Choice of SIGNALTYPE for scan flipflops - a case study

3 scan flipflops are given: A, B, C

Subjective choice of signaltype: just pick the signaltype which seems most appropriate.

Formal choice of signaltype: chose the signaltype according to ALF 2.0, March 2000

FIGURE 1. Schematic for scan flipflop A

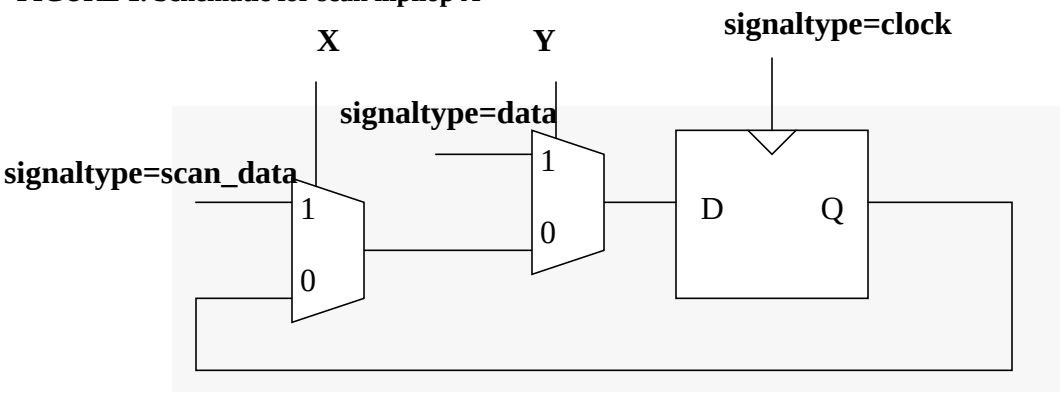

TABLE 1. Function table for scan flipflop A

X	Y	mode
0	0	hold
0	1	normal
1	0	scan
1	1	normal

TABLE 2. proposed SIGNALTYPE values for X and Y in scan flipflop A

	subjective	formal	comment
X	scan_enable	scan_enable	X enables only “scan” mode with lower priority than Y
Y	scan_control(?) enable(?)	control	Y controls “normal” mode directly and “scan” mode in conjunction with X

FIGURE 2. Schematic for scan flipflop B

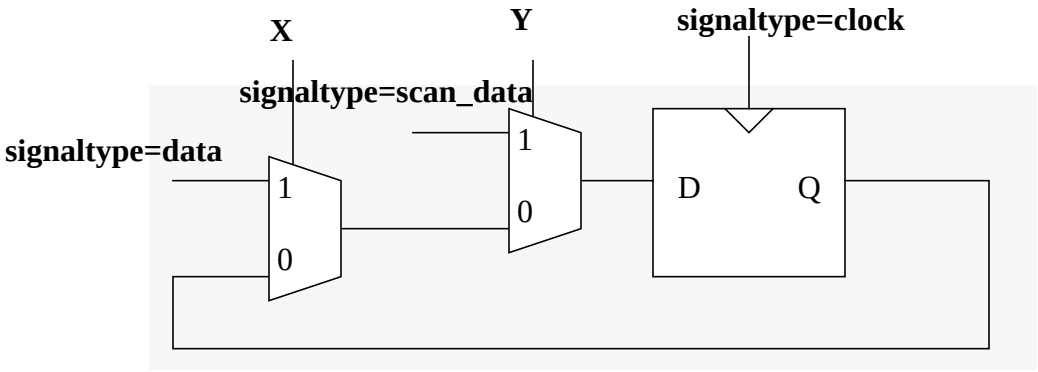

TABLE 3. Function table for scan flipflop B

X	Y	mode
0	0	hold
0	1	scan
1	0	normal
1	1	scan

TABLE 4. proposed SIGNALTYPE values for X and Y in scan flipflop B

	subjective	formal	comment
X	enable	enable	X enables only “normal” mode with lower priority than Y
Y	scan_enable	scan_control	Y controls “scan” mode directly and normal mode in conjunction with X

FIGURE 3. Schematic for scan flipflop C

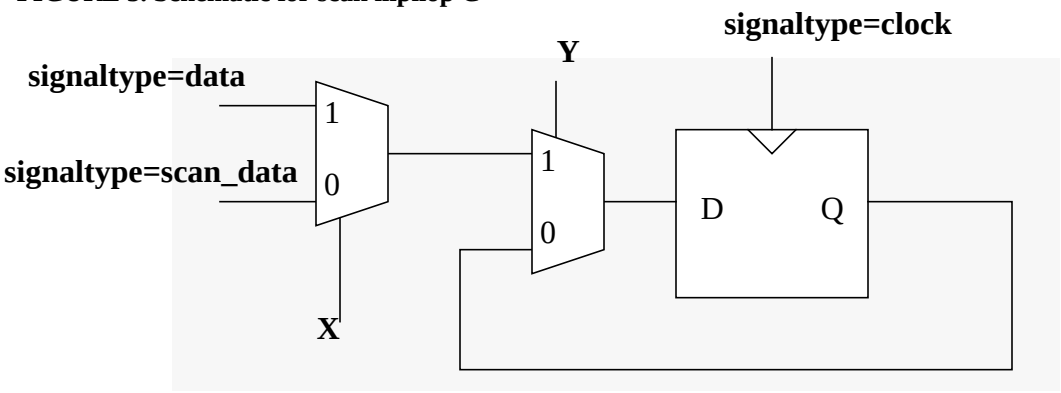

TABLE 5. Function table for scan flipflop C

X	Y	mode
0	0	hold
0	1	scan
1	0	hold
1	1	normal

TABLE 6. proposed SIGNALTYPE values for X and Y in scan flipflop C

	subjective	formal	comment
X	scan_enable	scan_control	X selects between “normal” mode and “scan” mode
Y	enable	enable	Y enables any mode in the same state