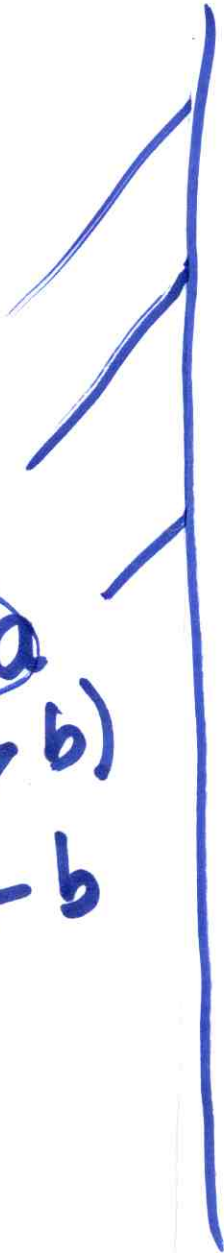


WEEK 7

# EUCLID'S

# GCD

```
a = read();  
b = read();  
while (a != b)  
  if (a < b)  
    b = b - a;  
  else if (a > b)  
    a = a - b;  
  endif  
endwhile  
Print a
```



EX1

( )

<sup>a</sup> 42, <sup>b</sup> 16

26, 16

10, 16

10, 6

4, 6

4, 2

2, 2

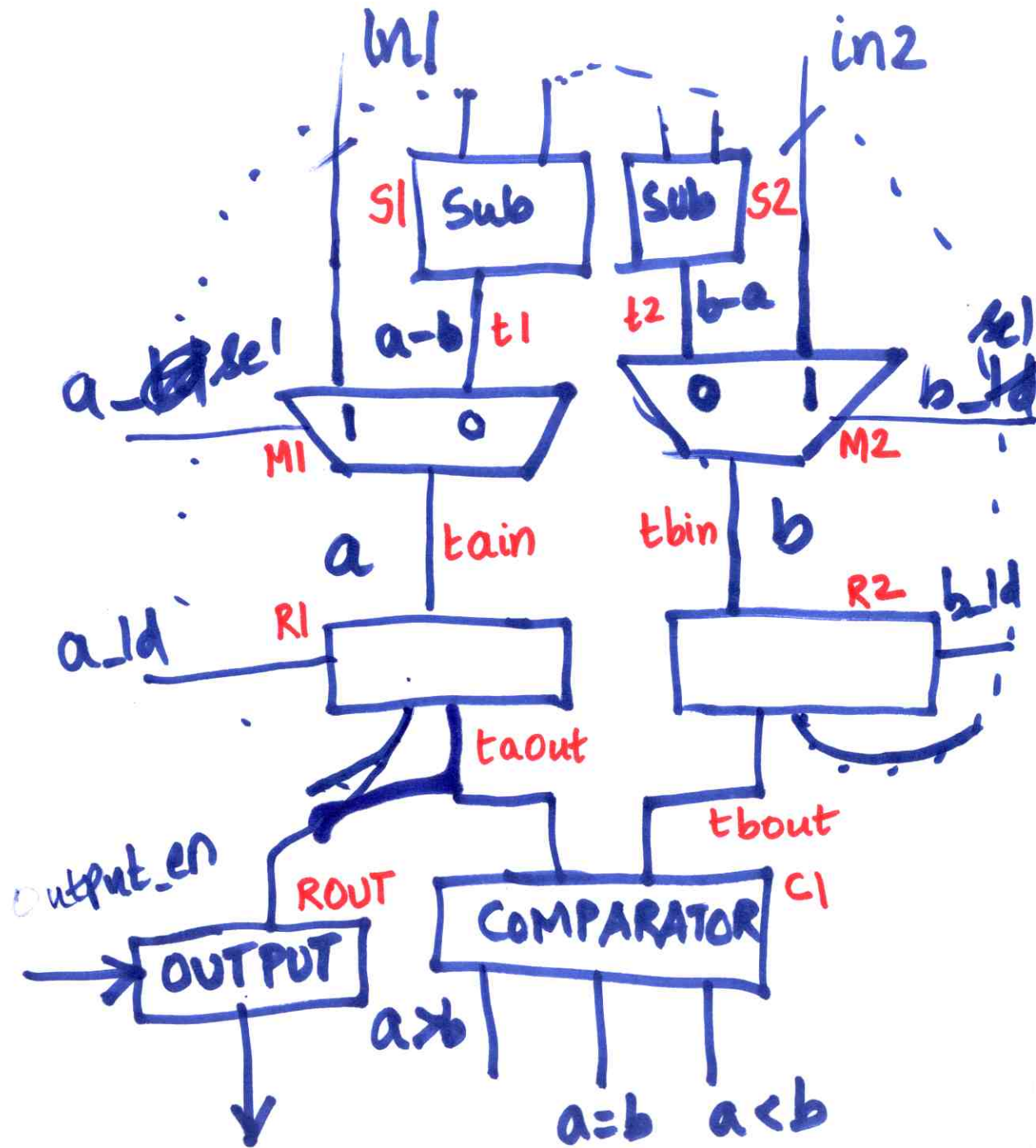
a b  
60, 45

15, 45

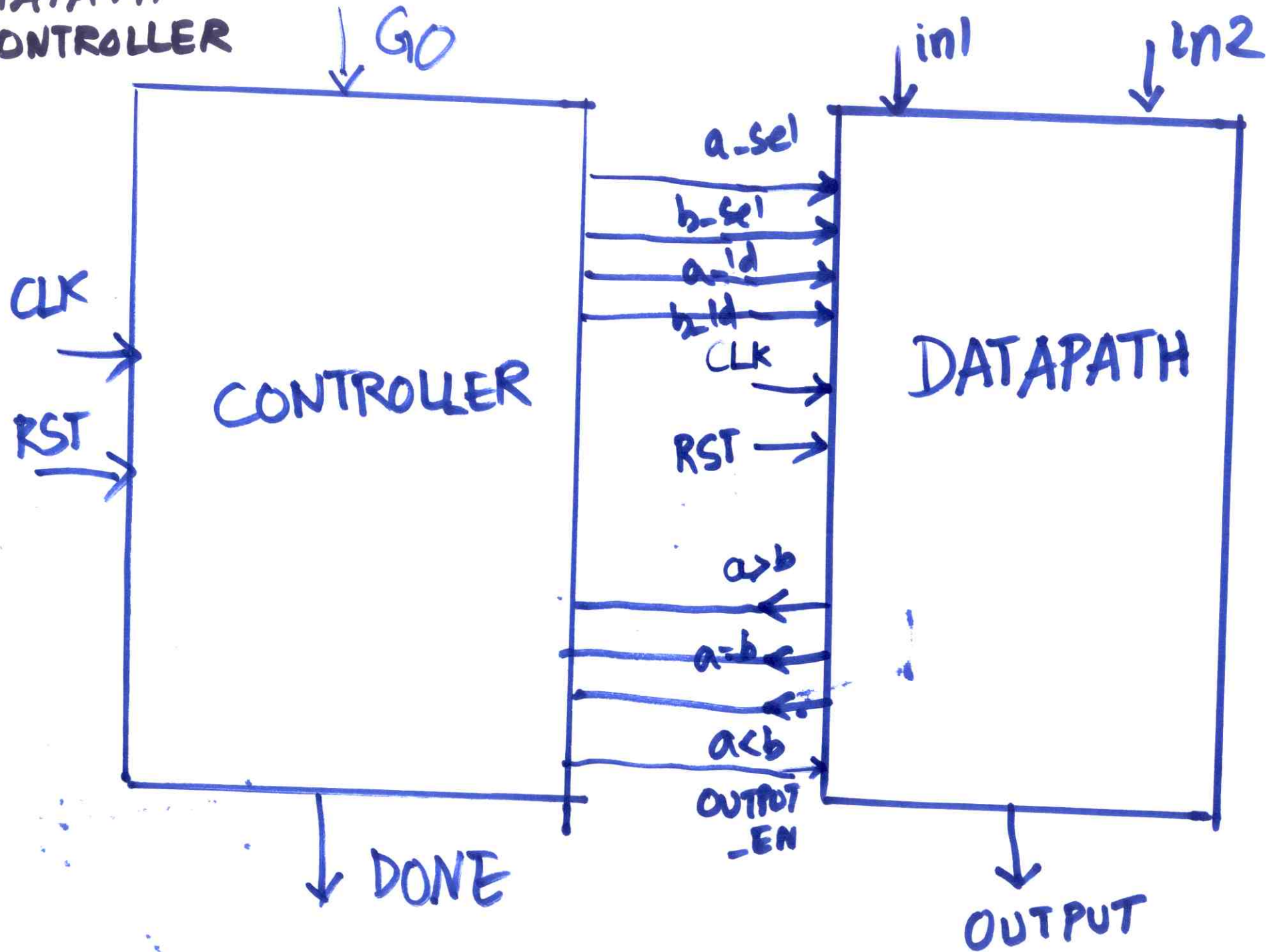
