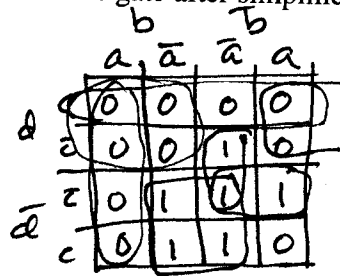


Consider the following logic function: $f = (a'bd + ab + ab'd + acd' + cd)'$. Construct a static CMOS complex gate implementing this function. Input b is known to be the last arriving value. (Hint: you need only 12 transistors.)

b last

a. Draw the schematic for this gate after simplification (draw a k-map!) label the transistors by their input variable.

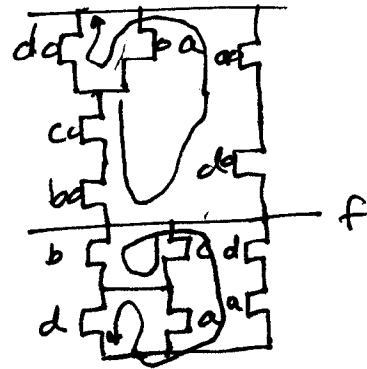
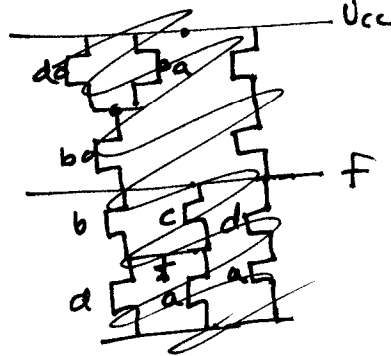


PD: $bd + cd + ab + ad + ac$

PU: $\bar{a}\bar{d} + \bar{b}\bar{c}\bar{d} + \bar{a}\bar{b}\bar{c}$

\rightarrow PU: $\bar{b}\bar{c}(\bar{d} + \bar{a}) + \bar{a}\bar{d} \rightarrow 6T$

PD: $(b + c)(d + a) + ad \rightarrow 6T$



b. This gate can be arranged as an Euler path. On the Stick outline below, label transistors and draw in the contacts and wires to complete the gate.

