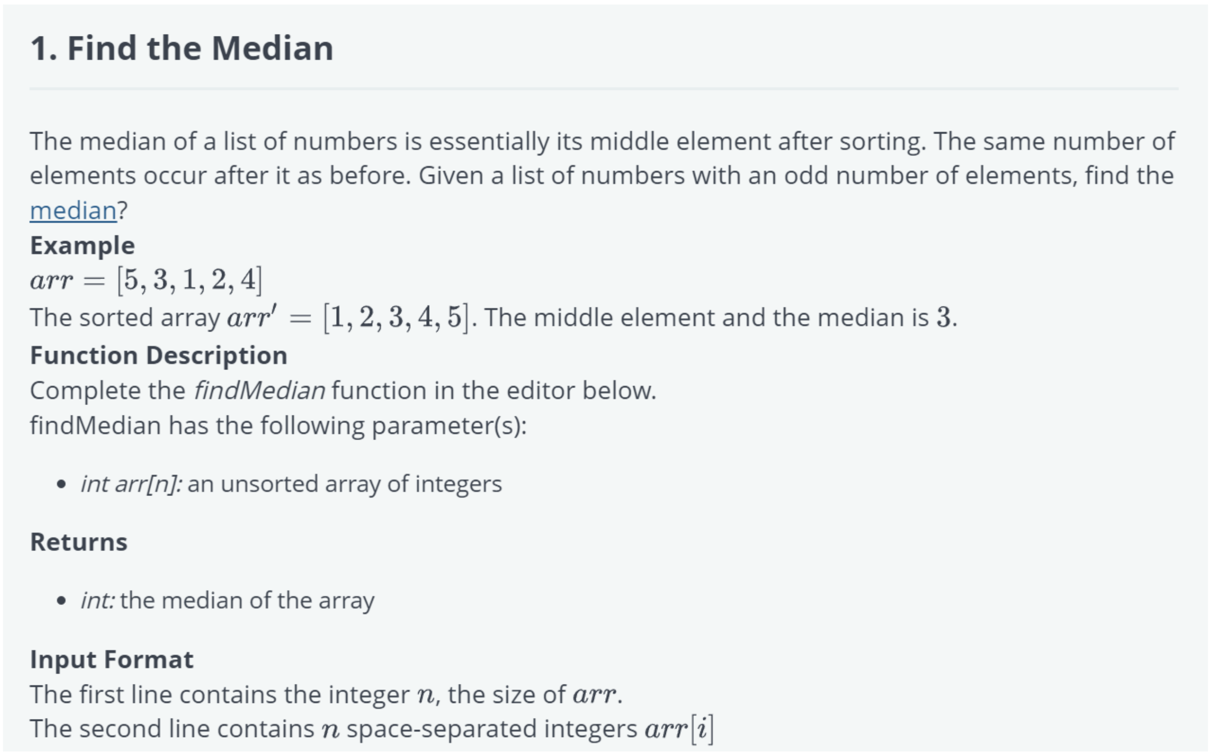
DAY 1 QUESTIONS

MOCK TEST



1. Find the Median

The median of a list of numbers is essentially its middle element after sorting. The same number of elements occur after it as before. Given a list of numbers with an odd number of elements, find the median?

Example

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

The sorted array $arr' = [1, 2, 3, 4, 5]$. The middle element and the median is 3.

Function Description

Complete the *findMedian* function in the editor below.

findMedian has the following parameter(s):

