621 Secret Research

At a certain laboratory results of secret research are thoroughly encrypted. A result of a single experiment is stored as an information of its completion:

‘positive result’, ‘negative result’, ‘experiment failed’ or ‘experiment not completed’

The encrypted result constitutes a string of digits $S$, which may take one of the following forms:

- positive result $S = 1$ or $S = 4$ or $S = 78$
- negative result $S = S35$
- experiment failed $S = 9S4$
- experiment not completed $S = 190S$

(A sample result $S35$ means that if we add digits 35 from the right hand side to a digit sequence then we shall get the digit sequence corresponding to a failed experiment)

You are to write a program which decrypts given sequences of digits.

Input

A integer $n$ stating the number of encrypted results and then consecutive $n$ lines, each containing a sequence of digits given as ASCII strings.

Output

For each analysed sequence of digits the following lines should be sent to output (in separate lines):

- for a positive result
- for a negative result
* for a failed experiment
? for a not completed experiment

In case the analysed string does not determine the experiment result, a first match from the above list should be outputted.

Sample Input

4
78
7835
19078
944

Sample Output

+  
-  
?  
*  