15, 30

15, 15

# DATAPATH

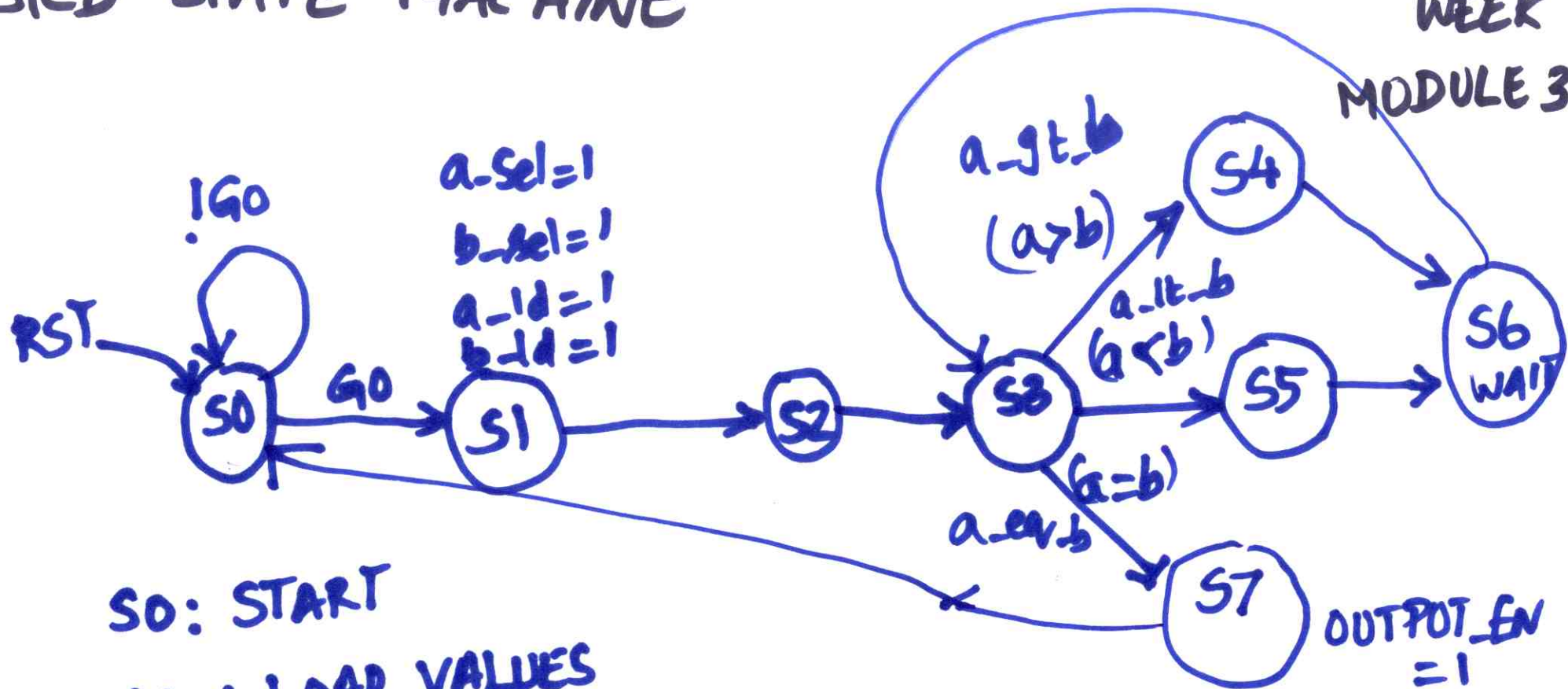


DATA PATH +  
CONTROLLER



# GCD STATE MACHINE

WEEK 7  
MODULE 37



S0: START

S1: LOAD VALUES

S2: WAIT STATE (for inputs to load)

