



## Problem 1. «2020»

A cipher machine WINSTON can transform a binary sequence in the following way. A sequence  $S$  is given, a cipher machine can add to  $S$  or remove from  $S$  any subsequence of the form 11, 101, 1001,  $10 \dots 01$ . Also, it can add to  $S$  or remove from  $S$  any number of zeros.

When special agent Smith entered the room there were two identical WINSTON machines. He was curious to encrypt number 2020 and he tried to encrypt the number in it's binary form. The first cipher machine returned the binary form of number 1984, the second one returned the binary form of number 2021. Smith understood that one of the machines is broken. How did he know that?

