COL 352 Lecture 18 Feb 18

Can we use M-N theorem to show that certain languages are not regular?

$L = \{ 0^i 1^i \mid i \geq 0 \}$. how many eqv classes does it require in R_L

$x \, R_L \, y$ iff $\forall z \in \Sigma^*$ $x \cdot z$ is in L exactly when $y \cdot z \in L$

$0^{i_1} \not R_L \, 0^{i_2}$ $\quad i_1 \neq i_2$

Prob 5 (e) $L^R = \{ x^R \mid x \in L \}$ and L is regular

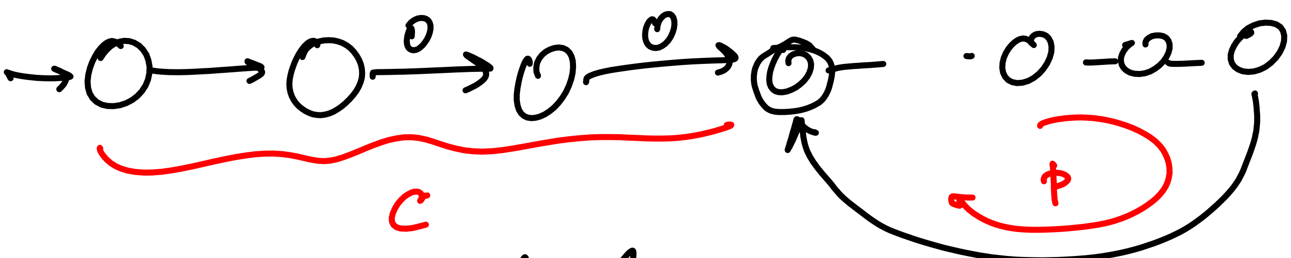
x^R is the reverse of x

$(a_1 a_2 a_3 a_k)^R = a_k a_{k-1} \ldots a_1$ Is L^R regular

Prob 1 A set of integers is *linear* if it is of the form $\{c + p\cdot i \mid i \geq 0\}$ for some fixed c, p.

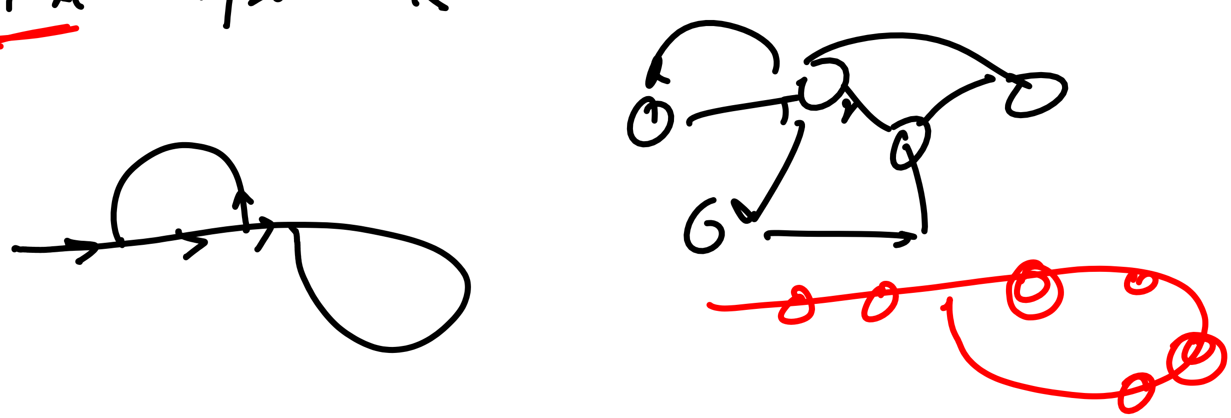
A *semilinear* set is a finite union of linear sets.

Let $R \subset 0^*$ be a regular language. Show that R is semilinear.



A DFA for linear set

DFA for R



7. What is the relationship between class of regular languages and the least class of languages closed under union, intersection, complement and that contains all finite sets.

This class, say $\mathcal{C}$ must contain all finite languages and complement of finite languages

$$\{ L_1, \; L_2 \ldots \\ \bar{L}_1, \; \bar{L}_2, \ldots \}$$

Is $\mathcal{C}$ closed under union & intersection