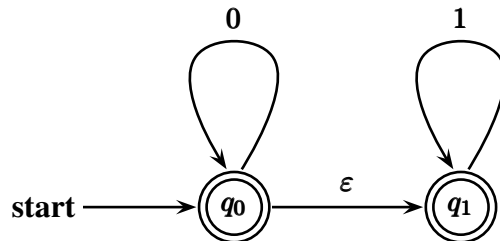


CS 301: Some randomly selected sample questions for midterm 1

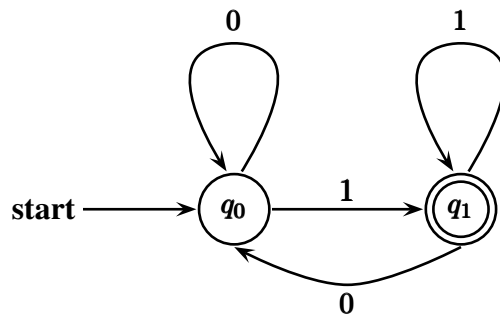
Problem 1 Draw an NFA accepting the language 0^*1^* over the alphabet $\Sigma = \{0, 1\}$.

Solution



Problem 2 Draw a DFA recognizing the language $L = \{w \mid w \text{ ends with } 1\}$ over the alphabet $\Sigma = \{0, 1\}$.

Solution



Problem 3 Give a **regular expression** for the language L defined in Problem 2.

Solution $(0 + 1)^*1$

Problem 4 True or False: If L is a regular language then

$$\text{Reverse}(L) = \{\text{all strings in } L \text{ written backwards}\}$$

is also a regular language.

Solution

True. Take the DFA for L , reverse all arrows, switch start and accepting states. Finally, if the new DFA has more than one start state then create a new start state q and have ϵ -moves from q to the old start states.