S3: COMPARISON STATE

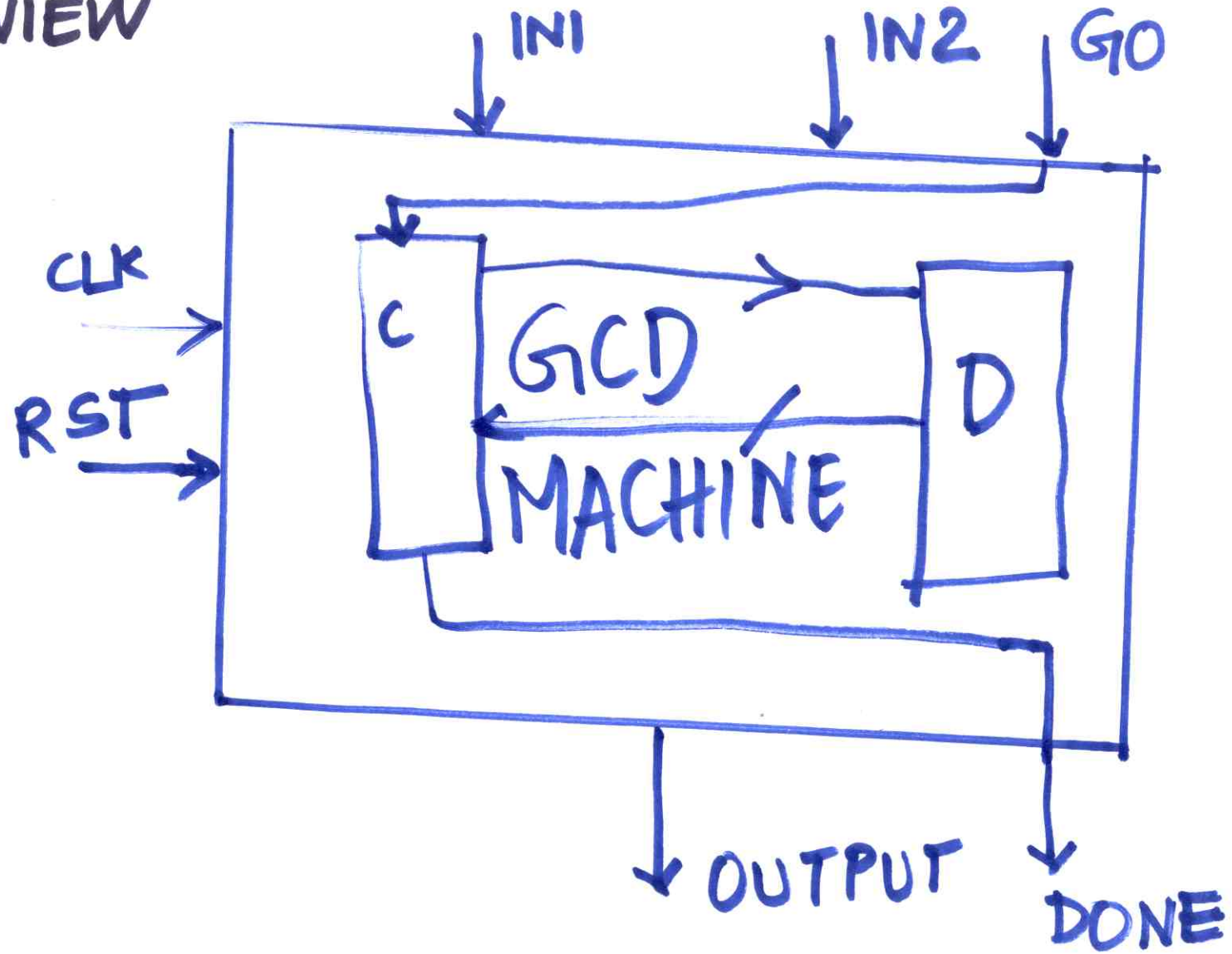
S4:  $a\_sel=0$  and  $a\_ld=1$  [ $a=a-b$ ]

