COMP311 In-Class Practice 10/28/26 Name: _____

Question 1: Performance Metrics To improve computer performance you can...

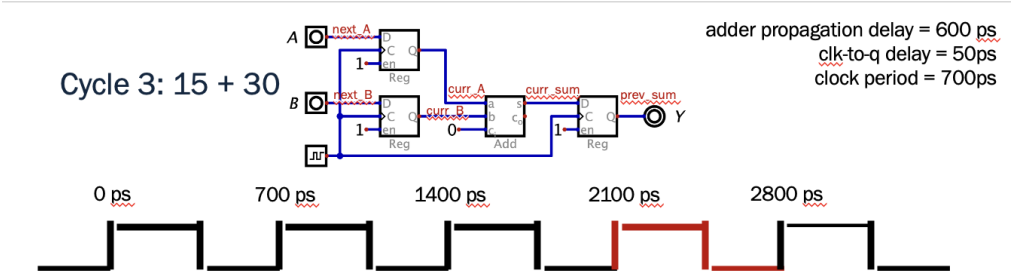
1.1. (Increase/Decrease) the number of required clocks for a program.

1.2. (Increase/Decrease) the clock cycle time, or said another way...

1.3. (Increase/Decrease) the clock rate

1.4. (Increase/Decrease) the CPI (average clock cycles per instruction)

Question 2: Timing Analysis Fill in the table to complete the timing analysis for the following circuit. Take note that A's input value changes.



Signal	t = 2100 ps A = 15 B = 30	t = 2150 ps A = 15 B = 30	t = 2750 ps A = 20 B = 30	t = 2800 ps A = 20 B = 30
next_A	15			
next_B	30			
curr_A	30			
curr_B	8			
curr_sum	38			
prev_sum	25			

Not a typo! What will happen in this case?

Question 3: Timing Analysis! Fill in the timing analysis tables.

Cycle 1

Signal	t = 650 ps A = 18 B = 7	t = 700 ps A = 18 B = 7	t = 1300 ps A = 30 B = 8
next_A	18		
next_B	7		
curr_A	7		
curr_B	7		
curr_sum	14		
prev_sum	0		

Cycle 2

Signal	t = 1300 ps A = 30 B = 8	t = 1350 ps A = 30 B = 8	t = 1950 ps A = 15 B = 30
next_A	30		
next_B	8		
curr_A	18		
curr_B	7		
curr_sum	25		
prev_sum	14		

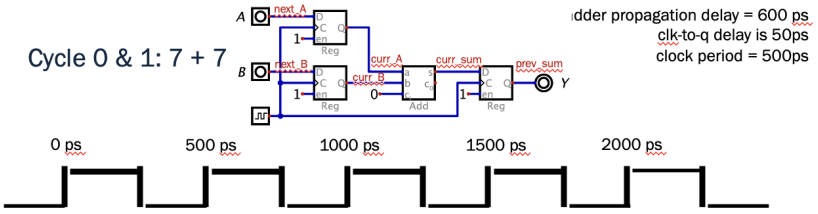
Cycle 3

Signal	t = 1950 ps A = 15 B = 30	t = 2000 ps A = 15 B = 30	t = 2600 ps A = 20 B = 30
next_A	15		
next_B	30		
curr_A	30		
curr_B	8		
curr_sum	38		
prev_sum	25		

Cycle 4

Signal	t = 2600 ps A = 20 B = 30	t = 2650 ps A = 20 B = 30	t = 3250 ps A = 0 B = 0	t = 3300 ps A = 0 B = 0
next_A	20			
next_B	30			
curr_A	15			
curr_B	30			
curr_sum	45			
prev_sum	38			

Question 4: Even More Timing Analysis What happens when the clock period is lowered to 500?



Signal	Starting State	t = 0 A = 7 B = 7	t = 50ps A = 7 B = 7	t = 500ps A = 18 B = 7	t = 550ps A = 18 B = 7
next_A	0				
next_B	0				
curr_A	0				
curr_B	0				
curr_sum	0				
prev_sum	0				