IOI Training Camp 2011 – Test 3, 13 June, 2011

Problem 1 Stock Market

Indraneel has bought shares in Shubham's startup. One of the things that Indraneel likes to do in the little time that he has free is to track the value of his shares over a sequence of days. On the first day, the price of the stock was 0 because no trading was done. Indraneel observes that on each successive day, the stock price either increases by 1 or decreases by 1 with respect to the previous day's price. On some days, when business is particularly bad, the share price can even be negative—you have to pay people to buy the stock from you!

Shubham is too busy running his company to keep his problem solving skills sharp, so Indraneel evolves the following plan. Once in a while, Indraneel adds up the share price on each day, starting from the first day, and sends this cumulative sum to Shubham, along with the number of days over which this sum has been calculated. Shubham's task is to reconstruct the sequence of daily share values from this cumulative sum, keeping in mind Indraneel's observation about the daily fluctuation in value and the fact that the first day's price was 0.

For instance, if Indraneel tells Shubham that the cumulative sum over 5 days is 2, one possible sequence for the share price over 5 days is 0, −1, 0, 1, 2.

To keep Shubham on his toes, Indraneel sometimes sends Shubham invalid data. For instance, if he says that over 5 days the cumulative sum is −100, Shubham is supposed to deduce that this is impossible.

Being a good businessman, Shubham is looking to slyly outsource this activity without telling Indraneel. If you are able to write a program that takes Indraneel's data and provides the answer that Shubham is supposed to send back, you could earn a lot of money.

Input format

The input consists of a single line with two space separated integers, N, the number of days over which the the share price is observed, and S, the cumulative sum.

Output format

Output a single line with −1 if there is no solution. If there is a solution, the output should be a single line with N space separated integers representing a valid solution. If there is more than one valid solution, it suffices to print any one.

Test Data

- *Subtask 1 (20 marks):* $1 \leq N \leq 20$.
- *Subtask 2 (30 marks):* $1 \leq N \leq 70$.
- *Subtask 3 (50 marks):* $1 \leq N \leq 10^6$.

In all subtasks, $-10^{17} \leq S \leq 10^{17}$.

Sample input 1

```
5 2
```

Sample input 2

```
5 -100
```

Sample output 1

```
0 -1 0 1 2
```

Sample output 2

```
-1
```

Time and memory limits

The time limit for this task is 2 seconds. The memory limit is 32 MB