State diagram with states S_0, S_1, and S_2 (accepting state). Start arrow points to S_0. Self-loop on S_0 labeled 0. Transition from S_0 to S_1 labeled 1. Self-loop on S_1 labeled 1. Transition from S_1 to S_2 labeled 0. Transition from S_2 back to S_1 labeled 1. Transition from S_1 to S_0 labeled 1.

$$b$$

$$0,1$$

$$S_0 \quad S_1 \quad \xrightarrow{0,1} \quad S_2$$

$$1$$

No 1 accept

One 1 accept

$$e \longrightarrow \boxed{S_0} \xrightarrow{0,1} \left(\boxed{S_1}\right) \circlearrowright 0,1$$