1. State table

Current state	Inputs (loop, reset)	Next State
State 1	Loop = 1, reset = 0	State 6
State 1	Loop = 0, reset = 0	State 2
State 2	Loop = 1, reset = 0	State 7
State 2	Loop = 0, reset = 0	State 3
State 3	Loop = 1, reset = 0	State 7
State 3	Loop = 0, reset = 0	State 6
State 6	Loop = 1, reset = 0	State 2
State 6	Loop = 0, reset = 0	State 7
State 7	Loop = 1, reset = 0	State 1
State 7	Loop = 0, reset = 0	State 6
All States	Reset=1	Reset

2. LED PWM State

State	LED1 (PWM)	LED2 (PWM)	LED3 (PWM)	Encoded (PWM)	S2,S1,S0
State 1	255	0	0	001	S2=0, S1=0, S0=1
State 2	0	255	0	010	S2 = 0, S1 = 1, S0 = 0
State 3	0	0	255	011	S2 = 0, S1 = 1, S0 = 1
State 4	255	255	255	100	S2 = 1, S1 = 0, S0 = 0
State 5	0	0	0	101	S2 = 1, S1 = 0, S0 = 1
State 6	255	255	0	110	S2 = 1, S1 = 1, S0 = 0
State 7	128	0	128	111	S2 = 1, S1 = 1, S0 = 1

S2: most significant bit

S1: Middle bit

S3: Least significant bit

LED 1 PWM Expression:

LED1 = S2*$\overline{s1}$*S0 + S2*S1*$\overline{s0}$ + $\overline{s2}$*S1*$\overline{s0}$

LED 2 PWM Expression:

LED2 = S2*S1*$\overline{s0}$+ $\overline{s2}$*S1*S0

LED 3 PWM Expression:

LED3 = S2* $\overline{s1}$*S0 + $s2$ *S1*S0

3. Encoded 2 bits LED PWM

PWM Value	Encoded
0	00
128	01
255	10

4. Encoded 2 bits LEDs

State	LED1	LED2	LED3
001	10	00	00
010	00	10	00
011	00	00	10
100	10	10	10
101	00	00	00

| 110 | 10 | 10 | 00 |
| 111 | 01 | 00 | 01 |