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## Hash tables

P83317\_en

Assaig Primer Concurs de Programació de la FME (2004)

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"Open Addressing" is a variant of hash tables, which (simplifiedly) consists of: Being  $x$  any key, being  $MAX$  the size of the vector where the information is stored, being  $h1(x)$ , the first position where will be tried to store  $x$  (a value between 0 and  $MAX-1$ ), and being  $inc$  a value (which sometimes depends on  $x$ ) between 1 and  $MAX-1$ . Then, the following position where would be tried to store  $x$  in the case that  $h1(x)$  was occupied would be  $h2(x) = (h1(x) + inc) \bmod MAX$ , and so forth to  $hMAX(x) = (hMAX-1(x) + inc) \bmod MAX$ . (Notice that with  $inc = 1$  we obtain one of the variants of hash tables that we implemented in a laboratory practice.)

For instance, if  $MAX = 5$ ,  $h1(x) = 1$  and  $inc = 2$ , the positions of the vector would be visited (if it was needed) in the following order: 1, 3, 0, 2, 4. However, if  $MAX = 6$ ,  $h1(x) = 1$  and  $inc = 2$ , the order would be: 1, 3, 5, 1, 3, 5. As you can see, in the first case all the  $MAX$  positions are visited, but not in the second one.

Write a program that decides for each combination of  $MAX$ ,  $h1(x)$  and  $inc$  given, if the combination is good (visites all the positions) or it is not.

### Input

Input consists of zero or more cases. Each case consists of a line with  $MAX$ ,  $h1(x)$  and  $inc$ . (We assure you that  $2 \leq MAX \leq 50000$ .) A line with three zeros indicates the end of the input.

### Output

For each case, print in a line "good" or "bad" as required.

#### Sample input

```
5 1 2
6 1 2
0 0 0
```

#### Sample output

```
good
bad
```

### Problem information

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