

Problem F. Prime Generator

Time limit	6000 ms
Mem limit	1572864 kB
Code length Limit	50000 B
OS	Linux

Peter wants to generate some prime numbers for his cryptosystem. Help him! Your task is to generate all prime numbers between two given numbers!

Input

The input begins with the number t of test cases in a single line ($t \leq 10$). In each of the next t lines there are two numbers m and n ($1 \leq m \leq n \leq 1000000000$, $n - m \leq 100000$) separated by a space.

Output

For every test case print all prime numbers p such that $m \leq p \leq n$, one number per line, test cases separated by an empty line.

Example

Input:

```
2
1 10
3 5
```

Output:

```
2
3
5
7

3
5
```

Warning: large Input/Output data, be careful with certain languages (though most should be OK if the algorithm is well designed)

Information

NSUPS Bootcamp S13 W2: Primality, Divisors, NOD, SOD in $O(\sqrt{n})$; Modular Arithmetic
After cluster change, please consider [PRINT](#) as a more challenging problem.