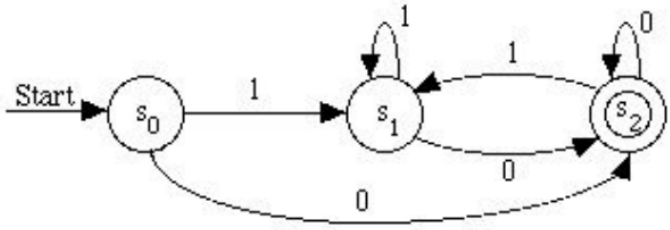
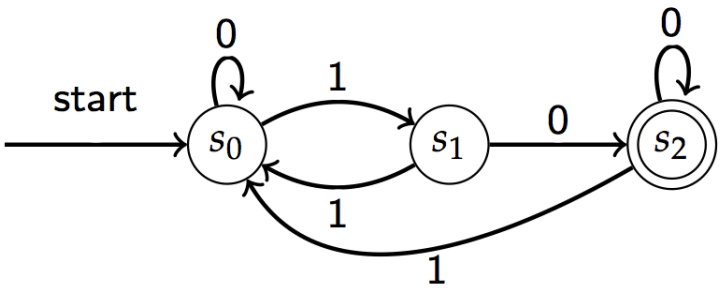
5. Finite Automatons

5.1)
Determine the set of bit strings recognized by the following deterministic finite-state automaton.



5.2)
Which language is recognised by this deterministic finite-state automaton:



5.3)
Construct a deterministic finite-state automaton that recognizes the set of all bit strings such that the first bit is 0 and all remaining bits are 1's

5.4)
Consider a grammar G with alphabet {a, b}, non-terminals {S, A}, starting symbol S and productions given as:

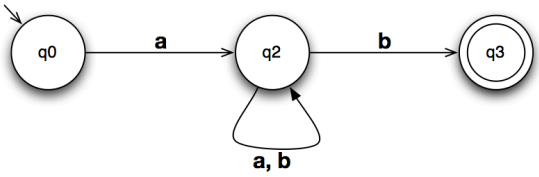
S→aA A→abS | b

For example we would have:

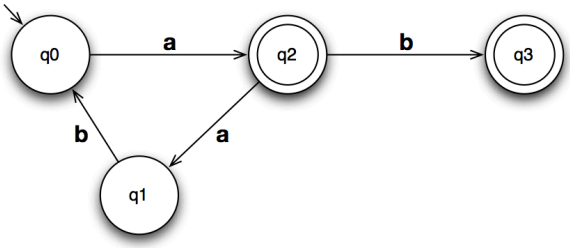
- ab
- aabab
- aabaabaabaab

Which of the following automata accepts the language generated by G?

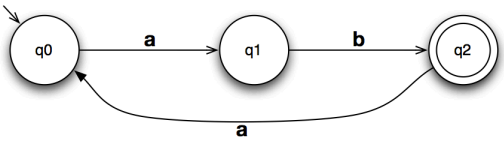
a)



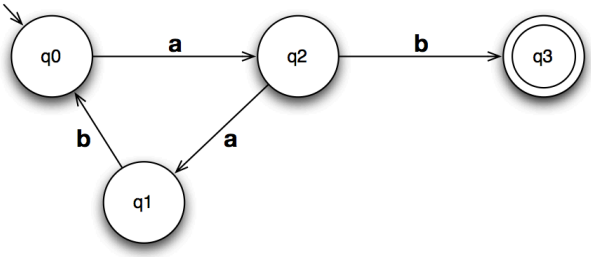
b)



c)



d)



5.5)
Construct a deterministic finite-state automaton that recognizes the set of all bit strings that contain exactly one 0.