Games, graphs, and machines

← A regex matching
valid email recipients
RFC......

Automata LEGO

Given are two automata for languages L and M. Construct (non-deterministic) automata for $L|M$ ✓ and LM ✓ and L^* ✓.
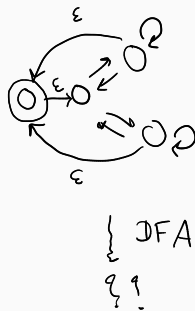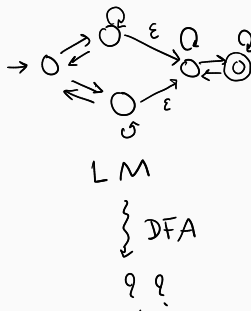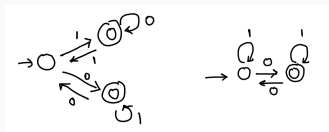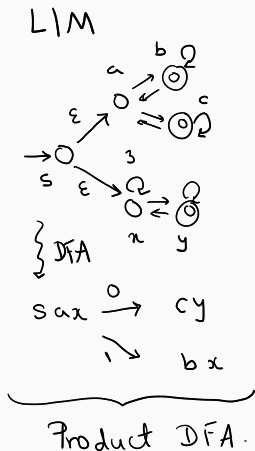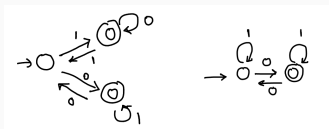
Converting M to M' with only one accept.

M

M'
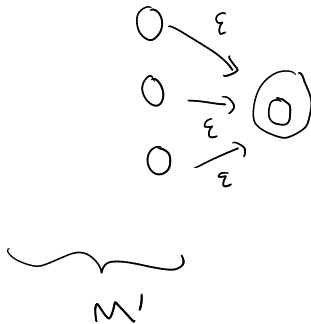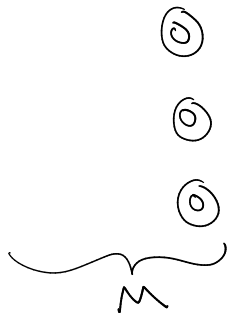
What if we wanted DFAs for $L|M$ and LM and L^*?
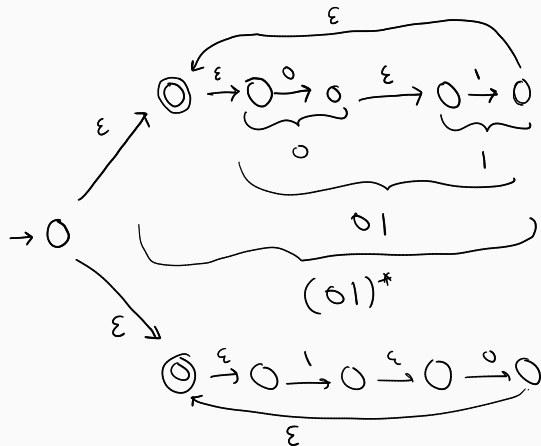

Just convert to DFA

(Direct lego with DFA's
 is inconvenient).

Construct a non-deterministic automaton for $(01)^*|(10)^*$.

Illustrates a
general process
regex
$\downarrow$
NFA.

Given an automaton with language L, can you construct an automaton with language L^{rev}
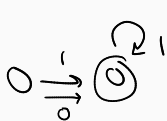
$$L^{\text{rev}} = \{\text{Reverses of all the words in } L\}.$$

Assume have one accept state.

New start = old accept

New accept = old start

New arrows = reverses of old arrows

$$0 \underset{0}{\overset{1}{\rightrightarrows}} \textcircled{0} \, \overset{\curvearrowright}{{}^{1}}$$

reverse machine
may be Nondet.

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Q: Is grammar checkable by regex?