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All Boards After  
Each Lecture

## Deterministic Finite Automata (DFA)

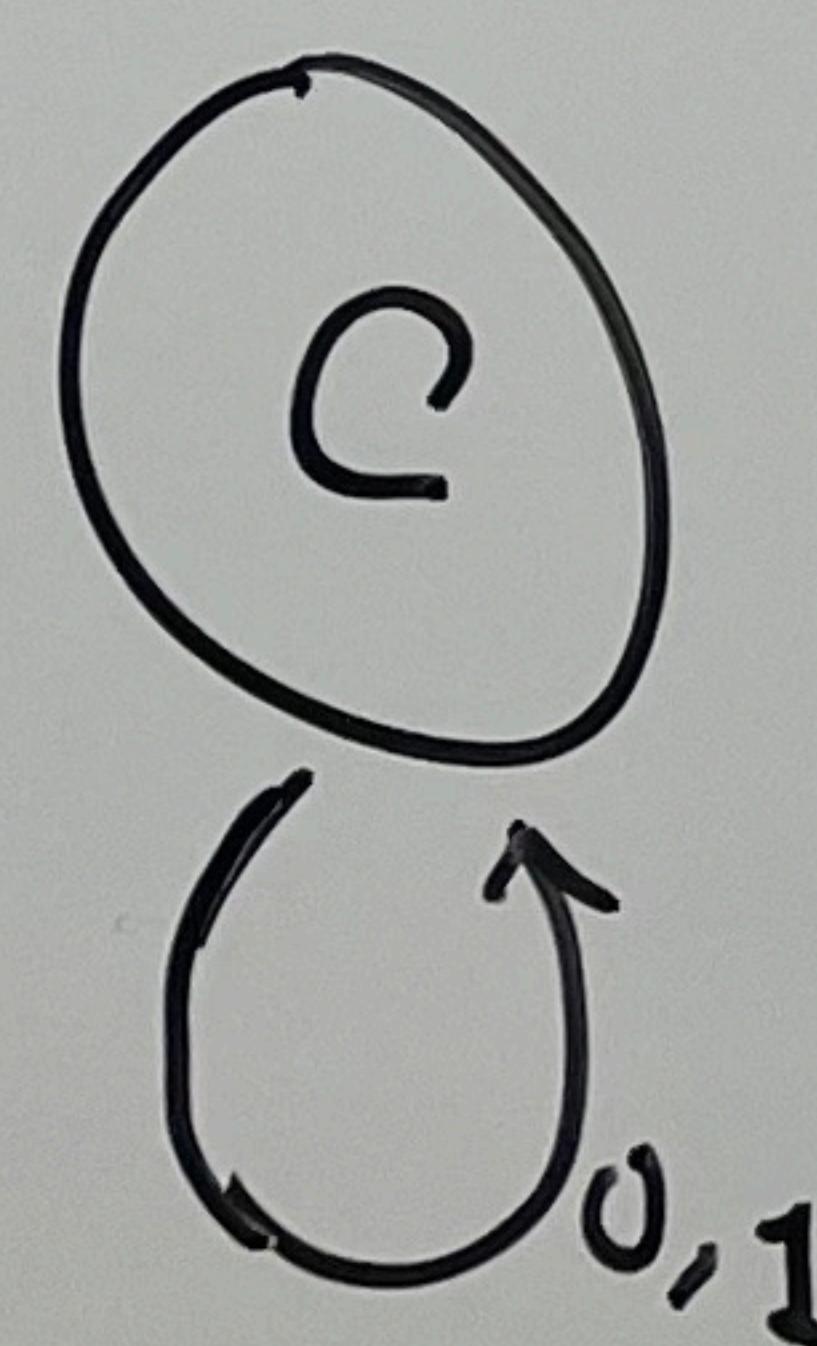
