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

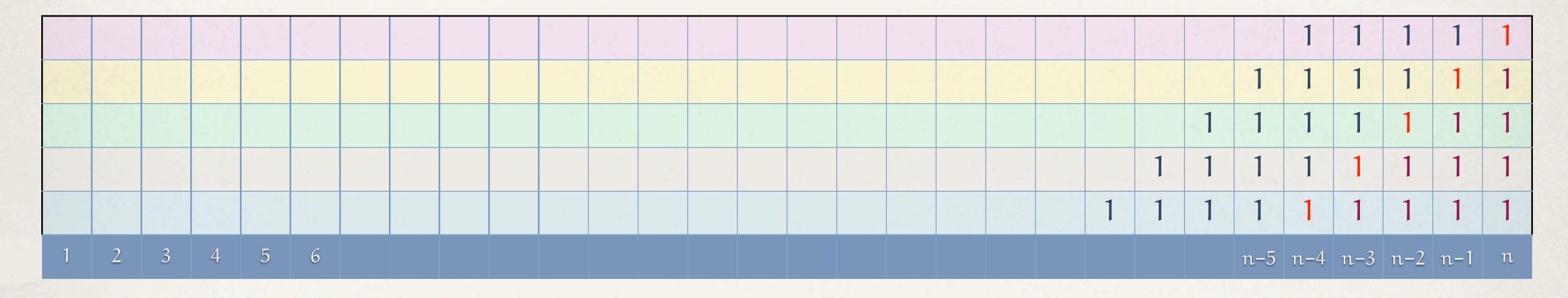
$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \dots - f_j u_{n-j} - \dots - f_{n-1} u_1$$

