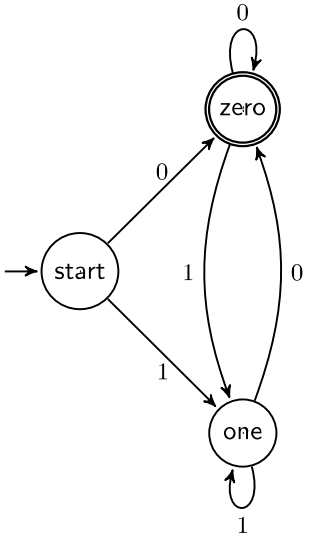
Deterministic Finite Automaton

Our machine is going to get a string as input.
It will read one character at a time and update "its state."
At every step, the machine thinks of itself as in one of the (finite number) vertices.
When it reads the character it follows the arrow labeled with that character to its next state.

Start at the "start state" (unlabeled, incoming arrow).
After you've read the last character, accept the string if and only if you're in a "final state" (double circle).



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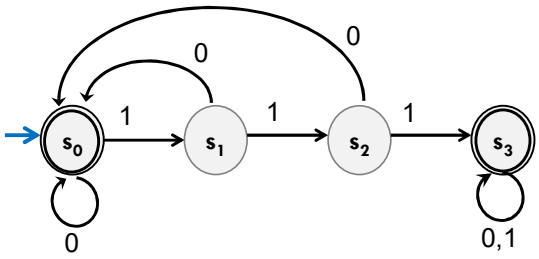
Deterministic Finite Automata

What is the language of this DFA?

I.e. the set of all strings it accepts?

Old State	0	1
s_0	s_0	s_1
s_1	s_0	s_2
s_2	s_0	s_3
s_3	s_3	s_3



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Design some DFAs

Let $\Sigma = \{0,1,2\}$

M_1 should recognize "strings with an even number of 2's.

What do you need to remember?

M_2 should recognize "strings where the sum of the digits is congruent to $0\ (mod\ 3)$"

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The set of binary strings with a 1 in the 3rd position from the start

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