



八. (1)  $B_{\text{dex}} = 1$

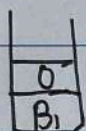
$B \rightarrow B_1, 0 \quad B_{\text{dex}} = B_1_{\text{dex}} * 2$

$B \rightarrow B_1, 1 \quad B_{\text{dex}} = B_1_{\text{dex}} * 2 + 1$

$B \rightarrow 1 \quad B_{\text{dex}} = 1$

$B \rightarrow 0 \quad B_{\text{dex}} = 0$

(2)  $B \rightarrow B_1, 0 \quad \text{stack}[\text{top}-1].\text{val} = 2 * \text{stack}[\text{top}-1].\text{val}$



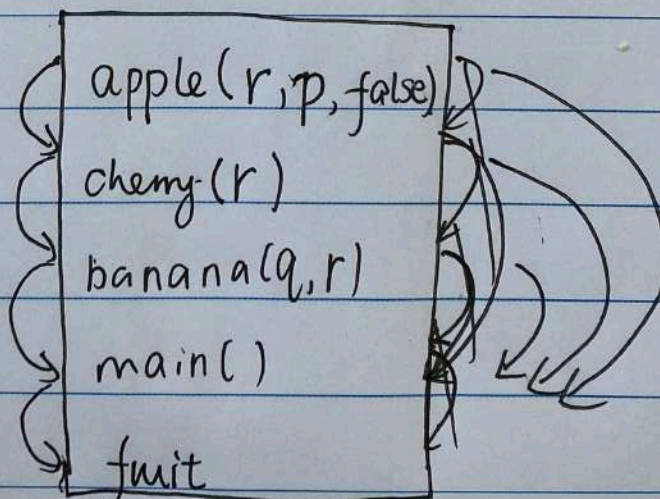
$B \rightarrow B_1, 1 \quad \text{stack}[\text{top}-1].\text{val} = 2 * \text{stack}[\text{top}-1].\text{val} + 1$

$B \rightarrow 1 \quad \text{stack}[\text{top}].\text{val} = 1$

$B \rightarrow 0 \quad \text{stack}[\text{top}].\text{val} = 0$

九. (1)

cherry(r)  
banana(q,r)  
main()  
fruit



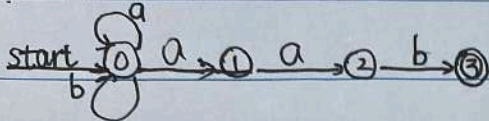




三. (1)  $(a|b)^*aab$

七. (1)

(2) NFA



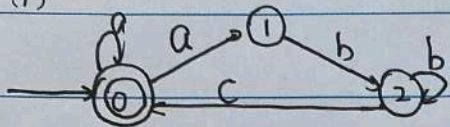
$first(S) = \{If, True, False\}$

$first(X) = \{\epsilon, Else\}$

$first(E) = \{True, False\}$

$first(Y) = \{\epsilon, And\}$

四. (1)



$follow(S) = \{\$ \}$

$follow(X) = \{\$ \}$

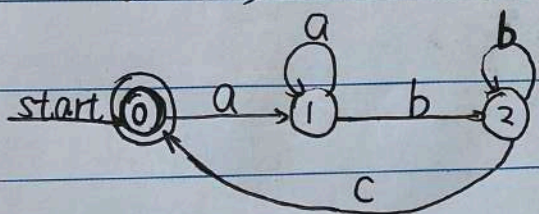
$follow(E) = \{), \$ \}$

$follow(Y) = \{), \$ \}$

$A = \{0\} \quad \begin{matrix} a & b & c \\ \{0,1\} & \emptyset & \emptyset \end{matrix}$

$B = \{0,1\} \quad \begin{matrix} a & b & c \\ \{0,1\} & \{2\} & \emptyset \end{matrix}$

$C = \{2\} \quad \begin{matrix} a & b & c \\ \emptyset & \{2\} & \{0\} \end{matrix}$



(2) ~~SELECT(S)~~ 略

(3) 是, 表中无冲突

五.  $t_1 = y * z$

$t_2 = a + b$

$t_3 = t_2 \times 5$

$t_4 = t_1 + t_3$

$x = t_4$

六.  $L \Rightarrow_{lm} E; L \Rightarrow_{lm} E + T; L \Rightarrow_{lm} T + T; L \Rightarrow_{lm} id + T; L \Rightarrow_{lm} id + id; L \Rightarrow_{lm} id + id; id(L) \Rightarrow_{lm} id + id; id(id())$





2.1. C

2. D

3. B

4.  $P \Rightarrow b|bB$

$B \Rightarrow bP$

$P \Rightarrow b$

$P \Rightarrow bB \Rightarrow b|bP \Rightarrow b|b|b$

$P \Rightarrow bB \Rightarrow b|bP \Rightarrow b|b|bB \Rightarrow b|b|b|bP \Rightarrow b|b|b|b|b$

$L(G[N]) = \{b^{2i+1} \mid i \geq 0\}$

奇数个b.

