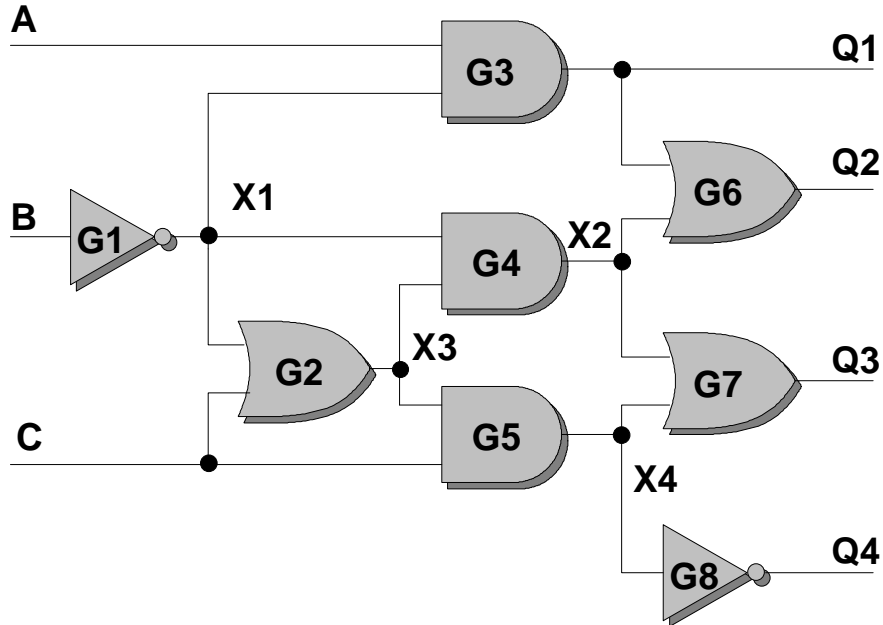


Name \_\_\_\_\_

1. Give the Level Numbers for each Gate and each Net in the following network.  
(20 Points)



Gate	Level
G1	
G2	
G3	
G4	
G5	
G6	
G7	
G8	

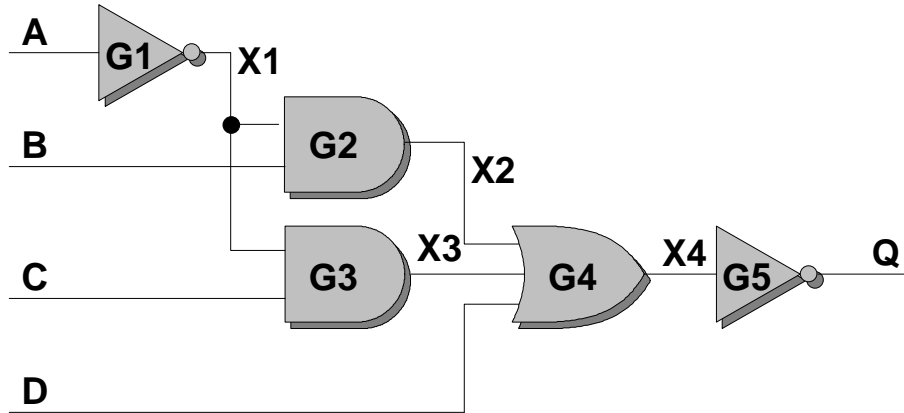
Net	Level
A	
B	
C	
X1	
X2	
X3	
X4	
Q1	
Q2	

Q3	
Q4	



Now, what was this “gate” thing supposed to be again?

2. For the following network, show the order in which the gates would be simulated using the leveled zero-delay algorithm. Show the final value of all nets, after the simulation of the vectors, A=0,B=1,C=0,D=1 and A=1,B=0,C=1,D=1. (20 Points)



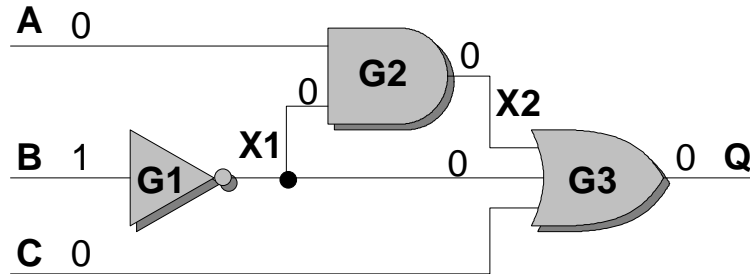
Simulation Order	Gate
1	
2	
3	
4	
5	

Net	0,1,0,1 Value	1,0,1,1 Value
A		
B		
C		
D		
X1		
X2		
X3		
X4		
Q		



Next time I'm **Definitely** going to use simulation first!

3. For the following circuit, show the events that are scheduled and the gates that are simulated at each time step. Use Event-Driven Unit-Delay Simulation. Assume that the circuit has already been simulated with the input A=0,B=1,C=0. (20 Points.)



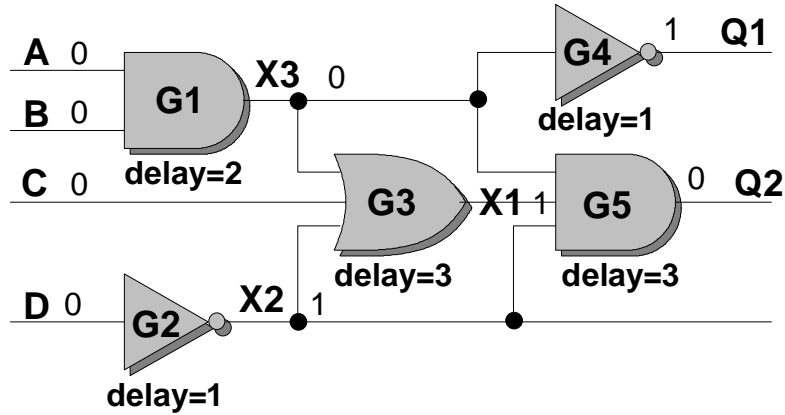
Time Step	Events Queued	Gates Simulated
0		
1		
2		
3		
4		
5		
6		



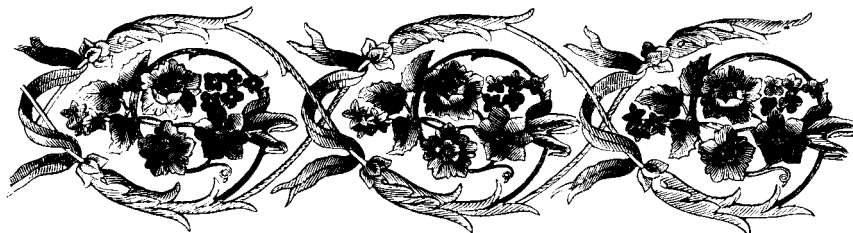
**In simulation, all events are the same.**

**In life, some events are less desirable than others.**

4. For the following circuit, determine the size of the timing wheel. Assume that the circuit has already been simulated using the input vector 0,0,0,0. Show the events that will be queued for the simulation of the input vector 1,0,1,0. (20 Points)



Time Step	Queue Slot	Events Queued	Gates Simulated.
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			



5. Fill in the following truth tables. (10 Points.)

And	U	0	1
U			
0			
1			

Or	U	0	1
U			
0			
1			

Xor	U	0	1
U			
0			
1			

Not	U	0	1
U			
0			
1			

6. The designer of this circuit claims it is hazard-free. Is he right? Why or Why not (10 points.)

