

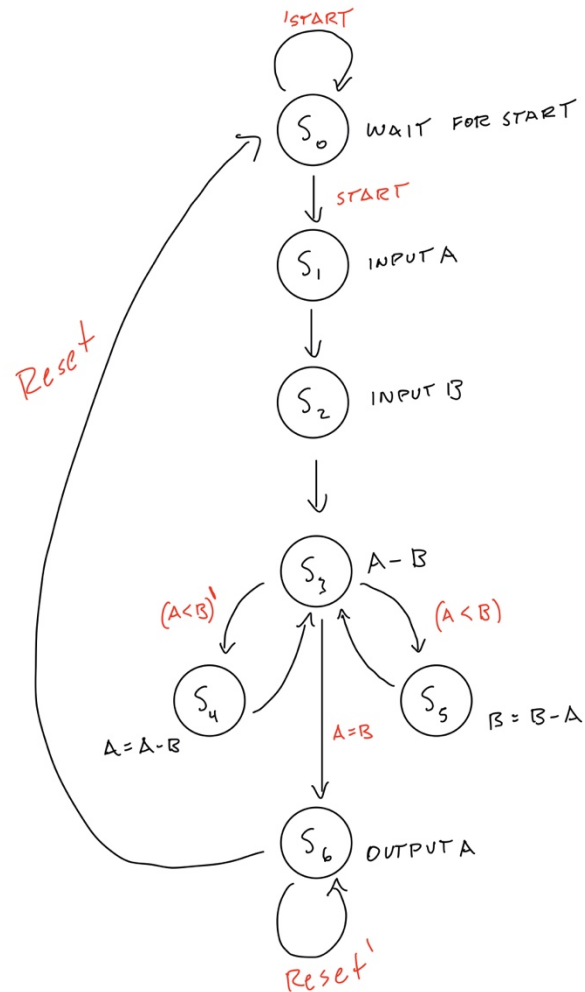
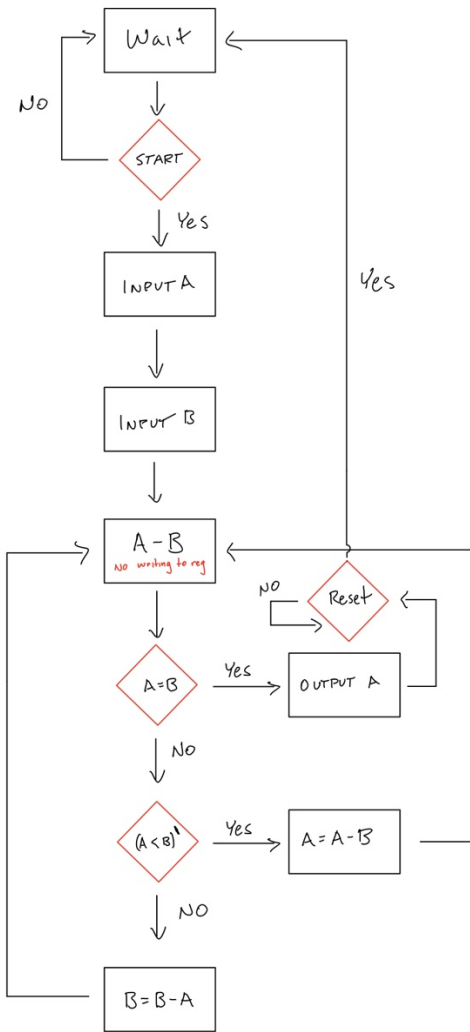
- For this lab experiment we will be using the GDP that was created in lab experiment 6, to implement the algorithm that calculates the greatest common divisor of 2 natural numbers. We will also be learning how to set up timing constraints and how to obtain timing information with the TimeQuest analyzer.

1. *Screenshots of the timing report.*

Setup: dclk								
Command Info		Summary of Paths						
	Slack	From Node	To Node	Launch Clock	Latch Clock	Relationship	Clock Skew	Data Delay
1	0.691	reg_B[1]	reg_sum[9]~reg0	dclk	dclk	4.000	0.324	3.630
2	0.697	reg_B[1]	reg_sum[9]~reg0	dclk	dclk	4.000	0.324	3.624
3	0.698	reg_B[2]	reg_sum[8]~reg0	dclk	dclk	4.000	0.324	3.623
4	0.698	reg_B[1]	reg_sum[9]~reg0	dclk	dclk	4.000	0.324	3.623
5	0.698	reg_B[2]	reg_sum[8]~reg0	dclk	dclk	4.000	0.324	3.623
6	0.701	reg_A[1]	reg_sum[9]~reg0	dclk	dclk	4.000	0.324	3.620
7	0.707	reg_A[1]	reg_sum[9]~reg0	dclk	dclk	4.000	0.324	3.614
8	0.708	reg_A[1]	reg_sum[9]~reg0	dclk	dclk	4.000	0.324	3.613

**Path #1: Setup slack is 0.691**

2. Flowchart, state graph and control words for the algorithm



state	IE	WE	WA(10)	RAE	RAA(10)	RBE	RBA(10)	ALU(210)	SH(10)	OE	
s0	0	1	00	1	00	1	00	101	xx	0	//Wait for start
s1	1	1	01	0	xx	0	xx	000	xx	0	//Input A
s2	1	1	10	0	xx	0	xx	xxx	xx	0	//Input B
s3	0	0	xx	1	01	1	10	101	00	0	//A-B no write to Reg
s4	0	1	01	1	01	1	10	101	00	0	//A = A-B
s5	0	1	10	1	10	1	01	101	00	0	//B = B-A
s6	x	0	xx	1	01	0	xx	000	00	1	//Output A