Working backwards: f_n

$$s_n = f_1 + f_2 + \cdots + f_n$$

$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \cdots - f_j u_{n-j} - \cdots - f_{n-1} u_1$$

$$u_n = 2^{-5} - u_{n-1}2^{-1} - u_{n-2}2^{-2} - u_{n-3}2^{-3} - u_{n-4}2^{-4}$$

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
u_n	0	0	0	0	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{17}{1024}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{529}{32768}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{16913}{1048576}$

Working backwards: f_n

$$s_n = f_1 + f_2 + \cdots + f_n$$

$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \cdots - f_j u_{n-j} - \cdots - f_{n-1} u_1$$

$$u_n = 2^{-5} - u_{n-1}2^{-1} - u_{n-2}2^{-2} - u_{n-3}2^{-3} - u_{n-4}2^{-4}$$

Slogan: If you know $u_1, u_2, \ldots, u_n$ and $f_1, f_2, \ldots, f_{n-1}$ then you know f_n.

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
u_n	0	0	0	0	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{17}{1024}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{529}{32768}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{16913}{1048576}$

Working backwards: f_n

$$s_n = f_1 + f_2 + \cdots + f_n$$

$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \cdots - f_j u_{n-j} - \cdots - f_{n-1} u_1$$

$$u_n = 2^{-5} - u_{n-1}2^{-1} - u_{n-2}2^{-2} - u_{n-3}2^{-3} - u_{n-4}2^{-4}$$

Slogan: If you know $u_1, u_2, \ldots, u_n$ and $f_1, f_2, \ldots, f_{n-1}$ then you know f_n.

$$f_1 = f_2 = f_3 = f_4 = 0$$

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
u_n	0	0	0	0	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{17}{1024}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{529}{32768}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{16913}{1048576}$

Working backwards: f_n

$$s_n = f_1 + f_2 + \cdots + f_n$$

$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \cdots - f_j u_{n-j} - \cdots - f_{n-1} u_1$$

$$u_n = 2^{-5} - u_{n-1}2^{-1} - u_{n-2}2^{-2} - u_{n-3}2^{-3} - u_{n-4}2^{-4}$$

Slogan: If you know $u_1, u_2, \ldots, u_n$ and $f_1, f_2, \ldots, f_{n-1}$ then you know f_n.

$$f_1 = f_2 = f_3 = f_4 = 0$$

$$f_5 = u_5 - f_1 u_4 - f_2 u_3 - f_3 u_2 - f_4 u_1 = 2^{-5}$$

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
u_n	0	0	0	0	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{17}{1024}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{529}{32768}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{16913}{1048576}$

Working backwards: f_n

$$s_n = f_1 + f_2 + \cdots + f_n$$

$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \cdots - f_j u_{n-j} - \cdots - f_{n-1} u_1$$

$$u_n = 2^{-5} - u_{n-1} 2^{-1} - u_{n-2} 2^{-2} - u_{n-3} 2^{-3} - u_{n-4} 2^{-4}$$

Slogan: If you know $u_1, u_2, \ldots, u_n$ and $f_1, f_2, \ldots, f_{n-1}$ then you know f_n.

$$f_1 = f_2 = f_3 = f_4 = 0$$

$$f_5 = u_5 - f_1 u_4 - f_2 u_3 - f_3 u_2 - f_4 u_1 = 2^{-5}$$

$$f_6 = u_6 - f_1 u_5 - f_2 u_4 - f_3 u_3 - f_4 u_2 - f_5 u_1 = 2^{-6}$$

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
u_n	0	0	0	0	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{17}{1024}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{529}{32768}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{16913}{1048576}$

Working backwards: f_n

$$s_n = f_1 + f_2 + \cdots + f_n$$

$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \cdots - f_j u_{n-j} - \cdots - f_{n-1} u_1$$

$$u_n = 2^{-5} - u_{n-1} 2^{-1} - u_{n-2} 2^{-2} - u_{n-3} 2^{-3} - u_{n-4} 2^{-4}$$

Slogan: If you know $u_1, u_2, \ldots, u_n$ and $f_1, f_2, \ldots, f_{n-1}$ then you know f_n.

$$f_1 = f_2 = f_3 = f_4 = 0$$

$$f_5 = u_5 - f_1 u_4 - f_2 u_3 - f_3 u_2 - f_4 u_1 = 2^{-5}$$

$$f_6 = u_6 - f_1 u_5 - f_2 u_4 - f_3 u_3 - f_4 u_2 - f_5 u_1 = 2^{-6}$$

$$f_7 = u_7 - f_1 u_6 - f_2 u_5 - f_3 u_4 - f_4 u_3 - f_5 u_2 - f_6 u_1 = 2^{-6}$$

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
u_n	0	0	0	0	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{17}{1024}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{529}{32768}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{16913}{1048576}$

Working backwards: f_n

$$s_n = f_1 + f_2 + \cdots + f_n$$

$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \cdots - f_j u_{n-j} - \cdots - f_{n-1} u_1$$

$$u_n = 2^{-5} - u_{n-1} 2^{-1} - u_{n-2} 2^{-2} - u_{n-3} 2^{-3} - u_{n-4} 2^{-4}$$

Slogan: If you know $u_1, u_2, \ldots, u_n$ and $f_1, f_2, \ldots, f_{n-1}$ then you know f_n.

$$f_1 = f_2 = f_3 = f_4 = 0$$

$$f_5 = u_5 - f_1 u_4 - f_2 u_3 - f_3 u_2 - f_4 u_1 = 2^{-5}$$

$$f_6 = u_6 - f_1 u_5 - f_2 u_4 - f_3 u_3 - f_4 u_2 - f_5 u_1 = 2^{-6}$$

$$f_7 = u_7 - f_1 u_6 - f_2 u_5 - f_3 u_4 - f_4 u_3 - f_5 u_2 - f_6 u_1 = 2^{-6}$$

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
u_n	0	0	0	0	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{17}{1024}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{33}{2048}$	$\frac{529}{32768}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{1057}{65536}$	$\frac{16913}{1048576}$
f_n	0	0	0	0	$\frac{1}{32}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{1}{64}$	$\frac{31}{2048}$	$\frac{61}{4096}$	$\frac{15}{1024}$	$\frac{59}{4096}$	$\frac{29}{2048}$	$\frac{57}{4096}$	$\frac{1793}{131072}$	$\frac{3525}{262144}$	$\frac{3465}{262144}$	$\frac{1703}{131072}$