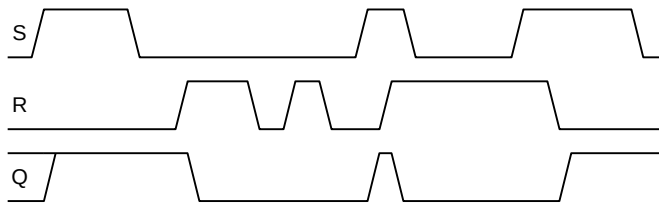
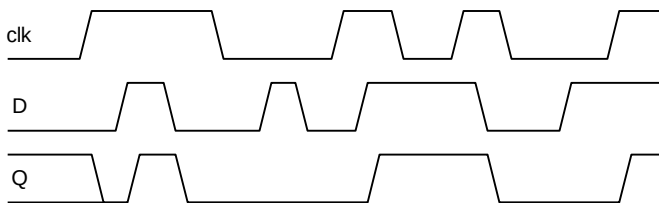


CHAPTER 3

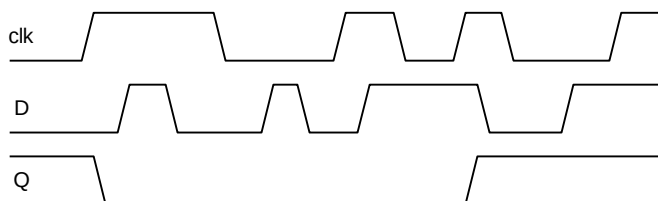
Exercise 3.1



Exercise 3.3



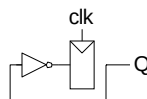
Exercise 3.5



Exercise 3.7

The circuit is sequential because it involves feedback and the output depends on previous values of the inputs. This is a SR latch. When $\bar{S} = 0$ and $\bar{R} = 1$, the circuit sets Q to 1. When $\bar{S} = 1$ and $\bar{R} = 0$, the circuit resets Q to 0. When both $\bar{S}$ and $\bar{R}$ are 1, the circuit remembers the old value. And when both $\bar{S}$ and $\bar{R}$ are 0, the circuit drives both outputs to 1.

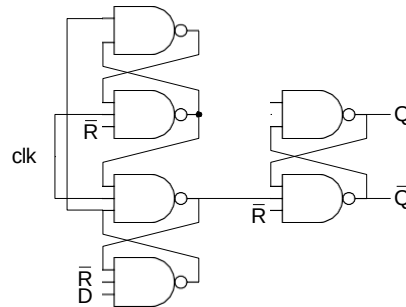
Exercise 3.9



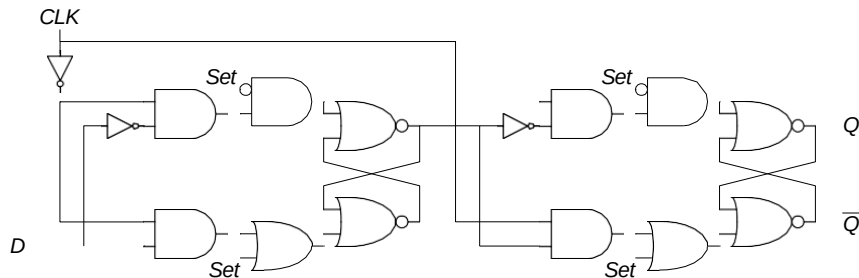
Exercise 3.11

If A and B have the same value, C takes on that value. Otherwise, C retains its old value.

Exercise 3.13



Exercise 3.15



Exercise 3.17

If N is even, the circuit is stable and will not oscillate.

Exercise 3.19

The system has at least five bits of state to represent the 24 floors that the elevator might be on.

Exercise 3.21

The FSM could be factored into four independent state machines, one for each student. Each of these machines has five states and requires 3 bits, so at least 12 bits of state are required for the factored design.

Exercise 3.23

This finite state machine asserts the output *Q* when *A* AND *B* is TRUE.

state	encoding $s_{1:0}$
S0	00
S1	01
S2	10

TABLE 3.1 State encoding for Exercise 3.23

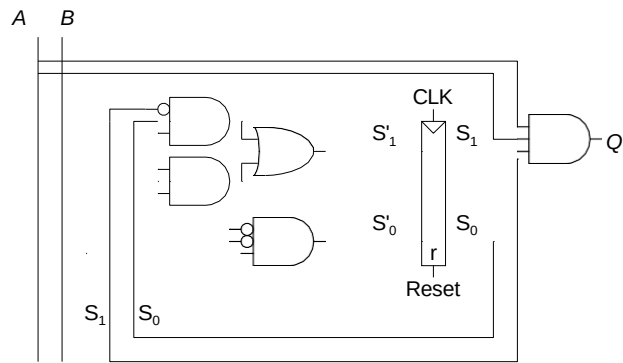
current state		in puts		next state		out put
s_1	s_0	a	b	s'_1	s'_0	q
0	0	0	X	0	0	0
0	0	1	X	0	1	0
0	1	X	0	0	0	0
0	1	X	1	1	0	0
1	0	1	1	1	0	1
1	0	0	0	0	0	0
1	0	0	1	0	0	0
1	0	1	0	0	0	0

TABLE 3.2 Combined state transition and output table with binary encodings for Exercise 3.23

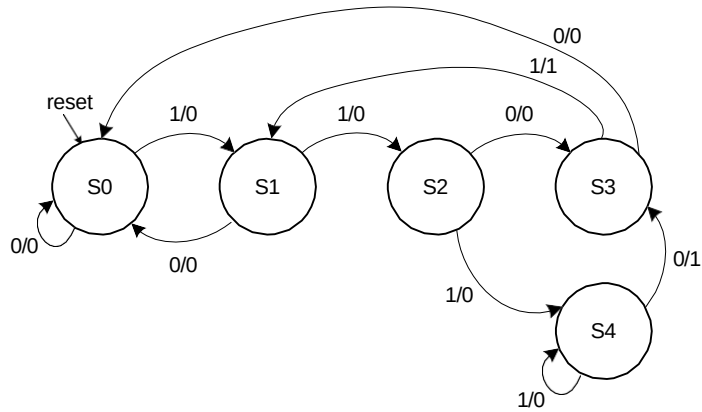
$$S'_1 = \overline{S_1}S_0B + S_1AB$$

$$S'_0 = \overline{S_1}\overline{S_0}A$$

$$Q' = S_1AB$$



Exercise 3.25



state	en coding $s_1:0$
S0	000
S1	001

TABLE 3.3 State encoding for Exercise 3.25

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：<https://d.book118.com/808000110043006041>