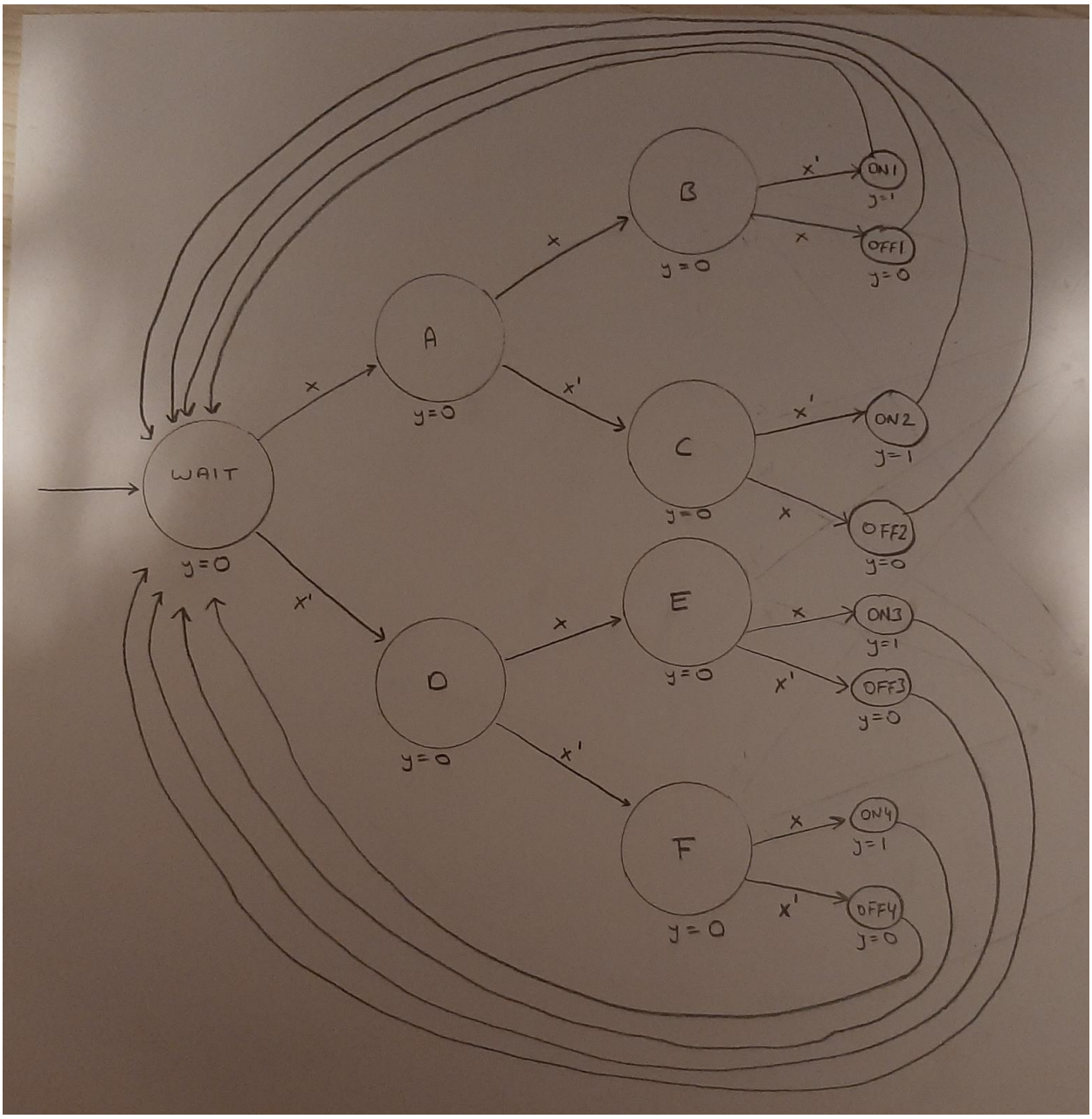
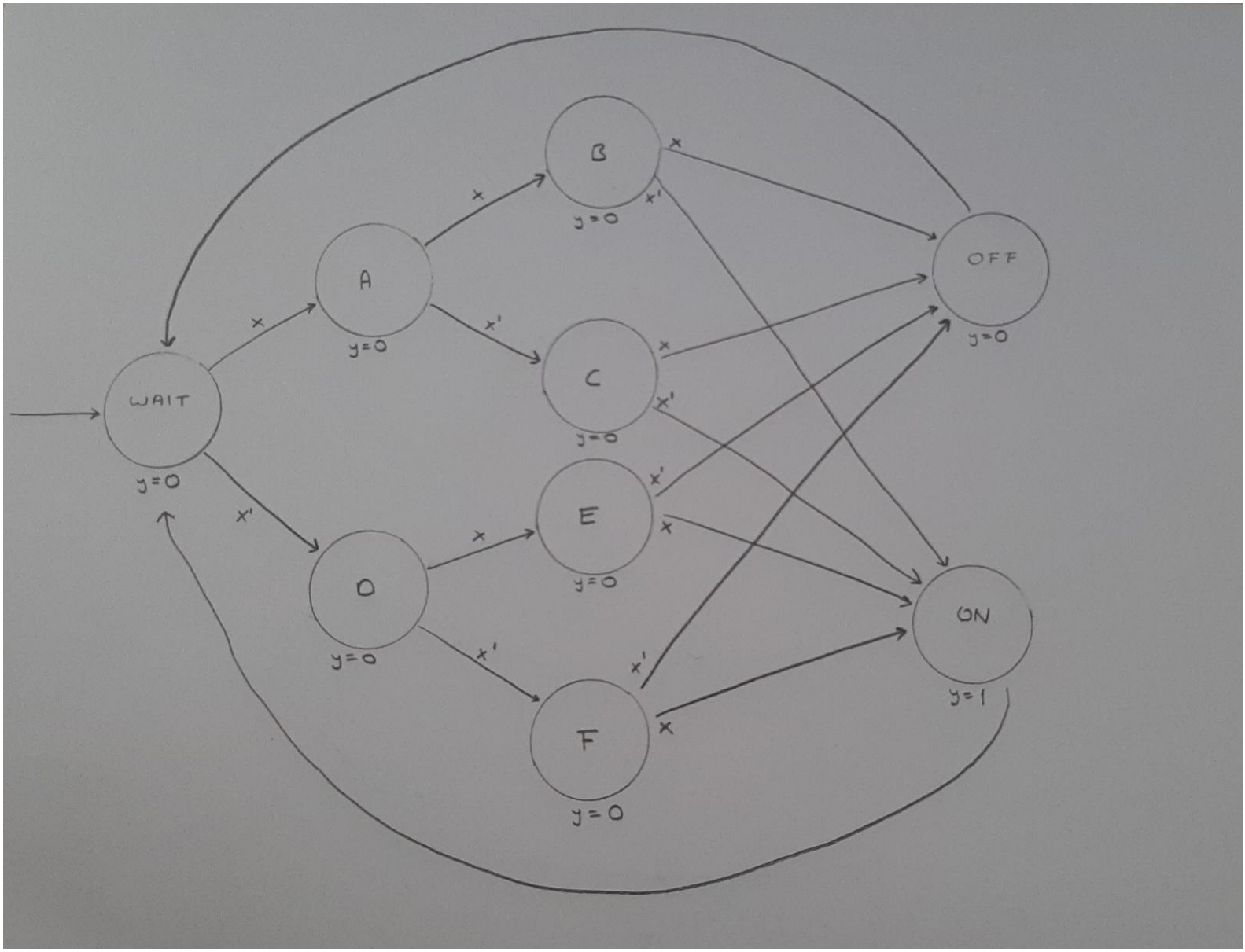
1

