Aufgabe 2

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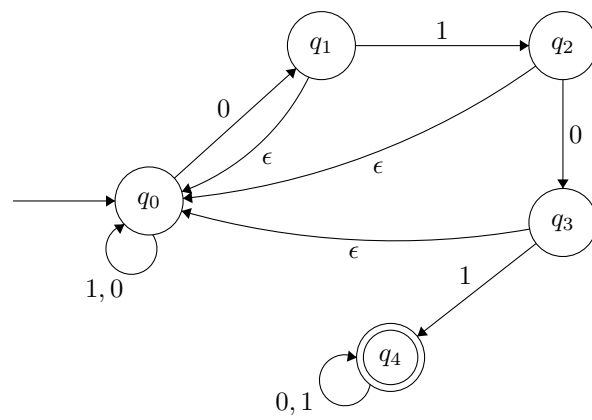**5581906**
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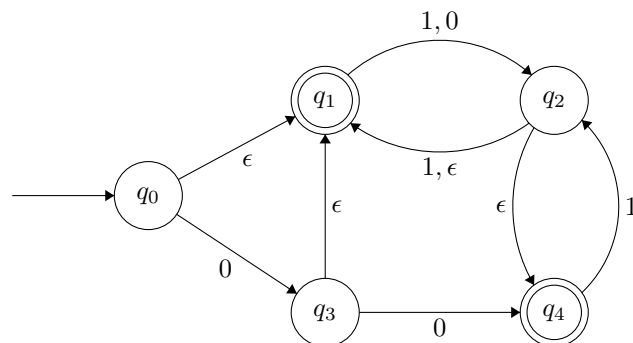# Chapter 1

Task 1

1.1   c)

1.2   d)

Chapter 2

Task2

2.1 a)

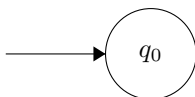If we chose the machine M as follows:

$$M = (q_0, \emptyset, \delta, q_0, q_0)$$

Then it can be proved that the only language accepted by a machine which has only the start state is the empty string ϵ. So the second machine would have as complement language

$$\Sigma^* \backslash \epsilon \to \epsilon \backslash \epsilon = \emptyset$$

remembering that $\emptyset^* = \epsilon$.
So this would mean that the machine M' would be something similar to this.

Thus meaning that no language could be accepted by this machine. Since also M' has like acceptance state $Q \backslash F \to q_0 \backslash q_0 \to \emptyset$.

2.2 b)

2.3   c)
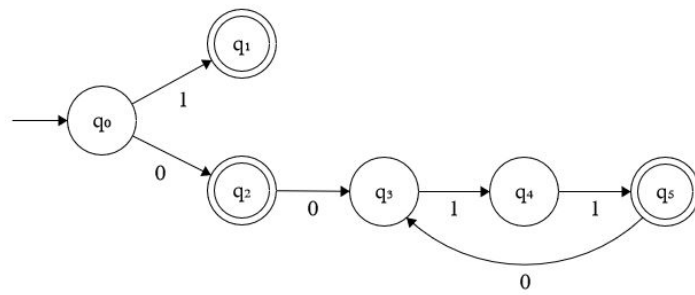
Figure 2.1: L1

Figure 2.2: L2

Chapter 3

Task 3

(a)

(b)

Chapter 4

Task 5