- *int arr[n]:* an unsorted array of integers

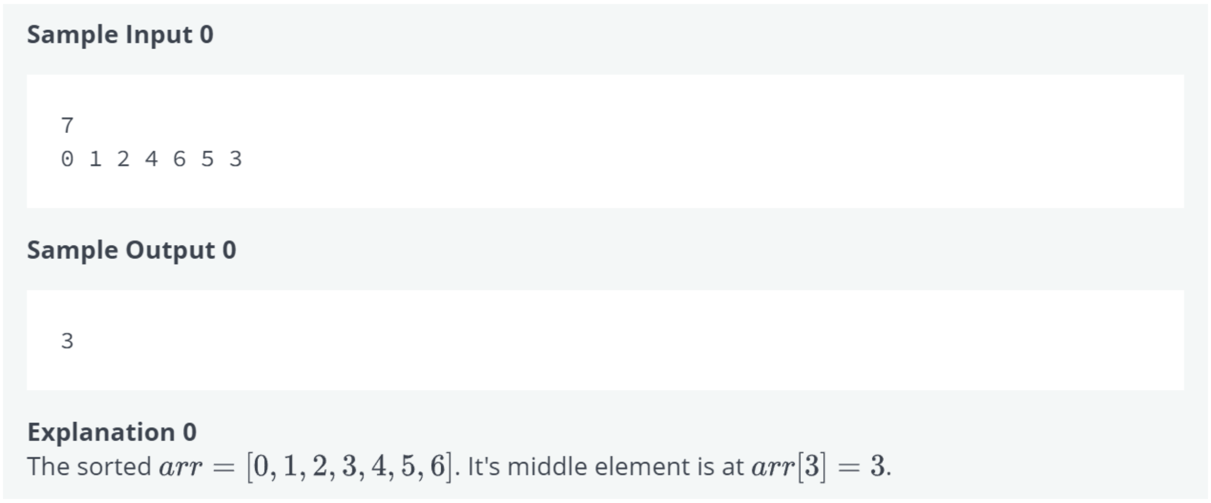
Returns

- *int:* the median of the array

Input Format

The first line contains the integer n, the size of arr.

