Anti-prime Sequences

Given a sequence of consecutive integers n, n+1, n+2,..., m, an anti-prime sequence is a rearrangement of these integers so that each adjacent pair of integers sums to a composite (non-prime) number. For example, if n = 1 and m = 10, one such anti-prime sequence is 1, 3, 5, 4, 2, 6, 9, 7, 8, 10. This is also the lexicographically first such sequence.

We can extend the definition by defining a degree d anti-prime sequence as one where all consecutive subsequences of length 2, 3,..., d sum to a composite number. The sequence above is a degree 2 anti-prime sequence, but not a degree 3, since the subsequence 5, 4, 2 sums to 11. The lexicographically first degree 3 anti-prime sequence for these numbers is 1, 3, 5, 4, 6, 2, 10, 8, 7, 9.

Input

Input will consist of multiple input sets. Each set will consist of three integers, n, m, and d on a single line. The values of n, m and d will satisfy $1 \leq n < m \leq 1000$, and $2 \leq d \leq 10$. The line 0 0 0 will indicate end of input and should not be processed.

Output

For each input set, output a single line consisting of a comma-separated list of integers forming a degree d anti-prime sequence (do not insert any spaces and do not split the output over multiple lines). In the case where more than one anti-prime sequence exists, print the lexicographically first one (i.e., output the one with the lowest first value; in case of a tie, the lowest second value, etc.). In the case where no anti-prime sequence exists, output:

> No anti-prime sequence exists.

Example

Input:

```
1 10 2
1 10 3
1 10 5
40 60 7
0 0 0
```

Output:

```
1,3,5,4,2,6,9,7,8,10
1,3,5,4,6,2,10,8,7,9
No anti-prime sequence exists.
40,41,43,42,44,46,45,47,48,50,55,53,52,60,56,49,51,59,58,57,54
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