



## Problem 2. «The magnetic storm»

A hardware random number generator is a device that generates random sequences consisting of 0s and 1s. Unfortunately, a disturbance caused by a magnetic storm affected this random number generator. As a result, the device had generated a sequence of 0s of length  $k$  (where  $k$  is a positive integer), and then started to generate an infinite sequence of 1s.

Prove that at some point the generator will produce a number  $1\dots 10\dots 0$  that is divisible by 2019.

