3-3 设初始状态为 $S_0=\{L=WSV, R=\emptyset\}$

L代表左部, R代表右部, W为报, S为羊, V为白菜

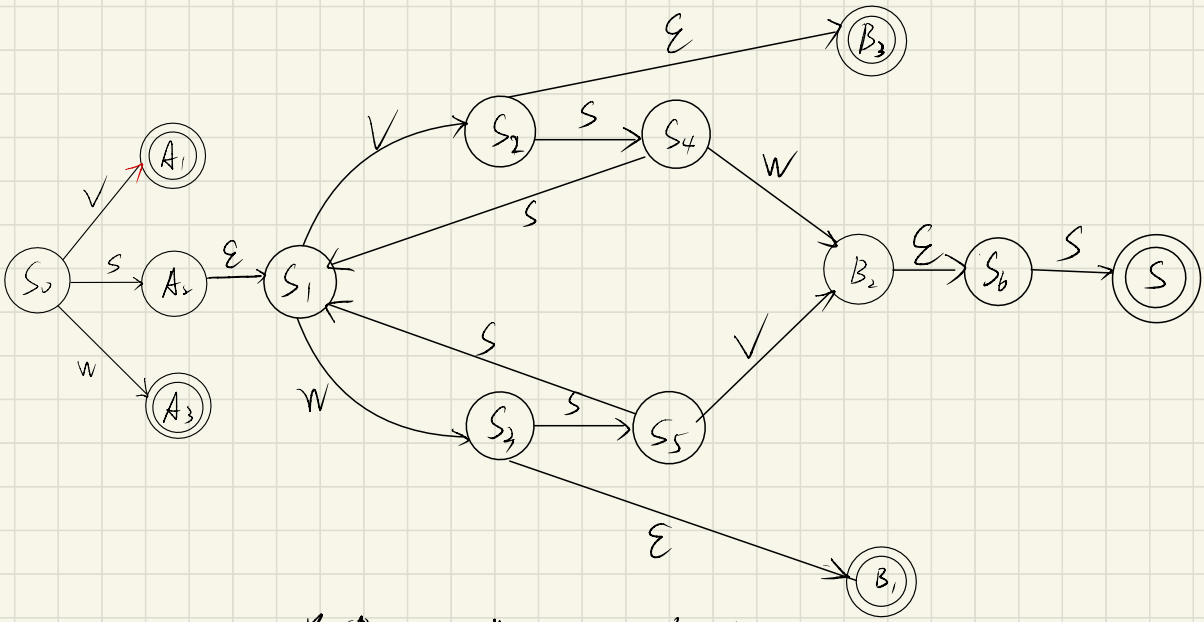
有如下几个状态

$A_1=\{L=WS\}$ $B_1=\{R=WS\}$

$A_2=\{L=WV\}$ $B_2=\{R=WV\}$

$A_3=\{L=VS\}$ $B_3=\{R=VS\}$

终止状态为 $S=\{R=WSV\}$



先把羊带到右岸, 把 V/W 带到右岸, 把S带回左岸

把 W/V 带到右岸, 把S带到右岸.

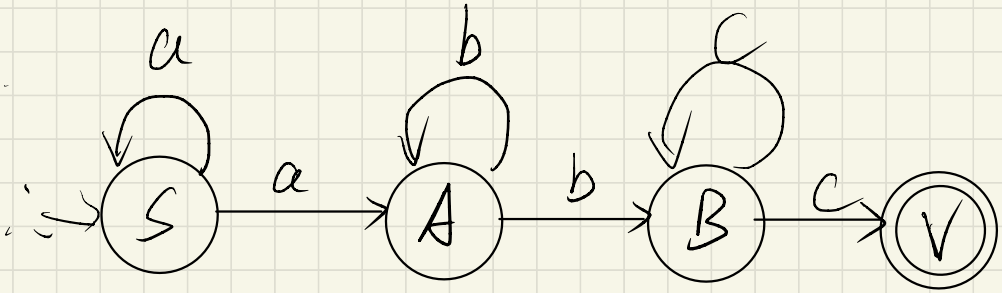
3-b.

$$\begin{cases} S = AB \\ A = UT \\ U = a + aU \\ T = T + bT \\ B = C + BC \end{cases} \Rightarrow S = \{a^x b^y c^z \mid x, y, z > 0\}$$

