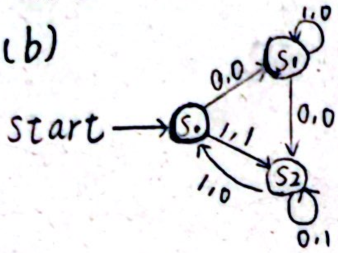
Homework 11 蒋云翔 22CST

Section 13.2

Ex.2

(b)



State table:

	Next state		Output	
State	0	1	0	1
s_0	s_1	s_2	0	1
s_1	s_2	s_1	0	0
s_2	s_2	s_0	1	0

Ex.14 Construct a finite-state machine for ATM:

Firstly, we have to set the corresponding states: Let s_0 be the start state and s_1, s_2, s_3, s_4 be the state reached after the ~~usr~~ user has entered the correct ~~answer~~ password digit. Then we know only the transition from s_3 to s_4 is a represent for the correct entering password.

Secondly, we must set the states to record the wrong entering times.

Section 13.3

Ex.10: Determine whether 01001 is in each of these sets:

a) $\{0,1\}^*$: This set contains all situations, of course 01001 is in this set

b) $\{0\}^*\{10\}\{1\}^*$: It is clear that ~~thii~~ all string can't contain 2 consecutive 0's in the middle, so 01001 is not in this set.

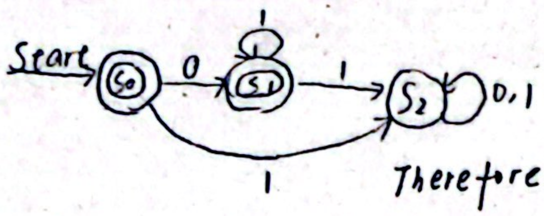
(c) $\{010\}^*\{0^*\}\{1\}$: $(010)^0(010)^1(0)^1 1$ is the string 01001

(4) $\{010, 011\}\{00, 01\}$: $(010)(01)$ is the string 01001

(5) $\{00\}\{0\}^*\{01\}$: This set has at least ~~to~~ 2 consecutive 0's in the begining of the string, so 01001 is not in the set

(6) $\{01\}^*\{01\}^*$. This set ~~co~~ can't have 2 ~~con~~ consecutive 0's of the sering, so 01001 is not in this set.

Ex.18 Find the language

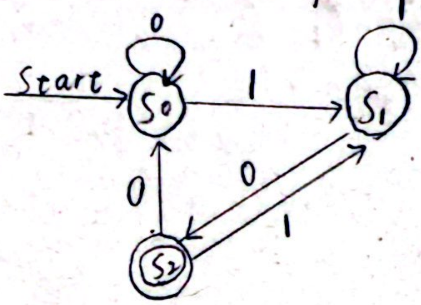


The final state is S_0 and S_1 so we need to find the ways to S_0 or S_1.

Therefore, the answer is $\{01^n, n \geq 0\} \cup \{\lambda\}$

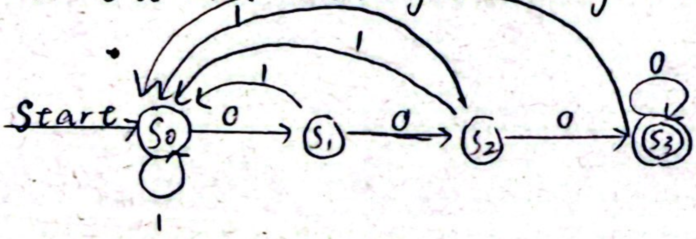
Ex.24 Construct a DFA that recognizes the set of all bits string end with 10

Sol: we have four situations as ~~final~~ ending : 00, 01, 10, 11

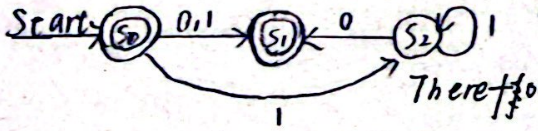


We need only 2 states S_0, S_1 to record the non-final state, and S_2 is our final state.

Ex.28 Construct a DFA ~~that recognizes~~ strings that contain at least three 0s



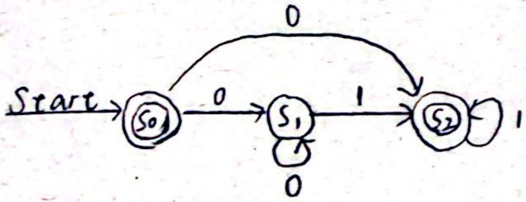
Ex.44: Find the language of NFA



The final states are S_0 an S_1.

Therefore, the language is $\{\lambda, 0, 1\} \cup \{0 1^n 0, n \geq 1\}$

Ex.52 Find a DFA

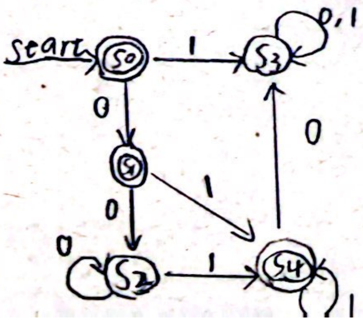


The final states are S_0 and S_2

Therefore, the language is:

$\{\lambda\} \cup \{01^n, n \geq 1\}$

According to the language, we can find the DFA


Start
S_0
1
S_3
0,1
0
0
S_1
1
0
0
S_2
1
S_4
1