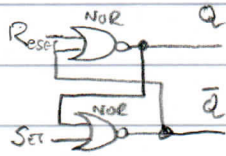
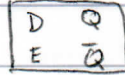
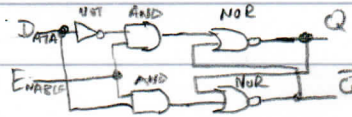


DIFFERENCE BETWEEN LATCH & FLIPFLOP:
 WHILE A LATCH CAN CHANGE ITS OUTPUT AT ANYTIME AS LONG AS IT'S ENABLED, A FLIPFLOP IS AN EDGE-TRIGGERED DEVICE THAT NEEDS A CLOCK TRANSITION TO CHANGE ITS OUTPUT.

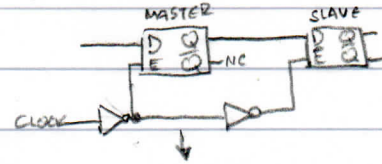
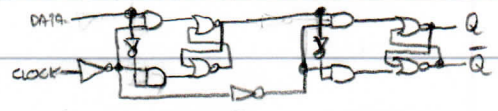
BASIC R/S LATCH (WITH THE INVALID STATE WHEN S=R=1)



D LATCH (INVALID STATE ELIMINATED)

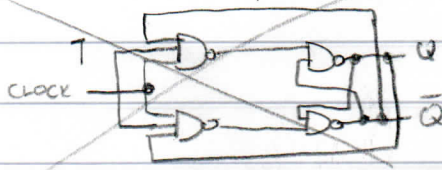


D FLIPFLOP (FROM 2 D LATCHES, FIRST AS MASTER AND SECOND AS SLAVE)

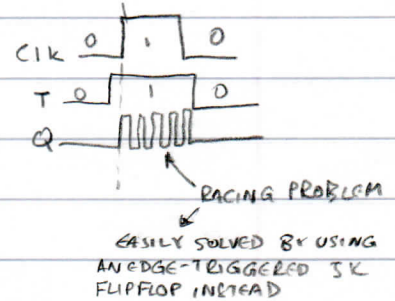


T FLIPFLOP

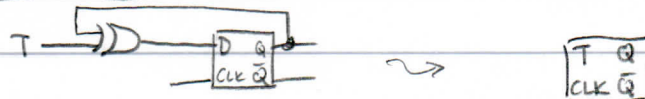
NOT BY SORTING J & K INPUTS OF A JK FLIPFLOP!



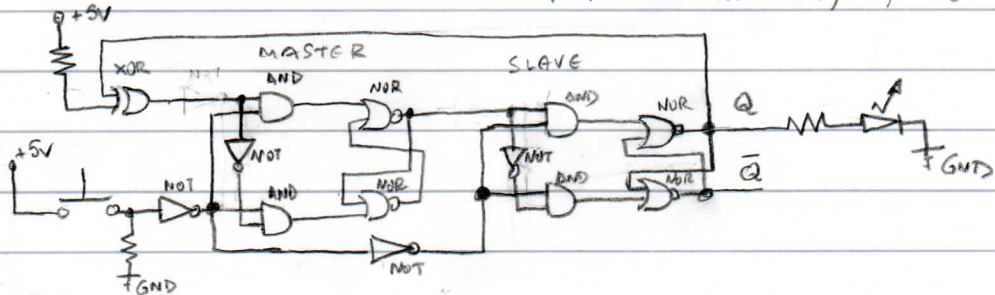
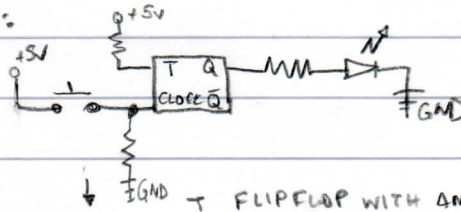
YOU NEED A VERY SHORT PULSE
 CLOCK PULSE NEEDS TO GO HIGH THEN LOW AGAIN
 BEFORE Q CHANGES STATE. OTHERWISE Q WILL TOGGLE
 QUICKLY BETWEEN 1 & 0 DURING THE ENTIRE POSITIVE PULSE DURATION