$\therefore$ $S = aA \mid aS$

$A = bB \mid bA$

$B = cB \mid C$



3-7(1)

$A \to 0D$

$D \to 0B \mid 1C$

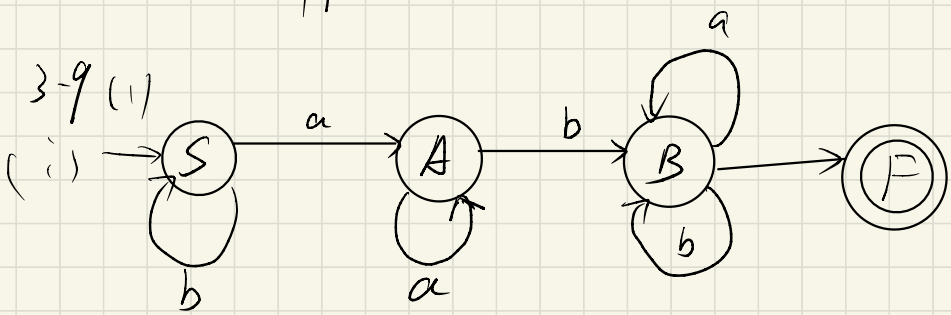
$B \to 0A \mid 1C$

$C \to 1F \mid 0A \mid 1$

$F \to 0E \mid 0 \mid 1A$

$E \to 0B \mid 1C$

3-9 (1)



(2) $S \to aA \mid bS$

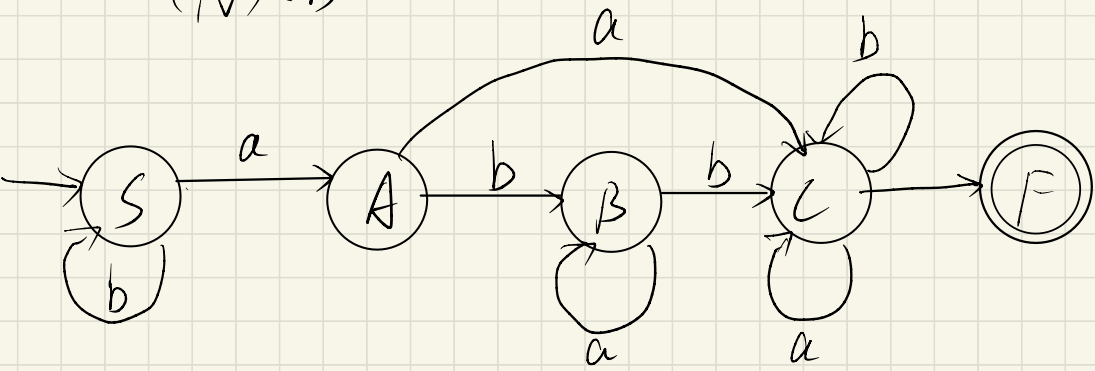
$A \to aA \mid bB$

$B \to aB \mid bB$

(3) 若干个b后面接若干个(≥ 1)a (≥ 0)

后面再接一串以b开头的ab不确定出现的序列

(iv)(1)



