Automata on Infinite Structure
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Exercice Sheet 9

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Exercise 1

1 : $(ab^*)^\omega$

$$0 \in Q_a \wedge \forall x.(x \in Q_a \rightarrow \exists y.(y \in Q_a \wedge x < y))$$

2 : $(aaa)^+(a+b)^\omega$

$$0 \in Q_a \wedge 0+1 \in Q_a \wedge 0+1+1 \in Q_a \wedge \forall x.(0+1+1 < x \rightarrow (x \in Q_a \vee x \in Q_b))$$

Exercise 2

1.

$$\mathcal{L}_1 = ab(ab)^\omega = (ab)^\omega$$

2.

$$\mathcal{L}_2 = aabb(aabb)^\omega = (aabb)^\omega$$

3.

$$\mathcal{L}_3 = aabb((aabb)^\omega + (aabb)^*(aaab)^\omega + (aabb)^*(aaab)^*a^\omega$$

Exercise 3