The second line contains n space-separated integers $arr[i]$



Sample Input 0

```
7
0 1 2 4 6 5 3
```

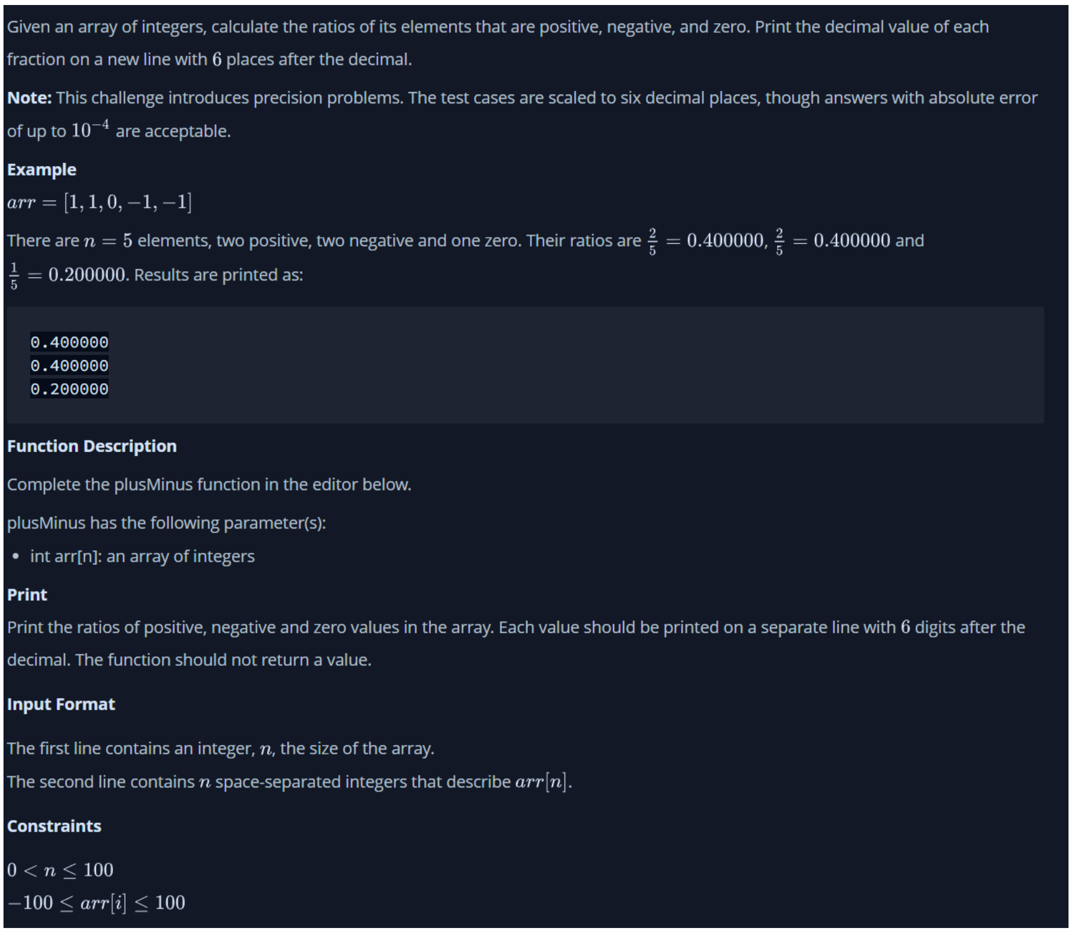
Sample Output 0

```
3
```

Explanation 0

The sorted $arr = [0, 1, 2, 3, 4, 5, 6]$. It's middle element is at $arr[3] = 3$.

Plus Minus



Given an array of integers, calculate the ratios of its elements that are positive, negative, and zero. Print the decimal value of each fraction on a new line with 6 places after the decimal.

Note: This challenge introduces precision problems. The test cases are scaled to six decimal places, though answers with absolute error of up to 10^{-4} are acceptable.

Example

$arr = [1, 1, 0, -1, -1]$

There are $n = 5$ elements, two positive, two negative and one zero. Their ratios are $\frac{2}{5} = 0.400000$, $\frac{2}{5} = 0.400000$ and $\frac{1}{5} = 0.200000$. Results are printed as:

```
0.400000
0.400000
0.200000
```

Function Description

Complete the plusMinus function in the editor below.

plusMinus has the following parameter(s):

- int arr[n]: an array of integers

Print

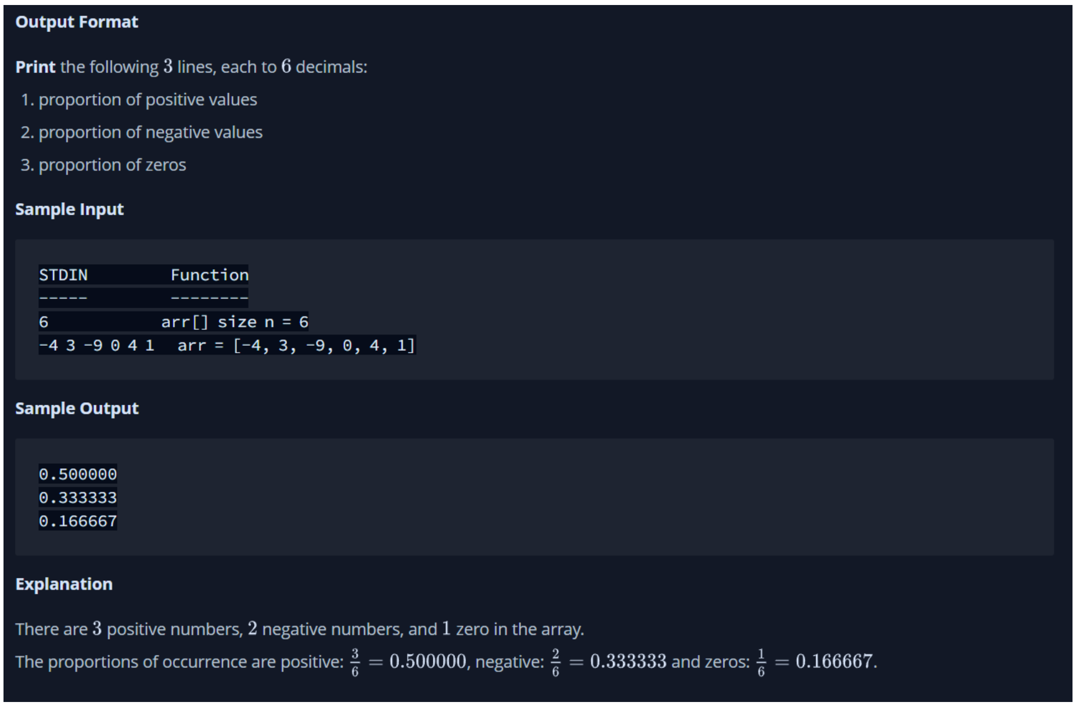
Print the ratios of positive, negative and zero values in the array. Each value should be printed on a separate line with 6 digits after the decimal. The function should not return a value.

