

Binary Sum

Problem Code: **LFSM**



Tweet

Like

Share

Be the first of your friends to like this.

In a binary tree, diameter sum between two leaf nodes is defined as sum of all the nodes in the unique path when traveling from one leaf to the other. Assume that the tree is a complete binary tree and every leaf node is at the same depth from root of the tree. Find the value of maximum diameter sum in a binary tree.

Note that the maximum diameter may be a single leaf node as well (since a single leaf node is also a valid diameter - the trivial path of length 0 from the leaf node to itself).

[All Submissions \(/DI16R144/status/LFSM\)](#)

Successful Submissions



Input

First line of input is the number T, which denotes the number of test cases.

Input for each case consists of 2 lines. The first line consists of the number of nodes N in the tree. The following line consists of the numbers A[1..n] which denote the value of each node in the tree.

The first element in the input is the root element of the tree. Considering index of root element is 1 in the following problem, left child of i'th element in the input is the (2*i)th element and right child of ith element is (2*i+1)th element.

Output

Output consits of T lines denoting the value of maximum diameter sum in binary tree for each test case.

Solution Templates

In the solution templates provided, complete the function whose signature is

C / C++

```
int maxDiameterSum(int nodes, int tree[511])
```

Java

```
static int maxDiameterSum(int nodes, int[] tree)
```

The first argument to maxDiameterSum is the number of nodes in the tree. The second argument is tree, presented in an array format as described in the Input Section above. maxDiameterSum should return the value of the maximum diameter sum in the binary tree.

Note: You are allowed to edit the code as you please. Add / delete headers. Add / delete methods. And so on.. So long as your final code solves the problem with Input and Output as described above. You may submit your own code, without using the template at all.

Constraints

$T \leq 100$

$N \leq 511$

Range of value of nodes is between -100000 and 100000

N is of the form 2^k-1 , where k is the height of the tree.

Sample Input

```
1
7
2 4 5 8 -4 3 -6
```

Sample Output

```
22
```

Explanation

Path followed to get the maximum diameter sum in this case is

```
8 (leaf node) => 4 => 2 => 5 => 3 (leaf node)
```

Author: [directi_campus \(/users/directi_campus/\)](/users/directi_campus/)

Tags: [directi_campus \(/tags/problems/directi_campus/\)](/tags/problems/directi_campus/)

Date Added: 5-08-2012

Time Limit: 3.33333 secs

Source Limit: 50000 Bytes

Languages: C, CPP 4.3.2, CPP 6.3, CPP14, JAVA, PYTH, PYTH 3.5

Comments ▶

[CodeChef is a non-commercial competitive programming community](#)

[About CodeChef \(http://www.codechef.com/aboutus/\)](http://www.codechef.com/aboutus/) [About Directi \(http://www.directi.com/\)](http://www.directi.com/) [CEO's Corner \(http://www.codechef.com/ceoscorner/\)](http://www.codechef.com/ceoscorner/)
[C-Programming \(http://www.codechef.com/c-programming/\)](http://www.codechef.com/c-programming/) [Programming Languages \(http://www.codechef.com/Programming-Languages/\)](http://www.codechef.com/Programming-Languages/) [Contact Us \(http://www.codechef.com/contactus/\)](http://www.codechef.com/contactus/)

© 2009 Directi Group (<http://directi.com>). All Rights Reserved. CodeChef uses SPOJ © by [Sphere Research Labs \(http://www.sphere-research.com\)](http://www.sphere-research.com)
In order to report copyright violations of any kind, send in an email to [copyright@codechef.com \(mailto:copyright@codechef.com\)](mailto:copyright@codechef.com)

Directi (<http://directi.com>)
Intelligent People. Uncommon Ideas.

The time now is: 10:38:26 PM
Your IP: 123.201.210.10

[CodeChef \(http://www.codechef.com\)](http://www.codechef.com) - A Platform for Aspiring Programmers

CodeChef was created as a platform to help programmers make it big in the world of algorithms, **computer programming** and **programming contests**. At CodeChef we work hard to revive the geek in you by hosting a **programming contest** at the start of the month and another smaller programming challenge in the middle of the month. We also aim to have training sessions and discussions related to **algorithms**, **binary search**, technicalities like **array size** and the likes. Apart from providing a platform for **programming competitions**, CodeChef also has various algorithm tutorials and forum discussions to help those who are new to the world of **computer programming**.

[Practice Section \(https://www.codechef.com/problems/easy\)](https://www.codechef.com/problems/easy) - A Place to hone your 'Computer Programming Skills'

Try your hand at one of our many practice problems and submit your solution in a language of your choice. Our **programming contest** judge accepts solutions in over 35+ programming languages. Preparing for coding contests were never this much fun! Receive points, and move up through the CodeChef ranks. Use our practice section to better prepare yourself for the multiple **programming challenges** that take place through-out the month on CodeChef.

[Compete \(https://www.codechef.com/problems/easy\)](https://www.codechef.com/problems/easy) - Monthly Programming Contests and Cook-offs

Here is where you can show off your **computer programming skills**. Take part in our 10 day long monthly coding contest and the shorter format Cook-off **coding contest**. Put yourself up for recognition and win great prizes. Our **programming contests** have prizes worth up to INR 20,000 (for Indian Community), \$700 (for Global Community) and lots more CodeChef goodies up for grabs.

Programming Tools

[Online IDE \(https://www.codechef.com/ide\)](https://www.codechef.com/ide)

[Upcoming Coding Contests \(http://www.codechef.com/contests#FutureContests\)](http://www.codechef.com/contests#FutureContests)

[Contest Hosting \(http://www.codechef.com/hostyourcontest\)](http://www.codechef.com/hostyourcontest)

[Problem Setting \(http://www.codechef.com/problemsetting\)](http://www.codechef.com/problemsetting)

[CodeChef Tutorials \(http://www.codechef.com/wiki/tutorials\)](http://www.codechef.com/wiki/tutorials)

[CodeChef Wiki \(https://www.codechef.com/wiki\)](https://www.codechef.com/wiki)

Practice Problems

[Easy \(https://www.codechef.com/problems/easy\)](https://www.codechef.com/problems/easy)

[Medium \(https://www.codechef.com/problems/medium\)](https://www.codechef.com/problems/medium)

[Hard \(https://www.codechef.com/problems/Hard\)](https://www.codechef.com/problems/Hard)

[Challenge \(https://www.codechef.com/problems/challenge\)](https://www.codechef.com/problems/challenge)

[Peer \(https://www.codechef.com/problems/extcontest\)](https://www.codechef.com/problems/extcontest)

[School \(https://www.codechef.com/problems/school\)](https://www.codechef.com/problems/school)

[FAQ's \(https://www.codechef.com/wiki/faq\)](https://www.codechef.com/wiki/faq)

Initiatives

[Go for Gold \(http://www.codechef.com/qoforgold\)](http://www.codechef.com/qoforgold)

[CodeChef for Schools \(http://www.codechef.com/school\)](http://www.codechef.com/school)

[Campus Chapters \(http://www.codechef.com/campus_chapter/about\)](http://www.codechef.com/campus_chapter/about)

[Domain Registration in India \(http://www.bigrock.in/\)](http://www.bigrock.in/) and [Web Hosting \(http://www.bigrock.com/web-hosting/\)](http://www.bigrock.com/web-hosting/) powered by BigRock