

1. I first traverse through the whole sequence until reaching the first 1, and save the position of that 1 into a set with 0. Next, I keep going through the remaining sequence. In the following for loop, I first calculate discrepancy(d), and if d is zero, annihilation would continue. If d is not zero, check whether 2L is smaller or equal to N. If the condition holds, do a temporary copy of C(x). Under other conditions, we would keep doing the iteration.

The remaining two part are for printing out the polynomials and turn the decimal numbers to binary numbers.

2. Sequence rule:

This is a Fibonacci sequence, which for $F_0 = 0$, $F_1 = 1$, $F_n = F_{n-1} + F_{n-2}$, $n = 2, 3, \dots$

- 3.

$$s(x) = x^8 + x^7 + 2x^6 + 3x^5 + 5x^4 + 8x^3 + 13x^2 + 21x + 34$$

$$v(x) = x^9$$

	$f(x)$	$c(x)$	$b(x)$
①	1	0	x^9
②	0	1	$x^8 + x^7 + 2x^6 + 3x^5 + 5x^4 + 8x^3 + 13x^2 + 21x + 34$
③	1	$-x$	$-x^8 - 2x^7 - 3x^6 - 5x^5 - 8x^4 - 13x^3 - 21x^2 - 34x$
④	1	$1-x$	$-x^9 - x^6 - 2x^5 - 3x^4 - 5x^3 - 8x^2 - 13x + 34$
⑤	$1-x$	$-2x+x^2$	$-x^9 - x^6 - 2x^5 - 3x^4 - 5x^3 - 8x^2 - 68x$
⑥	x	$-x^2+x+1$	$55x+34$

$$f(x)v(x) + c(x)s(x) = b(x)$$

$$x^{10} + (-x^2+x+1)(x^8 + x^7 + 2x^6 + 3x^5 + 5x^4 + 8x^3 + 13x^2 + 21x + 34)$$

$$= 55x + 34 = b(x)$$

\Rightarrow we find that $c(x) = -x^2 + x + 1$

for $\deg b < \deg c$