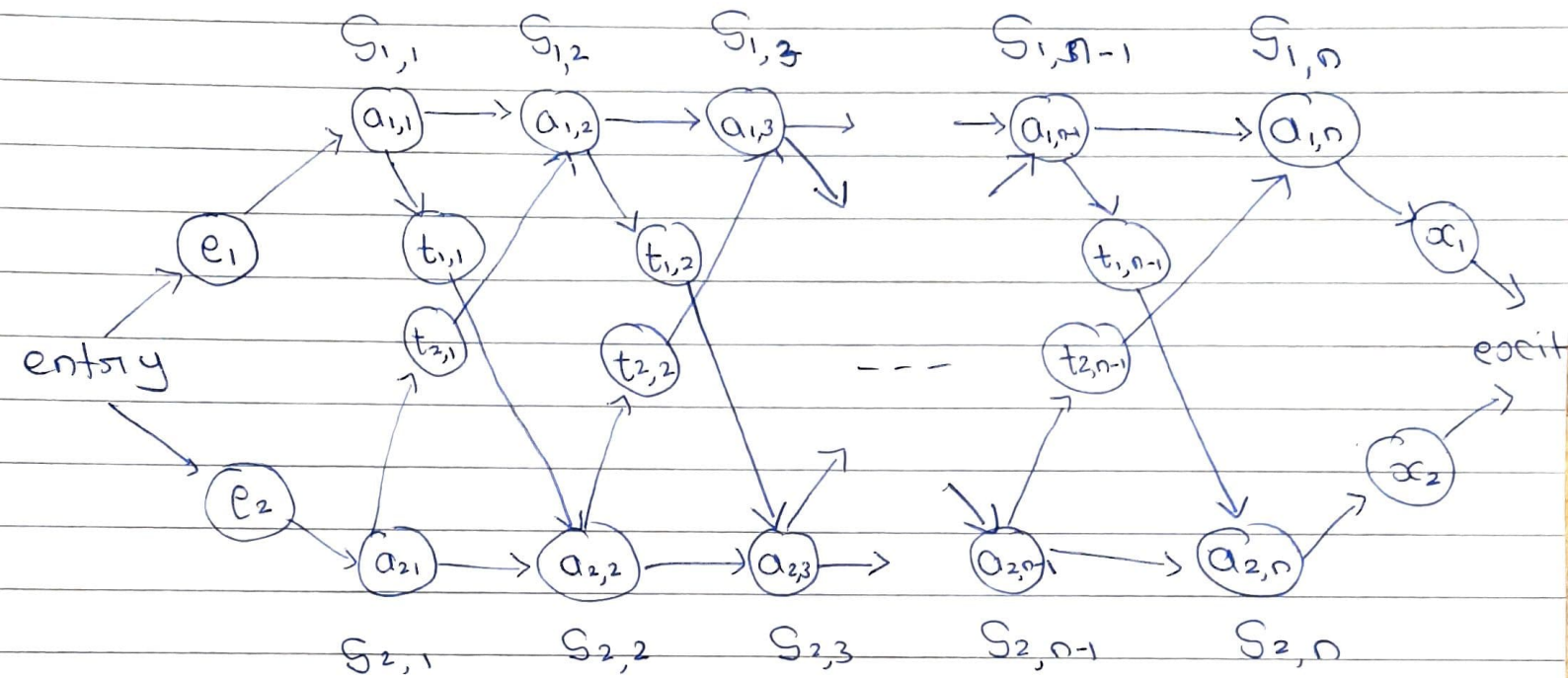


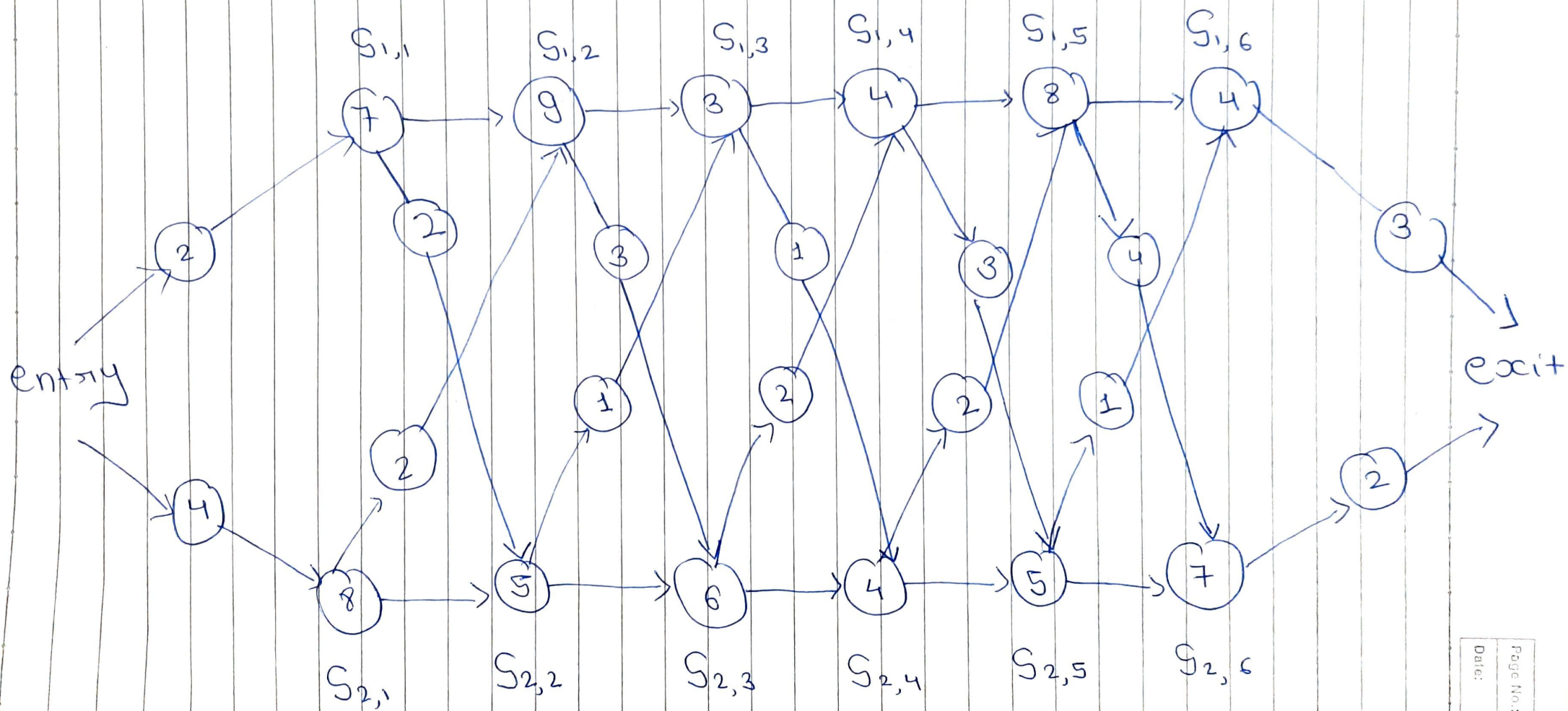
# Assembly Line Scheduling



$$f_1[j] = \begin{cases} e_1 + a_{1,1} & \text{if } j=1 \\ \min(f_1[j-1] + a_{1,j}, f_2[j-1] + t_{2,j-1} + a_{1,j}) & \text{if } j \geq 2 \end{cases}$$

$$f_2[j] = \begin{cases} e_2 + a_{2,1} \\ \min(f_2[j-1] + a_{2,j}, f_1[j-1] + t_{1,j-1} + a_{2,j}), & \text{if } j \geq 2 \end{cases}$$

$$f^* = \min(f_1[n] + x_1, f_2[n] + x_2)$$



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$$\rightarrow f_1[1] = c_1 + a_{11}$$

$$= 2 + 7$$

$$= \underline{\underline{9}}$$

$$f_2[1] = c_2 + a_{21}$$

$$= 4 + 8$$

$$= \underline{\underline{12}}$$

$$\rightarrow f_1[2] = \min(f_1[j-1] + a_{1j}, f_2[j-1] + t_{2,j-1} + a_{1j})$$

$$= \min(9 + 9, 12 + 2 + 9)$$

$$= \min(18, 23)$$

$$= \underline{\underline{18}}$$

$$\rightarrow f_2[2] = \min(f_2[j-1] + a_{2j}, f_1[j-1] + t_{1,j-1} + a_{2j})$$

$$= \min(12 + 5, 9 + 2 + 5)$$

$$= \min(17, 16)$$

$$= 16$$

	1	2	3	4	5	6
$f_1[j]$	9	18	20	24	32	35
$f_2[j]$	12	16	22	25	30	37

$$\begin{aligned}
 f^* &= \min (f_1[n] + \infty_1 + f_2[n] + \infty_2) \\
 &= \min (35 + 3, 37 + 2) \\
 &= \underline{\underline{38}}
 \end{aligned}$$