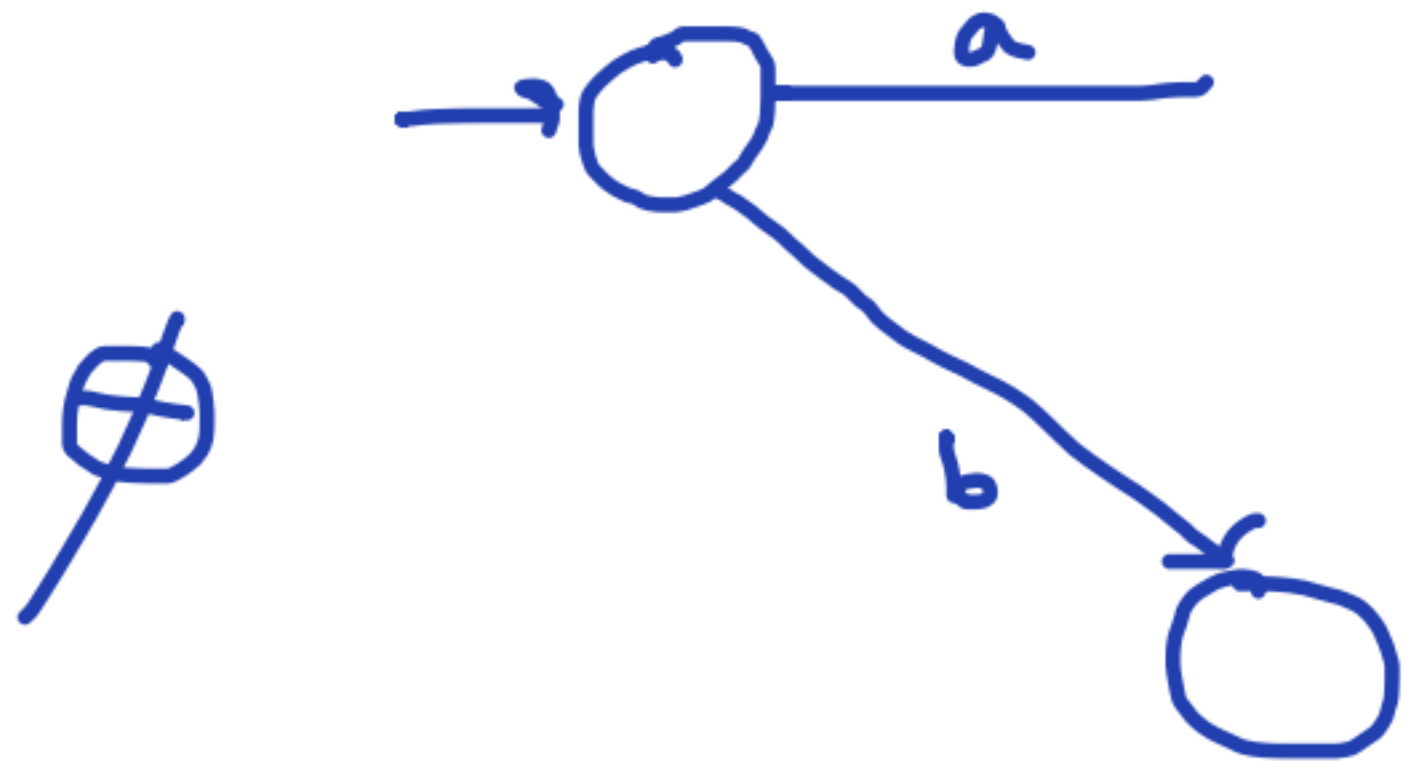


abb

aba

$$L = \{abb, aba\}$$



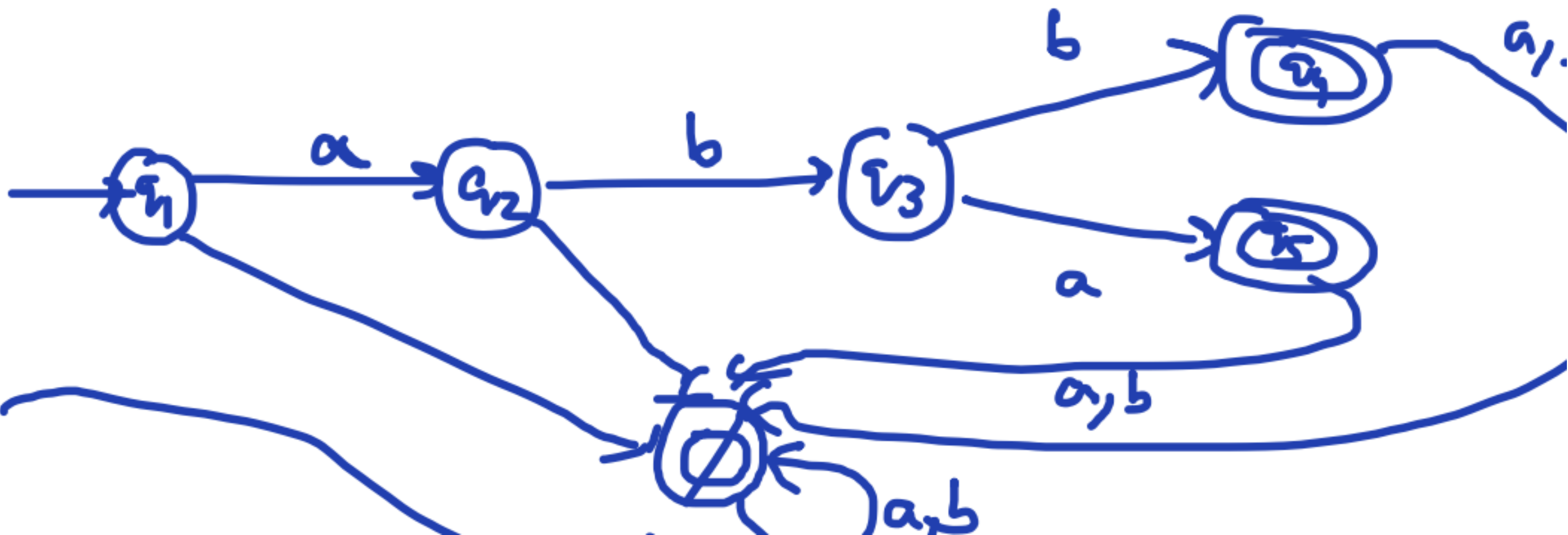
