Theory of Computation
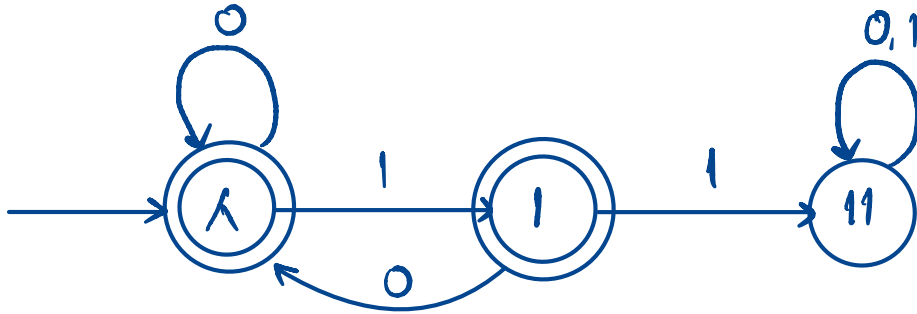## Exercise 2: (Deterministic Finite Automata - DFA)

1. Draw DFA for L1

$$L1 = \{w \in \{0,1\}^* : w \text{ has no substring } 11\}$$

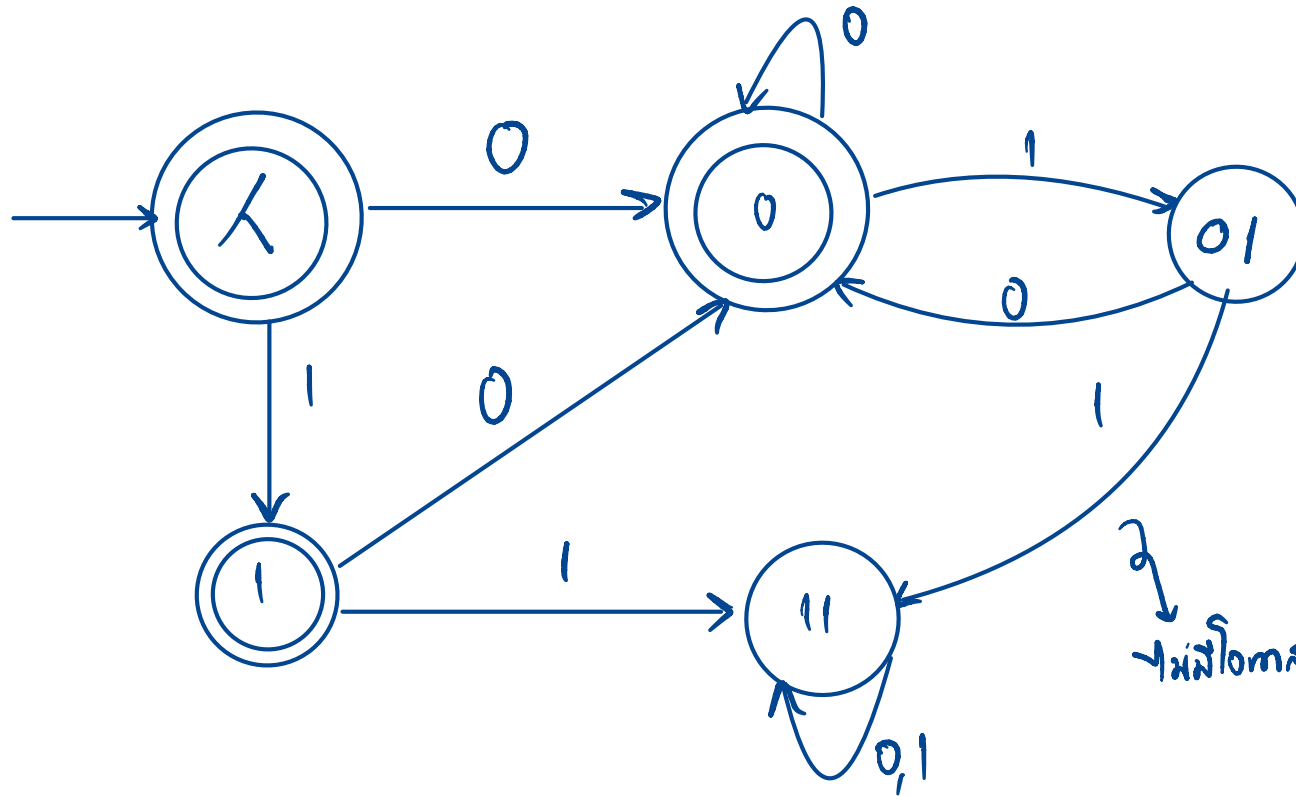## 2. Draw DFA for L2

คิดว่าทำไม่ได้

