Homework 2

Nikhil Unni (nunni2)

1. (a) Suppose there is an n-state DFA M recognizing L. Then, ww $= 01^n01^n$ is in acceptance, and there is a loop in M of size m, with $1 \leq m \leq n$. This means, by the pidgeonhole principle, that $01^{n+im}01^n$ is also accepted. If we let $i = 1$, then we get $01^{n+m}01^n$, which is not valid.