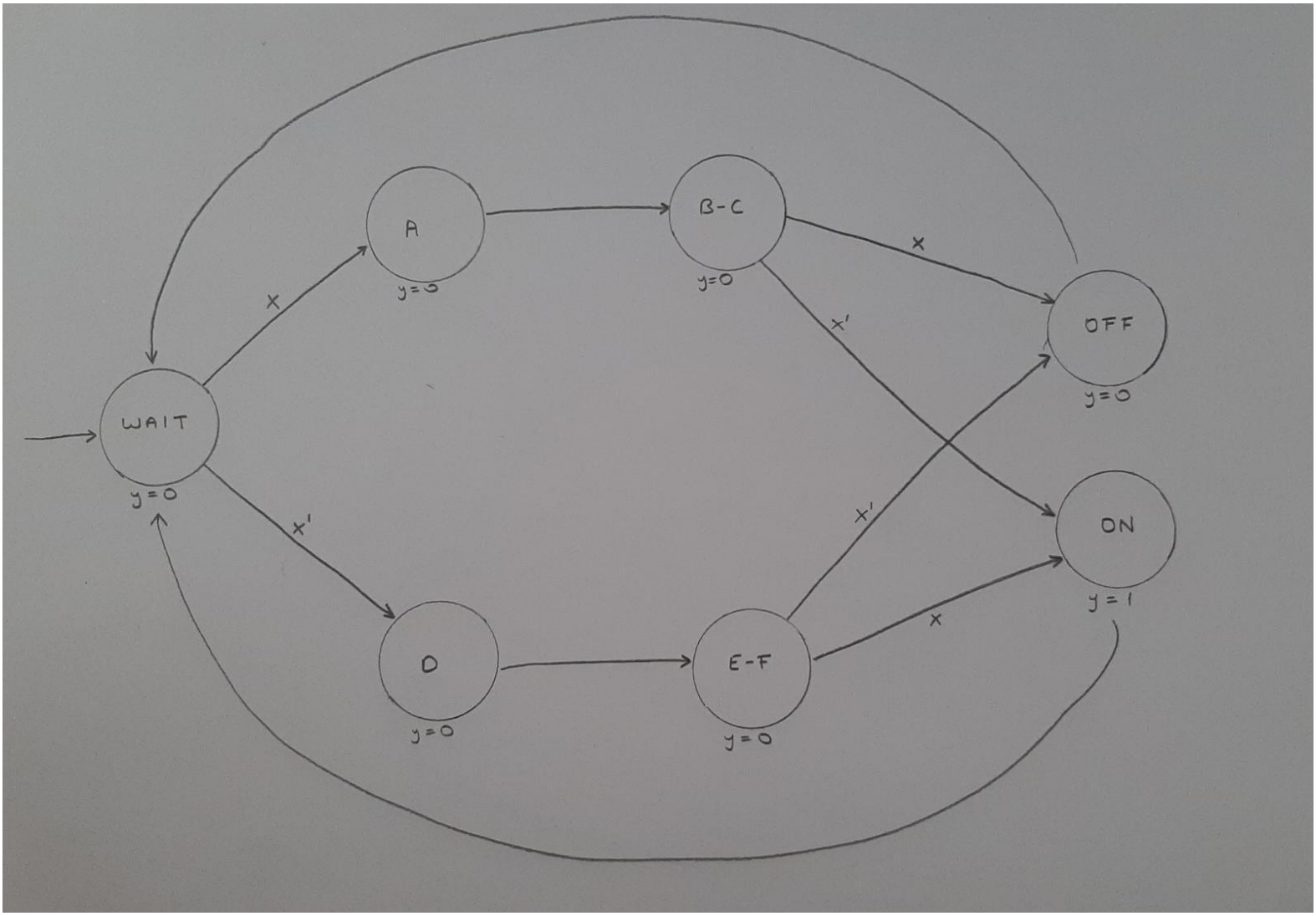
State diagram:



State diagram (little reduced):



Reduced state diagram:



Encode the states (we have 7 states so 3 bits will be used):

- WAIT : 000
- A : 001
- B-C : 010
- D : 011
- E-F : 100
- OFF : 101
- ON : 110

	s2	s1	s0	X	n2	n1	n0	Y
WAIT	0	0	0	0	0	1	1	0
	0	0	0	1	0	0	1	0
A	0	0	1	0	0	1	0	0
	0	0	1	1	0	1	0	0
B-C	0	1	0	0	1	1	0	0
	0	1	0	1	1	0	1	0
D	0	1	1	0	1	0	0	0
	0	1	1	1	1	0	0	0
E-F	1	0	0	0	1	0	1	0
	1	0	0	1	1	1	0	0
ON	1	0	1	0	0	0	0	0
	1	0	1	1	0	0	0	0
OFF	1	1	0	0	0	0	0	1
	1	1	0	1	0	0	0	1
UNUSED	1	1	1	0	x	x	x	x
	1	1	1	1	x	x	x	x

2

y = s1.s0’

n1 = (a.s1’.s0 + a’.s1.s0’)’

n0 = a.s1’.s0’

s1	s0	a	n1	n0	y
0	0	0	1	0	0
0	0	1	1	1	0
0	1	0	1	0	0
0	1	1	0	0	0
1	0	0	0	0	1
1	0	1	1	0	1
1	1	0	1	0	0
1	1	1	1	0	0

