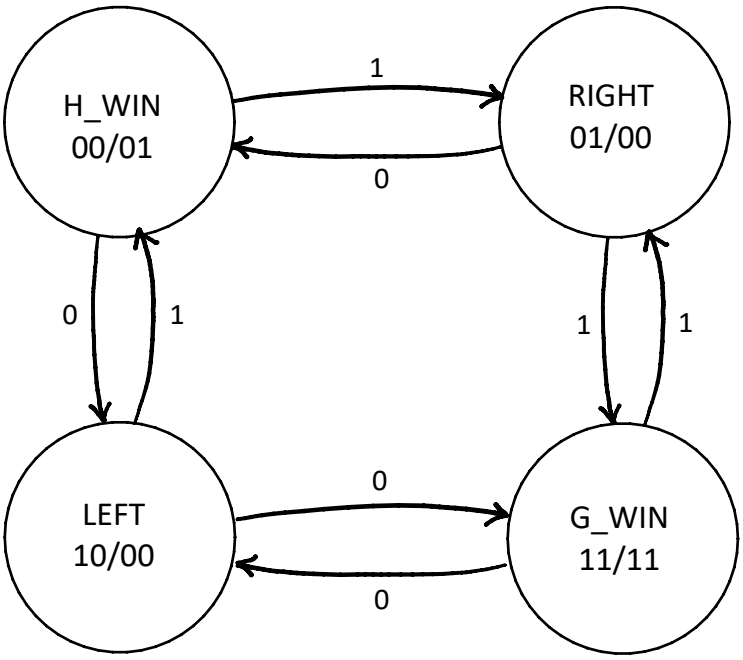
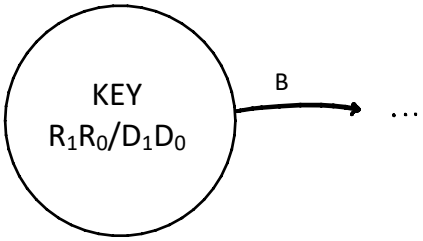
Guess Which Hand

Monday, November 28, 2022 11:16 PM

Game Finite State Machine





State	R_1R_0	Meaning
H_WIN	00	Hidden player wins
RIGHT	01	Guessing player turn; RIGHT to win
LEFT	10	Guessing player turn; LEFT to win
G_WIN	11	Guessing player wins

(B=0 corresponds to left, B=1 is right)

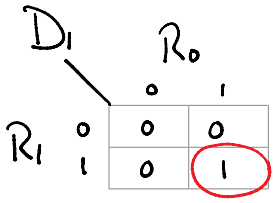
3.2)

State	B	Next state
H_WIN	0	LEFT
H_WIN	1	RIGHT
RIGHT	0	H_WIN
RIGHT	1	G_WIN
LEFT	0	G_WIN
LEFT	1	H_WIN
G_WIN	0	LEFT
G_WIN	1	RIGHT

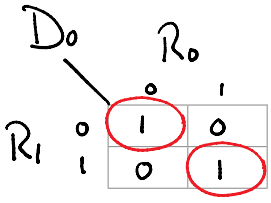
3.5)

State	R_1	R_0	D_1	D_0
H_WIN	0	0	0	1
RIGHT	0	1	0	0
LEFT	1	0	0	0
G_WIN	1	1	1	1

3.6)



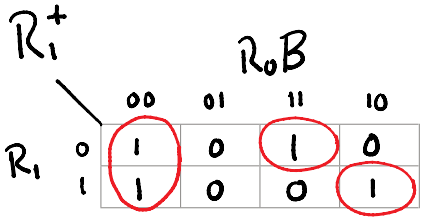
$D_1 = R_1R_0$



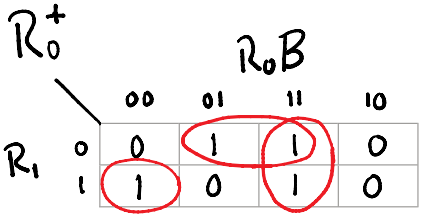
$D_0 = R_1'R_0' + R_1R_0$

3.7)

