# Problem 8: Cyclic Numbers

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|---|---|
| Source filename: | `cyclic.(cpp\|java)` |
| Input filename: | `cyclic.in` |
| Output filename: | `cyclic.out` |

A *cyclic number* is an integer *n* digits in length which, when multiplied by any integer from 1 to *n*, yields a "cycle" of digits of the original number. That is, if you consider the number after the last digit to "wrap around" back to the first digit, the sequence of digits in both numbers will be the same, though they may start at different positions.

For example, the number `142857` is cyclic, as illustrated by the following table:

```
142857     x     1     =     142857
142857     x     2     =     285714
142857     x     3     =     428571
142857     x     4     =     571428
142857     x     5     =     714285
142857     x     6     =     857142
```

Write a program which will determine whether or not numbers are cyclic. The input file is a list of positive integers from 2 to 60 digits in length (leading zeroes are legal), one per line. The end of the input file is indicated by the 2-digit integer: `00`. In the output file, display each positive integer and indicate whether or not it is cyclic.

**Sample Input File**

```
142857
142856
142858
01
0588235294117647
00
```

**Sample Output File**

```
142857 is cyclic
142856 is not cyclic
142858 is not cyclic
01 is not cyclic
0588235294117647 is cyclic
```