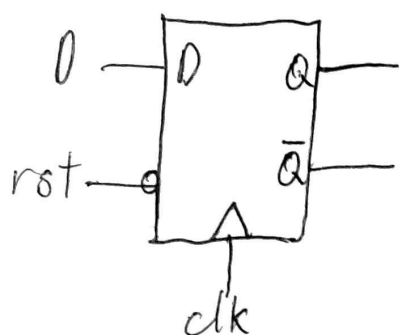


## #1 D-Flip-Flop (1) posedge clk



- (2) Q and Q bar Output  
(3) active-low async rst [negedge rst]

\* Code attached in submission \*

~~#2~~

#2

(a) After one clock cycle

Fragment 1

$a=2, b=2, c=2$

Fragment 2

$a=2, b=4, c=7$

(b) Is the ordering important?

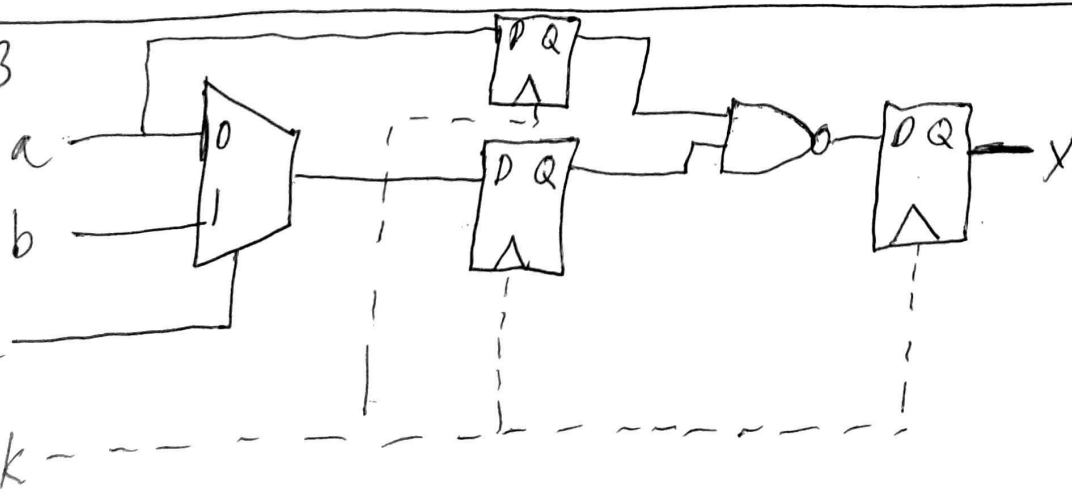
Fragment 1

Yes, the order matters  
since it overwrites  
the variable

Fragment 2

No, since the variables  
are processed and updated  
at the same time.

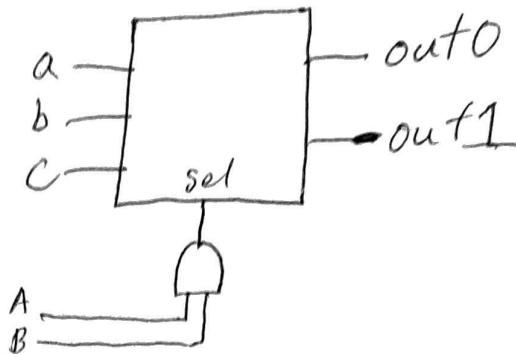
#3



\* code attached  
in submission \*

# #4 Fragment 1

$a$  —  $1'b1$  — out0  
 $b$  — out0  
 $c$  — out1  
 $a$  — out1



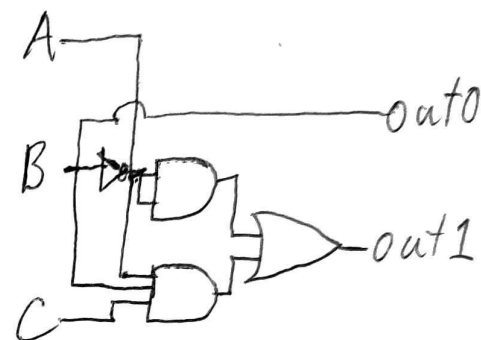
A	B	C	out0	out1
0	0	0	0	0
0	0	1	0	0
0	1	0	1	0
0	1	1	1	0
1	0	0	0	1
1	0	1	0	1
1	1	0	1	0
1	1	1	1	1

out0

	$\bar{A}$	A
BC	0	0
BC	0	0
BC	1	1
BC	1	1

B

$\bar{A}A$   
 $\bar{A}\bar{B} + ABC$   
 or  
 $AC + A\bar{B}C$



## Fragment 2