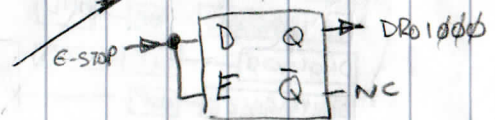
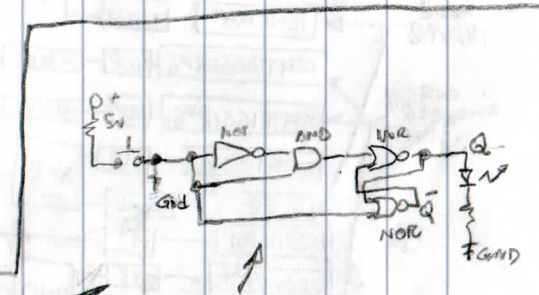
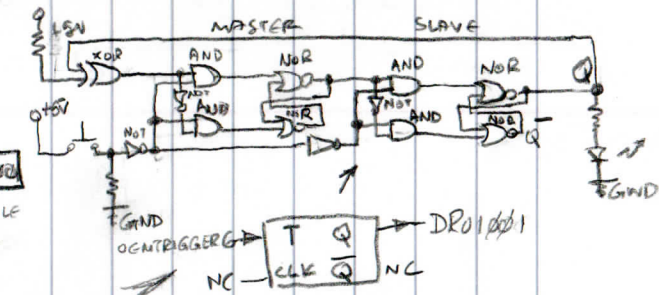
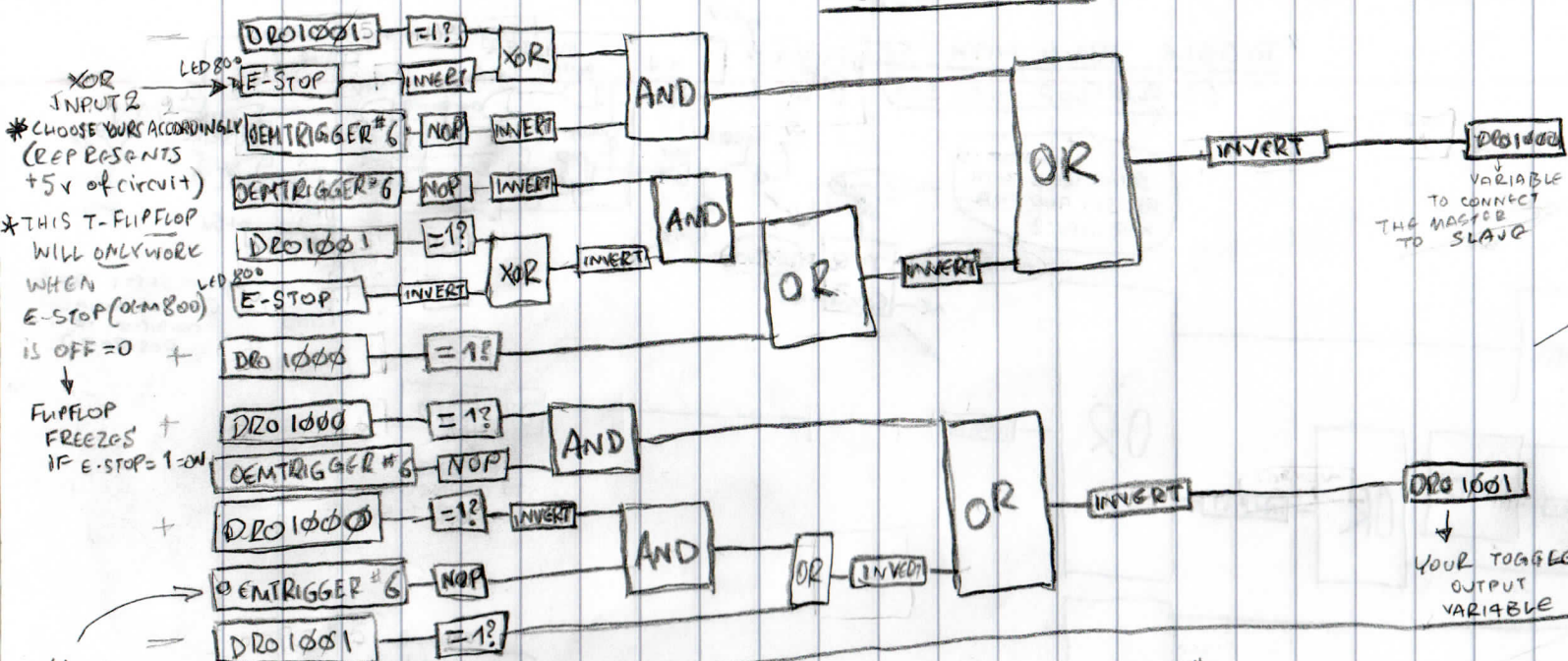
FULLY FUNCTIONAL T FLIPFLOP BY USING A D FLIPFLOP COMBINED WITH AN XOR GATE LIKE THIS:



TOGGING A LED:

