C. Sorting Substrings

time limit per test: 5 seconds

memory limit per test: 256 megabytes

Given the string s and a set of its substrings. Substrings are defined by pairs of numbers l_i, r_i, the position of the left end and the right end of the substring. You need to sort substrings in lexicographic order. If substrings are equal as words, then use the pairs themselves as an additional sorting key (i.e., first compare by l, then by r).

Input

The first line contains a non-empty line s. Its length does not exceed $4 \cdot 10^5$, it can contain any characters with codes from 33 to 127.

The second line contains n ($1 \le n \le 4 \cdot 10^5$), the number of substrings in the set. The next n lines contain a pairs of integers l_i, r_i ($1 \le l_i \le r_i \le |s|$), where $|s|$ is the length of the string s. It is possible that a set of substrings contains the same pairs.

Output

Print n lines, each line contains a description of the substring in the same format as in the input. The order of the substrings is specified in the problem statement.

Examples

input Copy

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

output Copy

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

input Copy

```
a
1
1 1
```

output Copy

```
1 1
```

input Copy

```
aa
5
1 1
1 2
2 2
1 1
2 2
```

output Copy

```
1 1
1 1
2 2
2 2
1 2
```

→ **Submit?**

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit