

Largest Labeled Common Ancestor

Given a labeled complete k-ary tree, find the largest labeled common ancestor of two given nodes. In a complete k-ary tree, the node in the tree is labeled sequentially from the left most child to right most child, level by level. Largest labeled common ancestor of A and B is defined as the largest labeled node in the tree which has A and B as descendants. A node is a descendant of itself.

Be careful with your finger, the source limit is 256 bytes.

Input

The first line of input contains an integer T ($1 \leq T \leq 100$) the number of cases. Each cases contains three integers K, A and B ($2 \leq K \leq 100$; $1 \leq A, B \leq 2,000,000,000$).

Output

For each test case, output in a line the largest labeled common ancestor node.

Example

Input:

```
4
3 42 7
2 2 6
2 1 105
4 10 13
```

Output:

```
2
1
1
3
```

Whitespace Explanation:

If there no input in any line, then the output for that line is a blank line :)) Sorry for inconvenience. >:)