Write a program to read an infinite sequence, and after every even number of inputs, to output a binary value saying whether the second half of the input so far is a repetition of the first half.

Let the reading channel be $c$, and let the writing channel be $d$. The specification is $S$, defined as

$$ S = \forall n: \text{nat} \cdot M_d \circ d + n = (M_c \circ c + n = M_c \circ c + 2n) $$

Let $f$ (first) and $s$ (second) be string variables, and define specification $P$ as

$$ P = \forall n: \text{nat} \cdot M_d \circ d + n = (f; M_c \circ c + n = s; M_c \circ c + 2n) $$

The refinements are

$$ S \iff f := \text{nil}. \quad s := \text{nil}. \quad P $$

$$ P \iff d! f = s. \quad c := s. \quad c \iff f; s_0. \quad s := s_1. \quad \cdots ; c. \quad P $$