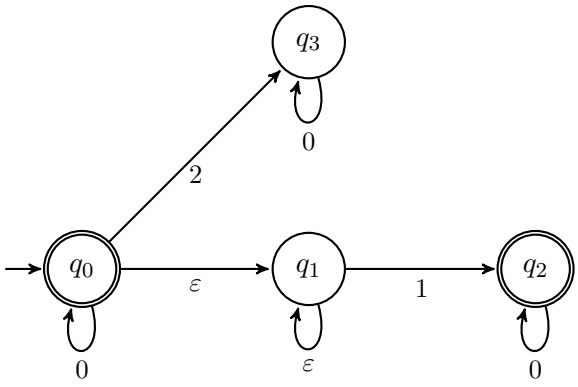
CSE 311: Foundations of Computing I

Section : NFAs, Minimization, Irregular Languages

0. NFAs

(a) What language does the following NFA accept?

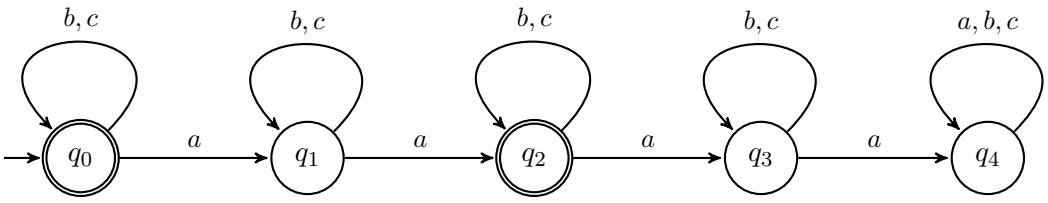


(b) Create an NFA for the language "all binary strings that have a 1 as one of the last three digits".

1. DFAs & Minimization

(a) Convert the NFA from 0a to a DFA, then minimize it.

(b) Minimize the following DFA:



2. Irregularity

(a) Let $\Sigma = \{0, 1\}$. Prove that $\{0^n 1^n 0^n \ : \ n \geq 0\}$ is not regular.

(b) Let $\Sigma = \{0, 1, 2\}$. Prove that $\{0^n (12)^m \ : \ n \geq m \geq 0\}$ is not regular.

(c) Let $\Sigma = \{(,)\}$. Prove that the language $\{s \in \Sigma^* \ : \ s$ is composed of correctly nested & balanced parentheses$\}$ is not regular.