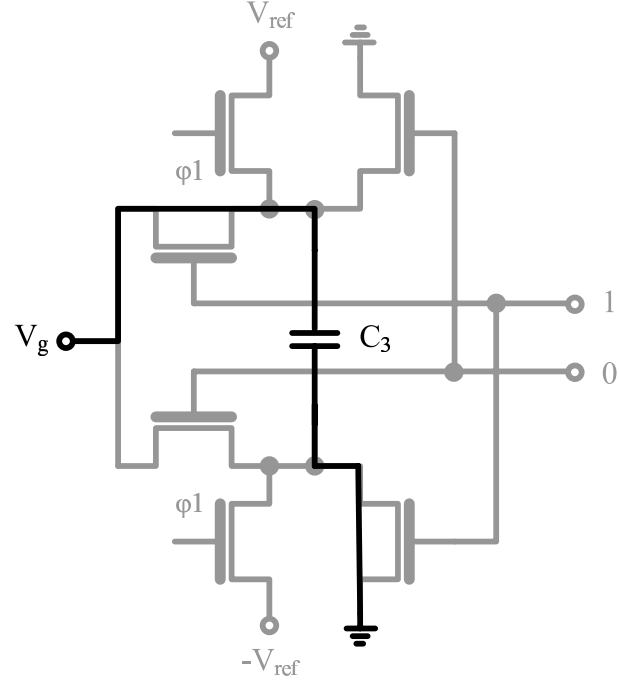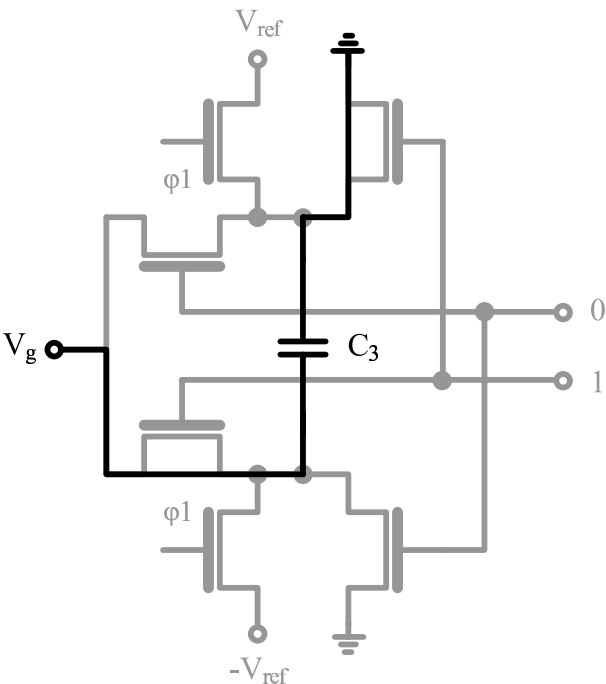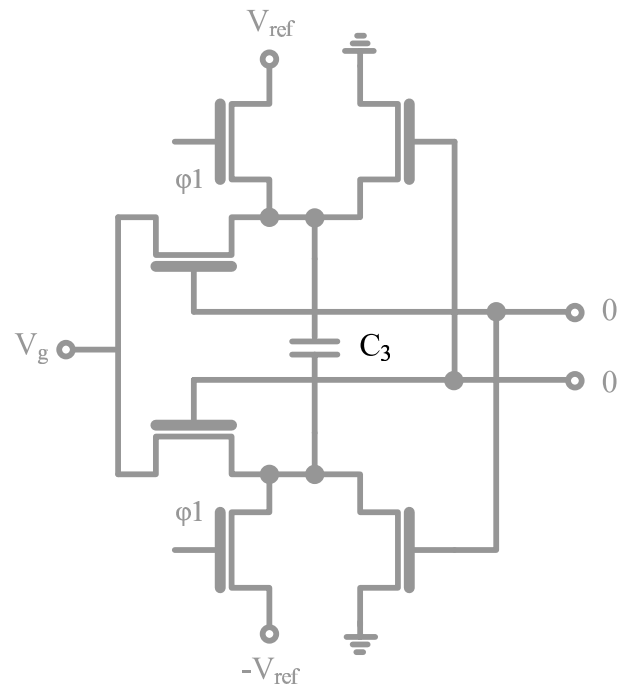a) In φ1 the capacitor is charged.

b) In φ3, if $V_o \geq V_{ref}$ the charge transfered to V_g will be $Q_3 = C_3 V_r$

c) In φ3, if $V_o \leq -V_{ref}$ the charge transfered to V_g will be $Q_3 = -C_3 V_r$

d) In φ3, if $-V_{ref} < V_o < V_{ref}$ no charge is transfered to C_3