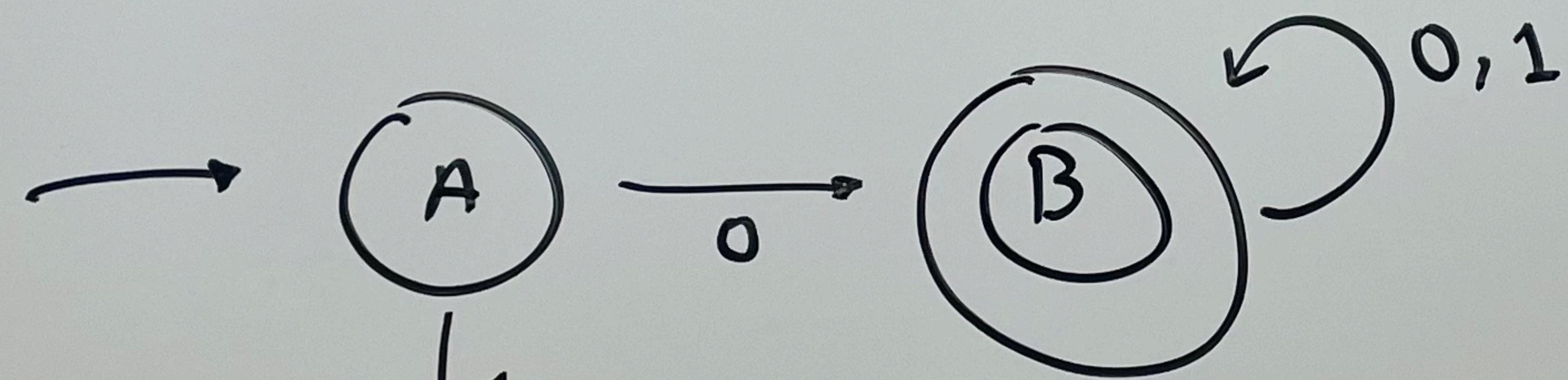
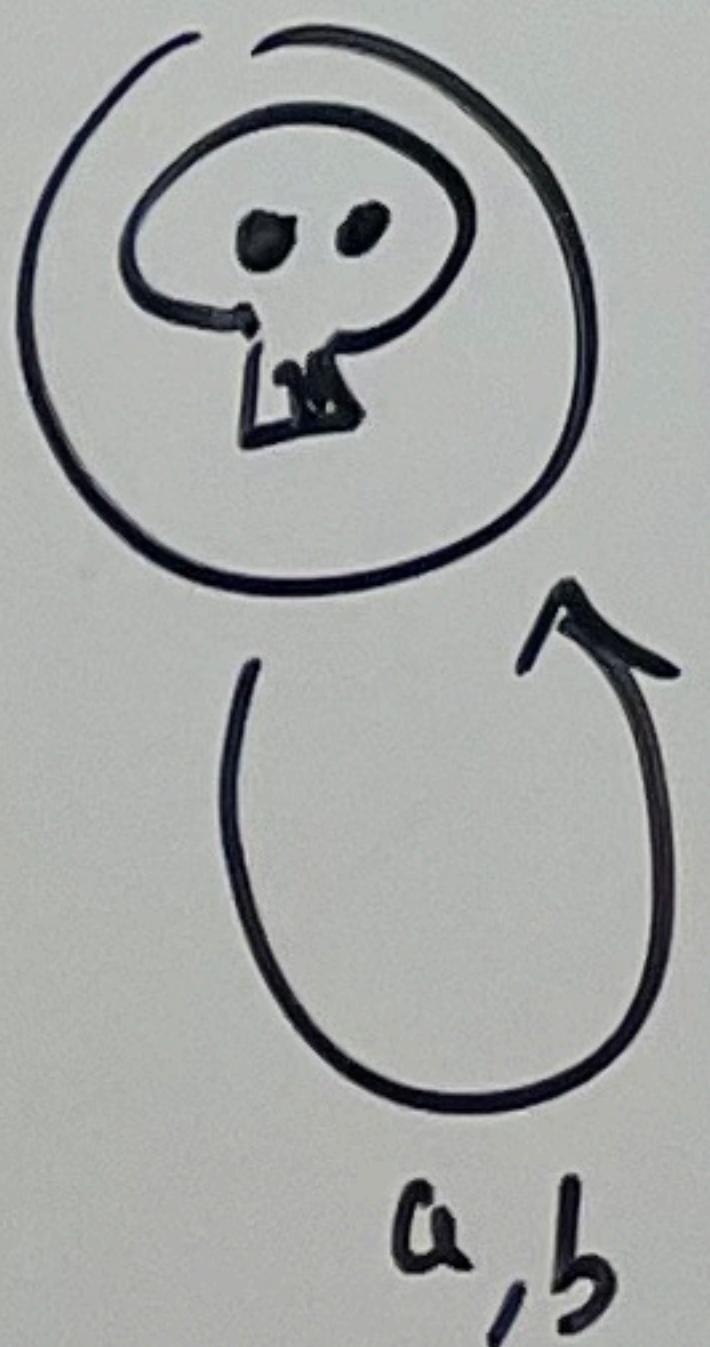
\* Example 1 : Construct a DFA  
that start with '0'.