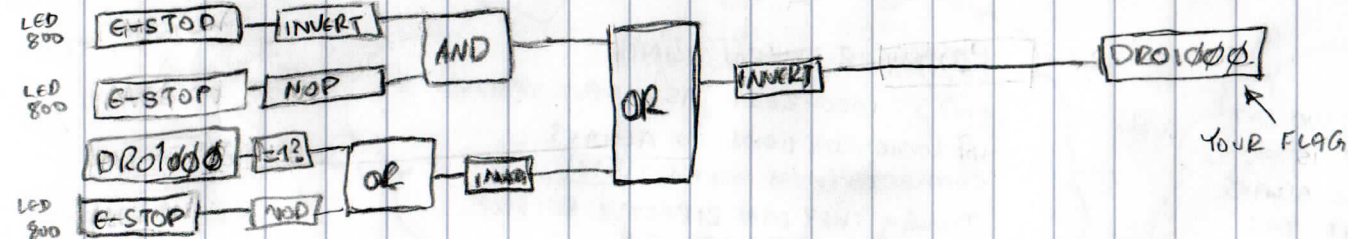


4 TOGGLE BRAIN (T-FLIPFLOP)



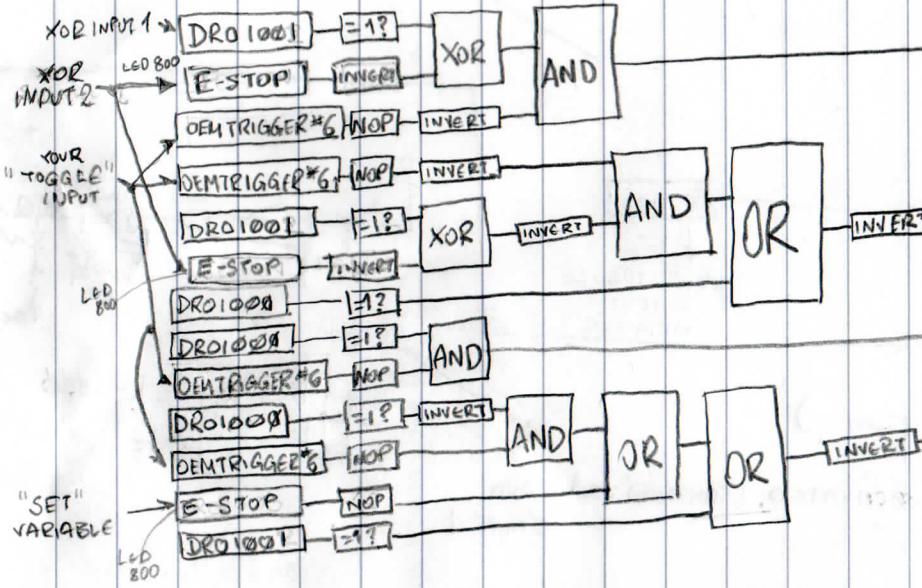
"LATCH BRAIN" (STORE AND FORGET) ^{"FLAG" ↓}

EXAMPLE → AFTER E-STOP IS ACTIVATED, $DR1000 = 1$ AND STAYS 1



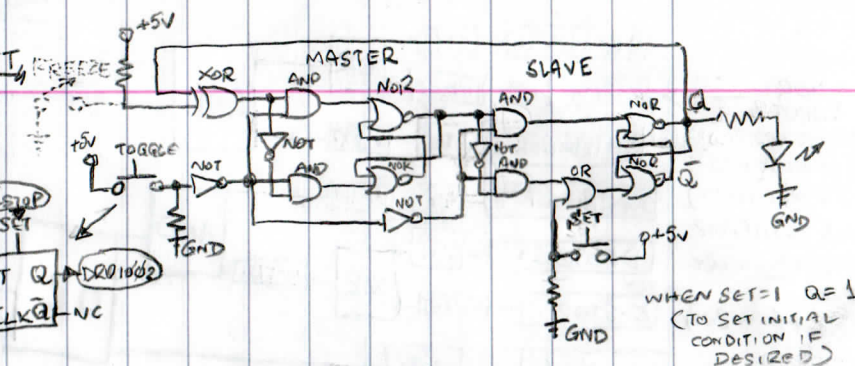
"TOGGLE BRAIN WITH SET" (T-FLIPFLOP WITH SET)

E-STOP IS BEING USED BOTH FOR SET AND FOR XOR INPUT 2



THE DIFFERENCE WITH THE T-FLIPFLOP NO SET IS THAT WHEN E-STOP IS PRESSED, DRO1001 WILL ALWAYS GO @ 1, WHEREAS AT THE T-FLIPFLOP NO SET, WHEN E-STOP IS PRESSED, IT WILL FREEZE DRO1001 @ WHATEVER LOGIC STATE IT WAS

REMEMBER WHEN USING DRO'S 1000-2254 AS OUTPUT VARIABLES IN LOGIC FUNCTIONS TO ALWAYS CONNECT THEM WITH **=1?** THOUGH, THEY CAN DIRECTLY RECEIVE A LOGICAL OUTPUT AS INPUT



WHEN SET=1 Q=1 (TO SET INITIAL CONDITION IF DESIRED)