

GE23131-Programming Using C-2024

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Status	Finished
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Question 1

Correct

Marked out of 1.00

Flag question

Given an array of integers, reverse the given array in place using an index and loop rather than a built-in function.

Example

`arr = [1, 3, 2, 4, 5]`

Return the array `[5, 4, 2, 3, 1]` which is the reverse of the input array.

Function Description

Complete the function `reverseArray` in the editor below.

`reverseArray` has the following parameter(s):

`int arr[n]`: an array of integers

Return

`int[n]`: the array in reverse order

Constraints

$1 \leq n \leq 100$

$0 < arr[i] \leq 100$

Input Format For Custom Testing

The first line contains an integer, `n`, the number of elements in `arr`.

Sample Input For Custom Testing

5
1
3
2
4
5

Sample Output

5
4
2
3
1

Explanation

The input array is [1, 3, 2, 4, 5], so the reverse of the input array is [5, 4, 2, 3, 1].

Sample Case 1

Sample Input For Custom Testing

4
17
10
21
45

Sample Output

45

17

Explanation

The input array is [17, 10, 21, 45], so the reverse of the input array is [45, 21, 10, 17].

Answer: (penalty regime: 0 %)

Reset answer

```
1  /*
2  * Complete the 'reverseArray' function
3  *
4  * The function is expected to return an integer array.
5  * The function accepts INTEGER_ARRAY arr as input.
6  */
7
8  /*
9  * To return the integer array from the function, you should
10 *   - Store the size of the array in the first parameter of the return statement.
11 *   - Allocate the array statically.
12 *
13 * For example,
14 * int* return_integer_array_using_static_allocation(int n)
15 *     *result_count = 5;
16 *
17 *     static int a[5] = {1, 2, 3, 4, 5};
18 *
19 *     return a;
20 * }
21 *
22 * int* return_integer_array_using_dynamic_allocation(int n)
23 *     *result_count = 5;
24 *
25 *     int *a = malloc(5 * sizeof(int));
26 *
27 *     for (int i = 0; i < 5; i++) {
28 *         *(a + i) = i + 1;
29 *     }
30 *
31 *     return a;
32 * }
```

```
35 #include<stdio.h>
36 #include<stdio.h>
37 int* reverseArray(int arr_count, int
38 int* result = (int *)malloc(arr_c
39
40 if(result == NULL){
41     return NULL;
42 }
43 for(int i=0;i<arr_count; i++)
44 {
45     result[i]=arr[arr_count-i-1];
46 }
47 *result_count =arr_count;
48 return result;
49 }
50
```

	Test	Expected	Got	
✓	int arr[] = {1, 3, 2, 4, 5}; int result_count; int* result = reverseArray(5, arr, &result_count); for (int i = 0; i < result_count; i++) printf("%d\n", *(result + i));	5 4 2 3 1	5 4 2 3 1	✓

Passed all tests! ✓

Question **2**
Correct

An automated cutting machine is used to cut rods into segments. The cutting machine can only hold a rod of *minLength* or more, and it can only make one cut at a time. Given the array *lengths[]* representing the desired lengths of each segment, determine

Example

$$n = 3$$

$$lengths = [4, 3, 2]$$

$$minLength = 7$$

The rod is initially $sum(lengths) = 4 + 3 + 2 = 9$ units long. First cut off the segment of length $4 + 3 = 7$ leaving a rod $9 - 7 = 2$. Then check that the length 7 rod can be cut into segments of lengths 4 and 3. Since 7 is greater than or equal to $minLength = 7$, the final cut can be made. Return "Possible".

Example

$$n = 3$$

$$lengths = [4, 2, 3]$$

$$minLength = 7$$

The rod is initially $sum(lengths) = 4 + 2 + 3 = 9$ units long. In this case, the initial cut can be of length 4 or $4 + 2 = 6$. Regardless of the length of the first cut, the remaining piece will be shorter than $minLength$. Because $n - 1 = 2$ cuts cannot be made, the answer is "Impossible".

Function Description

Complete the function *cutThemAll* in the editor below.

int lengths[n]: the lengths of the segments, in order

int minLength: the minimum length the machine can accept

Returns

string: "*Possible*" if all $n-1$ cuts can be made. Otherwise, return the string "*Impossible*".

Constraints

- $2 \leq n \leq 10^5$
- $1 \leq t \leq 10^9$
- $1 \leq lengths[i] \leq 10^9$
- *The sum of the elements of lengths equals the uncut rod length.*

Input Format For Custom Testing

The first line contains an integer, n , the number of elements in *lengths*.

Each line i of the n subsequent lines (where $0 \leq i < n$) contains an integer, *lengths*[i].

The next line contains an integer, *minLength*, the minimum length accepted by the machine.

Sample Case 0

STDIN Function

4 → lengths[] size n = 4
3 → lengths[] = [3, 5, 4, 3]
5
4
3
9 → minLength= 9

Sample Output

Possible

Explanation

The uncut rod is $3 + 5 + 4 + 3 = 15$ units long. Cut the rod into lengths of $3 + 5 + 4 = 12$ and 3 . Then cut the 12 unit piece into lengths 3 and $5 + 4 = 9$. The remaining segment is $5 + 4 = 9$ units and that is long enough to make the final cut.

Sample Case 1

Sample Input For Custom Testing

STDIN Function

3 → lengths[] size n = 3

2

12 → minLength= 12

Sample Output

Impossible

Explanation

The uncut rod is $5 + 6 + 2 = 13$ units long. After making either cut, the rod will be too short to make the second cut.

Answer: (penalty regime: 0 %)

Reset answer

```
1 1 /*
2 2 * Complete the 'cutThemAll' function
3 3 *
4 4 * The function is expected to return
5 5 * The function accepts following par
6 6 * 1. LONG_INTEGER_ARRAY lengths
7 7 * 2. LONG_INTEGER minLength
8 8 */
9 9
10 10 /*
11 11 * To return the string from the func
12 12 *
13 13 * For example,
14 14 * char* return_string_using_static_a
15 15 *     static char s[] = "static allo
16 16 *
17 17 *     return s;
```



```
20  char* return_string_using_dynamic_
21  *   char* s = malloc(100 * sizeof(
22  *
23  *   s = "dynamic allocation of str
24  *
25  *   return s;
26  * }
27  *
28  */
29  #include<stdio.h>
30  char* cutThemAll(int lengths_count, l
31  long t=0,i=1;
32  for(int i=0;i<=lengths_count-1;i++){
33      t+=lengths[i];
34  }
35  do{
36      if(t-lengths[lengths_count-1]<min
37          return "Impossible";
38      }
39      i++;
40  }while(i<lengths_count-i);
41  return "Possible";
42  }
43
```

	Test	Expected	Got	
✓	long lengths[] = {3, 5, 4, 3}; printf("%s", cutThemAll(4, lengths, 9))	Possible	Possible	✓
✓	long lengths[] = {5, 6, 2}; printf("%s", cutThemAll(3, lengths, 12))	Impossible	Impossible	✓

Passed all tests! ✓

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