a



NFA



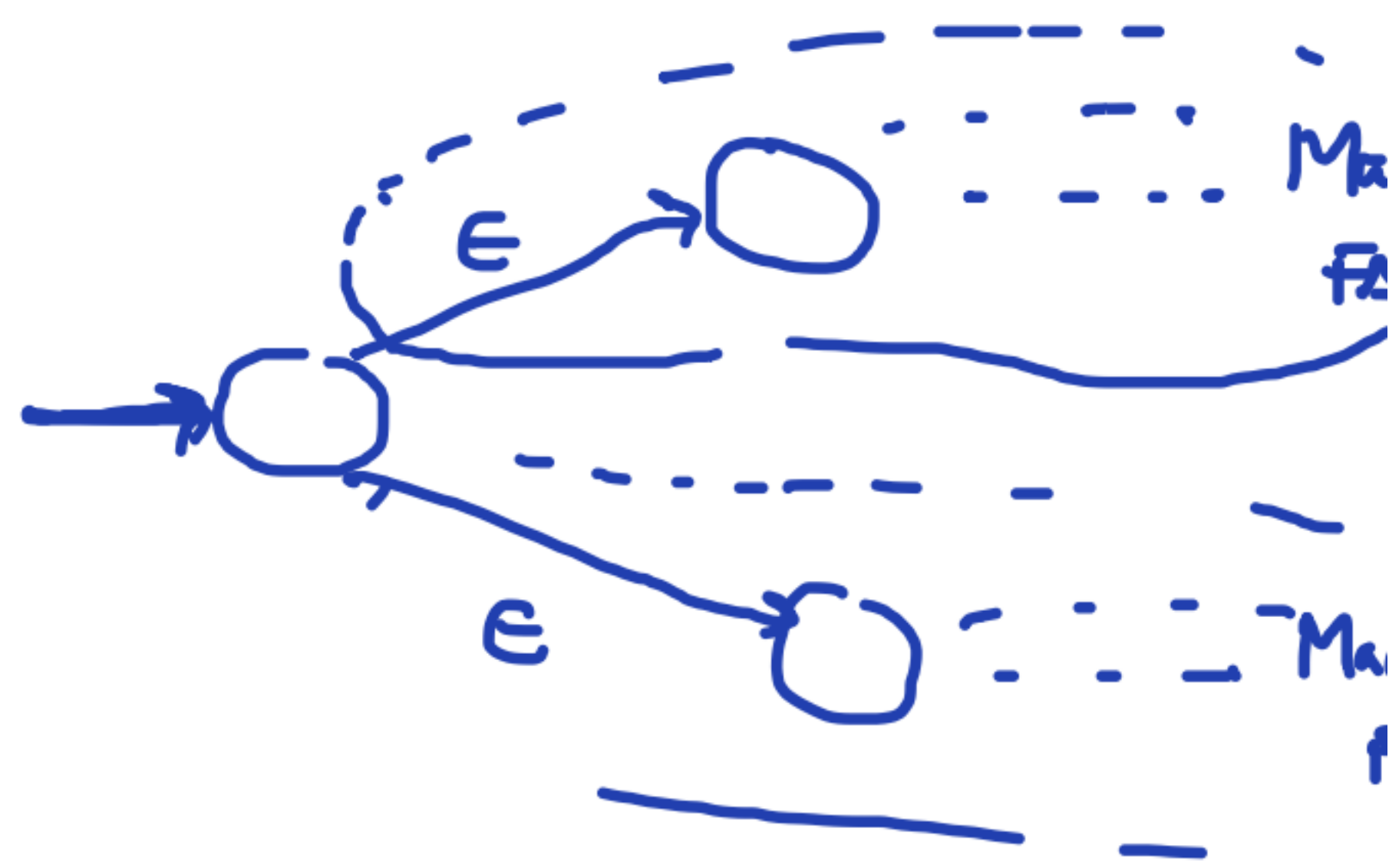
DFA



↓ accepts
a
Language
 L_1

↓ accepts
another
Language
