Name: _____ unique name: _____
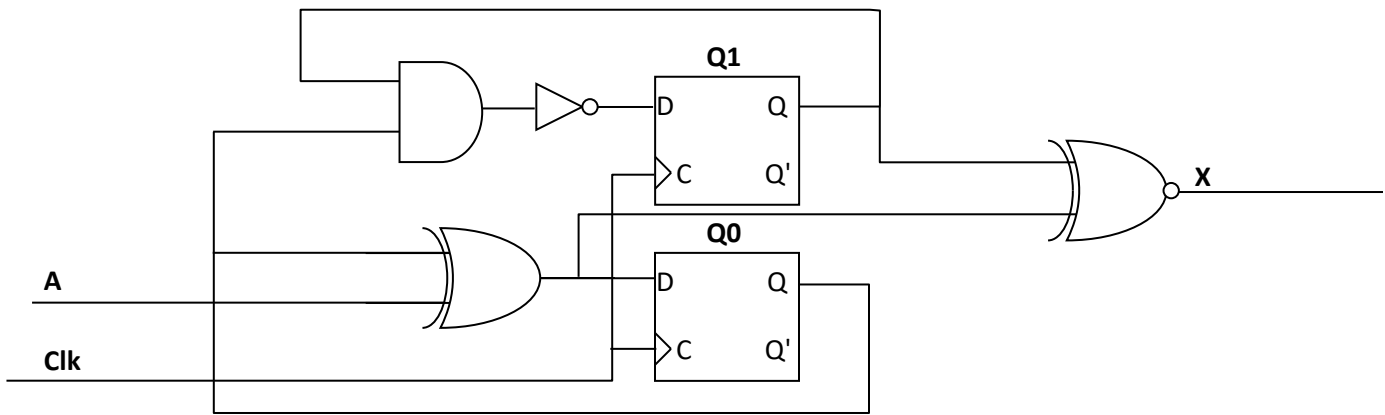
Honor code:
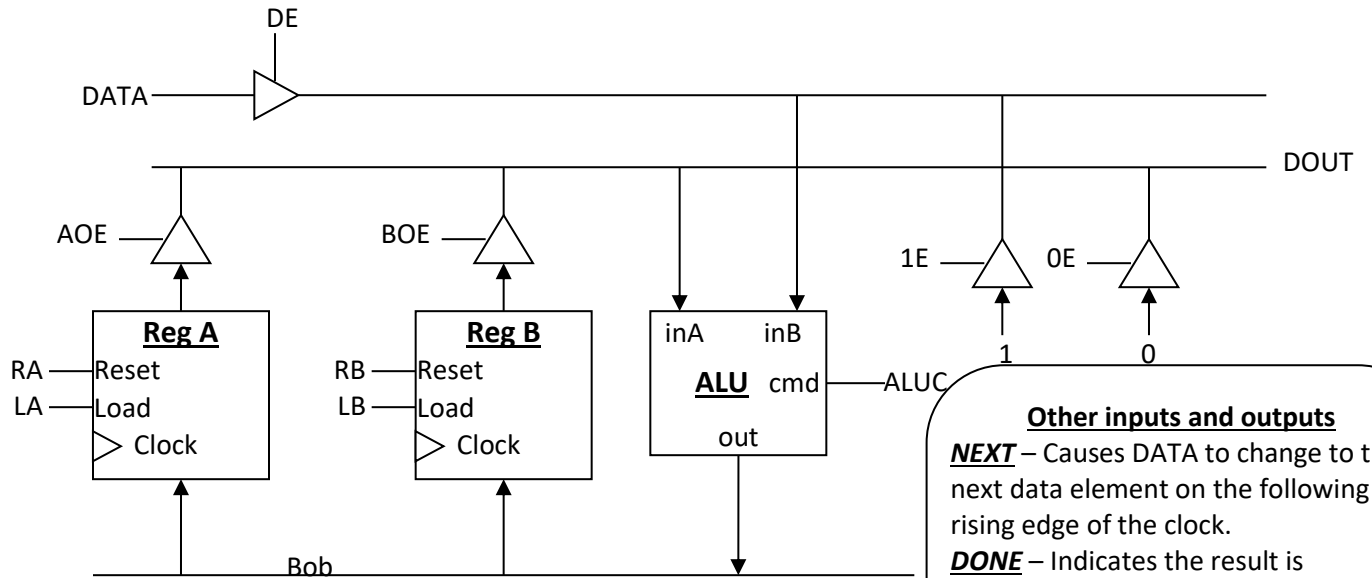I have not given or received aid on this quiz, nor have I observed anyone else doing so:

Sign here:_____

This quiz is graded out of 100 points and is worth about 4% of your class grade.
Closed everything including calculators! To receive partial credit, work must be shown.

1. Draw the state transition diagram for the above circuit. You should assume "00" is the initial state. Please label each state as "Q1Q0" (so if Q1=1 and Q0=0 the label would be "10"). Don't include unreachable states (if any). **[40]**

DE

DATA

DOUT

AOE

BOE

1E   0E

Reg A
RA — Reset
LA — Load
Clock

Reg B
RB — Reset
LB — Load
Clock

inA   inB
ALU cmd —ALUC
out

1   0

Bob

Other inputs and outputs
NEXT – Causes DATA to change to the next data element on the following rising edge of the clock.
DONE – Indicates the result is available on DOUT. Only needs to be asserted for one clock period.
START – You are to start finding the average.
Bob1 – True if Bob==1
B16 – True if RegB==16.

2. You are to design a Moore-type state transition diagram which causes the above datapath to find the maximum of 16 unsigned numbers. When the START signal goes high, you are to begin. Once done, the result should be placed on DOUT and the DONE signal should be set high. START will not go high again until after DONE is asserted. Any value not specified in a given state will be assumed to be zero. **[60]**

ALU

cmd	Operation
0	out=inA+inB
1	out=inA-inB
2	out=inA<inB
3	out=inA>inB

Note X>Y means the output is a 1 if X>Y otherwise it is a 0.