$L_1$  : Set of all strings

$\Sigma = \{0, 1\}$

{ $0, 00, 01, 011, 0111, 01110, 00110, 110, 1, 100$ }  
 $x \quad x \quad x$

Dead State



### \* Example 1

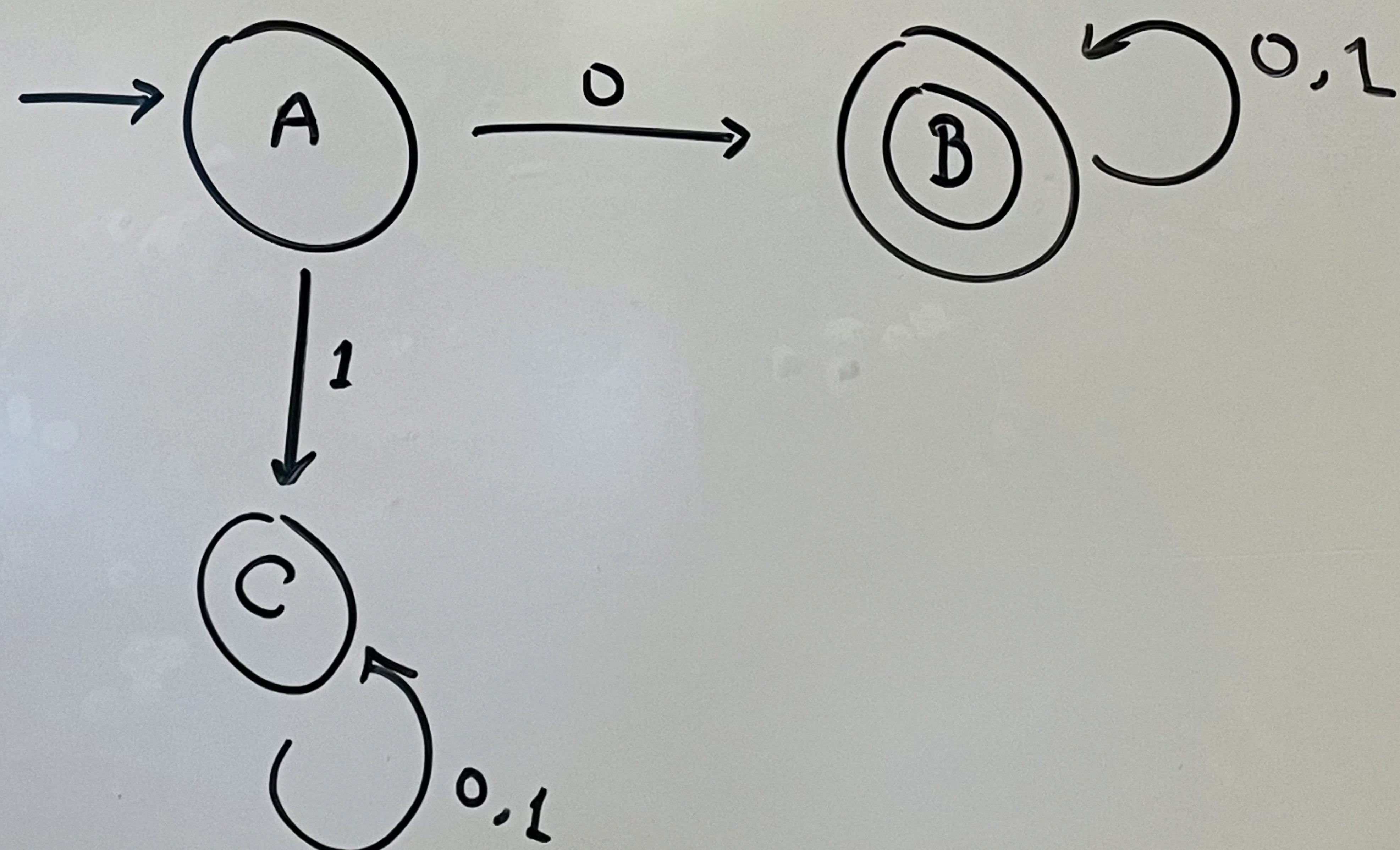
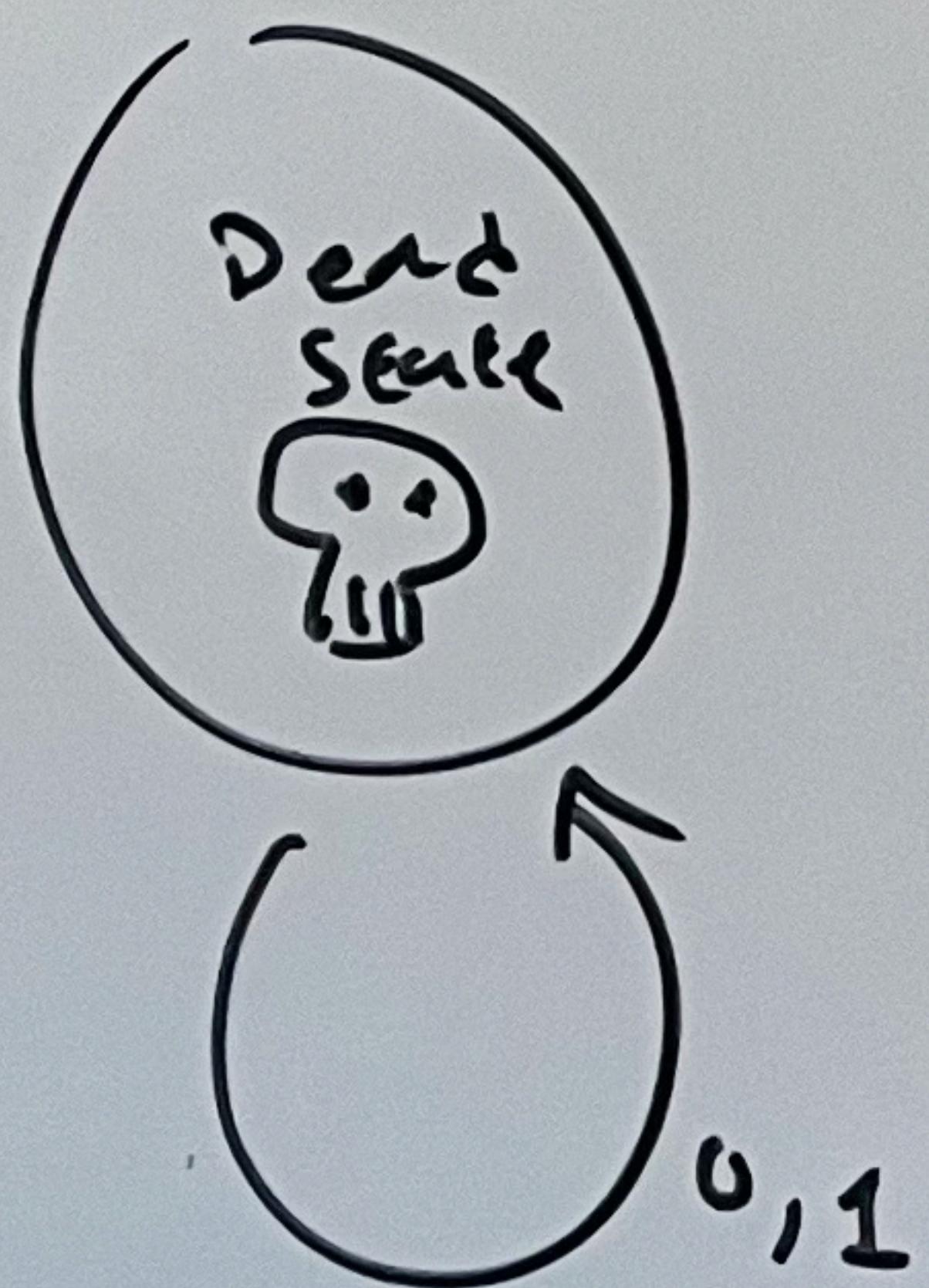
Construct a DFA