 L_2

$L_3 =$



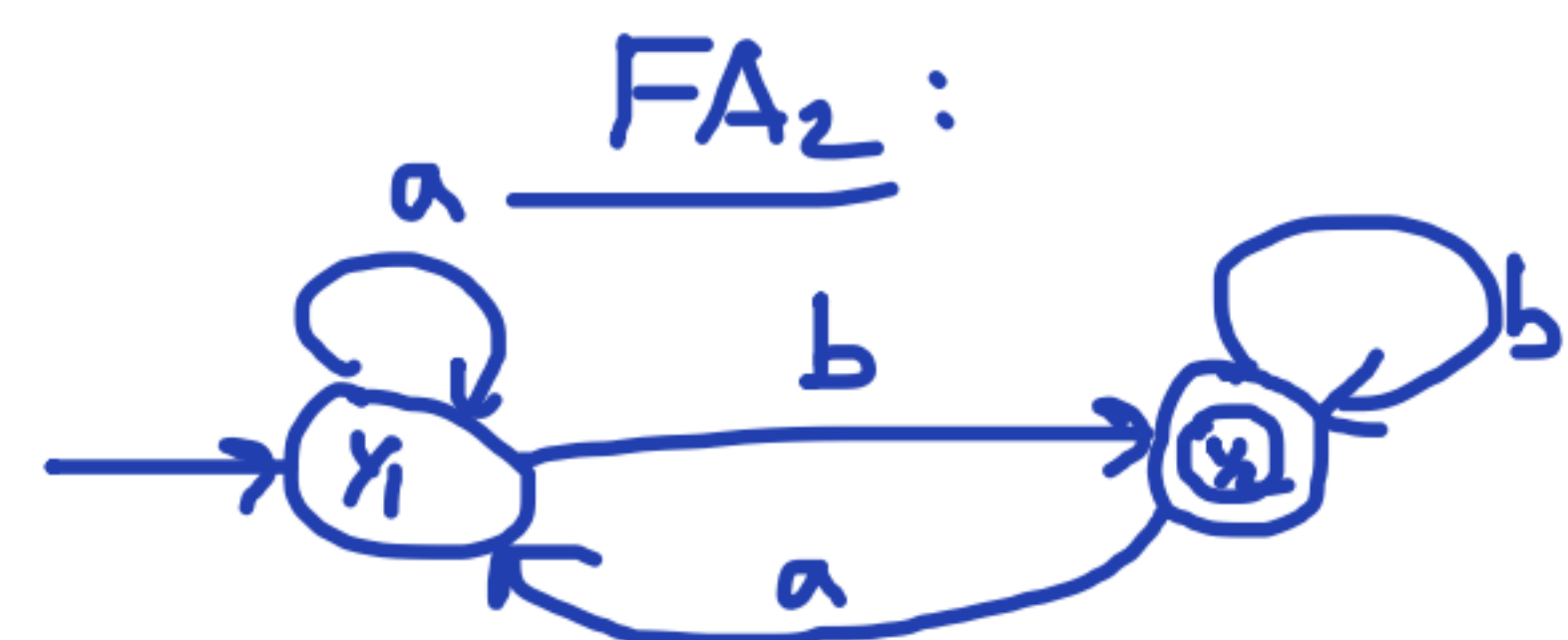
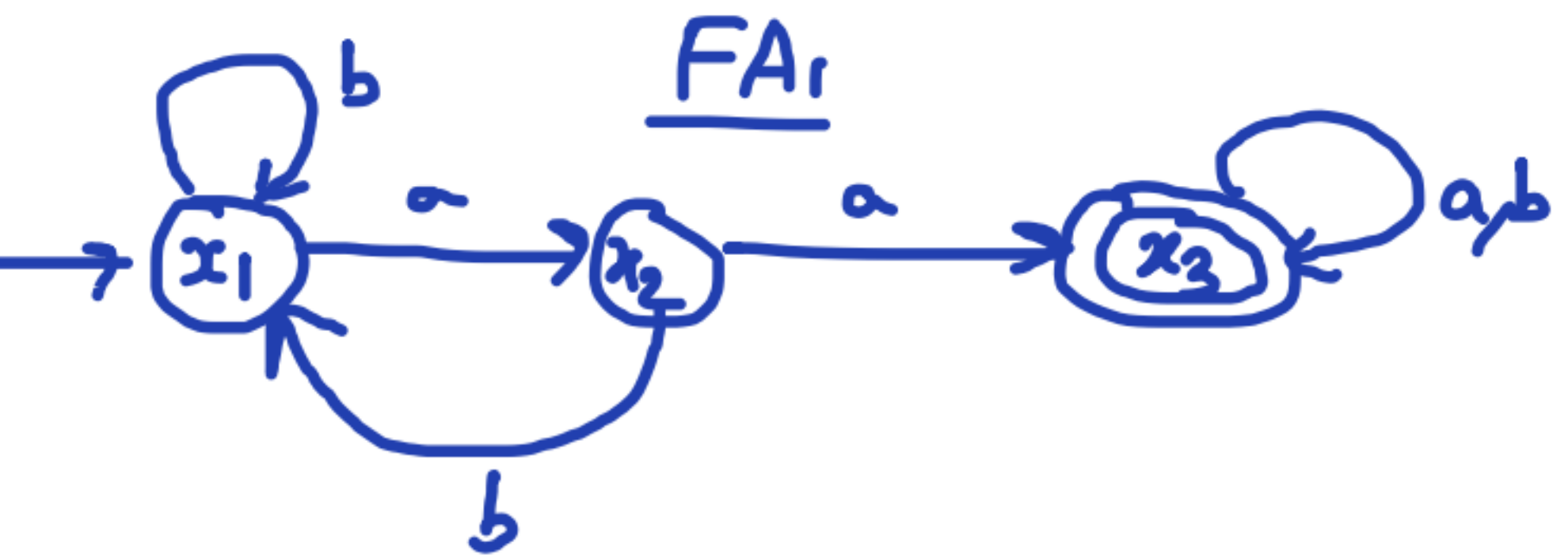
Union of two FA's

