

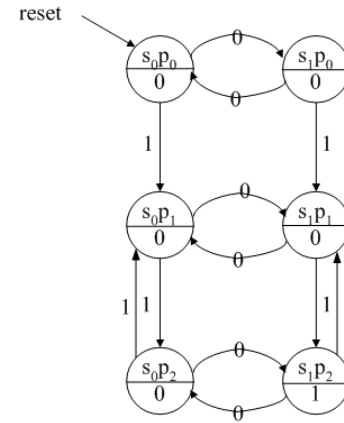
7.27

#0 has two cases: even, odd.

#1 has three cases: zero, odd, even

6 states:

S0P0/0 <=#0s is even, #1s is zero / output = 0
 S0P1/0 <=#0s is even, #1s is odd / output = 0
 S0P2/0 <=#0s is even, #1s is even / output = 0
 S1P0/0 <=#0s is odd, #1s zero / output = 0
 S1P1/0 <=#0s is odd, #1s odd / output = 0
 S1P2/1 <=#0s is odd, #1s even / output = 1



8.2

ps	in=0	in=1
A	B/0	C/0
B	A/0	C/0
C	D/1	C/0
D	D/1	E/0
E	A/0	F/0
F	B/0	G/0
G	A/0	E/0

step1:

B	B-A C-C					
C	X	X				
D	X	X	D-D C-E			
E	B-A C-F	A-A C-F	X	X		
F	B-B C-G	A-B C-G	X	X	A-B F-G	
G	B-A C-E	A-A C-E	X	X	A-A F-E	B-A G-E
	A	B	C	D	E	F

step2:

B	B-A C-C					
C	X	X				
D	X	X	X			
E	X	X	X	X		
F	X	X	X	X	A-B F-G	
G	X	X	X	X	A-A F-E	B-A G-E
	A	B	C	D	E	F

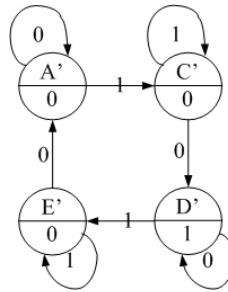
new state combined original state

A' A,B

E' E,F,G

C' C

D' D



8.4

ps in=0 in=1

s0 s1/0 s4/0

s1 s2/0 s1/0

s2 s1/0 s6/0

s3 s1/0 s3/0

s4 s5/0 s4/0

s5 s2/0 s1/0

s6 s5/0 s3/1

step1:

S1	S1-s2 S4-s1					
S2	S1-s1 S4-s6	S2-s1 S1-s6				
S3	S1-s1 S4-s3	S2-s1 S1-s3	S1-s1 S6-s3			
S4	S1-s5 S4-s4	S2-s5 S1-s4	S1-s5 S6-s4	S1-s5 S3-s4		
S5	S1-s2 S4-s1	S2-s2 S1-s1	S1-s2 S6-s1	S1-s2 S3-s1	S5-s2 S4-s1	
S6	X	X	X	X	X	X
	S0	S1	S2	S3	S4	S5

step2:

S1	S1-s2 S4-s1					
S2	X	X				
S3	S1-s1 S4-s3	X	X			
S4	S1-s5 S4-s4	S2-s5 S1-s4	X	S1-s5 S3-s4		
S5	S1-s2 S4-s1	S2-s2 S1-s1	X	X	X	
S6	X	X	X	X	X	X
	S0	S1	S2	S3	S4	S5

step3:

S1	X					
S2	X	X				
S3	S1-s1 S4-s3	X	X			
S4	S1-s5 S4-s4	X	X	S1-s5 S3-s4		
S5	X	S2-s2 S1-s1	X	X	X	
S6	X	X	X	X	X	X
	S0	S1	S2	S3	S4	S5

new state combined original state
s0' s0,s3,s4
s1' s1,s5
s2' s2
s6' s6

8.7

(a) Minimum bit-change heuristic.

- 1) S0 = 000
- 2) S0's next states: S1 = 001, S2 = 100
- 3) S1's next states: S3 = 011, S4 = 101
- 4) S3's next states: S5 = 010, S6 = 111

(a)

		Q ₁ Q ₀			
		00	01	11	10
Q ₂	0	S0	S1	S3	S5
	1	S2	S4	S6	

state map

(b) State assignment guidelines.

Highest priority: 2*(s5,s6),(S1,S2), (S1,S2,S4), (S3,S4)

Medium priority: (S1,S2),2*(S3,S4),(S5,S6),(S4,S6)

Lowest priority: 0/0 (S0,S4,S5,S6)

0/1 (S1,S2,S3)

1/0 (S0,S1,S2,S4,S5)

1/1(S3,S6)

(b)

		Q ₁ Q ₀			
		00	01	11	10
Q ₂	0	S0	S5	S3	S2
	1		S6	S4	S1

state map

S0 = 000

S1 = 110

S2 = 010

S3 = 011

S4 = 111

S5 = 001

S6 = 101

8.14

