E - Electric Scooters

Context

We are designing a new model of electric scooter, with which we are going to become millionaires. Our model is not only faster, more efficient and colourful, but it is also capable of recharging the batteries when going downhill.

To demonstrate its efficiency, we want to calculate the result of using our scooter in a city with many slopes.

The Problem

Our scooter has a certain battery capacity, *C*, measured in ampere-hours (Ah), of which we will initially have a certain charge, *I*.

We move through a city that has many uphills and downhills. If we go up or flat, a certain amount of charge is spent. Specifically, the amount of charge spent on a unit distance is equal to the slope plus a given constant, *K*. If we go down, the battery is recharged by an amount that is equal to the slope.

The charge of the battery cannot be negative, nor can it be greater than the battery capacity. If in a given unit distance (up or flat) we do not have enough charge, we will have to walk.

Given the description of a travel, we want to know the final charge of the battery and the number of units that we have to walk.

The Input

The input contains several test cases. Each test case is described in two lines.

The first line of a test case contains four integer numbers: *N C I K*, where *N* is the length of the path (the number of unit distances), from 1 to 1000; *C* is the battery capacity (i.e., the maximum charge that it can have), from 0 to 1000000; *I* is the initial charge of the battery, from 0 to *C*; and *K* is the constant consumption of battery per unit distance when we go up or flat, from 0 to 1000000.

The second line of each test case contains *N* integer numbers, from -1000000 to 1000000, indicating the slope of each unit distance in our travel. The value is positive if we go uphill, negative if we go downhill, and 0 if it is flat.

The input ends with a case where *N* is 0, and this case does not have to be processed.

The Output

For each test case, you have to output two lines:

```
WALK W
BATTERY B
```

Where *W* is the number of unit distances that we have to walk, and *B* is the final charge of the battery.

Observe that if we do not have enough battery to complete a unit distance, we count it as walk, even if we have battery for a part of the unit distance. For example, suppose that *K*=10, we have a current charge of 9, and the slope is 0, then we count it as walk, and the charge of the battery goes to 0.

Sample Input

```
4 10 5 3
0 0 0 0
10 100 80 12
20 25 0 -5 -10 -20 6 28 15 -2
5 100 80 14
-10 -20 -30 -20 0
4 0 0 0
0 0 0 0
0
```

Sample Output

```
WALK 3
BATTERY 0
WALK 3
BATTERY 2
WALK 0
BATTERY 86
WALK 0
BATTERY 0
```

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