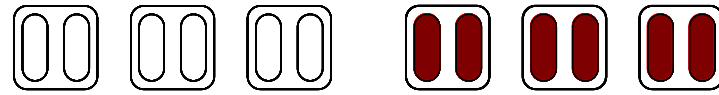
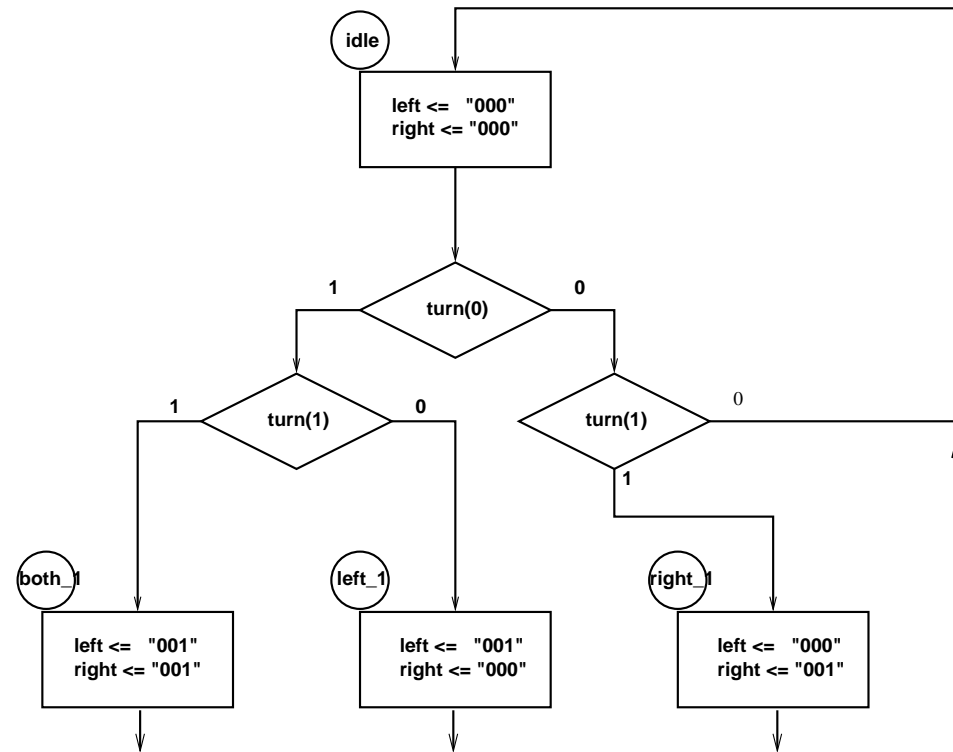


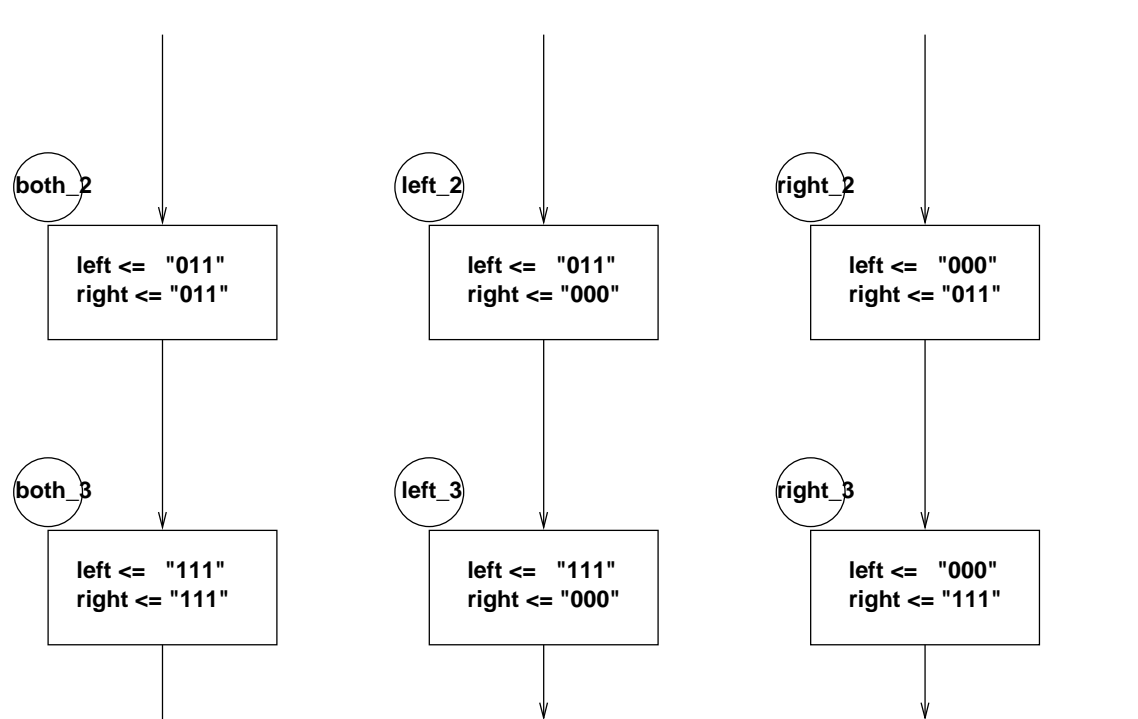
Provide a sequencer to duplicate the left-turn, right-turn and hazard indicators for a 1965 Ford Thunderbird.



