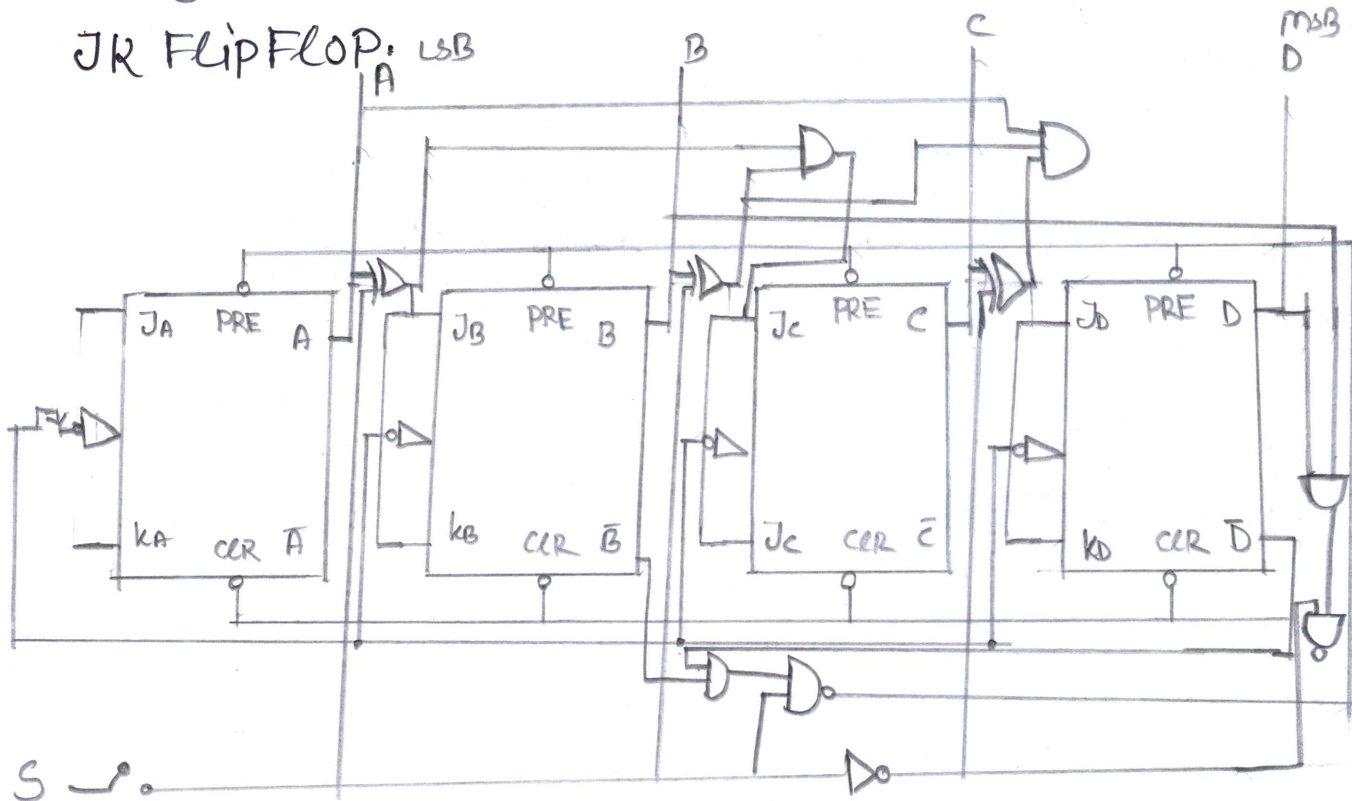2) Design MOD10 UP/Down Synchronous Counter using JR FlipFlop.

Operation:

when $S=0$, (0 to 9)

  PRE $=1$, CLR $=0$ Normal clock Operation
                        (PRE$=1$, CLR$=1$)

$A = B = C = D = 0$

  This is a UP Counter

Whe $S=1$, (10)

  PRE $=0$, CLR $=1$

  $A = B = C = D = 1$

  This is a Down Counter.