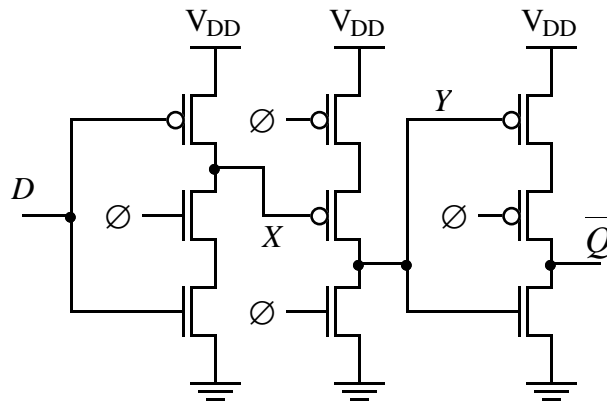


Back to TSPC D Flip-Flops: Falling Edge-Triggered Observations

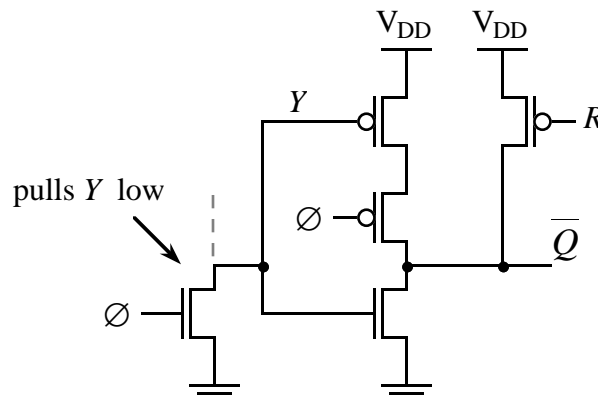


When clock = 0, Y node controls \bar{Q} , but X_{old} value controls \underline{Y} !

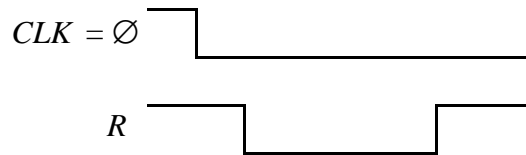
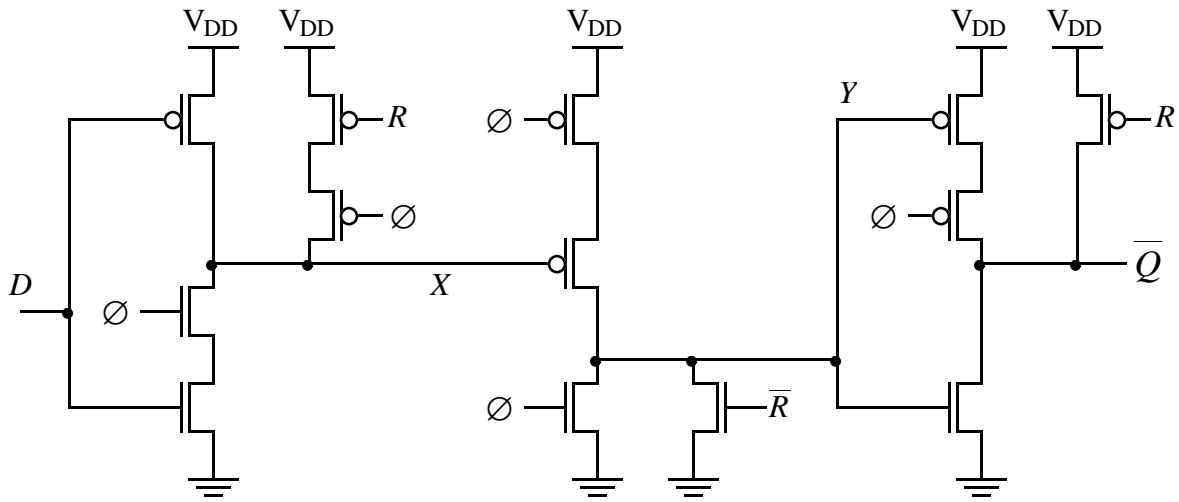
clock	D	X	Y	\bar{Q}
0	1	$X_{old} = 0$	1	0
		$= 1$	$Y_{old} = 0$	1
			$= 1$	0

When clock = 0, reset will have to affect both X, Y nodes!!!

When clock = 1, only internal node which can affect \bar{Q} is Y and this is pulled low. This means we will have to put a pullup directly on \bar{Q} (at least), also must set $Y = 0$.



Falling Edge Triggered TSPC D-Flip Flop with Asynchronous Low-True Reset



$$\begin{array}{ll}
 X = 1 & X = 1 \text{ or } X_{old} = 1 \\
 Y = 0 & Y = Y_{old} = 0 \\
 & \bar{Q} = 1
 \end{array}$$



$$\begin{array}{ll}
 Y = 0 & \bar{Q} = Q_{old} = 1 \\
 \bar{Q} = 1 & \\
 X = \text{don't care} &
 \end{array}$$