$L_1$  : Set of all strings that start with '0'

$$\Sigma = \{0, 1\}$$

$$= \{ \underbrace{0}, \underbrace{00}, \underbrace{01\underbrace{0}, 0\underbrace{00}, 0\underbrace{11}, 0\underbrace{010} \dots \}$$

Dead State

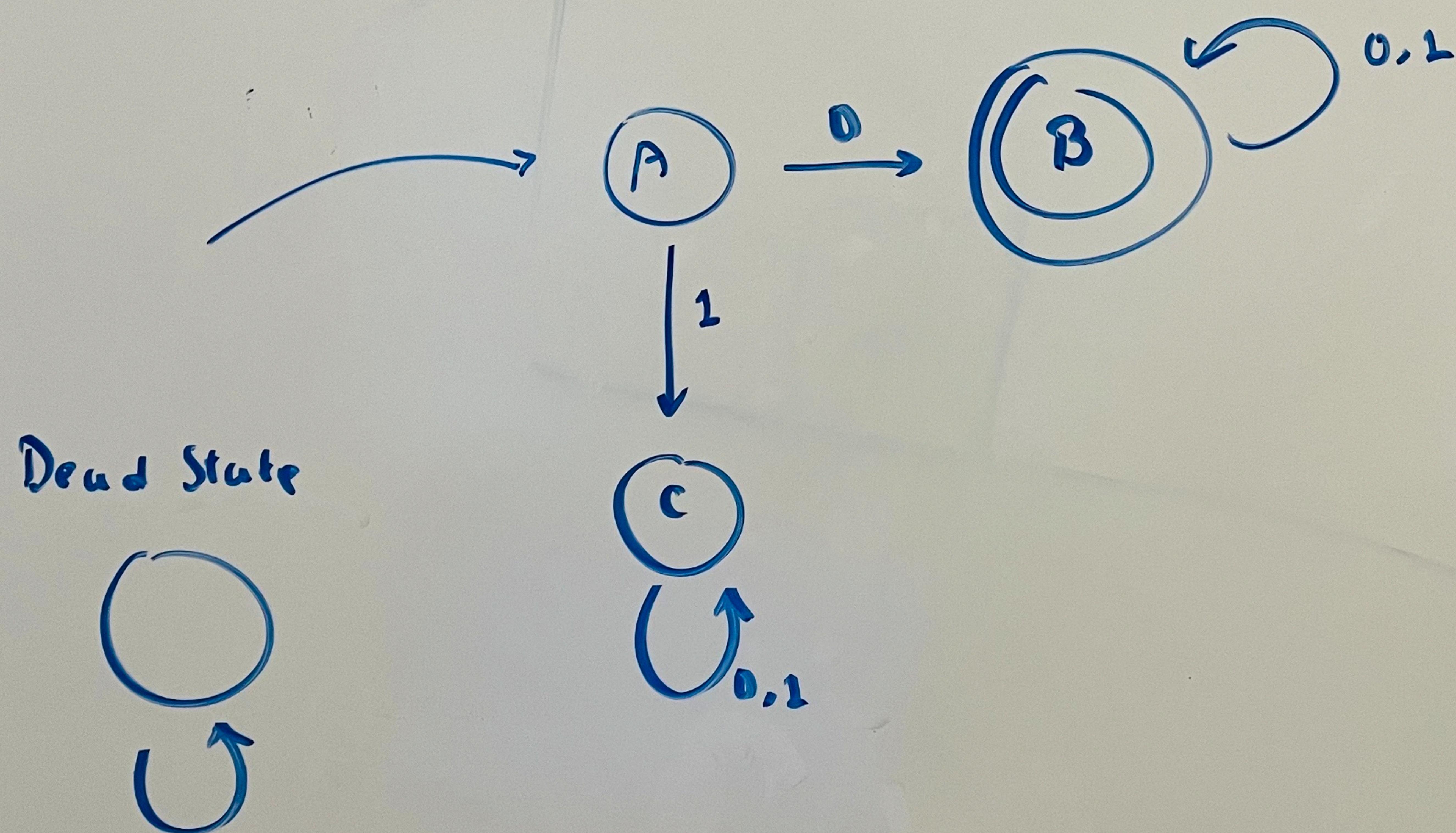


$$\left. \begin{array}{c} 0 \\ 0 \\ x \end{array} \right\}$$

\* Example 1

LL: Set of all strings that start with '0'  $\Sigma = \{0, 1\}$

{0, 00, 01, 0110, 01111, 010100, / 1, x, x, 10, 100}

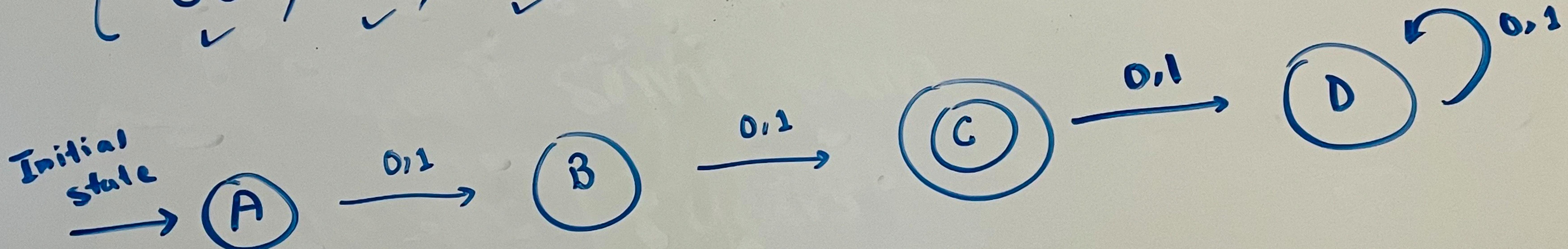


### \* Example 2

Construct a DFA that accepts sets of all

String over  $\Sigma = \{0, 1\}$  of length 2.