(2) $S \to bS \mid aA$

$A \to aC \mid bB$

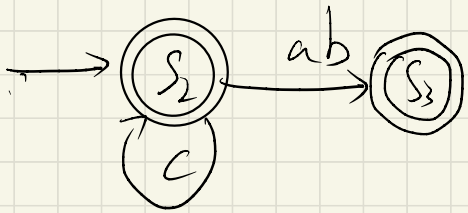
$B \to aB \mid bC$

$C \to aC \mid bC$

(3) 输入串以若干个(≥ 0)b开头，以若干个a和若干个b交替组成的串结尾

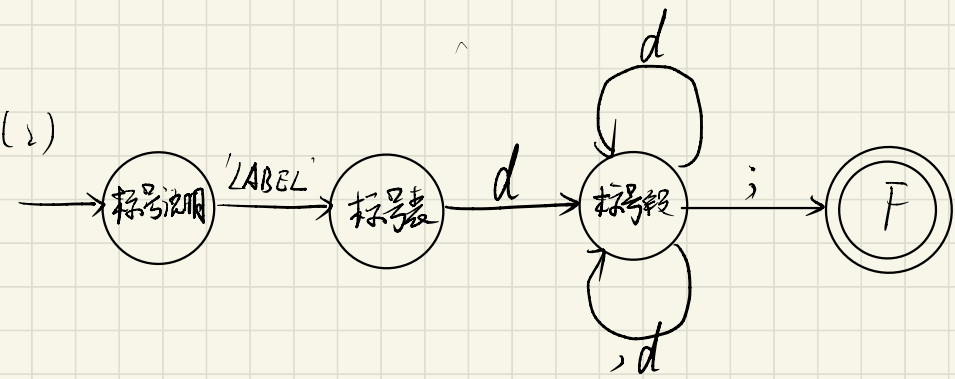
中间以一个单独的"a"或ba^nb ($n>0$)连接

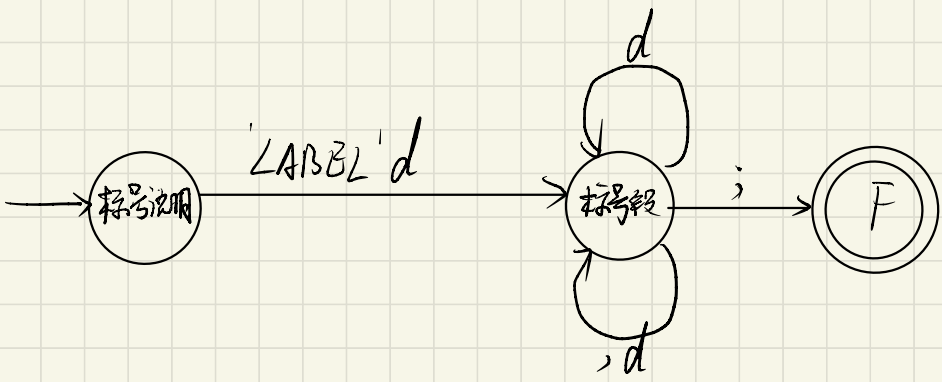
3-13 (1)



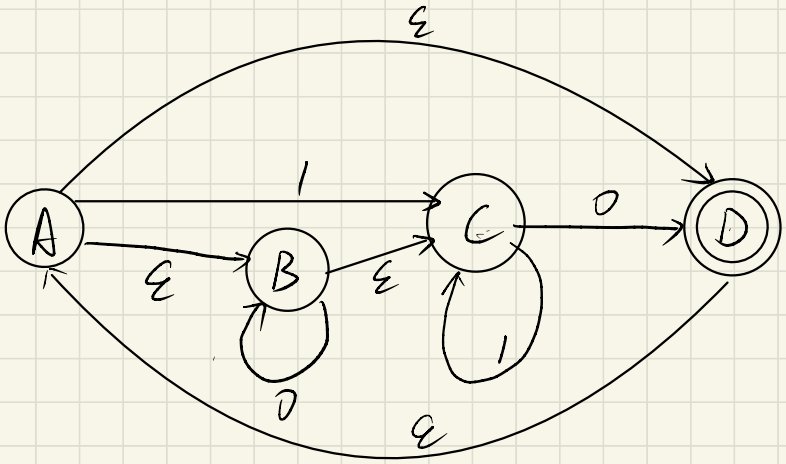
3-20 (1) 'LABEL' d (d | , d)* ;

(2)

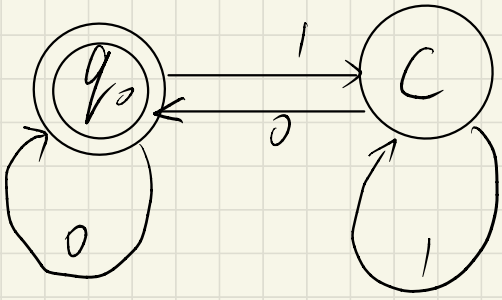




3-22 (1)



	0	1
$q_0 = \{A, B, C, D\}$	q_0	C
C	q_0	C



补充：为便于表示，将 $(A|B|\cdots|Z|a|b\cdots|z)$ 记为 Q

$$QQ^*:QQ^*,QQ^* \mid QQ^*,QQ^* \mid QQ^*:QQ^* \mid QQ^*$$

2.3. (1)(2)(3)