

1 The Problem

Given the set of integers from 1 to n , $P = \{1, 2, \dots, n-1, n\}$, a sequence of unique pairs, Q , can be generated:

$$Q = \{x_1, y_1\}, \{x_2, y_2\}, \dots, \{x_N, y_N\}$$

where N is the total number of unique pairs in P , $x_i \leq x_{i+1}$, $y_i > x_i$ and $y_i < y_{i+1}$ if $x_i = x_{i+1}$. In other words, Q is ordered by x , then y .

The problem is to compute the k th element of Q given n and k where $0 < k \leq N$.

2 Example

Given $n = 4$ and $k = 5$:

$$P = \{1, 2, 3, 4\}$$
$$Q = \{1, 2\}, \{1, 3\}, \{1, 4\}, \{2, 3\}, \{2, 4\}, \{3, 4\}$$

The solution is $\{2, 4\}$, which is the *5th element* of Q . Note that $\{2, 1\}$ is not in Q as it is the same pair as $\{1, 2\}$.

3 The Challenge

Write a program that takes a file path as its sole command line argument and prints the k th element of Q for each line in the file. Each input is of the form $n\ k$ (n followed by a space followed by k) where $1 < n < 92,683$. Output should be of the form $x_k\ y_k$ (x_k followed by a space followed by y_k).

3.1 Example

If the input file is:

```
4 5
8 2
9 6
```

your program should output:

```
2 4
1 3
1 7
```