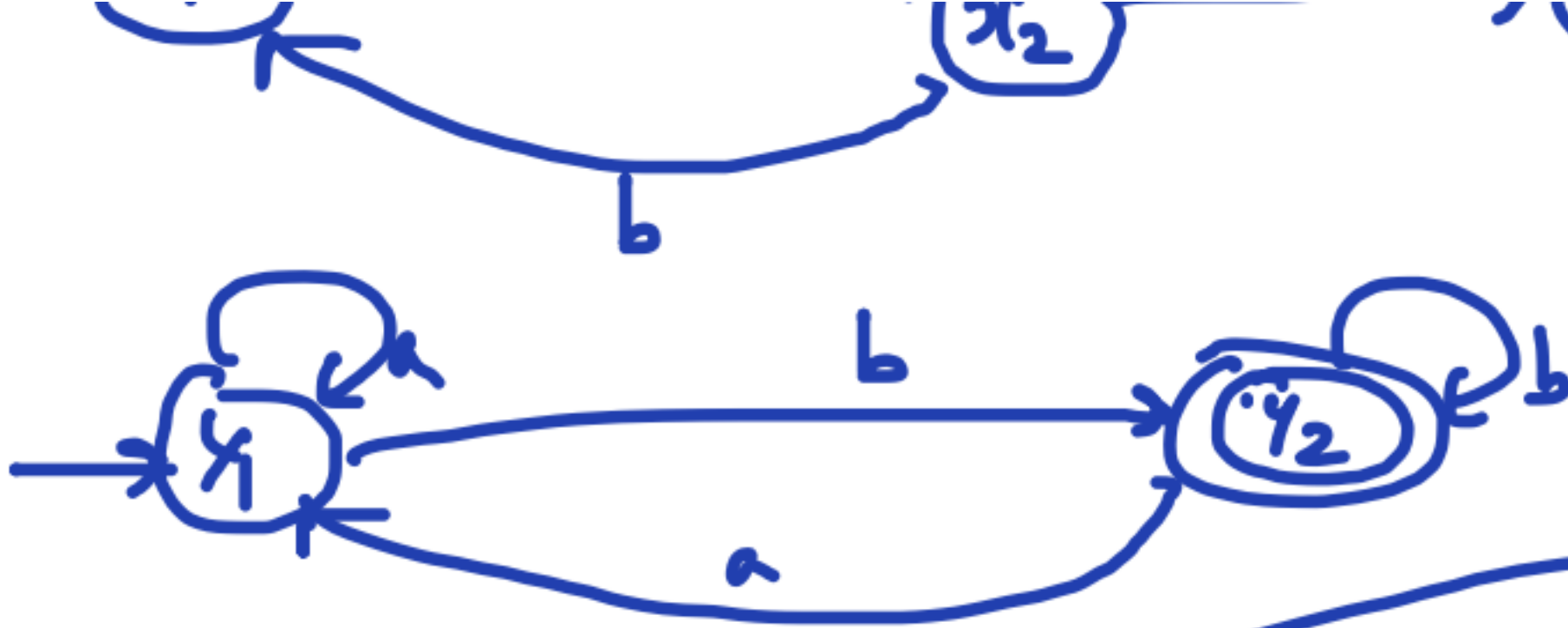


FA₁: $\{w \mid w \in \{a,b\}^* \text{ and has 'aa' as a substring}\} = L_1$

FA₂: $\{w \mid w \in \{a,b\}^* \text{ and ends with b}\} = L_2$

$L_1 = \{aa, baa, bab, \dots\}$





b a b a a b b a ✓

$FA_3 = FA_1 \cup FA_2$ (72)

