

# 프로그래밍실습 (ICE2012)

## Term Project 2



**School of Information and Communication Engineering**



# 핵발전소

A core meltdown just happened at a local nuclear plant! There are  $n$  nuclear fuel rods that need to be moved to solid lead isolation chambers by a specialized, radiation-hardened robot. Each fuel rod is labeled with an identifier from  $1$  and  $n$ , and many of the fuel rods fused together during the meltdown. The relationship between fused rods is given as an array of space-separated integer IDs named *pairs*.

The robot can pick up one set of rods at a time, where each set consists one or more rods *directly or indirectly fused together* (i.e, as a single mass). Each recovery trip has a cost,  $c$ , associated with it. This cost is proportional to the square root of the number of fused rods recovered during the trip, meaning that the cost of recovering  $k$  rods is  $c = \text{ceiling}(\text{sqrt}(k))$ .

Complete the *minimalCost* function in your editor. It has 2 parameters:

1. An integer,  $n$ , the number of rods.
2. An array of strings, *pairs*, where the value of each element  $\text{pairs}_i$  (where  $0 \leq i < n$ ) is two space-separated integers describing the respective values of  $p_i$  and  $q_i$ . Each item in the array is a string which needs to be parsed into  $p$  and  $q$ .

It must return an integer denoting the cost of recovering all  $n$  radioactive rods.



# 핵발전소

## Input Format

The locked stub code in your editor reads the following input from stdin and passes it to your function:

The first line contains an integer,  $n$ , denoting the number of rods.

The second line contains an integer,  $m$ , denoting the number of fused rods in *pairs*.

Each line  $i$  of the  $m$  subsequent lines (where  $0 \leq i < m$ ) contains a string describing element  $i$  in *pairs*. Each string contains two space-separated integers describing the respective ID numbers for fused rods  $p_i$  and  $q_i$ .

## Constraints

- $2 \leq n \leq 10^5$
- $1 \leq p, q \leq n$
- $p \neq q$

## Output Format

Your function must return an integer denoting the cost of recovering all the rods. This is printed to stdout by the locked stub code in your editor.



# 핵발전소

## Sample Input 1

The following arguments are passed to your function:

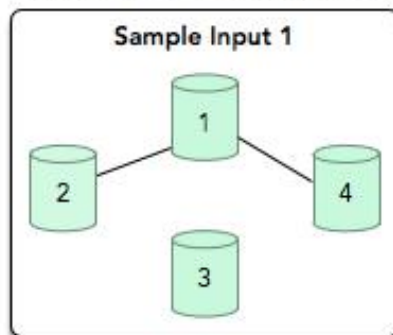
1.  $n = 4$
2.  $pairs = [{"1\ 2"}, {"1\ 4"}]$

## Sample Output 1

3

## Explanation 1

The diagram below depicts the configuration of rods:



The cost for removing each group is as follows:

1. Set  $\{1, 2, 4\}$ :  $c = \text{ceil}(\text{sqrt}(3)) = 2$
2. Set  $\{3\}$ :  $c = \text{ceil}(\text{sqrt}(1)) = 1$

When we sum all values of  $c$ , we get  $2 + 1 = 3$  as our answer. Thus, we return 3.



# 핵발전소

## Sample Input 2

The following arguments are passed to your function:

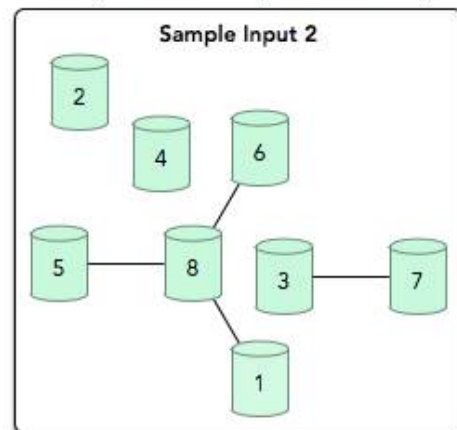
1.  $n = 8$
2.  $pairs = ["8\ 1", "5\ 8", "7\ 3", "8\ 6"]$

## Sample Output 2

6

## Explanation 2

The diagram below depicts the configuration of rods:



The cost for removing each group is as follows:

1. Set {2}:  $c = \text{ceil}(\text{sqrt}(1)) = 1$
2. Set {4}:  $c = \text{ceil}(\text{sqrt}(1)) = 1$
3. Set {1, 5, 6, 8}:  $c = \text{ceil}(\text{sqrt}(4)) = 2$
4. Set {3, 7}:  $c = \text{ceil}(\text{sqrt}(2)) = 2$

When we sum all values of  $c$ , we get  $1 + 1 + 2 + 2 = 6$  as our answer. Thus, we return 6.



# 업로드시 제출물

- ❖ test case1~5에 대한 출력값을 제시하시오.
- ❖ 어떻게 문제를 풀었는지 보고서에 자세히 작성한 후 소스와 함께 압축하여 업로드 할 것.

