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# 1. Candies for Kids

**Program Name: Candy.java**

**Input File: candy.dat**

Patty is a kindergarten teacher in Texas. She likes to reward her students for good behavior by giving them packages of candy. She has several sets of packages of candy but, for any given set, there is not the same number of candies in each package. Fearing that a student would complain about someone else receiving more candies than a friend received, she has decided to open all of the packages in each set and move some candies so each package contains the same number of candies.

You are to determine how many candies Patty has to move into or out of each package in a set to ensure that each package contains the same number of candies. If there are extra candies after each package is complete, Patty will make a package for herself using the left-over candies. All candies in each set must be used and the number of candies that Patty will have in her package will always be less than the number of candies in a student package.

For example, Patty has a set of three packages that contain 3, 4, and 6 candies respectively. She needs to put one candy in package 1, zero candies in package 2, and take 2 candies out of package 3. She will have one candy left for her package. Therefore, the output would be: 1 0 -2 1

## Input

The first line will contain a single integer  $n$  that indicates the number of sets of packages that will follow. Each of the next  $n$  lines will have  $p$  integers that indicate the number of candies in the packages for that set.

## Output

For each package in a set, you are to print the number of candies that need to be moved into or removed from the package (a negative value) so all packages have the same number of candies, followed by the number of candies that Patty will have in her package. Results for each set will be on a single line and be separated by a single space.

## Example Input File

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

## Example Output to Screen

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