$(Q, \Sigma, \delta, q_0, F)$

Θ

$\bar{x}_1 \vee \bar{y}_1 = \bar{z}_1$

$x_2 \vee y_1 = z_2$

$x_1 \vee y_2 = z_3$

$x_3 \vee y_1 = z_4$

Σ

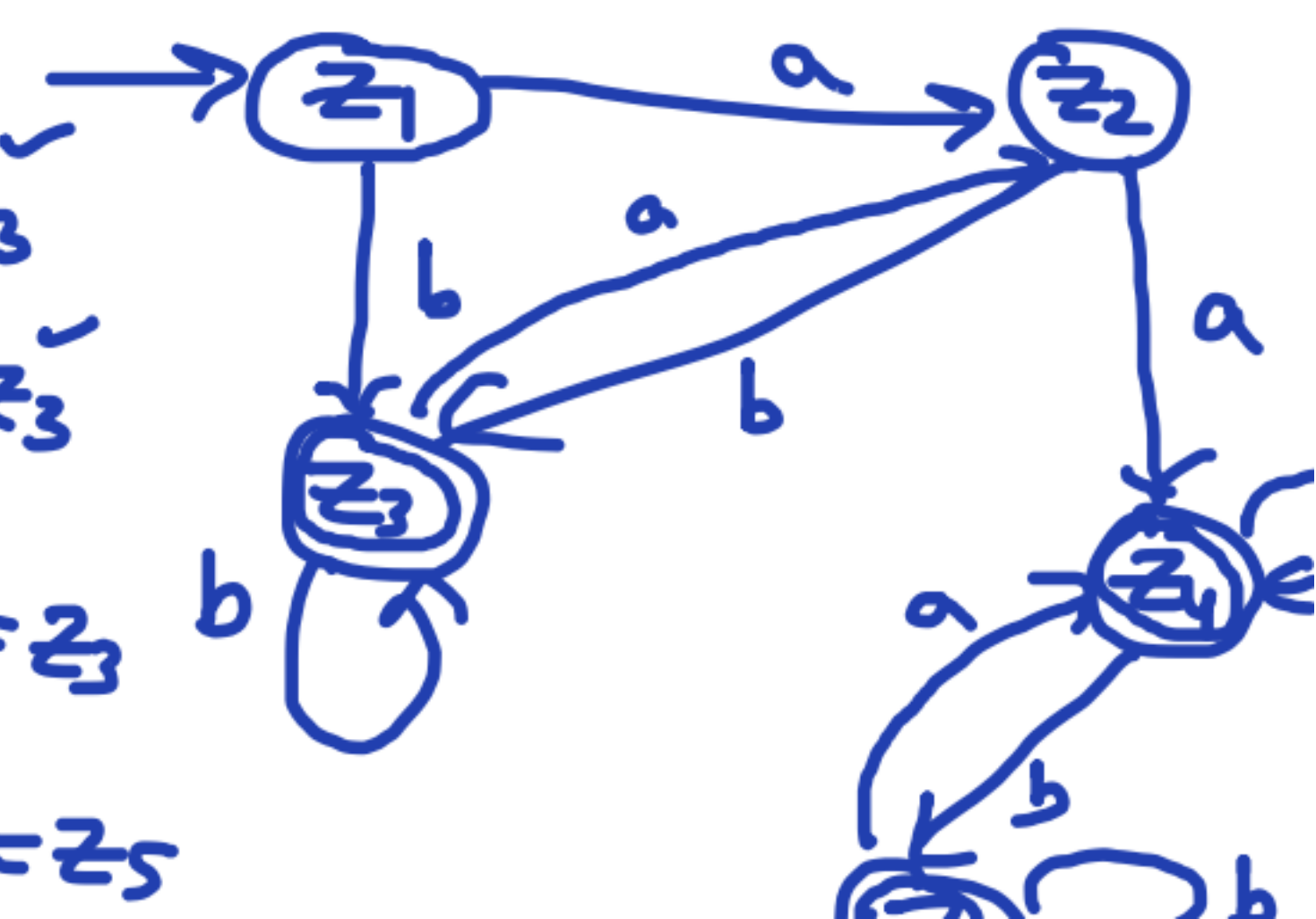
 a b