Light sequence for a right turn

- Develop an ASM model for the three sequences, left, right and hazard (both).
- Assign state values.
- Derive the excitation equations.
- Derive the output equations.
- Write the VHDL description.
- Test your design.
- Pocket the cheque.

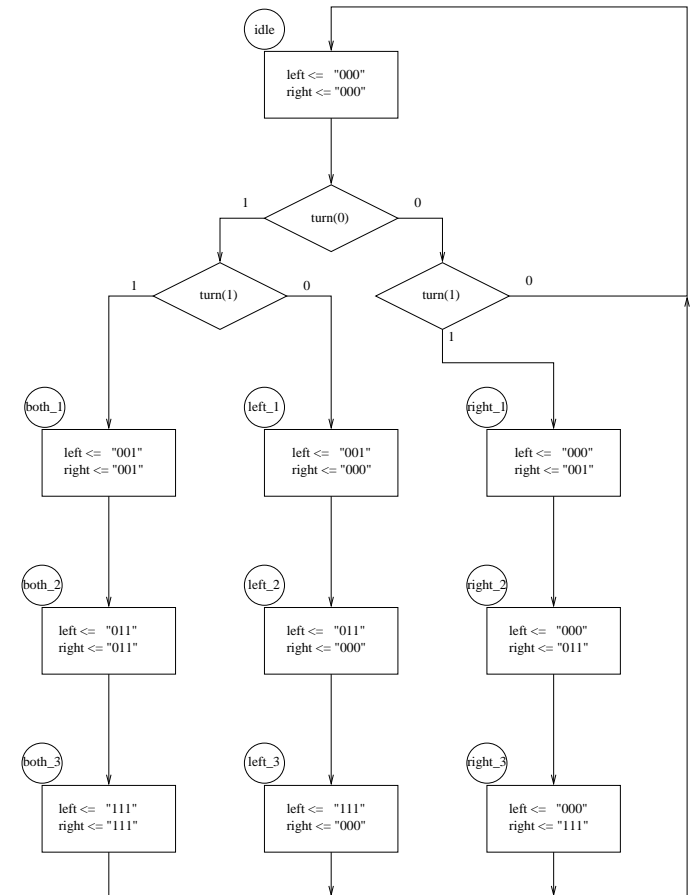




ASM to VHDL State Machines :

