

Q2 - Heap

A Binary Heap is a Complete Binary Tree where items are stored in a special order such that value in a parent node is greater(or smaller) than the values in its two children nodes.

You have to construct a binary heap in this lab and follows the additional rules.

Now, when a new node is inserted in the heap there will be additional cost, and the cost is the summation of those two to be added.

That is, to add 1 and 10, you need a cost of 11. If you want to add 1, 2 and 3. There are several ways:

First way:

$1 + 2 = 3$, cost = 3

$3 + 3 = 6$, cost = 6

total cost = 9

Second way:

$1 + 3 = 4$, cost = 4

$2 + 4 = 6$, cost = 6

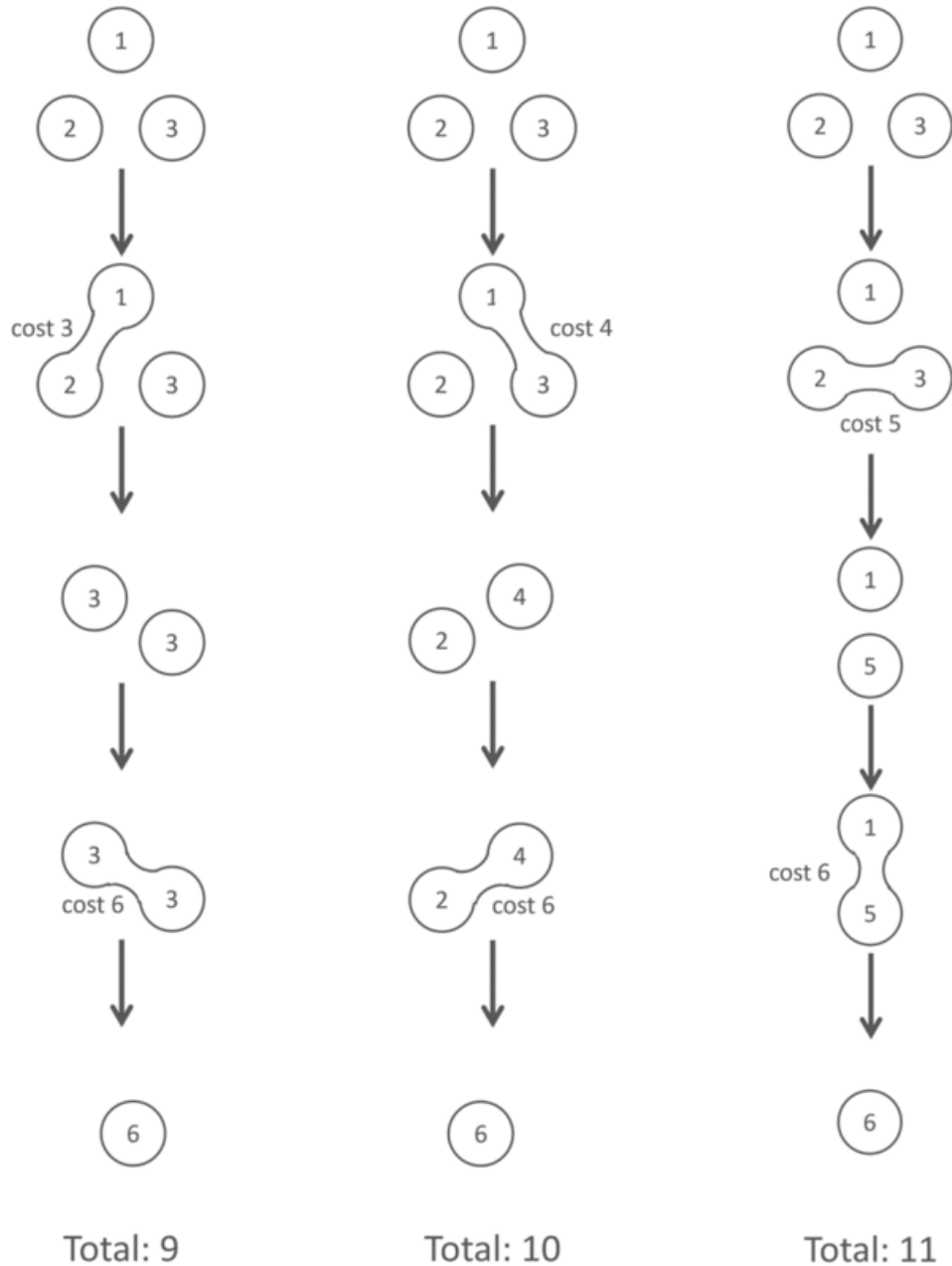
total cost = 10

Third way:

$2 + 3 = 5$, cost = 5

$1 + 5 = 6$, cost = 6

total cost = 11



Your mission is to add a set of integers so that **the cost is minimal**.

Input Format

Each test case will start with a positive number, N ($2 \leq N \leq 5000$) followed by N non negative integers(all are less than 100000). Input is terminated by a case where the value of N is zero. This case should not be processed.

Constraints

N (integer): $2 \leq N \leq 5000$

All of the numbers are less than 100000

Output Format

For each case print the minimum total cost of addition in a single line

Sample Input 0

```
3
1 2 3
4
1 2 3 4
0
```

Sample Output 0

```
9
19
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