$$\{\{1\}, \{0,1\}, \{10,1\}, \{0,0,1\}, \{0,10,1\}, \{10,0,1\}, \{10,10,1\}$$
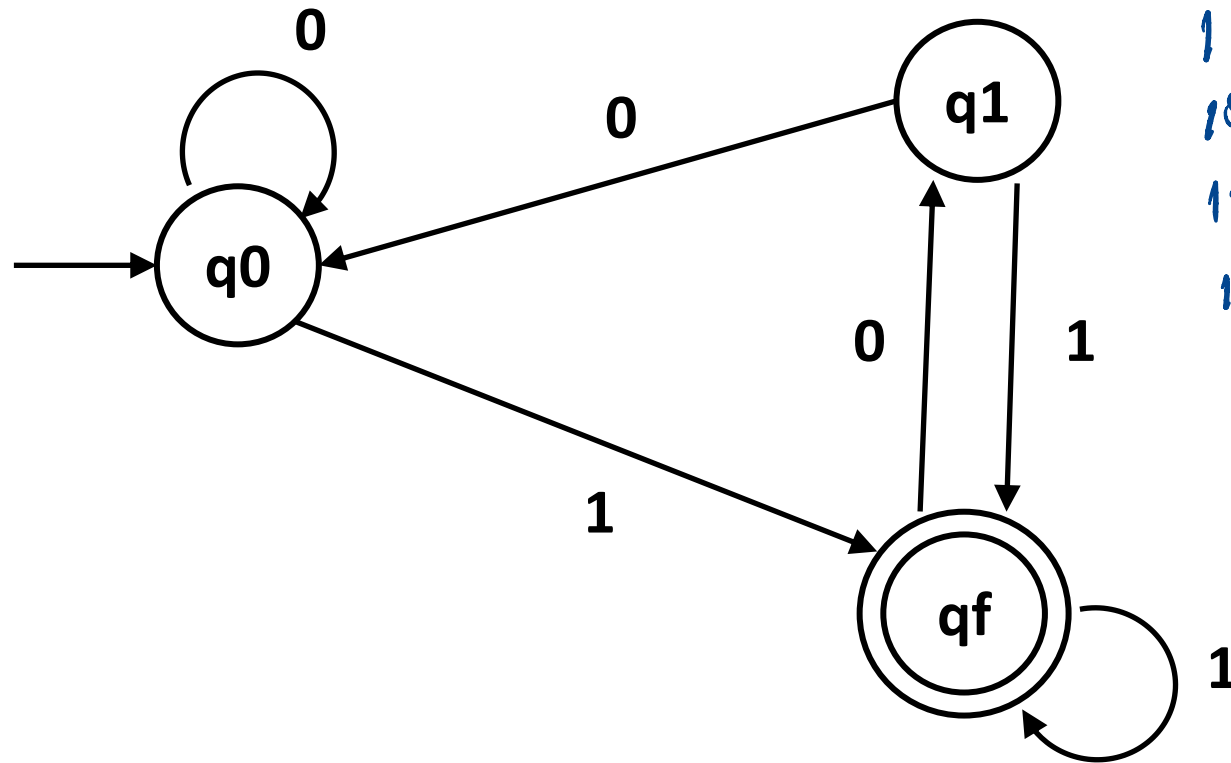
$$L2 = \{0, 10\}^* \cup \{1\}$$

↳ มองเป็นก้อน แต่ทำ DFA จะแยก Digit

ไม่มีโอกาสเป็น 11 เพราะ 10 จาก $\{0,10\}^*$

3. Find the language of DFA M.

M:

