Examen

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Pregunta 1

What is the start state?

q1

What is the set of accepted states?

F = {q1, q4} ⊂ Q

What sequence of states does the machine go through on imput *aabb*?

{q1, q1, q2, q4}

Does the machine accept the string *aabb*?

Yes, it does acept the string *aabb*.

Does the machine accept the string ε?

No it does not.

Pregunta 2

Give the formal descritption of the previous machine.

- *Q = {q1, q2, q3, q4}*
- *Σ = {a, b}*
- *δ = Q ⨯ Σ =*

	a	b
q1	q1	q2
q2	q3	q4
q3	q2	q1
q4	q3	q4

- *q0 = {q1}*
- *F = {q1, q4}*

Pregunta 3

Draw the state diagram of a DFA for the language: *{w | w has even numbers of a's and each a is followed by at least one b}*

- *q0 = {q0}*
- *F = {q0}*

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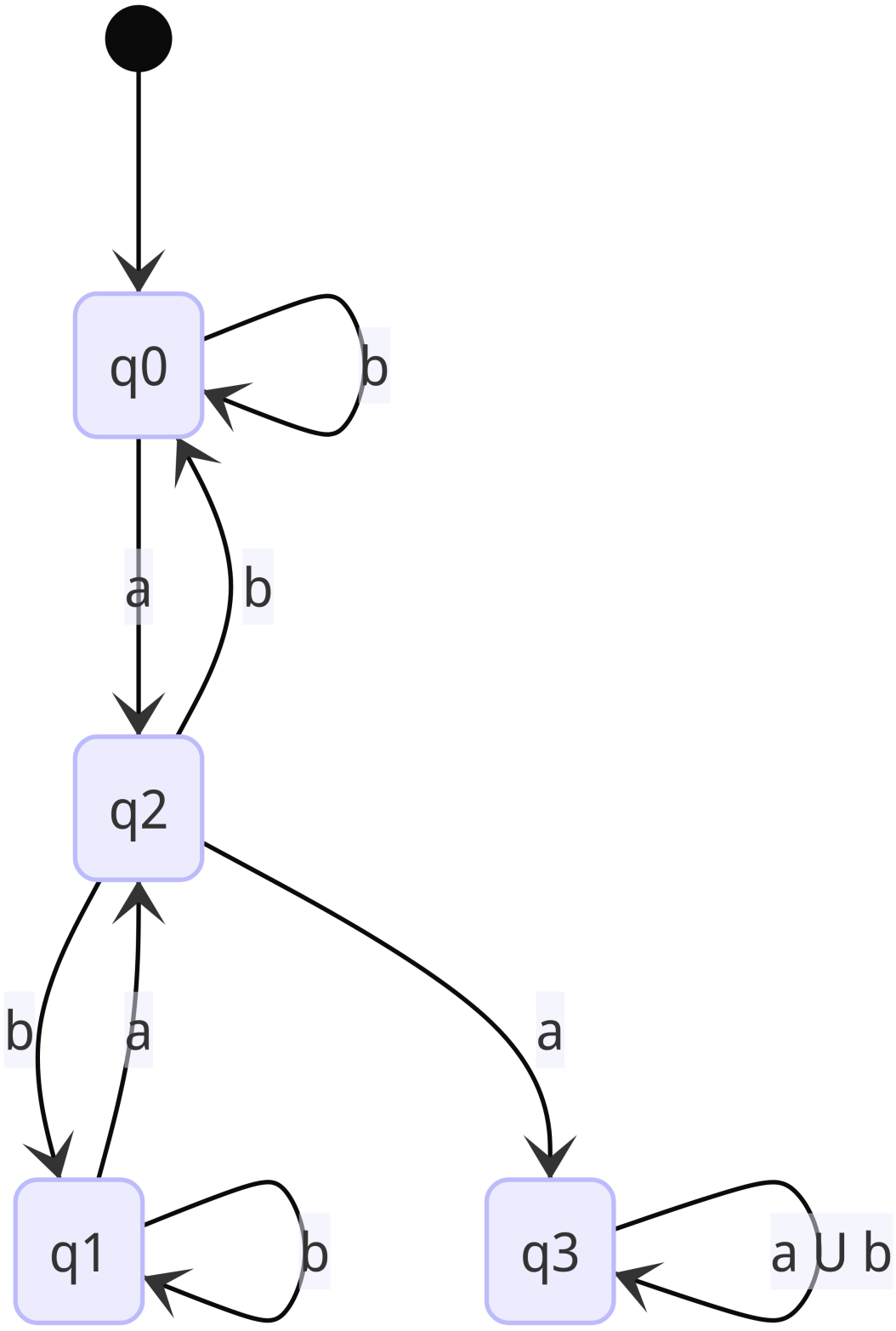
stateDiagram-v2
    q0:
    q1:
    q2:
    q3:

    [*] --> q0

    q0 --> q2 : a
    q2 --> q1 : b
    q0 --> q0 : b
    q1 --> q2 : a
    q2 --> q0 : b
    q1 --> q1 : b
    q2 --> q3 : a
    q3 --> q3 : a U b
```


q0
b
a
b
q2
b
a
a
q1
b
q3
a U b

Pregunta 4

The following language is the complement of a simpler language. In each part, construct a DFA for the simpler language. ***{w | w does not contain the substring ab}***