Input Format

The first line contains an integer, n, the size of the array.
The second line contains n space-separated integers that describe $arr[n]$.

Constraints

$0 < n \leq 100$
$-100 \leq arr[i] \leq 100$



Output Format

Print the following 3 lines, each to 6 decimals:

1. proportion of positive values
2. proportion of negative values
3. proportion of zeros

Sample Input

```
STDIN           Function
-----           --------
6               arr[] size n = 6
-4 3 -9 0 4 1   arr = [-4, 3, -9, 0, 4, 1]
```

Sample Output

```
0.500000
0.333333
0.166667
```

Explanation

There are 3 positive numbers, 2 negative numbers, and 1 zero in the array.
The proportions of occurrence are positive: $\frac{3}{6} = 0.500000$, negative: $\frac{2}{6} = 0.333333$ and zeros: $\frac{1}{6} = 0.166667$.

Mini Max Sum

Given five positive integers, find the minimum and maximum values that can be calculated by summing exactly four of the five integers. Then print the respective minimum and maximum values as a single line of two space-separated long integers.

Example

$arr = [1, 3, 5, 7, 9]$

The minimum sum is $1 + 3 + 5 + 7 = 16$ and the maximum sum is $3 + 5 + 7 + 9 = 24$. The function prints

```
16 24
```

Function Description

Complete the miniMaxSum function in the editor below.

miniMaxSum has the following parameter(s):

- arr: an array of 5 integers

Print

Print two space-separated integers on one line: the minimum sum and the maximum sum of 4 of 5 elements.

Input Format

A single line of five space-separated integers.

Constraints

$1 \leq arr[i] \leq 10^9$

Output Format

Print two space-separated long integers denoting the respective minimum and maximum values that can be calculated by summing exactly four of the five integers. (The output can be greater than a 32 bit integer.)

