547 DDF

An integer a is a positive factor of an integer b if a is greater than zero and there exist some integer n such that $a \times n = b$.

Consider a sequence of integer $x_1, x_2, x_3, \ldots, x_n$. This sequence is a Decimal-Digit Factor Sequence (DDF) if each number in the sequence is a positive integer where $x_1 > 1$ and for all positive integers $i > 1$, x_{i+1} is the sum of the digits of all positive factors of x_i.

The following is a DDF:

```
17, 9, 13, 5, 6, ...
positive factor of 17 = 1, 17
1 + (1 + 7) = 9
positive factor of 9 = 1, 3, 9
1 + 3 + 9 = 13
positive factor of 13 = 1, 13
1 + (1 + 3) = 5
positive factor of 5 = 1, 5
1 + 5 = 6
```

It is known that any DDF beginning whit a number greater than or equal to 1000 repeats no number greater than or equal to 1000 and contains a number less than 1000. In addition, every DDF beginning whit a number less than 1000 contains no number greater than 999. Thus, every DDF must eventually repeat number less than 1000. It has also been show that every DDF eventually repeats a single number. That is, for each DDF, there exists a number x_n, called the last term, such that for all $j > n$, $x_j = x_n$.

Write a program that will find the longest DDF.

Input and Output

You have to read the input file each line will have two numbers m, n which define the range were you have to find the longest DDF. In non case m and n will be greater than 3000. Many DDF's will have the same last term, so you program should report only the first one. You can take the exact format from the example below.

Sample Input

```
200 500
100 150
```

Sample Output

```
Input1: 200 500
Output1: 285 66 36 46 18 30 27 22 9 13 5 6 12 19 11 3 4 7 8 15
Input2: 100 150
Output2: 102 36 46 18 30 27 22 9 13 5 6 12 19 11 3 4 7 8 15
```