$$n_1^{t+1} = f_1 n_1^t + \dots + f_p n_p^t$$

$$n_i^{t+1} = s_i n_{i-1}^t \quad , \; i > 1$$

$$\begin{pmatrix} n_1^0 \\ n_2^0 \\ \vdots \\ n_p^0 \end{pmatrix} \Rightarrow \begin{aligned} n_1^1 &= f_1 n_1^0 + f_2 n_2^0 + \dots + f_p n_p^0 \\ n_2^1 &= s_1 n_1^0 \\ &\vdots \\ n_p^1 &= s_p n_{p-1}^0 \end{aligned}$$

$$\leftarrow \begin{bmatrix} f_1 & f_2 & \cdots & f_p \\ s_2 & 0 & \cdots & 0 \\ 0 & s_3 & \cdots & 0 \\ 0 & 0 & \ddots & s_p \; 0 \end{bmatrix}$$