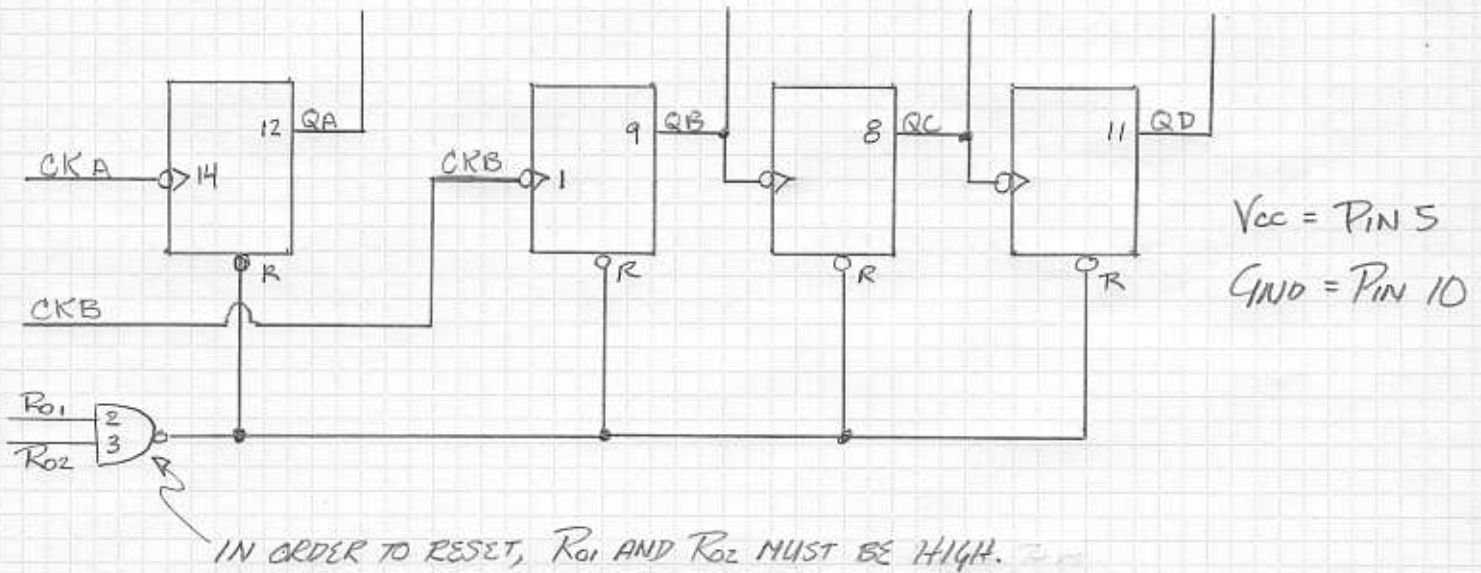


# 7493

The 7493 consists of a MOD-2 counter (single flip flop) and a MOD-8 counter (3 flip-flops). Both counters are reset from a common circuit.



NOTE THAT THERE IS NO PROVISION TO SET OR CLEAR INDIVIDUAL BITS USING THIS DEVICE. NOTE THAT THIS COUNTER CAN ONLY COUNT UP.

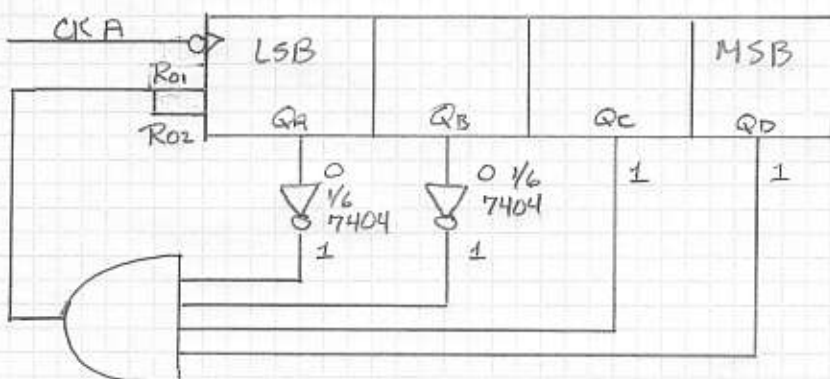
THE 74193 IC ADDRESSES BOTH OF THESE LIMITATIONS.

## DESIGN NOTES:

IF YOU ARE DESIGNING A MOD-8 OR LESS COUNTER, USE THE 3-FF PORTION OF THE CHIP AND IGNORE THE EXTRA FF.

IF YOU ARE DESIGNING A COUNTER BETWEEN MOD-8 AND MOD-16, CREATE A 4-FF COUNTER BY HOOKING UP QA TO CKB. CKA IS THE INPUT (PULSES BEING COUNTED) AND QA THE LEAST SIGNIFICANT BIT.

FOR DECODING, TIE R01 AND R02 TOGETHER AND ALSO TO THE OUTPUT OF YOUR DECODING AND GATE. SINCE THERE ARE NO  $\bar{Q}$  OUTPUTS, YOU WILL NEED TO INVERT Q YOURSELF WITH A 7404 CHIP. HERE IS A MOD 12 COUNTER.



NOTE: THE 7493 CAN COUNT UP TO 12.