$x_2 \vee y_1 = z_2 \quad x_1 \vee y_2 = z_3$

$x_3 \vee y_1 = z_4 \quad x_1 \vee y_2 = z_3$

$x_2 \vee y_1 = z_2 \quad x_1 \vee y_2 = z_3$

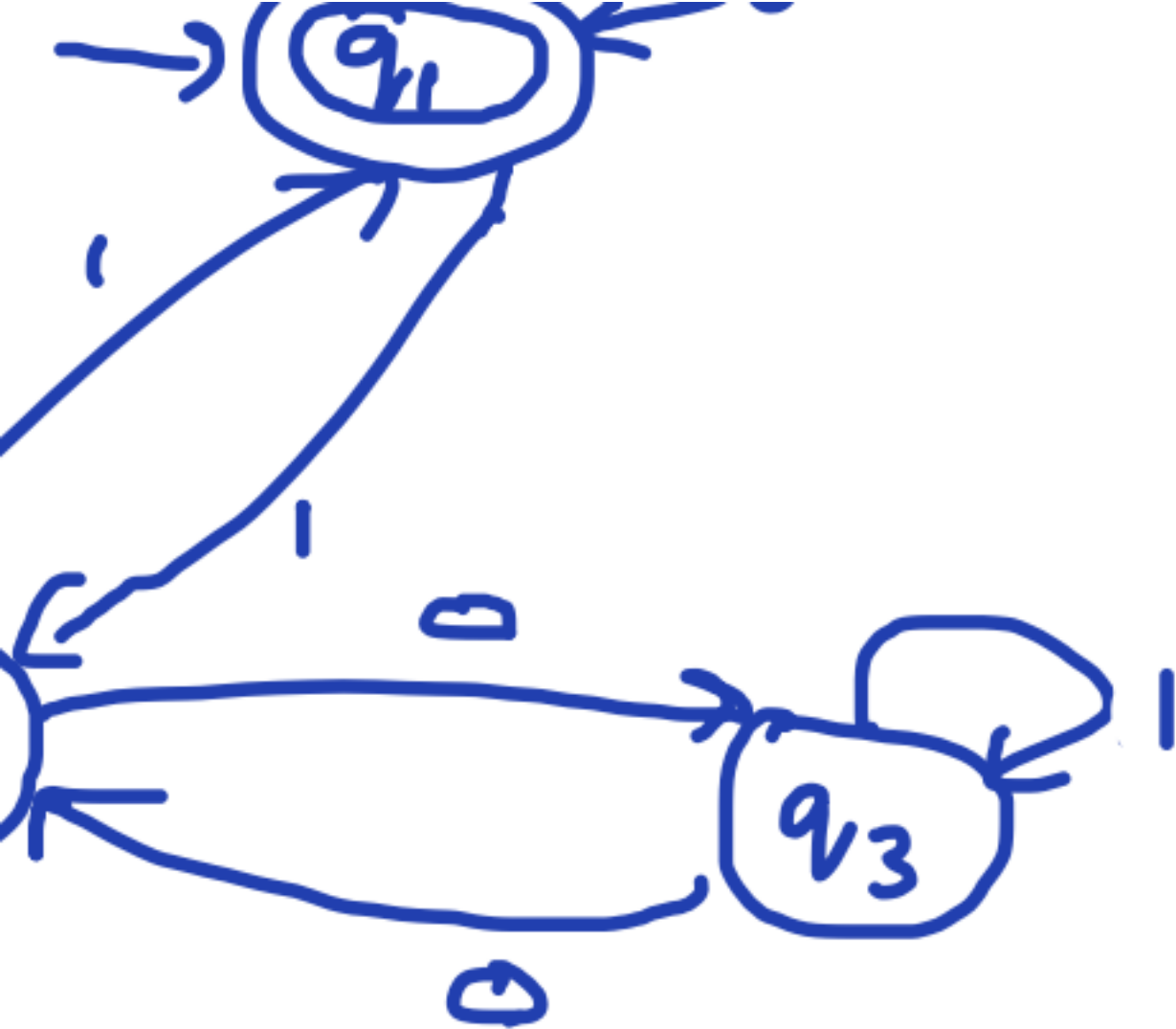
$x_3 \vee y_1 = z_4 \quad x_3 \vee y_2 = z_5$