{ 00, 01, 10, 11, 000, 10<sub>x</sub>, 001, 11<sub>x</sub> . . . }

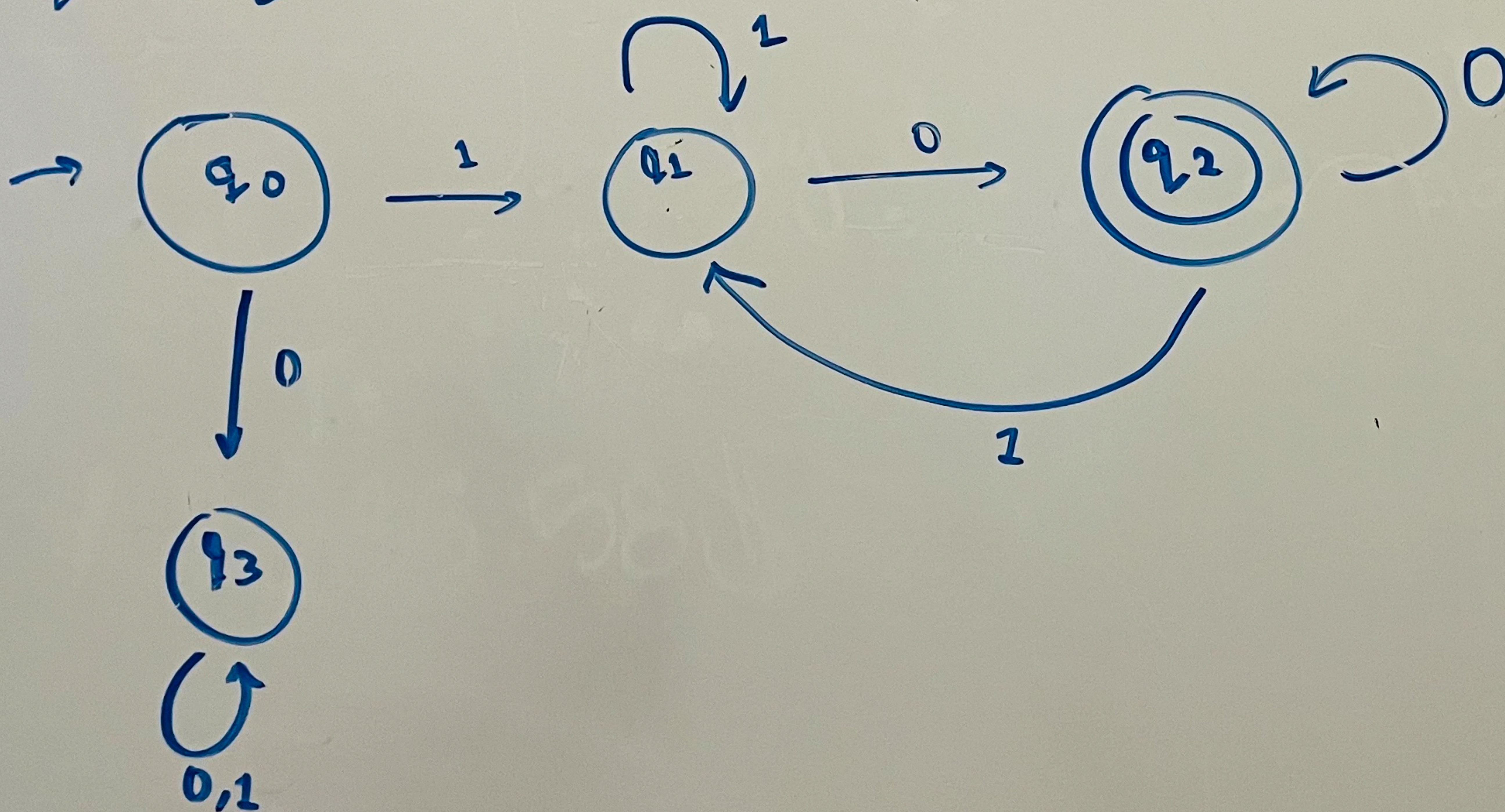


### \* Example 3

Construct a DFA with  $\Sigma = \{0,1\}$  which accepts

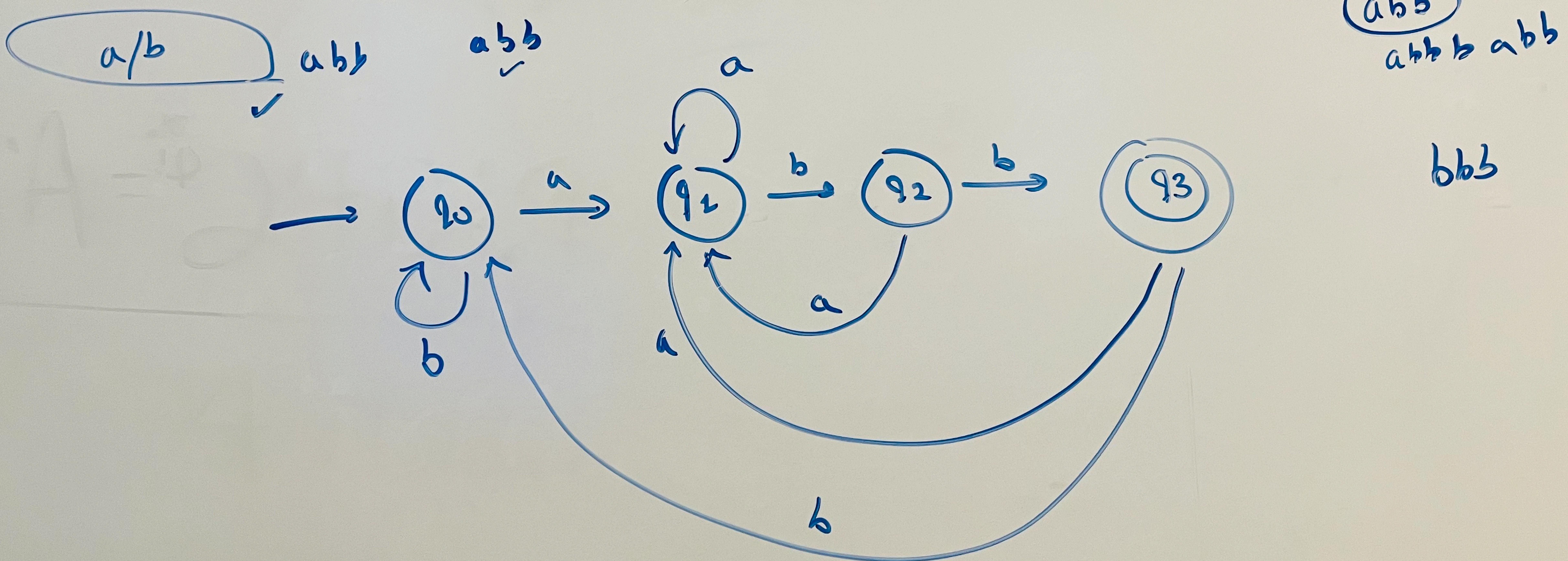
those strings which start with 1 and ends with 0.