Sample Input

```
1 2 3 4 5
```

Sample Output

```
10 14
```

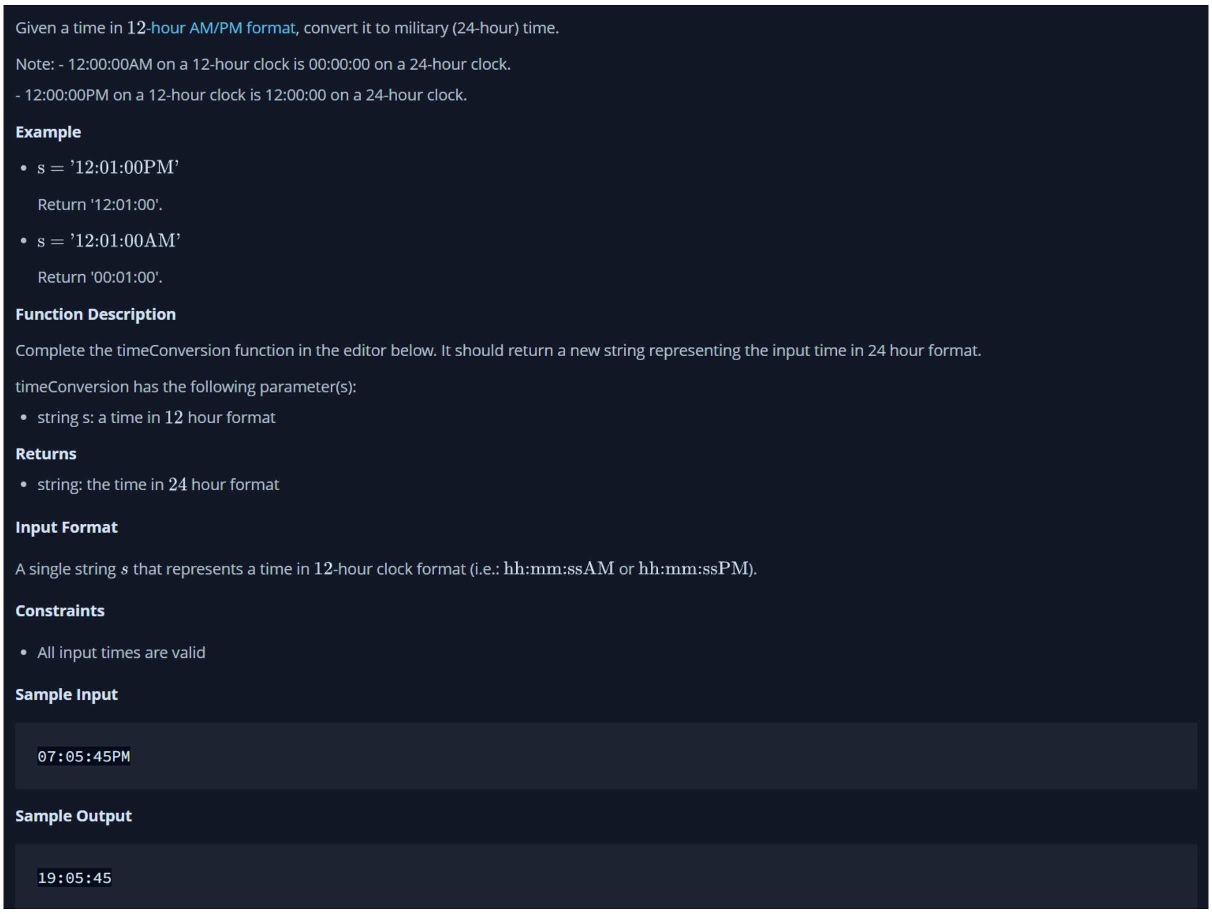
Explanation

The numbers are 1, 2, 3, 4, and 5. Calculate the following sums using four of the five integers:

1. Sum everything except 1, the sum is $2 + 3 + 4 + 5 = 14$.
2. Sum everything except 2, the sum is $1 + 3 + 4 + 5 = 13$.
3. Sum everything except 3, the sum is $1 + 2 + 4 + 5 = 12$.
4. Sum everything except 4, the sum is $1 + 2 + 3 + 5 = 11$.
5. Sum everything except 5, the sum is $1 + 2 + 3 + 4 = 10$.

Hints: Beware of integer overflow! Use 64-bit Integer.

Time Conversion



Given a time in 12-hour AM/PM format, convert it to military (24-hour) time.

Note: - 12:00:00AM on a 12-hour clock is 00:00:00 on a 24-hour clock.

- 12:00:00PM on a 12-hour clock is 12:00:00 on a 24-hour clock.

Example

- $\mathrm{s} = \text{'12:01:00PM'}$

  Return '12:01:00'.

- $\mathrm{s} = \text{'12:01:00AM'}$

  Return '00:01:00'.

Function Description

Complete the timeConversion function in the editor below. It should return a new string representing the input time in 24 hour format.

timeConversion has the following parameter(s):

- string s: a time in 12 hour format

Returns

- string: the time in 24 hour format

Input Format

A single string s that represents a time in 12-hour clock format (i.e.: $\mathrm{hh{:}mm{:}ssAM}$ or $\mathrm{hh{:}mm{:}ssPM}$).

Constraints

- All input times are valid

Sample Input

```
07:05:45PM
```

Sample Output

```
19:05:45
```