Finite State Machine

Up/Down Binary Coded Decimal Counter
Displayed on a 7−Segment Display

synchronous logic

up/down counter

reset

reset
up/down_bar

up/down_bar

clk

Q[3]
Q[2]
Q[1]
Q[0]

Q[3]
Q[2]
Q[1]
Q[0]

Logic for segment 0

7−segment display

[0]
[1]
[2]
[3]
[4]
[5]
[6]

[0]

[5] [6] [1]

[4] [2]

[3]

Q[3]
Q[2]
Q[1]
Q[0]

Logic for segment 6

combinational logic