# Problem Set 5 Weighted Automata 2020 

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Problem 1. Construct a probabilistic automata $\mathcal{A}$, which takes a word $w \in\{0,1\}^{*}$, such that $\llbracket \mathcal{A} \rrbracket(w)=\left(0 .\left(w^{r}\right)\right)_{2}$ in decimal, where $w^{r}$ means the reverse of the word $w$.
For example, $\llbracket \mathcal{A} \rrbracket(1)=(0.1)_{2}=(0.5)_{10}$, and $\llbracket \mathcal{A} \rrbracket(110)=\left(0 .(110)^{r}\right)_{2}=(0.011)_{2}=(0.375)_{10}$. Prove the correctness of your construction formally.