$\{ 10, 100, 110, 1(0111)0, 0_x^0, 011_x^0, 11_x^1, 101_x^1, 100101_x^0 \}$



#### \* Example 4

Design a DFA for the language accepting strings ending with 'abb' over  $\Sigma = \{a, b\}$



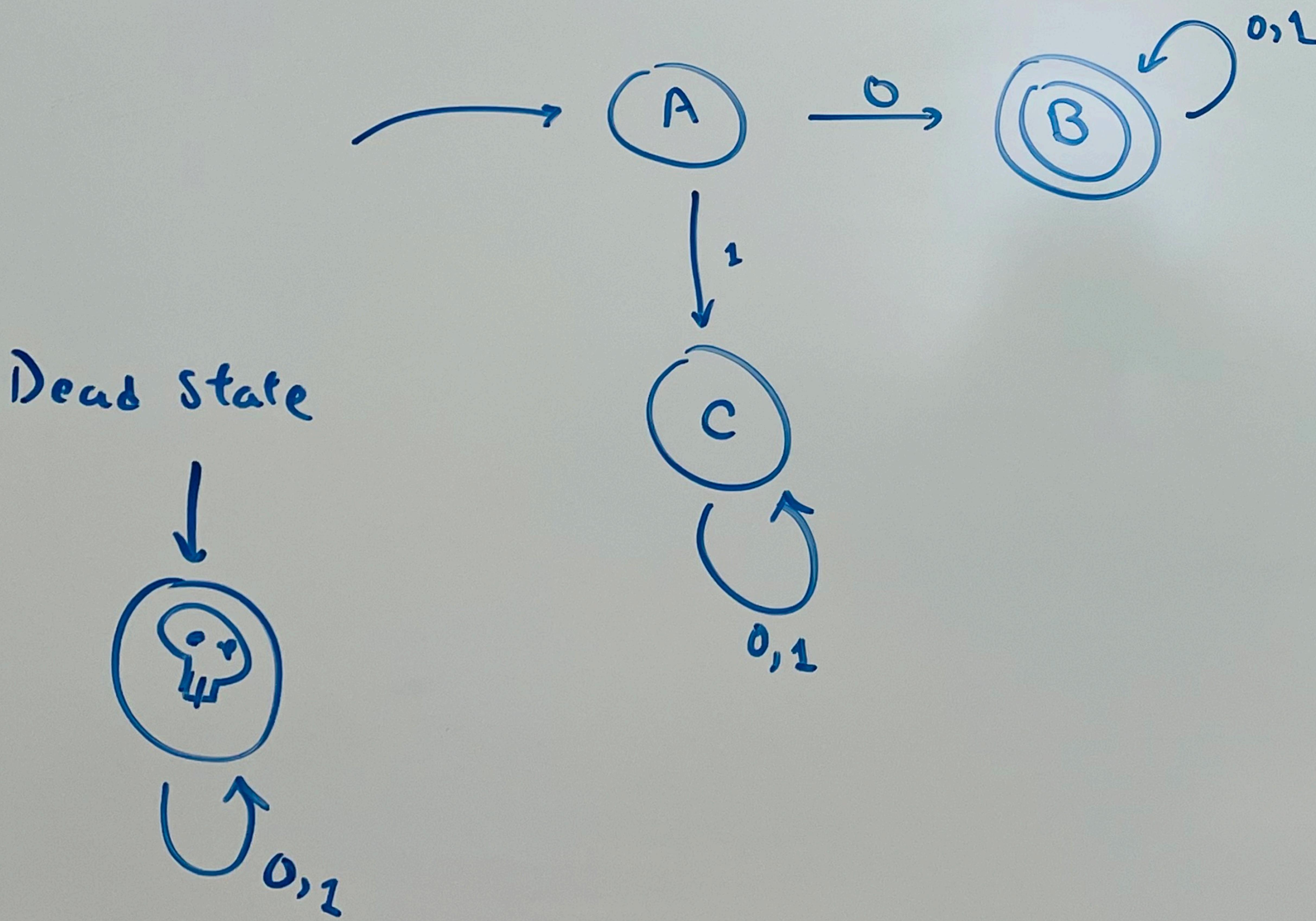
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\* Example 1

Construct a DFA

$L_1 = \text{Set of all strings that start with '0'} \quad \Sigma = \{0, 1\}$

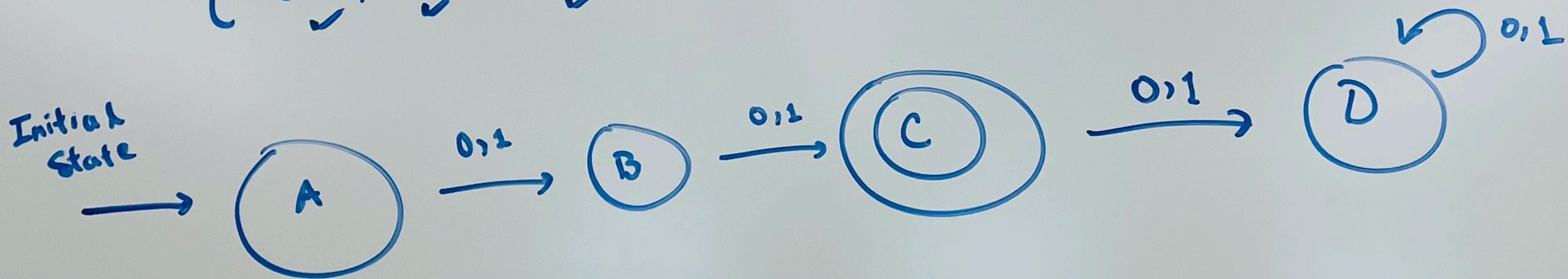
{ 0, 00, 01, 001, 01110, 0111, 1, x, 110, 100, 10001 }



\* Example 2

Construct a DFA that accepts set of all strings over  $\Sigma: \{a,b\}$   
of length 2.

