

# Square Connection

Input file:            **standard input**  
Output file:           **standard output**  
Time limit:            **2 seconds**  
Memory limit:         **1024 megabytes**

You are given positive integers,  $s$  and  $t$ . You can perform the following operation any number of times (including zero):

- Choose an integer  $u$  such that  $1 \leq u \leq 4 \times 10^{18}$  and  $s + u$  is a square number, then replace  $s$  with  $u$ .

Find the minimum number of operations required to make  $s$  equal to  $t$ , and provide one sequence of operations.

Formally, find a sequence of integers  $(u_1, u_2, \dots, u_K)$  satisfying the following conditions:

- $K$  is the minimum number of operations required to make  $s$  equal to  $t$ .
- For each  $i = 1, 2, \dots, K$ , the condition  $1 \leq u_i \leq 4 \times 10^{18}$  holds.
- Let  $u_0 = s$ , for each  $i = 1, 2, \dots, K$ , the sum  $u_{i-1} + u_i$  is a square number.
- $u_K = t$ .

It is guaranteed that under the constraints of this problem, there always exists a way to transform  $s$  into  $t$  using at most  $10^6$  operations.

You have  $T$  test cases; solve each of them

## Input

The input is given from Standard Input in the following format:

```
T
case1
case2
⋮
caseT
```

Each test case is given in the following format:

```
s t
```

- $1 \leq T \leq 3 \times 10^5$
- $1 \leq s, t \leq 10^9$
- $s \neq t$
- The sum of the numbers of operations ( $= K$ ) over all test cases does not exceed  $10^6$ .
- All input values are integers.

## Output

Output  $T$  lines. On the  $i$ -th line, print the answer for the  $i$ -th test case in the following format:

$K \ u_1 \ u_2 \ \dots \ u_K$
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If there are multiple answers, print any.

## Example

standard input	standard output
3	2 1 3
8 3	3 5 76 24
20 24	1 998244353
998236771 998244353	

## Note

For the first test case,  $8 + 1 = 9$  and  $1 + 3 = 4$  are both square numbers. Additionally, it is not possible to replace 8 into 3 in a single operation.