorithm or other ways to solve the same problem.

Popular Posts

All permutations of a given string
Memory Layout of C Programs
Understanding “extern” keyword in C
Median of two sorted arrays
Tree traversal without recursion and without stack!
Structure Member Alignment, Padding and Data Packing
Intersection point of two Linked Lists
Lowest Common Ancestor in a BST.
Check if a binary tree is BST or not
Sorted Linked List to Balanced BST

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com



HP Chromebook 11

google.com/chromebook

Everything you need in one laptop. Made with Google. Learn more.

Related Tpoics:

- Remove minimum elements from either side such that 2*min becomes more than max
- Divide and Conquer | Set 6 (Search in a Row-wise and Column-wise Sorted 2D Array)
- Bucket Sort
- Kth smallest element in a row-wise and column-wise sorted 2D array | Set 1
- Find the number of zeroes
- Find if there is a subarray with 0 sum
- Divide and Conquer | Set 5 (Strassen's Matrix Multiplication)
- Count all possible groups of size 2 or 3 that have sum as multiple of 3

7 Tweet 0 2

Writing code in comment? Please use **ideone.com** and share the link here.

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com

705 Subscribe

Recent Comments

Aman Hi, Why arent we checking for conditions...

Write a C program to Delete a Tree. · 22 minutes ago

kzs please provide solution for the problem...

Backtracking | Set 2 (Rat in a Maze) · 25 minutes ago

Sanjay Agarwal bool tree::Root_to_leaf_path_given_sum(tree...

Root to leaf path sum equal to a given number · 50 minutes ago

GOPI GOPINATH @admin Highlight this sentence "We can easily...

Count trailing zeroes in factorial of a number · 52 minutes ago

newCoder3006 If the array contains negative numbers also. We...

Find subarray with given sum · 1 hour ago

newCoder3006 Code without using while loop. We can do it...

Find subarray with given sum · 1 hour ago

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com

AdChoices
▶ Java Array
▶ C++ Array
▶ Array Max
AdChoices
▶ C++ Array
▶ Array Max
▶ An Array
AdChoices
▶ C Element
▶ Element 1 Test
▶ Element Used

@geeksforgeeks, **Some rights reserved** **Contact Us!** Powered by **WordPress** & **MooTools**, customized by geeksforgeeks team

open in browser PRO version Are you a developer? Try out the HTML to PDF API pdfcrowd.com