

O. Xum

time limit per test: 2 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

You have a blackboard and initially only an **odd** number x is written on it. Your goal is to write the number 1 on the blackboard.

You may write new numbers on the blackboard with the following two operations.

- You may take two numbers (not necessarily distinct) already on the blackboard and write their sum on the blackboard. The two numbers you have chosen remain on the blackboard.
- You may take two numbers (not necessarily distinct) already on the blackboard and write their **bitwise XOR** on the blackboard. The two numbers you have chosen remain on the blackboard.

Perform a sequence of operations such that at the end the number 1 is on the blackboard.

Input

The single line of the input contains the odd integer x ($3 \leq x \leq 999,999$).

Output

Print on the first line the number q of operations you perform. Then q lines should follow, each describing one operation.

- The "sum" operation is described by the line " $a + b$ ", where a, b must be integers already present on the blackboard.
- The "xor" operation is described by the line " $a \wedge b$ ", where a, b must be integers already present on the blackboard.

The operation symbol (+ or \wedge) must be separated from a, b by a whitespace.

You can perform at most 100,000 operations (that is, $q \leq 100,000$) and all numbers written on the blackboard must be in the range $[0, 5 \cdot 10^{18}]$. It can be proven that under such restrictions the required sequence of operations exists. You can output any suitable sequence of operations.

Examples

input	Copy
3	
output	Copy
5 3 + 3 3 \wedge 6 3 + 5 3 + 6 8 \wedge 9	

input	Copy
123	
output	Copy
10 123 + 123 123 \wedge 246 141 + 123 246 + 123 264 \wedge 369 121 + 246 367 \wedge 369 30 + 30	

Topic Stream Mashup: Number Theory

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 Language: GNU G++17 7.3.0

 Choose file: Choose file No file chosen
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```
60 + 60
120 ^ 121
```

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