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

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

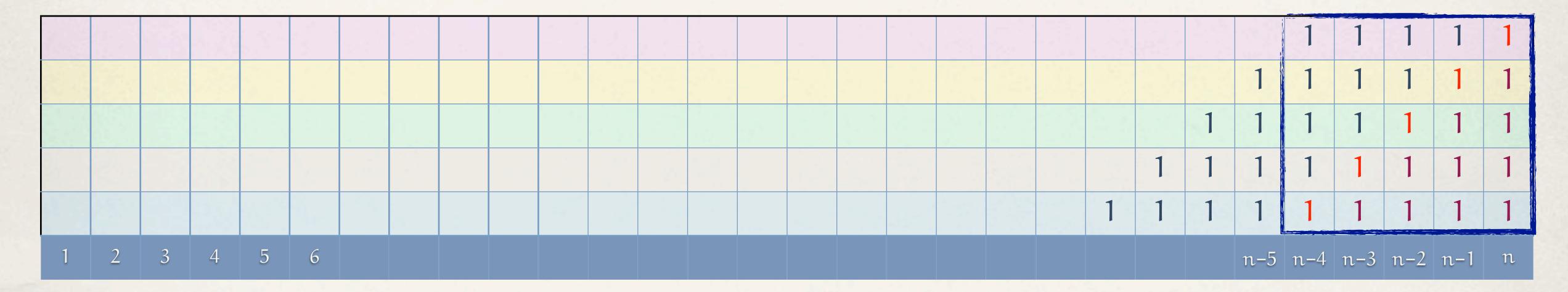
$$s_n = f_1 + f_2 + \dots + f_n$$

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



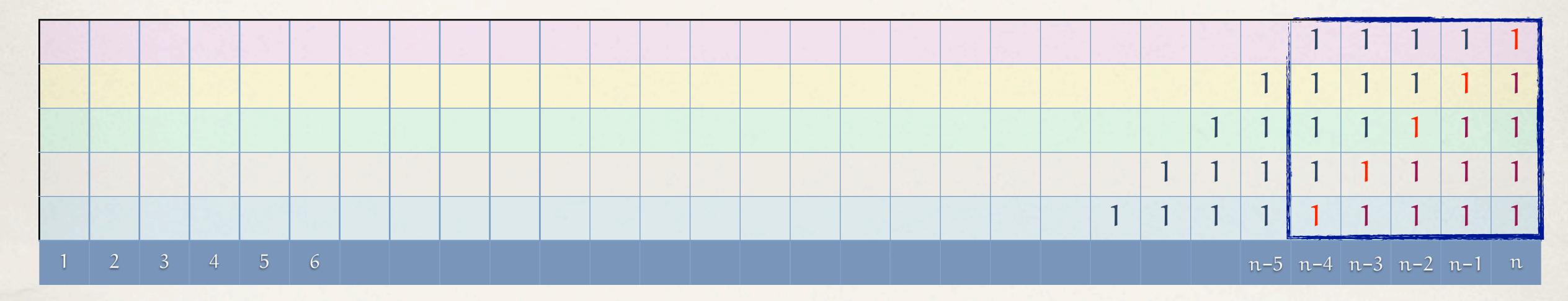
$$s_n = f_1 + f_2 + \cdots + f_n$$

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



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

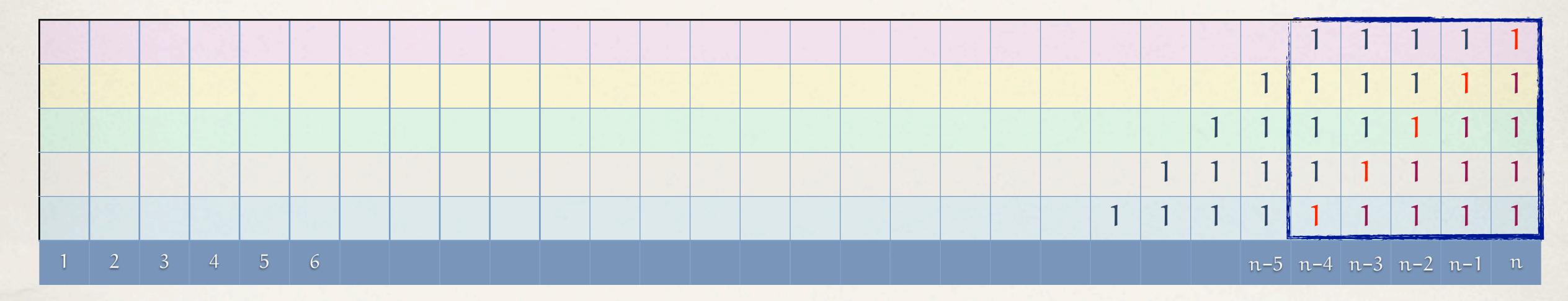
$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \dots - f_j u_{n-j} - \dots - f_{n-1} u_1$$



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

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

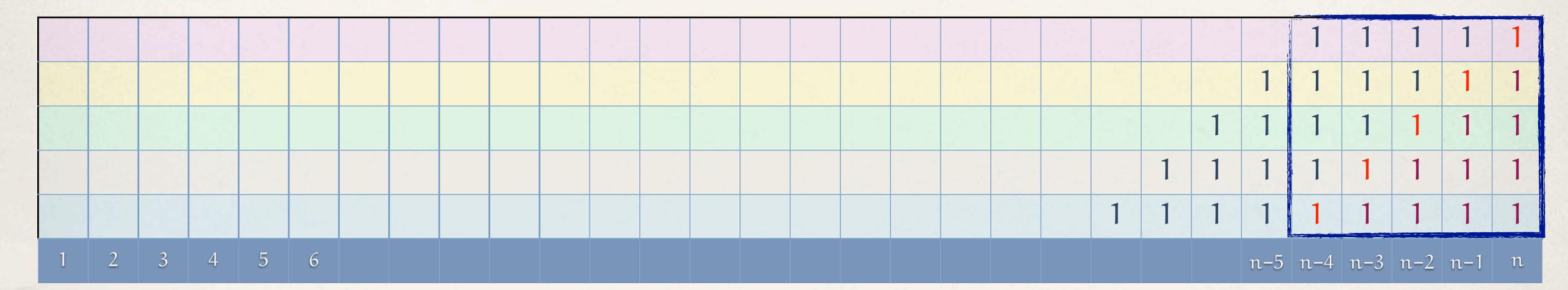
$$f_n = u_n - f_1 u_{n-1} - f_2 u_{n-2} - \dots - f_j u_{n-j} - \dots - f_{n-1} u_1$$



Additivity!
$$2^{-5} = u_n + u_{n-1}2^{-1} + u_{n-2}2^{-2} + u_{n-3}2^{-3} + u_{n-4}2^{-4}$$
— or equivalently —

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

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



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

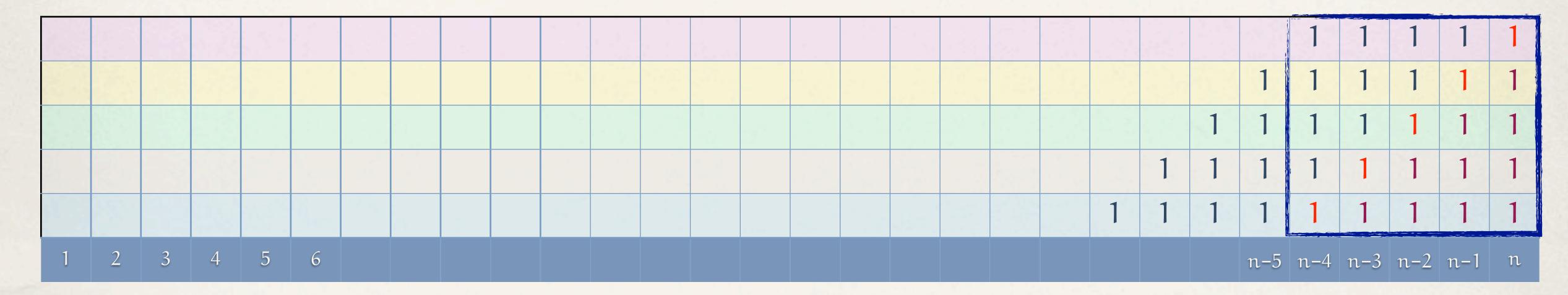
$$- \text{ or equivalently } -$$

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

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

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

Key observation: if there is a run of five consecutive successes from trial n - 4 through n, then a success run must have occurred at one of the trials n - 4, n - 3, n - 2, n - 1, or n.



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

$$- \text{ or equivalently } -$$

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

Slogan: If you know $u_1, u_2, ..., u_{n-1}$ then you know u_n .