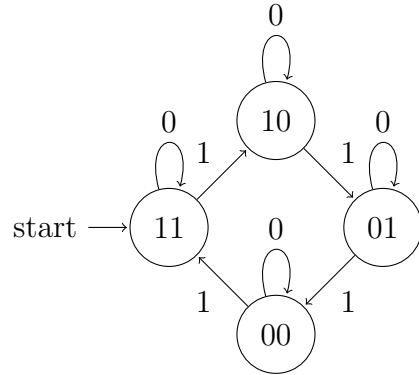


1. The state diagram is like below:



The state table is like the following:

$x$	Current State	Next State
0	00	00
0	01	01
0	10	10
0	11	11
1	00	11
1	01	00
1	10	01
1	11	10

x \ Current State	00	01	11	10
	0	0	1	1
1	1	0	1	0

Table 1: Karnugh Map for  $D_2$

x \ Current State	00	01	11	10
	0	1	1	0
1	1	0	0	1

Table 2: Karnugh Map for  $D_2$

2.