Outline

FSAs vs REs

Closed Properties for Regular Languages

Proving non-regularity

Concepts Beyond the Course

Notes
Do FSAs and REs recognize the same class of languages?
Prove that languages recognized by REs are recognized by FSAs.
Prove that languages recognized by FSAs are recognized by REs
Regular Languages
Properties of Regular Languages

- Regular languages are *closed* under certain operations

- Applying these operations to regular languages results in regular languages
Closure Properties of Regular Languages
Define a DFA/NFA/RE to accept $L = \{0^n1^n : n \geq 0\}$
Proving non-regularity
Pumping Lemma
for regular languages

If $L$ is a regular language, then there exists $p \in \mathbb{N}$ (the \textit{pumping length}) where, if $s$ is any string in $L$ with length at least $p$, then $s$ can be divided into three pieces, $s = xyz$, satisfying the following conditions:

1. for each $i \geq 0$, $xy^i z \in L$
2. $|y| > 0$
3. $|xy| \leq p$
Pumping a regular language
Proving non-regularity
Context Free Languages
Pushdown Automata
Turing machines
Undecidable Languages
Computational Complexity