S5:  $b\_sel=0$  and  $b\_ld=1$  [ $b=b-a$ ]

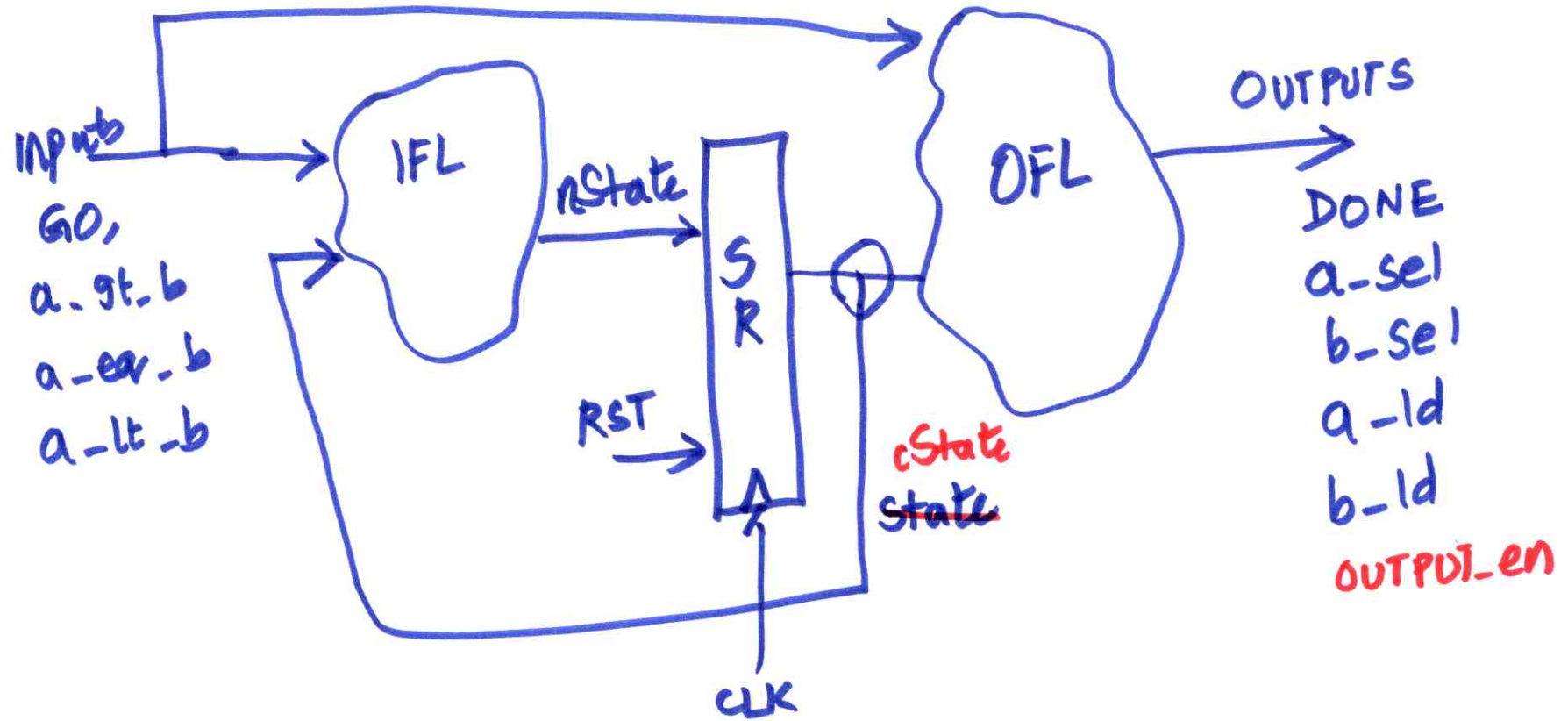
S6: WAIT  
S7: DONE

S6: WAIT  
S7: DONE

# TOP LEVEL VIEW



WEEK 7  
MODULE 41



# TEST PLAN

1. Reset the chip
  2. Place inputs
  3. Turn on "Go"
  4. Wait till done = 0
  5. Remove go. FSM will start working
  6. Wait till done = 1
  7. Output is ready
- 