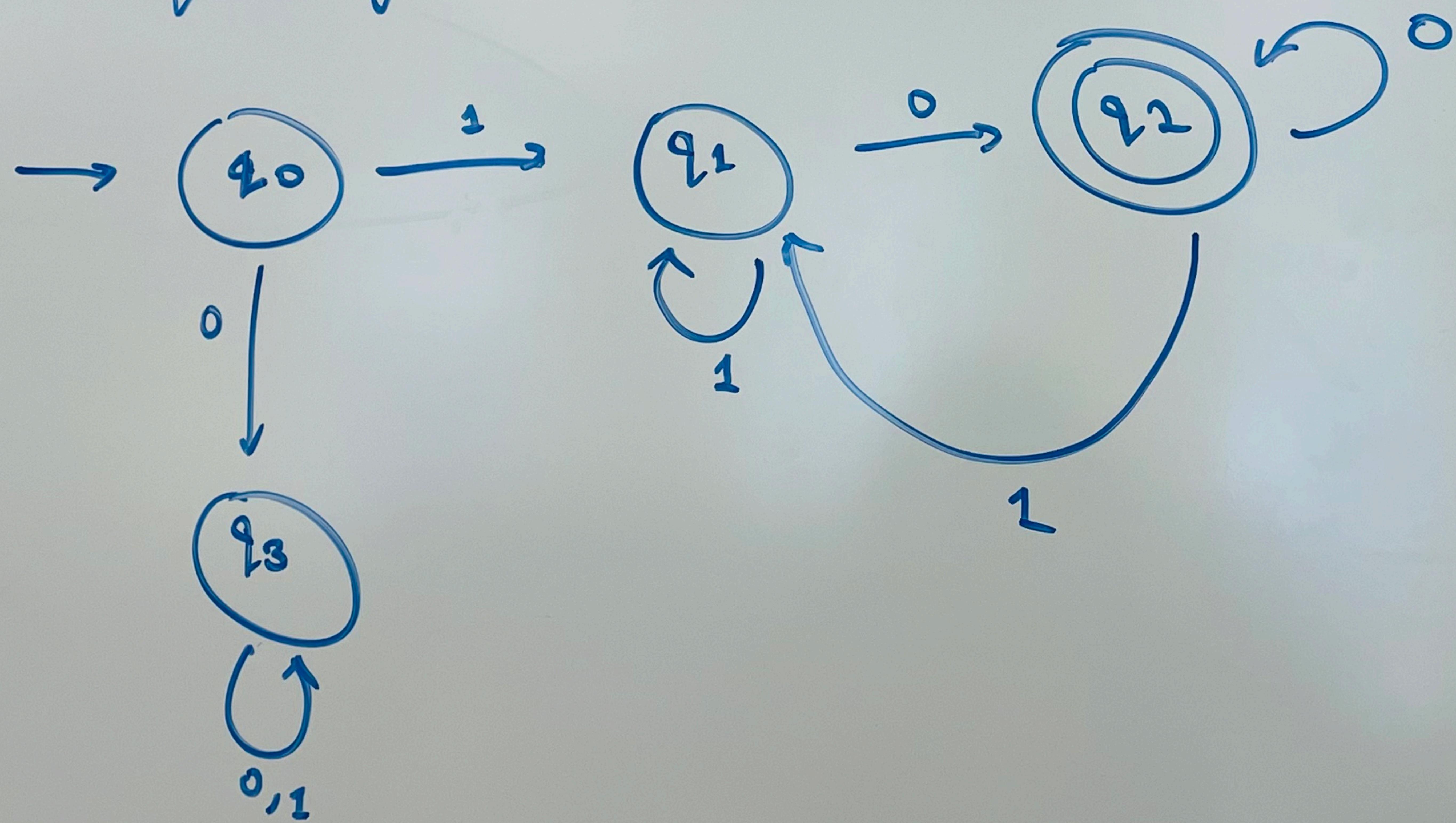
$\{ 00, 01, 10, 11, 00^x, 10^x, 01^x, 0000, 11001, 1110 \}$



### \* Example 3

Construct a DFA with  $\Sigma = \{0,1\}$  which accepts

these strings which starts with 1 and ends with 0.  
 $\{10, 110, 10010, 1 \text{ (final state)}, 1000101, 01000\}$



#### \* Example 4

Design a DFA for the language accepting strings  
ending with 'abb' over  $\Sigma = \{a, b\}$