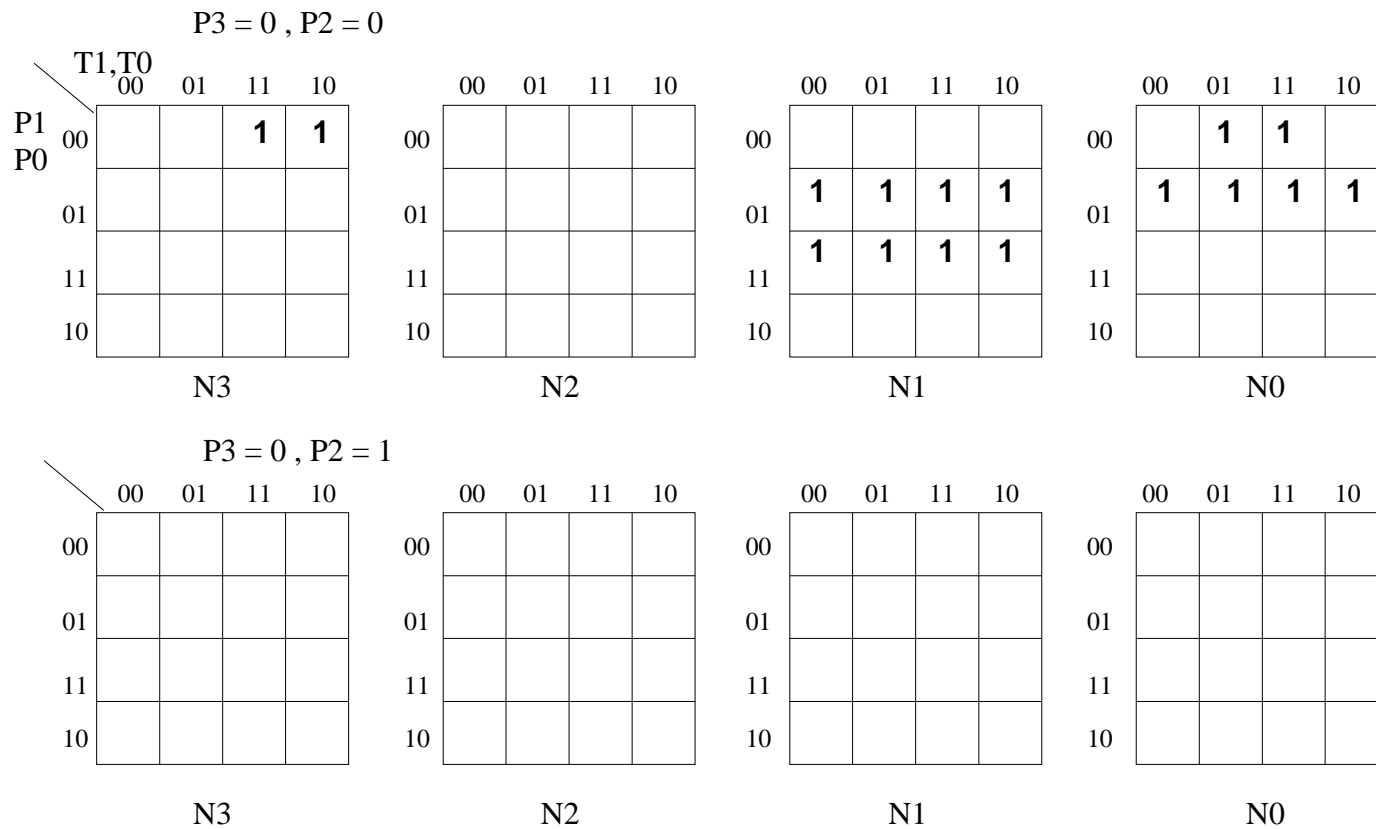
4

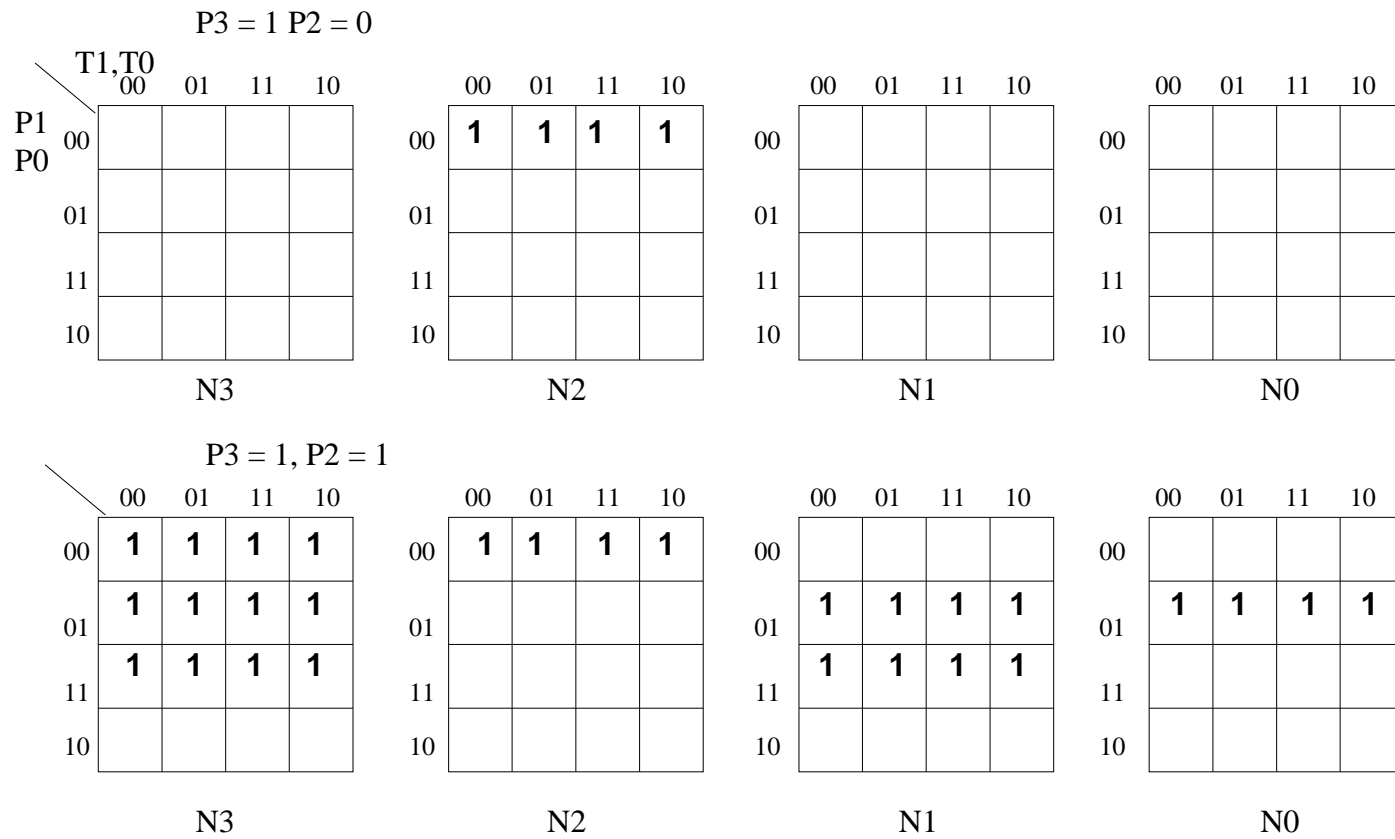
state	value
idle	0000
right_1	0001
right_2	0011
right_3	0010
left_1	1000
left_2	1100
left_3	0100
both_1	1001
both_2	1011
both_3	1010



Present state	turn	next state
0000	00	0000
0000	01	0001
0000	10	1000
0000	11	1001
0001	XX	0011
0011	XX	0010
0010	XX	0000
1000	XX	1100
1100	XX	0100
0100	XX	0000
1001	XX	1011
1011	XX	1010
1010	XX	0000

Next, fill in the k-maps.





```
n3 <= reset and ((not p3 and not p2 and
                  not p1 and not p0
                  and turn(1))
                 or (p3 and not p2 and not p1)
