

British Informatics Olympiad Final

11–13 April, 2003

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Scary Numbers

Here is a worrying thought if you are triskaidekaphobic — almost every integer contains the pattern 13. There is only a single such integer between 1 and 100 (namely 13) but there are another 19 between 100 and 1,000 (such as 131 and 213). Between 1,000 and 10,000 there are 279 such numbers and there are 3671 between 10,000 and 100,000. Note that we only count patterns if they are unbroken; for example, 103 does *not* contain the pattern 13.

Given a scary pattern, write a program to determine how many integers in a given range contain that pattern. The input will be on two lines: the first line will contain a single integer n indicating the scary pattern ($1 \leq n \leq 99$), the second line will contain two integers, a then b , ($1 \leq a < b \leq 2^{30}$), indicating the range.

Your output should consist of a single number, indicating the number of integers between a and b (inclusive) that contain the pattern n .

Sample Input

```
13
13 1350
```

Sample Output

```
84
```

THERE IS MORE CREDIT FOR A PARTIAL PROGRAM THAT CAN SOLVE SINGLE DIGIT PATTERNS OVER THE ENTIRE RANGE OF a AND b , THAN FOR A PARTIAL PROGRAM THAT CAN SOLVE SINGLE AND DOUBLE DIGIT PATTERNS, BUT ONLY OVER A SMALL RANGE