

# Project Euler #130: Composites with prime repunit property

This problem is a programming version of [Problem 130](#) from [projecteuler.net](#)

A number consisting entirely of ones is called a repunit. We shall define  $R(k)$  to be a repunit of length  $k$ ; for example,  $R(6) = 111111$ .

Given that  $i$  is a positive integer and  $\text{gcd}(i, 10) = 1$ , it can be shown that there always exists a value,  $k$ , for which  $R(k)$  is divisible by  $i$ , and let  $A(i)$  be the least such value of  $k$ ; for example,  $A(7) = 6$  and  $A(41) = 5$ .

You are given that for all primes,  $p > 5$ , that  $p - 1$  is divisible by  $A(p)$ . For example, when  $p = 41$ ,  $A(41) = 5$ , and  $40$  is divisible by  $5$ .

However, there are rare composite values for which this is also true; the first five examples being  $91$ ,  $259$ ,  $451$ ,  $481$ , and  $703$ .

Given  $L$  and  $R$ , print all composite values  $i$  in the interval  $[L, R]$  for which  $\text{gcd}(i, 10) = 1$  and  $i - 1$  is divisible by  $A(i)$ .

## Input Format

The input contains consists of one line containing two integers  $L$  and  $R$  separated by a space.

## Constraints

$R - L \leq 1500000$   
 $2 \leq L \leq R$   
In files #01-#05:  $R \leq 10000$   
In files #06-#10:  $R \leq 1500000$   
In files #11-#25:  $R \leq 10^{12}$

## Output Format

Output all composite values  $i$  in the interval  $[L, R]$  for which  $\text{gcd}(i, 10) = 1$  and  $i - 1$  is divisible by  $A(i)$ , each in a single line.

## Sample Input

```
2 1000
```

## Sample Output

```
91
259
451
481
703
```