R_1	R_0	B	R_1^+	R_0^+
0	0	0	1	0
0	0	1	0	1
0	1	0	0	0
0	1	1	1	1
1	0	0	1	1
1	0	1	0	0
1	1	0	1	0
1	1	1	0	1



$R_1^+ = R_0'B' + R_1'R_0B + R_1R_0B'$



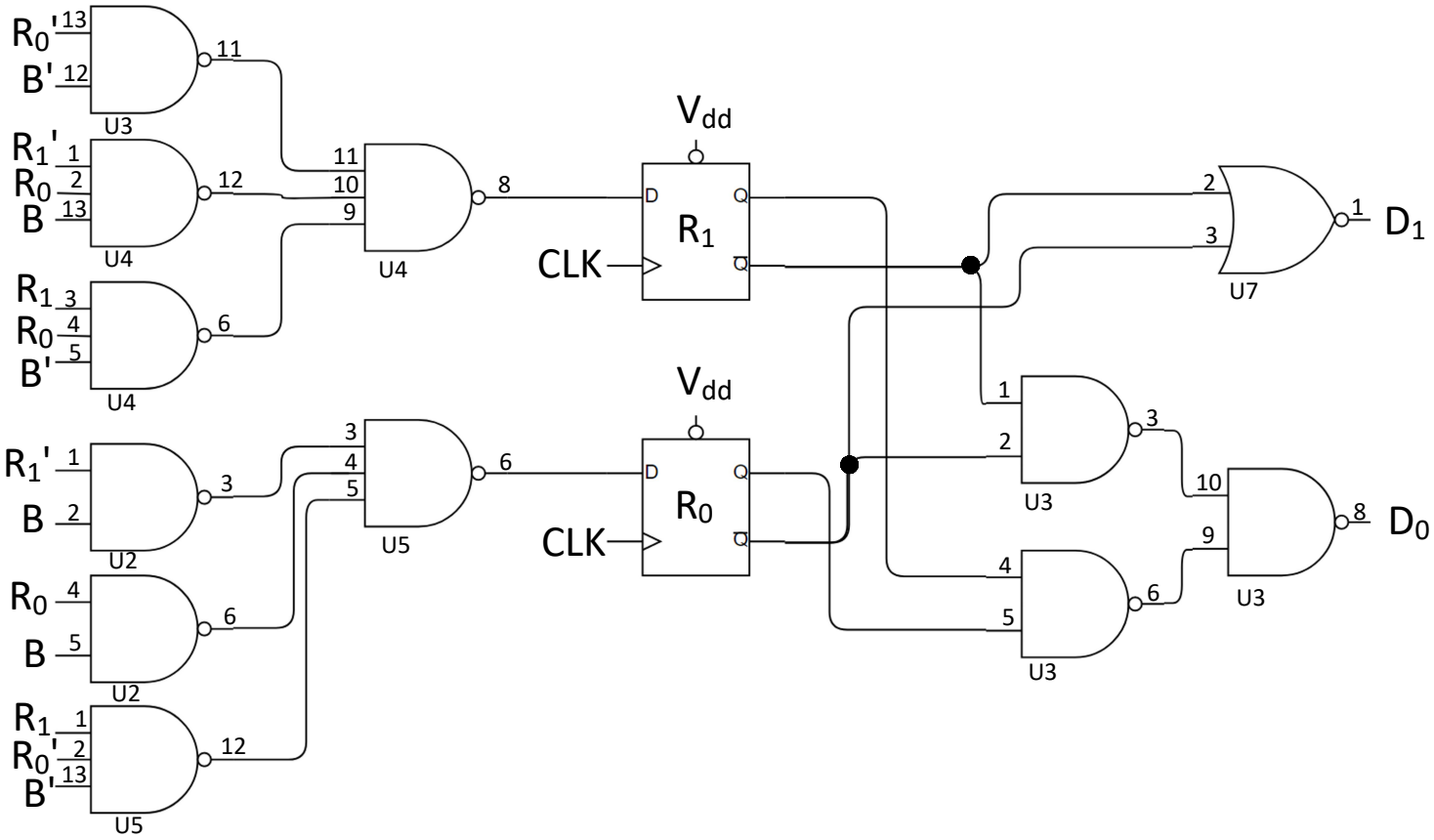
$R_0^+ = R_1'B + R_0B + R_1R_0'B'$

NAND-NAND Expressions (using DeMorgans Law):

$R_1^+ = ((R_0'B')' + (R_1'R_0B)' + (R_1R_0B')')'$

$R_0^+ = ((R_1'B)' + (R_0B)' + (R_1R_0'B')')'$

Implementation



4.2)

Ref.	Part no.
U1	SN7404
U2	SN7400
U3	SN7400
U4	SN7410
U5	SN7410
U6	SN74175
U7	SN7402