

Vishal B

241001305

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`.

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

Sample Case 0

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
21
10
17

Explanation

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

```

1  /*
2  * Complete the 'reverseArray' function below.
3  *
4  * The function is expected to return an INTEGER_ARRAY.
5  * The function accepts INTEGER_ARRAY arr as parameter.
6  */
7
8  /*
9  * To return the integer array from the function, you should:
10 * - Store the size of the array to be returned in the result_count variable
11 * - Allocate the array statically or dynamically
12 *
13 * For example,
14 * int* return_integer_array_using_static_allocation(int* result_count) {
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* result_count) {
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 * }
33 *
34 */
35 #include<stdio.h>
36 #include<stdlib.h>
37 int* reverseArray(int arr_count, int *arr, int *result_count) {
38     *result_count=arr_count;
39     int *reversed=(int *)malloc(arr_count * sizeof(int));
40     if(reversed==NULL)
41     {
42         exit(1);
43     }
44     for(int i=0;i<arr_count;i++)
45     {
46         reversed[i]=arr[arr_count-1-i];
47     }
48     return reversed;
49 }
50

```

	Test	Expected	Got	
✓	<pre> 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)); </pre>	<pre> 5 4 2 3 1 </pre>	<pre> 5 4 2 3 1 </pre>	✓

Passed all tests! ✓

Question 2

Correct

Marked out of 1.00

Flag question

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 if it is possible to make the necessary cuts using this machine. The rod is marked into *lengths* already, in the order given.

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.

cutThemAll has the following parameter(s):

- 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

Sample Input For Custom Testing

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
5  - lengths[] = [5, 6, 2]
6
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.

```
1  /*
2  * Complete the 'cutThemAll' function below.
3  *
4  * The function is expected to return a STRING.
5  * The function accepts following parameters:
6  * 1. LONG_INTEGER_ARRAY lengths
7  * 2. LONG_INTEGER minLength
8  */
9
10 /*
11 * To return the string from the function, you should either do static allocation or dynamic allocation
12 *
13 * For example,
14 * char* return_string_using_static_allocation() {
15 *     static char s[] = "static allocation of string";
16 *     return s;
17 * }
18 *
19 * char* return_string_using_dynamic_allocation() {
20 *     char* s = malloc(100 * sizeof(char));
21 *     s = "dynamic allocation of string";
22 *     return s;
23 * }
24 *
25 */
26
27 #include<stdio.h>
28
29 char* cutThemAll(int lengths_count, long *lengths, long minLength) {
30     long totalLength=0;
31
32     for(int i=0;i<lengths_count;i++)
33     {
34         totalLength+=lengths[i];
35     }
36     long currentLength=0;
37     for(int i=0;i<lengths_count -1;i++)
38     {
39         currentLength+=lengths[i];
40         long remainingLength=totalLength-currentLength;
41         if(remainingLength > minLength)
42         {
43             return "Possible";
44         }
45     }
46     return "Impossible";
47 }
```

	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! ✓