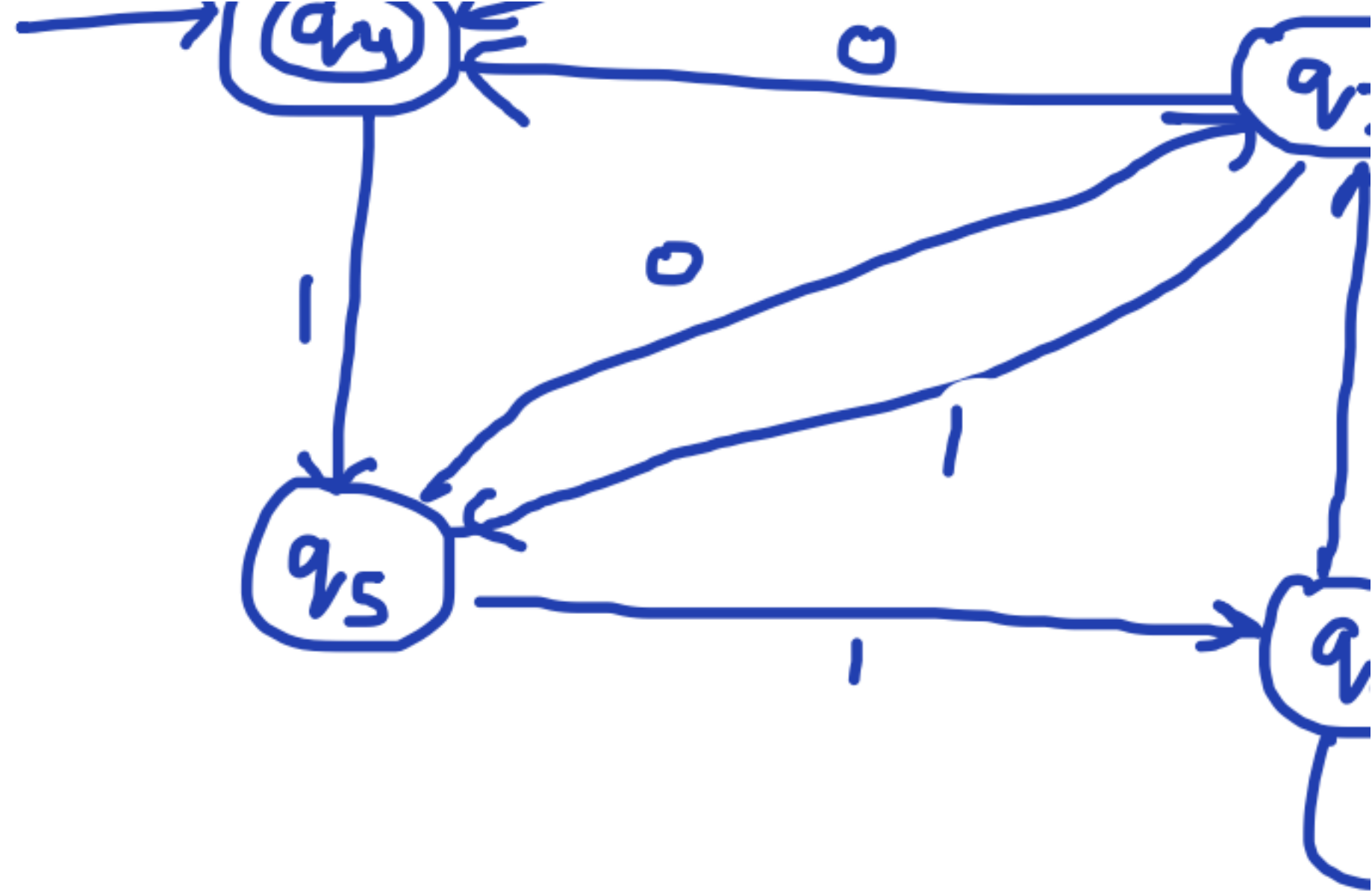
FA₁: odd no. of a's

FA₂: Even no. of a's and b's

aphviz



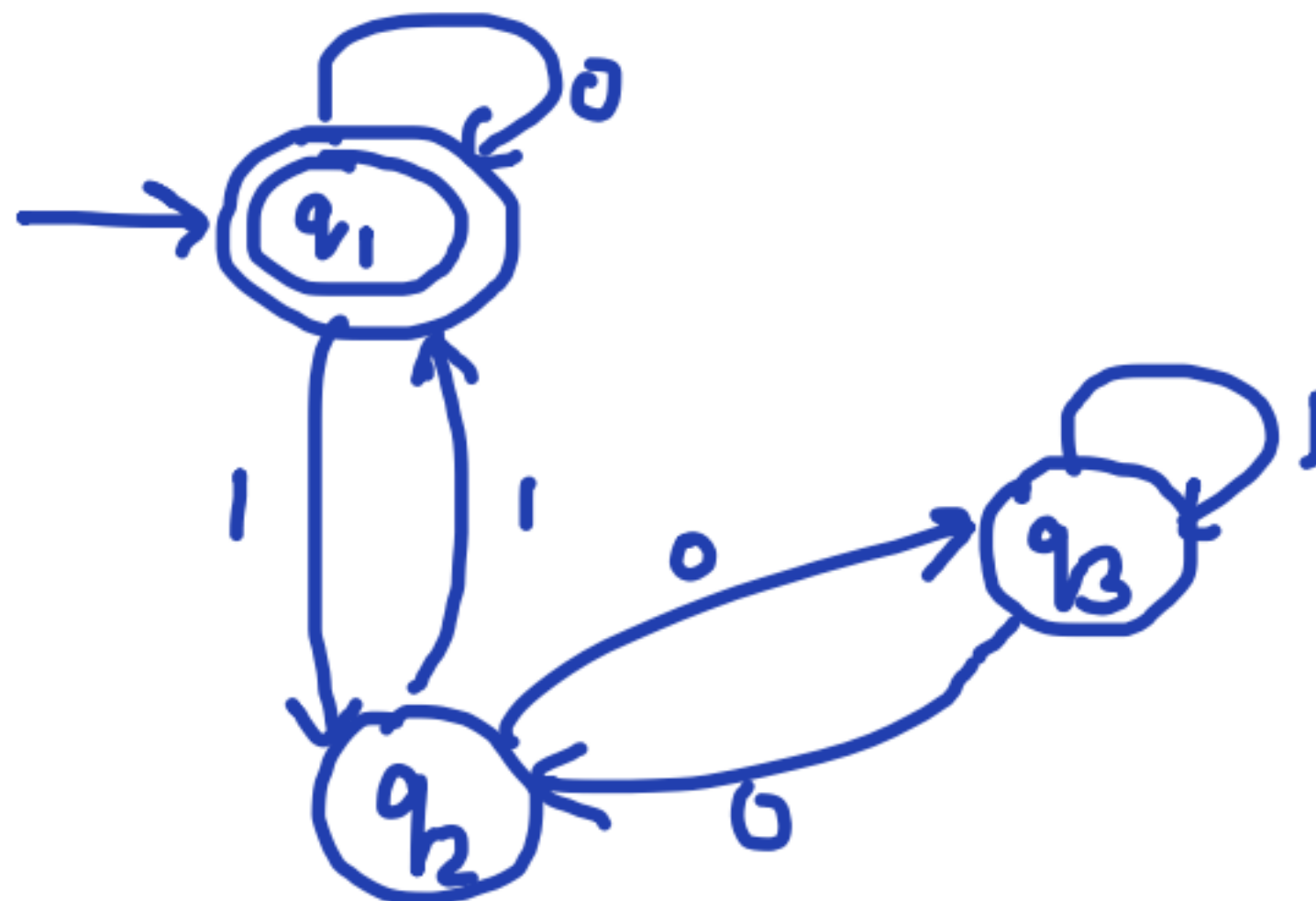
(q, q')
(q_1, q_4)
(q_2, q_5)



