

Practice (/) BETA

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All-time Popular Problems
Delete without head pointer (/problems/delete-without-head-pointer/1/?ref=self)
Level order traversal in spiral form (/problems/level-order-traversal-in-spiral-form/1/?ref=self)
Angle between hour and minute hand (/problems/angle-between-hour-and-minute-hand/0/?ref=self)
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0 - 1 Knapsack Problem (/problems/0-1-knapsack-problem/0/?ref=self)
Sort an array of 0s, 1s and 2s (/problems/sort-an-array-of-0s-1s-and-2s/0/?ref=self)
Check for BST (/problems/check-for-bst/1/?ref=self)

Difficulty Level: [Medium \(https://practice.geeksforgeeks.org/Medium/0/0/\)](https://practice.geeksforgeeks.org/Medium/0/0/)

Submissions: [8393 \(/problem_submissions.php?pid=281\)](#) Accuracy: 39.99%

Trapping Rain Water

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Given n non-negative integers in array representing an elevation map where the width of each bar is 1, compute how much water it is able to trap after raining.

For example:

Input:

3

2 0 2

Output:

2

Structure is like below

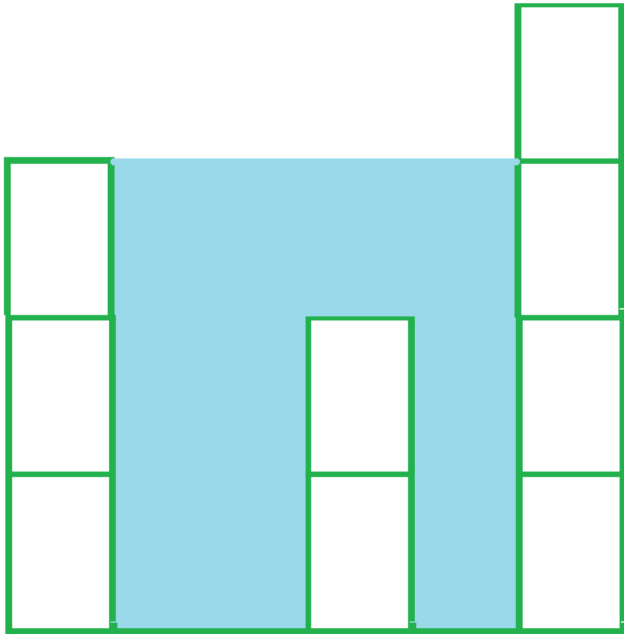
| |

|_ |

We can trap 2 units of water in the middle gap.



Below is another example.



Bars for input {3, 0, 0, 2, 0, 4}

Total trapped water = 3 + 3 + 1 + 3 = 10

Input:

The first line of input contains an integer T denoting the number of test cases. The description of T test cases follows.

Each test case contains an integer N followed by N numbers to be stored in array.

Output:

Print trap units of water in the middle gap.

Constraints:

$1 \leq T \leq 100$

$3 \leq N \leq 100$

$0 \leq \text{Arr}[i] < 10$

Example:

Input:

```
2
4
7 4 0 9
3
6 9 9
```

Output:

```
10
0
```

**** For More Input/Output Examples Use 'Expected Output' option ****

Author: Karan Grover ([https://auth.geeksforgeeks.org/user/Karan Grover/practice/](https://auth.geeksforgeeks.org/user/Karan%20Grover/practice/))

All submissions

(/problem_submissions.php?pid=281)

My submissions

(/problem_submissions.php?

pid=281&isSolved=ALL&lang=ALL&user=Self)

Editorial (/editorial.php?pid=281)

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C (gcc 5.4)

C++ (g++ 5.4)

C#

Java (1.8)

Python 3

Theme Light

Set Default Code (<https://auth.geeksforgeeks.org/edit-profile.php>)

Reset



```
1 for _ in range(int(input())):
2     n=int(input())
3     l=list(map(int,input().split()))
4     R=[]
5     L=[]
6     Sum=0
7     for i in range(n):
8         L.append(max(l[0:i+1]))
9         R.append(max(l[i:n]))
10    for i in range(n):
11        Sum+=min(L[i],R[i])-l[i]
12    print(Sum)
13
```

It is recommended to 'Compile & Test' your code before clicking 'Submit'!

Compile & Test

Submit

Expected Output

Compilation/Execution Result:

Correct Answer.