$L(M) = ?$

0 ✗ $, 01$ ✓ $, 001$ ✓, λ ✗

1 ✓

11 ✓

10 ✗

100 ✗

$111\ldots 1$ ✓

101 ✓

Ans $L(M) = \{$ all string $\in \{0,1\}^*$ with subfix $1 \}$

* 4. Draw DFA for L3   (Homework 1)

m	n		
0 + 5		b^5	bbb bb
1 + 4		$a^1 b^4$	a bbbb
2 + 3		$a^2 b^3$	aa bbb
3 + 2		$a^3 b^2$	aaa bb
4 + 1		$a^4 b^1$	aaaa b
5 + 0		a^5	aaaaa
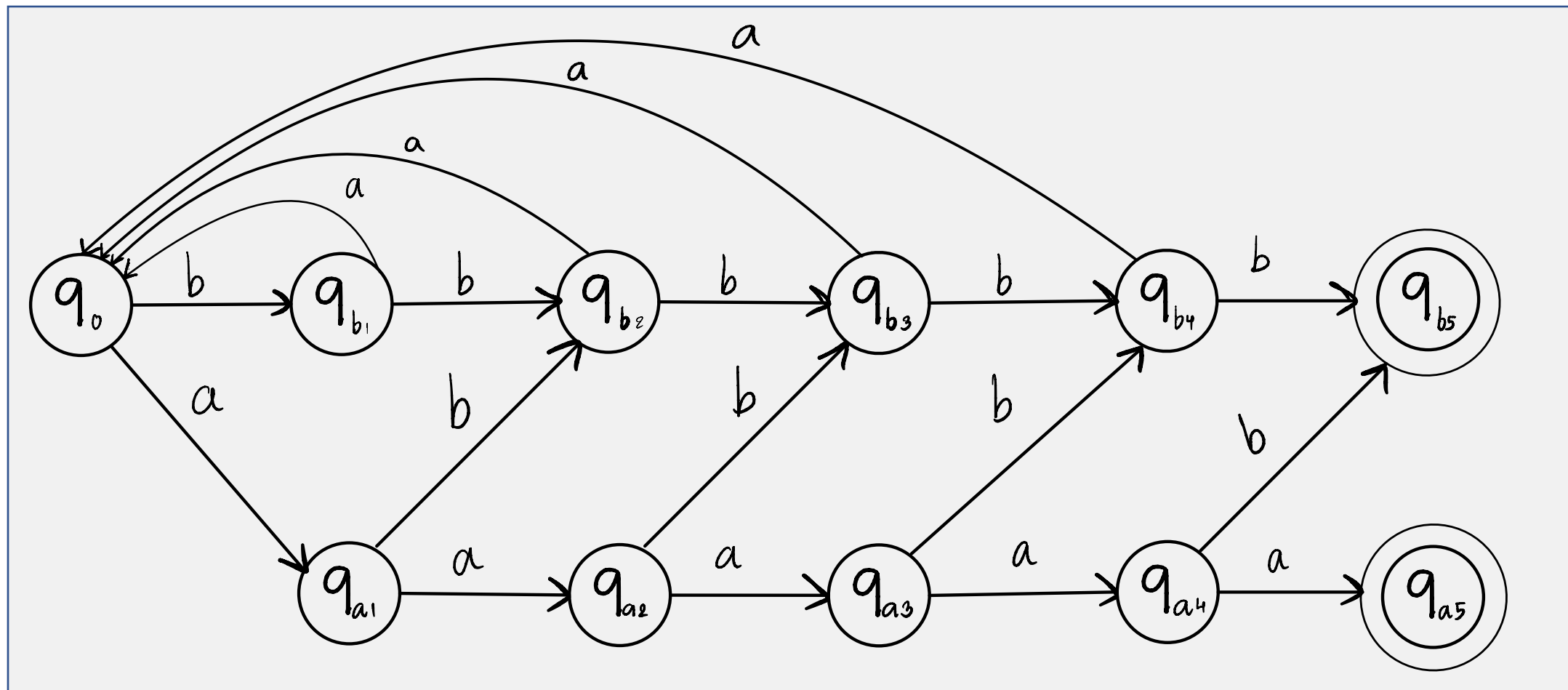
$$L3 = \{\, a^m\, b^n : m + n = 5; \ \ m \ and \ n \ \geq 0 \,\}$$

* 4. Draw DFA for L3   (Hom

$$L3 = \{\, a^m\, b^n : m + n = 5;\; m \text{ and } n \geq 0 \,\}$$