Station Balance

The International Space Station contains many centrifuges (اجهزة الطرد المركزي) in its labs. Each centrifuge will have some number (N) of chambers (غرف) each of which will contain 2 specimens (العينات) EXCEPT the last one if the number of specimens is odd. You are to write a program which assigns all S specimens to the chambers such that the following expression for *IMBALANCE* is minimized.

$$IMBALANCE = \sum_{i=1}^{N} |\boldsymbol{CM_i} - \boldsymbol{AM}|$$

where:
$\boldsymbol{CM_i}$ is the Chamber Mass of chamber i and is computed by summing the masses of the 2 specimens assigned to chamber i.

$\boldsymbol{AM}$ is the Average Mass of the chambers (**rounded to nearest integer**) and it is computed by dividing the sum of the masses of all specimens by the number of chambers (N).

$$AM = \frac{1}{N}\sum_{i=1}^{N} CM_i$$

Examples

Sample Input:

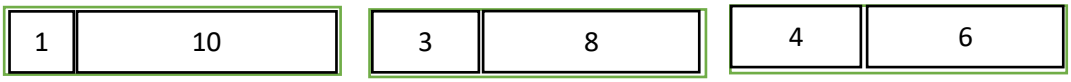
N = 3 , Chambers' masses: 8, 4, 6, 3, 1, 10

Sample Output:

Imbalance = 1

Note:

The optimal assignment of specimen in this example:



Chamber 1 mass = 11, Chamber 2 mass = 11, Chamber 3 mass = 10

Average of chambers' masses = 10.67 ≈11

Imbalance = $|11 - 11| + |11 - 11| + |10 - 11| = 0 + 0 + 1 = 1$

Sample Input:

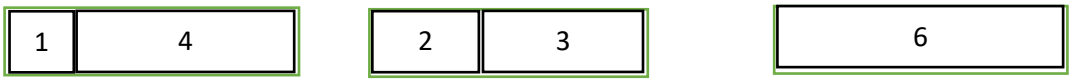
N = 3 , Chambers' masses: 4, 1, 2, 6, 3

Sample Output:

Imbalance = 1

Note:

The optimal assignment of specimen in this example:



Chamber 1 mass = 5, Chamber 2 mass = 5, Chamber 3 mass = 6

Average of chambers' masses = 5.3 ≈ 5

Imbalance = $|5-5| + |5-5| + |6-5| = 0 + 0 + 1 = 1$

Function to Implement

```
public static int RequiredFunction(int[] items, int N)
```

```
items: array of integers (specimens' weights)
N: chambers count (half of the items count)
```

PROBLEM_CLASS.cs includes this method.

C# Help

Creating 1D array

```
int [] array = new int [size]
```

Creating 2D array

```
int [,] array = new int [size1, size2]
```

Sorting single array

Sort the given array in ascending order

```
Array.Sort(items);
```

Sorting parallel arrays

Sort the first array "master" and re-order the 2nd array "slave" according to this sorting

```
Array.Sort(master, slave);
```

Rounding a decimal number to the nearest integer

```
int roundedValue = Math.Round(doubleValue);
```