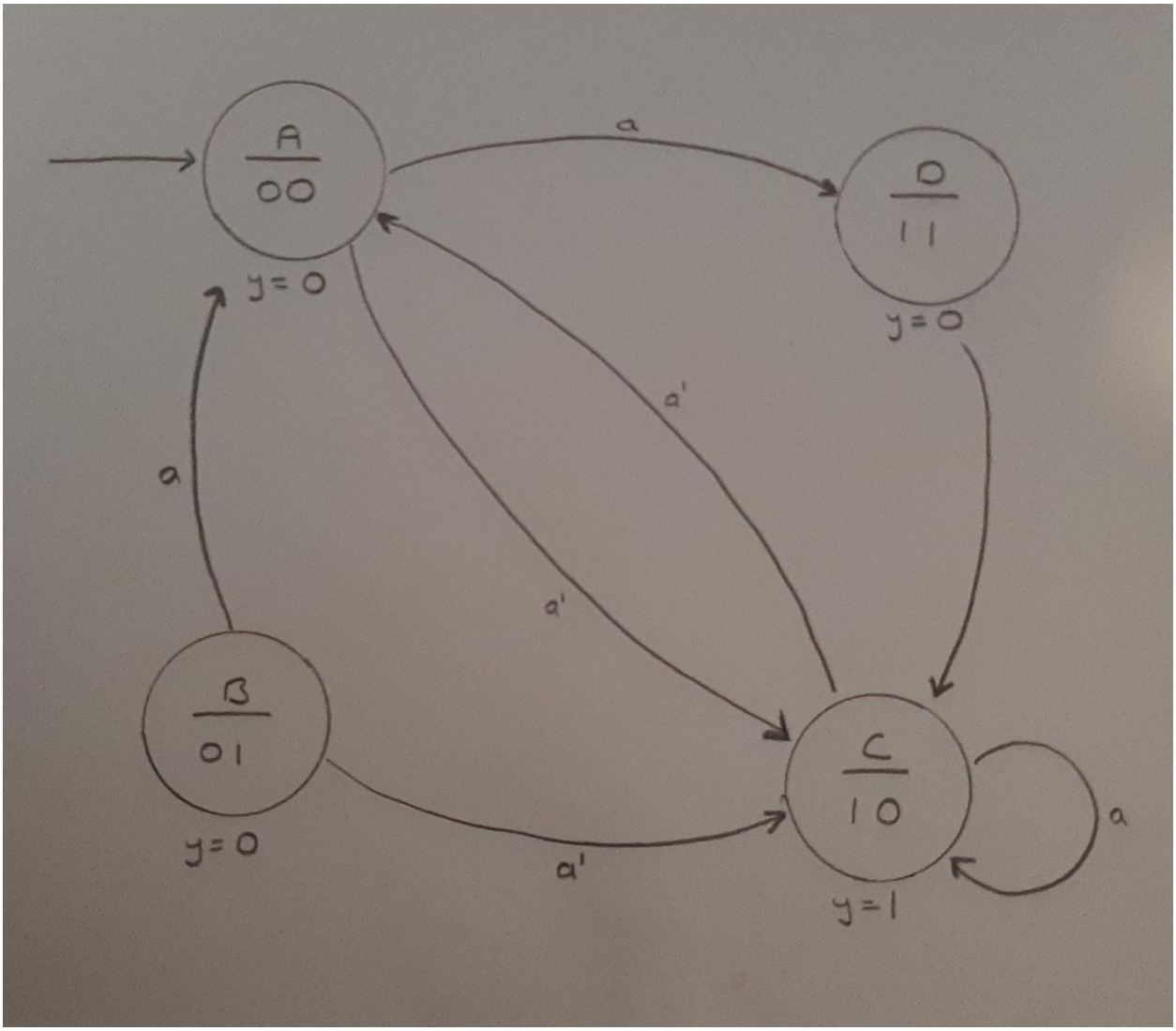
We have:

- 4 states (we may not use all the states)
- input : a
- output : y

Encoding:

- A : 00
- B : 01
- C : 10
- D : 11

FSM:



There isn’t any way to go to B state. That’s why B is unused. We can ignore it. We have only 3 states.