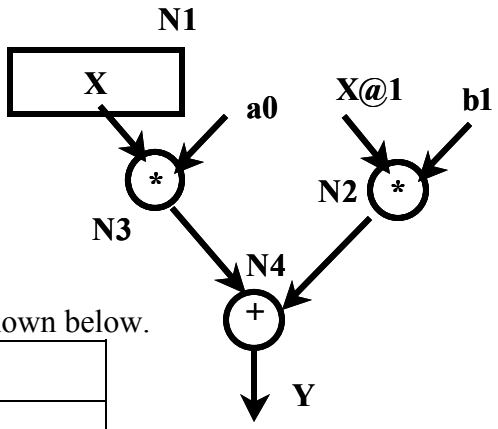
1. Create a schedule for the flowgraph above that increases the initiation rate to its maximum value. Draw the datapath for this scheule

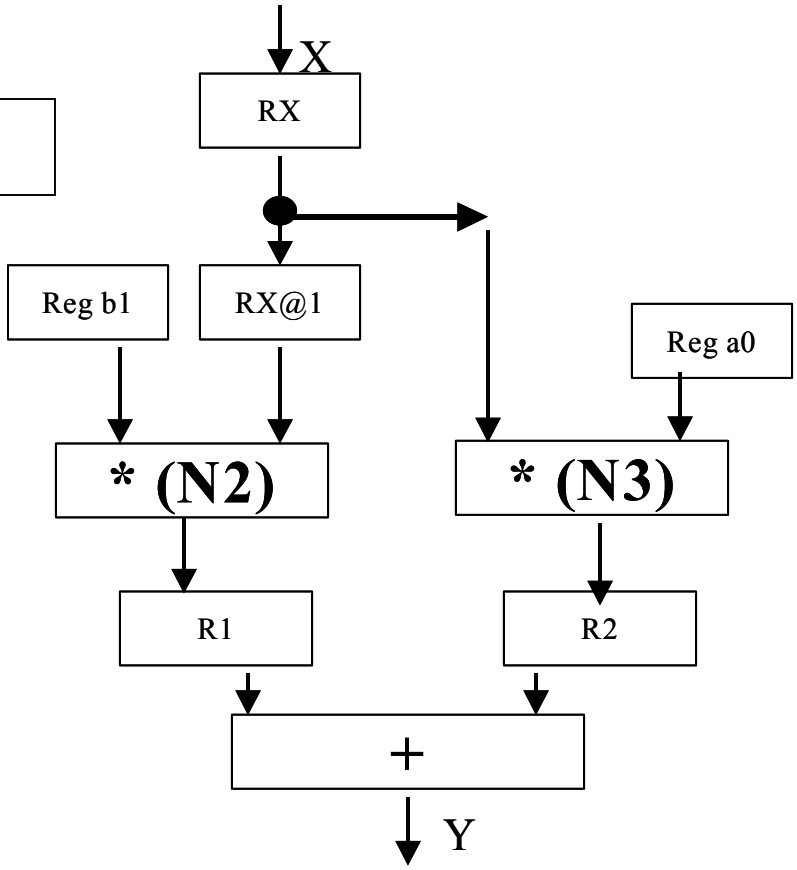
Figure 1

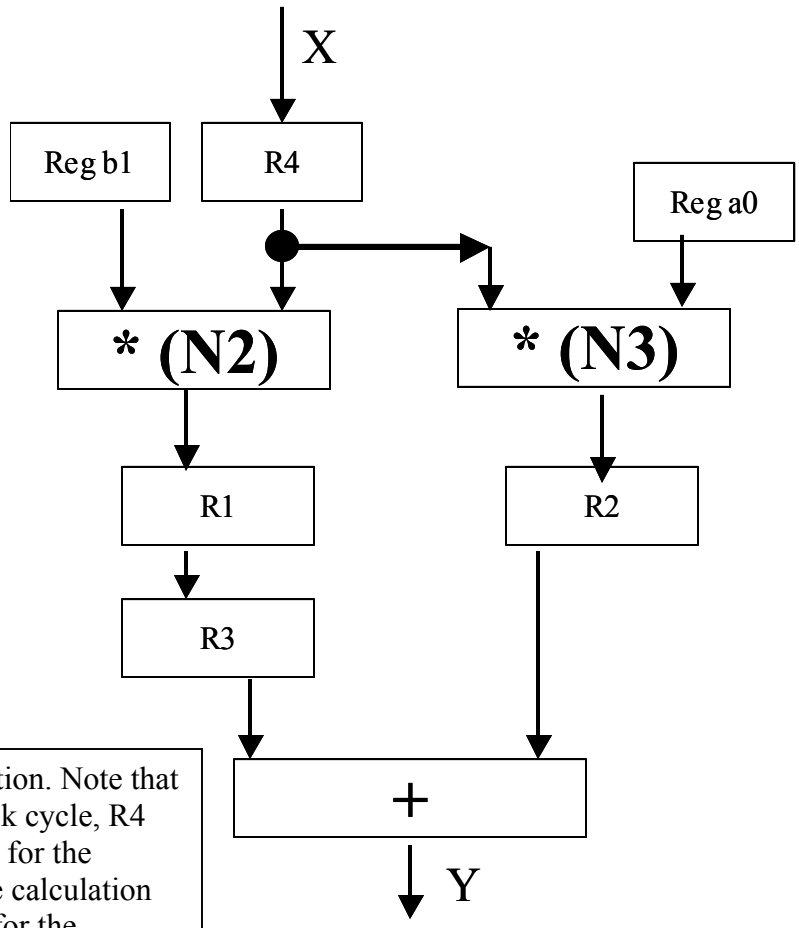


The schedule for initiation rate = 1, latency =3 and datapath is shown below.

	Sample A	Sample B	Sample C
Clk N	N1(←)		
Clk N+1	N2(*), N3(*)	N1(←)	
Clk N+2	N4(+)	N2(*), N3(*)	N1(←)
Clk N+3		N4(+)	N2(*), N3(*)
Clk N+4			N4(+)

Solution #1



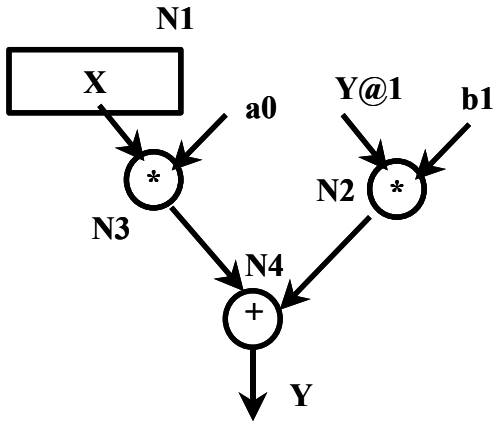


Alternate solution. Note that any given clock cycle, R4 contains the X for the current sample calculation and the X@1 for the previous sample period. The extra register in the lefthand path delays the X@1 * b calculation by 1 clock period to align with the X*a0 calculation.

3. For the flowgraph below, design a schedule and datapath that will achieve the fastest initiation rate.

The value 'Y@1' is the value of the previous computation. (Hint – the fastest initiation rate is 2 --- why???? – you determine the latency)

Figure 2



	Sample J	*Sample J+1*
Clk 1	*N1*	
Clk 2	*N3, N2 (depends on N4 Sample J-1)*	
Clk 3	*N4*	*N1,*
Clk 4		*N3, **N2** **(depends on N4 sample J)***
Clk 5		*N4*
Clk 6