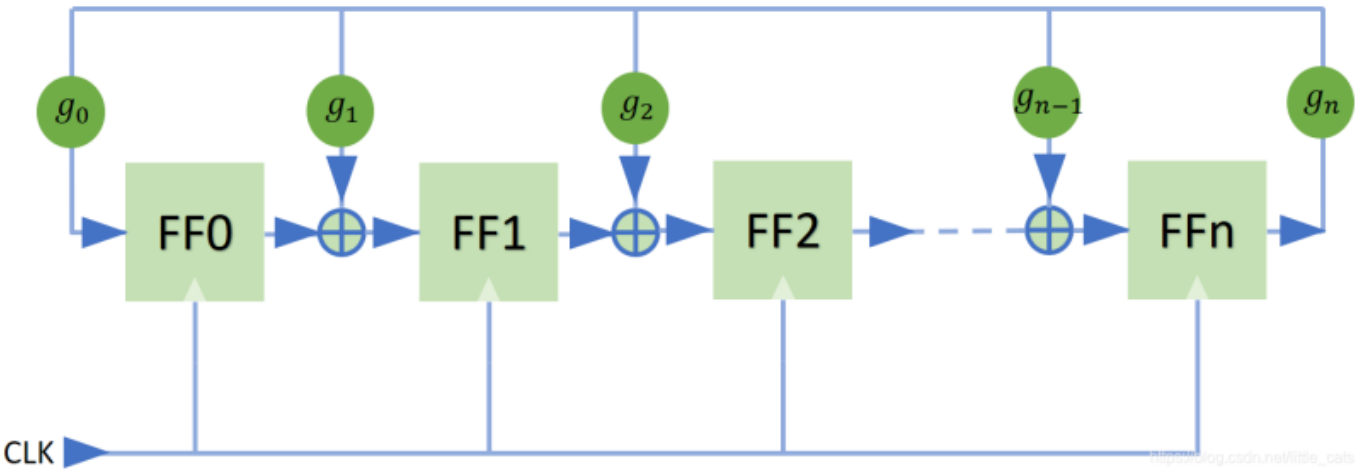
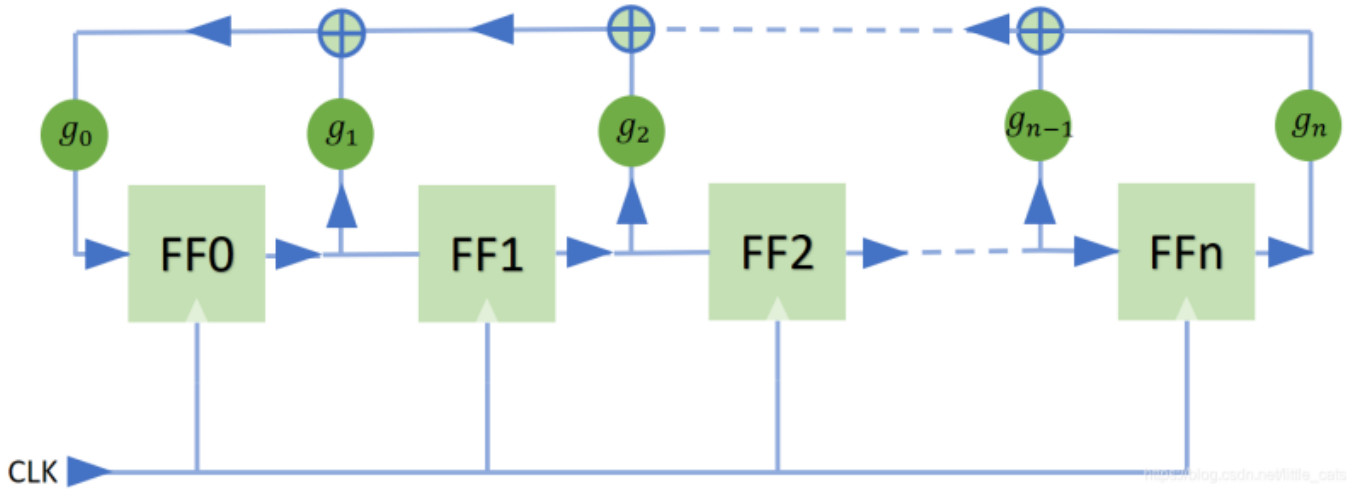
LFSR

原文：https://blog.csdn.net/little_cats/article/details/104488780

1. Galois型实现



2. Fibonacci型实现



3. 多项式表

对于一个n nn位的LFSR□可用的抽头至少有n nn个（第0个抽头是必须的，不算数）
虽然一个n nn位的LFSR可以有很多种不同的抽头配置，但不是所有抽头都能使其达到最长输出序列。下表给出一些能够使LFSR达到最长反馈的抽头配置

