

# Purchasing Paint

Time Limit	Memory Limit
1 second	512 MB

## Statement

Ryan is a professional painter looking to buy new paints.

The arts and crafts store sells  $N$  different pots of paint, the  $i$ th paint pot having colour  $d_i$  and cost  $c_i$ . There are  $D$  different colours in total. The store does not allow you to buy two pots of paint that are the same colour.

Ryan wants to buy as many colours of paint as possible, and then among these options, to minimise the sum of costs. He lists all his options and sorts them in descending order by the number of colours of paint purchased, breaking ties by cost ascending. In Ryan's  $K$ th best option, how many cans of paint would he buy, and what is the total cost?

Two options are considered different if there is a can of paint bought in one option but not the other. Note that not buying anything is also considered an option. Also note that there may be situations in which two different options have the same colour count and cost. They should be counted as separate options.

## Input

The first line of input contains the three space-separated integers  $N$   $K$   $D$ .

The next  $N$  lines of input contain two space-separated integers  $d_i$  and  $c_i$ , representing the colour and cost of the  $i$ th pot of paint.

## Output

The number of colours of paint in the  $K$ th best option, followed by its total cost.

### Sample Input 1

```
7 2 2
1 92
2 43
2 6
1 100
1 63
1 83
2 67
```

### Sample Output 1

```
2 89
```

## Sample Input 2

```
7 14 2
1 92
2 43
2 6
1 100
1 63
1 83
2 67
```

## Sample Output 2

```
1 43
```

## Constraints

- $1 \leq D \leq N \leq 2 \times 10^3$
- $1 \leq K \leq \min(\text{number of options}, 2 \times 10^3)$
- $1 \leq c_i \leq 10^9$
- $1 \leq d_i \leq D$

## Subtasks

Number	Points	Other constraints
1	10	$K = 1$
2	20	$K = 2$
3	10	$N \leq 18$
4	30	(see below)
5	15	$N, K, D \leq 300$
6	15	No additional constraints

Additionally, for Subtask 4, the number of cans of paint in the  $K$ th best option is  $D$  and the total cost of the  $K$ th best option  $\leq 2 \times 10^3$ .