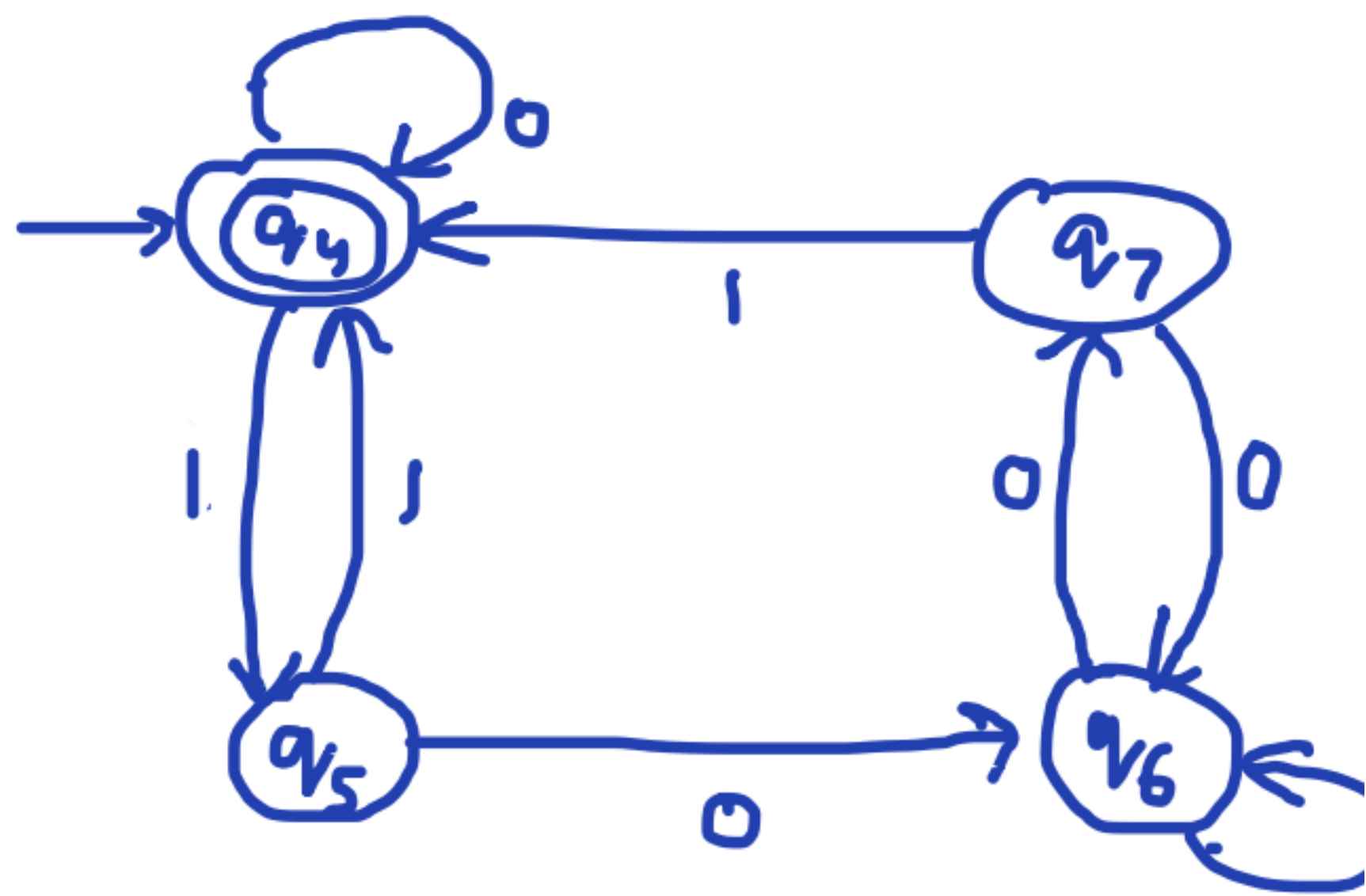
0
$(\underline{q}_1, \underline{q}_4)$
$(\underline{q}_3, \underline{q}_7)$

1
(q_2, q_5)
$(\underline{q}_1, \underline{q}_6)$

Equivalence



$\{0,1\}$



(q, q')

- (q_1, q_4)
- (q_2, q_5)
- (q_3, q_6)

0

- (q_1, q_4)
- (q_3, q_6)
- (q_1, q_7)

1

- (q_2, q_5)
- (q_1, q_4)
- (q_2, q_7)