LFSR位数	状态周期	抽头配置	LFSR位数	状态周期	抽头配置
2	3	2□1	**17**	131,071	17, 14

LFSR位数	状态周期	抽头配置	LFSR位数	状态周期	抽头配置
3	7	3, 2	**18**	262,143	18, 11
4	15	4, 3	**19**	524, 287	19, 6, 2, 1,
5	31	5, 3	**20**	1,048,575	20, 17
6	63	6, 5	**21**	2,097,151	21, 19
7	127	7, 6	**22**	4,194,303	22, 21
8	255	8, 6, 5, 4,	**23**	8,388,607	23, 18
9	511	9, 5	**24**	16,777,215	24, 23, 22, 17,
10	1,023	10, 7	**25**	33,554,431	25, 22
11	2,047	11, 9	**26**	67,108,963	26, 6, 2, 1,
12	4,095	12, 6, 4, 1,	**27**	134,217,727	27, 5, 2, 1,
13	8,191	13, 4, 3, 1,	**28**	268,435,455	28, 25
14	16,383	14, 5, 3, 1,	**29**	536,870,911	29, 27
15	32,767	15, 14	**30**	1,073,741,823	30, 6, 4, 1,
16	65,535	16, 15, 13, 4,	**31**	2,147,483,646	31, 28
32	4,294,967,294	32, 22, 2, 1,	**32**	4,294,967,294	32, 22, 2, 1,

n	XNOR from	n	XNOR from	n	XNOR from	n	XNOR from
3	3,2	45	45,44,42,41	87	87,74	129	129,124
4	4,3	46	46,45,26,25	88	88,87,17,16	130	130,127
5	5,3	47	47,42	89	89,51	131	131,130,84,83
6	6,5	48	48,47,21,20	90	90,89,72,71	132	132,103
7	7,6	49	49,40	91	91,90,8,7	133	133,132,82,81
8	8,6,5,4	50	50,49,24,23	92	92,91,80,79	134	134,77
9	9,5	51	51,50,36,35	93	93,91	135	135,124
10	10,7	52	52,49	94	94,73	136	136,135,11,10
11	11,9	53	53,52,38,37	95	95,84	137	137,116
12	12,6,4,1	54	54,53,18,17	96	96,94,49,47	138	138,137,131,130
13	13,4,3,1	55	55,31	97	97,91	139	139,136,134,131
14	14,5,3,1	56	56,55,35,34	98	98,87	140	140,111
15	15,14	57	57,50	99	99,97,54,52	141	141,140,110,109
16	16,15,13,4	58	58,39	100	100,63	142	142,121
17	17,14	59	59,58,38,37	101	101,100,95,94	143	143,142,123,122
18	18,11	60	60,59	102	102,101,36,35	144	144,143,75,74
19	19,6,2,1	61	61,60,46,45	103	103,94	145	145,93
20	20,17	62	62,61,6,5	104	104,103,94,93	146	146,145,87,86
21	21,19	63	63,62	105	105,89	147	147,146,110,109
22	22,21	64	64,63,61,60	106	106,91	148	148,121
23	23,18	65	65,47	107	107,105,44,42	149	149,148,40,39
24	24,23,22,17	66	66,65,57,56	108	108,77	150	150,97
25	25,22	67	67,66,58,57	109	109,108,103,102	151	151,148
26	26,6,2,1	68	68,59	110	110,109,98,97	152	152,151,87,86
27	27,5,2,1	69	69,67,42,40	111	111,101	153	153,152
28	28,25	70	70,69,55,54	112	112,110,69,67	154	154,152,27,25
29	29,27	71	71,65	113	113,104	155	155,154,124,123
30	30,6,4,1	72	72,66,25,19	114	114,113,33,32	156	156,155,41,40
31	31,28	73	73,48	115	115,114,101,100	157	157,156,131,130
32	32,22,2,1	74	74,73,59,58	116	116,115,46,45	158	158,157,132,131
33	33,20	75	75,74,65,64	117	117,115,99,97	159	159,128
34	34,27,2,1	76	76,75,41,40	118	118,85	160	160,159,142,141
35	35,33	77	77,76,47,46	119	119,111	161	161,143
36	36,25	78	78,77,59,58	120	120,113,9,2	162	162,161,75,74
37	37,5,4,3,2,1	79	79,70	121	121,103	163	163,162,104,103
38	38,6,5,1	80	80,79,43,42	122	122,121,63,62	164	164,163,151,150
39	39,35	81	81,77	123	123,121	165	165,164,135,134
40	40,38,21,19	82	82,79,47,44	124	124,87	166	166,165,128,127
41	41,38	83	83,82,38,37	125	125,124,18,17	167	167,161
42	42,41,20,19	84	84,71	126	126,125,90,89	168	168,166,153,151
43	43,42,38,37	85	85,84,58,57	127	127,126		
44	44,43,18,17	86	86,85,74,73	128	128,126,101,99		