2. b) No Like if we change the number of firings, the functionality will be different

7. b) We can use skills like function pointer to simulate the same model in C.
But compared with ForSyDe, it is still very difficult.

1>

a) $\Gamma = \begin{array}{c} \\ ac \\ cd \\ bd \\ dc \end{array} \begin{array}{c} \begin{array}{cccc} A & B & C & D \end{array} \\ \begin{bmatrix} 1 & 0 & -2 & 0 \\ 0 & 0 & 1 & -1 \\ 0 & 2 & 0 & -2 \\ 0 & 0 & -1 & 1 \end{bmatrix} \end{array} = \begin{array}{c} \begin{array}{cccc} A & B & C & D \end{array} \\ \begin{bmatrix} 1 & 0 & -2 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & -2 \\ 0 & 0 & -1 & 1 \end{bmatrix} \end{array}$

$\Rightarrow \Gamma q = 0 \Rightarrow q = \begin{bmatrix} 2 \\ 1 \\ 1 \\ 1 \end{bmatrix} \Rightarrow q^T = [2, 1, 1, 1]$

$\phi = \{a, a, c, b, d\}$

$b^T = [2, 1, 1, 2]$

b> $\frac{2}{2C_A + C_B + C_C + C_D} = 0.01$ token per time

c> $P_{sing,1} = \frac{2 \times 2}{2 \cdot 20} = 0.02$ ← As the digram shows.

$P_{sing,2} = \frac{1 \times 1}{2 \cdot 20} = 0.025$

If Input rate is lower than $P_{sing,i}$, it may need to wait for executing. If it is higher, then we need to get a better buffer size.

Question 1

Question 6

a) It is possible. Because we have the delay $\Delta(0)$, and we can have the input events. So all can be calculated.

b)

input	1	2	3
+	1	6	18
×2	2	12	36
Y	2	3	4
+	4	15	40
$\Delta(0)$	0		
X	0	4	15 40

sequence: X {0, 4, 15, 40}
Y {2, 3, 4}

c) ① Tags are used to reason about the order of events. Expressing a possible order relation among Tags to express the order of events.

② value is the contains, such as numbers or some specific values.

③ Event contains a tag and a value.

④ Signal is a set of events ei: $s = \{e_0, e_1, e_2 \cdots\}$

⑤ process is a set of possible behaviors. It turns the input signals to output signals.

d) $T_x < T_y < T_{input}$ (reflexive relation)

extra: mini language