                 or (p3 and not p2 and p0));
n2 <= reset and (p3 and not p1 and
                 not p0);
n1 <= reset and (not p2 and p0);
n0 <= reset and ((not p3 and not p2 and
                  not p1 and turn(0))
                 or (not p3 and not p2 and not p1
                     and p0));
```

```
-- purpose: set current_state_0 new value

update0: block (
    ((not (clk'stable) and clk) = '1')
)

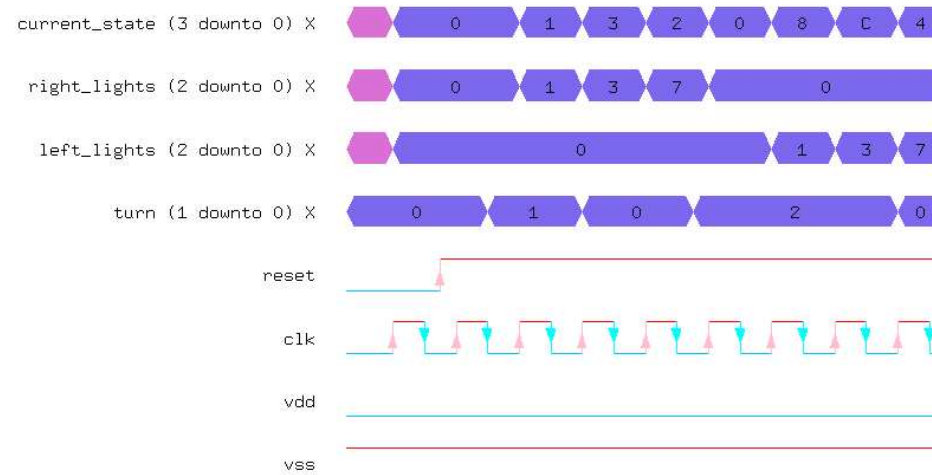
begin -- block updat0

    current_state(0) <= guarded n0;

end block update0;
```

ASM to VHDL State Machines :

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