Execution Time:0.01

Next Suggested Problem: [Pythagorean Triplet \(/problems/pythagorean-triplet/0/?ref=self\)](/problems/pythagorean-triplet/0/?ref=self)

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My Subjective Stats

Subjective Questions (/questions/himanshudce/)

Subjective Answers (/answers/himanshudce/)

Trending Problems

Printing Maximum Sum Increasing Subsequence (/problems/printing-maximum-sum-increasing-subsequence/0/?ref=self)
Strongly connected component (Tarjans's Algo) (/problems/strongly-connected-component-tarjanss-algo/0/?ref=self)
Easy Query (/problems/easy-query/0/?ref=self)
ADA Noise (/problems/ada-noise/0/?ref=self)
Smallest K digit number divisible by X (/problems/smallest-k-digit-number-divisible-by-x/0/?ref=self)
Number of Palindromic paths in a Matrix (/problems/number-of-palindromic-paths-in-a-matrix/0/?ref=self)
Maximum XOR subset (/problems/maximum-xor-subset/0/?ref=self)
Collecting Trees (/problems/collecting-trees/0/?ref=self)
Minimum Time (/problems/minimum-time/0/?ref=self)
Next higher palindromic number using the same set of digits (/problems/next-higher-palindromic-number-using-the-same-set-of-digits/0/?ref=self)
Power Set (/problems/power-set/0/?ref=self)
C++ STL Set 6 (set) (/problems/c-stl-set-6-set/1/?ref=self)
Line passing through 2 points (/problems/line-passing-through-2-points/0/?ref=self)
Largest power of prime (/problems/largest-power-of-prime/0/?ref=self)
Decreasing Sequence (/problems/decreasing-sequence/0/?ref=self)
Maximum number of characters between any two same character (/problems/maximum-number-of-characters-between-any-two-same-character/0/?ref=self)
Trisha's Number (/problems/trishas-number/0/?ref=self)
Max sum submatrix (/problems/max-sum-submatrix/0/?ref=self)

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 himanshu ▾

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**Vrinda Agarwal** • 3 months ago

Please help ! Getting SIGSEGV

<http://ide.geeksforgeeks.org...>

7 ^ | v • Reply • Share ›

**raj007** → Vrinda Agarwal • 15 days ago

```
int k=s.top();
s.pop(); //Here when you pop, the stack might have become empty
int d=(i-s.top()-1); //So this call s.top will give you Segfault if it has become empty.
```

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**Afaque ahmad** • a year ago

Please Help me! Cant understand where im going wrong!

<http://code.geeksforgeeks.o...>

4 ^ | v • Reply • Share ›

**amor p** → Afaque ahmad • a year ago

Silly mistake at below line :P

else

tower[i] = maxSeenRight;

check below..I just changed this else part

<http://code.geeksforgeeks.o...>

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**Yuge Xiong** • 2 months ago<http://ide.geeksforgeeks.or...>

Please help me!

I am getting the correct answers when I test with all the example inputs, but IndexOutOfBounds error when I submit it!

1 ^ | v • Reply • Share ›

**Zah Ra** • a year ago

This is O(n) solution:

```
int find_res(int A[], int n){
```

```
int sum = 0;
```

```
int s1 = 0;
```

```
int i = 1;
```

```
while(i < n){
```

```
while(A[i] < A[s1]){
```

```
i++;
```

```
}
```

```
for(int k = s1; k < i; k++){
```

```
sum += (std::min(A[s1], A[i]) - A[k]);
```

[see more](#)

1 ^ | v • Reply • Share ›

**Deepjal Chhetri** • 2 years ago

Good question !

.... question....

1 ^ | v • Reply • Share ›



Abhay Singh → Deepjal Chhetri • 2 years ago

yeah ..awesome one..

i solved it by..using 3 bars..then 4 bars..5 bars..

what is your logic?

^ | v • Reply • Share ›



Deepjal Chhetri → Abhay Singh • 2 years ago

I have used dp. Maintain two dp arrays, one dpleft and another dpright. Let dpleft[i] be the maximum elevation map from 1 to i, and let dpright[i] be maximum elevation map from i to n, Then maximum amount of water you can trap on ith position will be $\max(\min(\text{left}[i], \text{right}[i]) - a[i], 0)$.

The sum for each i from 1 to n gives you answer!

1 ^ | v • Reply • Share ›



Radek Hendrych • 4 months ago

A commented solution in Python 3, runs in 0.05 sec.

<http://ide.geeksforgeeks.org...>

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Shrihan P • 6 months ago

I thought my solution was perfectly alright, until I found a RTE.

Help would be appreciated.!

<http://ide.geeksforgeeks.org...>

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Soumava • 6 months ago

This question was asked in DE SHAW last year.Kindly add the company tag.

^ | v • Reply • Share ›



GeeksforGeeks Mod → Soumava • 6 months ago

Thanks for writing to us. We have added the company tag.

^ | v • Reply • Share ›



shreya srivastava • 6 months ago

Why don't we have number of test cases in the input.

Input should be

1

4

7 4 0 9

And not

4

7 4 0 9

^ | v • Reply • Share ›



shreya srivastava → shreya srivastava • 6 months ago

The issue was due to the space my code was using. After moving the double dimension array inside the loop, it was successful.

^ | v • Reply • Share ›



Muruganandhan Peramagounder • 10 months ago

```
def main():
```

```
arr = (3,0,0,4,0,1)
```

```
stones = 0
```

```
drops = 0
```

```
start_idx = 0
```

```
if arr[0] > arr[-1]:
```

```
arr = arr[::-1]
```

```
for i in range(1, len(arr)):
```

```
if arr[start_idx] >= arr[i] and i != len(arr)-1:
```

