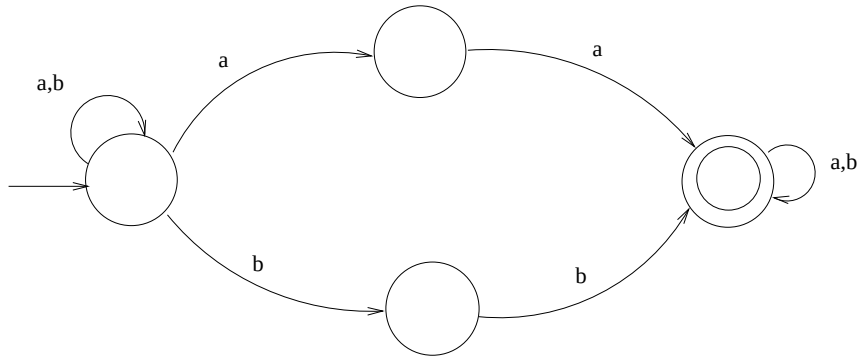


SOLUTIONS
 CSE105 Quiz #1 (Blue Version)
 Thursday, Oct. 7, 1999

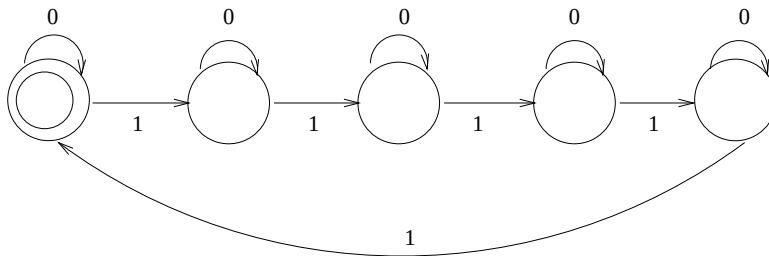
1. Give the state diagram of an NFA over the alphabet $\{a, b\}$ that accepts $\{w \mid w \text{ has either } aa \text{ or } bb \text{ as substring}\}$



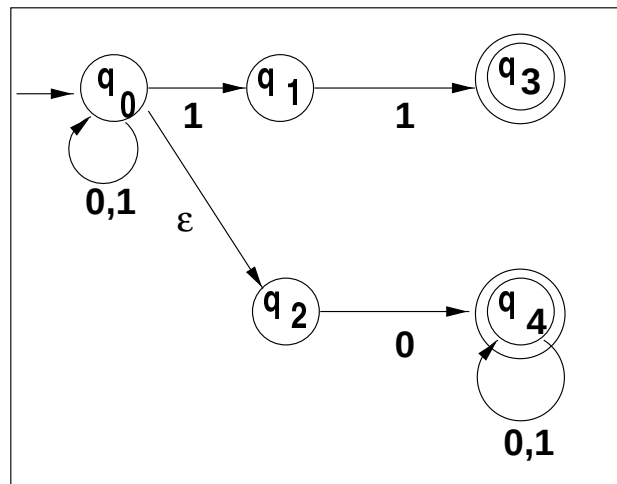
2. Give the state diagram of a DFA over the alphabet $\{0, 1\}$ that accepts

$\{w \mid w \text{ has } 5m \text{ 1's for some integer } m \geq 0\}$

Remember that m can be any nonnegative integer (this includes 0!). The FA must accept any string with exactly $(5m)$ 1's.



3. Describe $L(M)$ where M is given by the following state diagram.



$L(M) = \{w \mid w \text{ is a string over the alphabet } 0,1 \text{ which either contains a } 0 \text{ or ends with the substring } 11\}$

4. Define the term language over alphabet Σ .

A language over Σ is defined to be any set of strings over Σ .