Problem Set 5 Weighted Automata 2020

CHENNAI MATHEMATICAL INSTITUTE

February 17, 2020

Problem 1. Construct a probabilistic automata \mathcal{A} , which takes a word $w \in \{0,1\}^*$, such that $\llbracket \mathcal{A} \rrbracket(w) = (0.(w^r))_2$ 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 $\llbracket \mathcal{A} \rrbracket(110) = (0.(110)^r)_2 = (0.011)_2 = (0.375)_{10}$. Prove the correctness of your construction *formally*.