**Linear sorting**

Write a program implementing stable sorting in linear time of pairs of numbers.

**Input**

Enter n pairs of numbers. After this, pairs of numbers. The last number on the input will be the type of test (0 or 1). The number values will be non-negative will not exceed n-1.

**Out**

In the case of the type 0 test, the first values from each pair (separated by a white sign) must be sorted out. In the case of type 1 test, pairs of numbers should be printed (separated by a comma, without any whitespace between them) sorted stably by the first value in the pair.

**Example**

**Input**

10

2 3

2 2

2 1

1 1

1 2

1 3

3 2

3 3

3 1

4 0

1

**Out**

1,1

1,2

1,3

2,3

2,2

2,1

3,2

3,3

3,1

4,0

**Input**

10

2 3

2 2

2 1

1 1

1 2

1 3

3 2

3 3

3 1

4 0

0

**Out**

1

1

1

2

2

2

3

3

3

4