

### **3. Dante**

**Program Name:** **Dante.java**

**Input File:** **dante.dat**

Dante is a new kid at your school, and he LOVES prime numbers. You are playing a game with him lately, where he gives you two numbers, and you determine how many prime numbers are in between these numbers (not inclusive).

**Input:** The input will begin with an integer,  $n$  ( $0 < n \leq 1000$ ), denoting the number of test cases to follow. Each test case will consist of two integers, separated by a space,  $a$  and  $b$  ( $0 < a < b \leq 100,000$ ), denoting the beginning and end of the range of numbers you are to search through to find out how many prime numbers lie within this range.

**Output:** For each test case, output the number of prime numbers between  $a$  and  $b$ .

**Sample input:**

```
3
4 15
10 14
8 11
```

**Sample output:**

```
4
2
0
```