5. LL(1)文法 无递归 ~~无左因子~~

B. 有递归

A  $\text{first}(S) = \{a\}$

$\text{follow}(S) = \{c, \$\}$

a, c, \$

S  $\begin{matrix} S \rightarrow aSc \\ S \rightarrow ac \end{matrix}$

X

B.  $\text{first}(S) = \{a, c\}$

a c \$

✓

$\text{follow}(S) = \{\$ \}$

S  $\begin{matrix} S \rightarrow aS \\ S \rightarrow ac \end{matrix}$

D.  $\text{first}(S) = \{a\}$

a c \$

$\text{follow}(S) = \{\$ \}$

S  $\begin{matrix} S \rightarrow a \\ S \rightarrow aS \end{matrix}$

X

故选 C.

6. ~~Y~~ ~~X~~ ~~F~~ ~~T~~

C

8. B

9. D

7. A

10.  $1+1+1=3$





$$3. S \Rightarrow SP' \quad S \rightarrow S; P \mid P$$

$$P' \rightarrow ; P \mid \epsilon \quad P \rightarrow id \mid id(E)$$

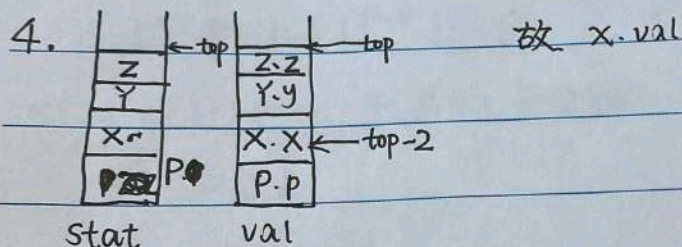
解:  $S \rightarrow PS'$

$$S' \rightarrow ; PS \mid \epsilon$$

$$P \rightarrow id \mid id(E)$$

析:  $S \rightarrow P; P; P; \dots; P \mid P$

故  $S' \rightarrow ; P \mid \epsilon$



$$5. Q \rightarrow x \mid (p) \Rightarrow (p) \mid PQ'$$

$$Q' \rightarrow \Rightarrow p \mid \Leftarrow p \mid ; p$$

6. 悬空引用

$$7. S \rightarrow stmt \mid \{ B$$

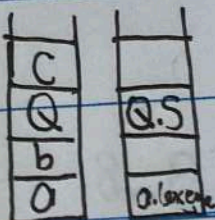
$$B \rightarrow \} \mid S \} \mid S; B$$

$$S \Rightarrow_{lm} \{ B \Rightarrow_{lm} \{ S \} B \Rightarrow_{lm} \{ S; S \} \Rightarrow_{lm} \{ S; stmt \}$$

故句柄为 stmt

$$8. S \rightarrow abQC$$

$$C \rightarrow c$$



解:  $g(stack[top-1].val) \cdot stack[top].val = g(stack[top-1].val)$

stack





第 / 页

1  $S \rightarrow aaSaaa \mid B$

$$B \rightarrow bB \mid \epsilon$$

解:  $S \Rightarrow \underset{1m}{aa'aaS} \underline{aaa \quad aaa}$

$S \Rightarrow aa \ a a \ b B \ a a a \ a a a$

故  $\{a^m b^n a^m, m \geq 0\}$

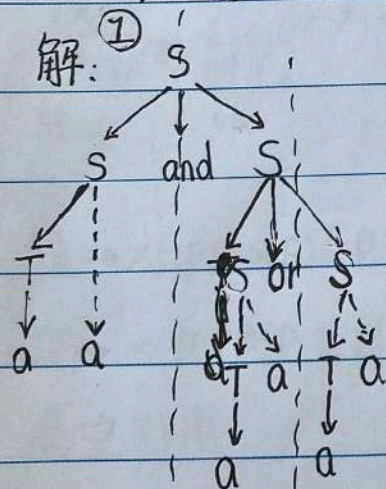
故  $\{a^m b^n a^q, m \geq 0 \text{ 且 } m=2k, n \geq 0, q \geq 0 \text{ 且 } q=2k+1, k \in [1, +\infty)\}$

化简  $\{a^{2k} b^n a^{3k} \mid 0 \leq n \leq 0, k, n \in \mathbb{N}\}$

2.  $S \rightarrow S \text{ and } S \mid S \text{ or } S \mid T \mid a$

$$T \rightarrow a$$

解: ①

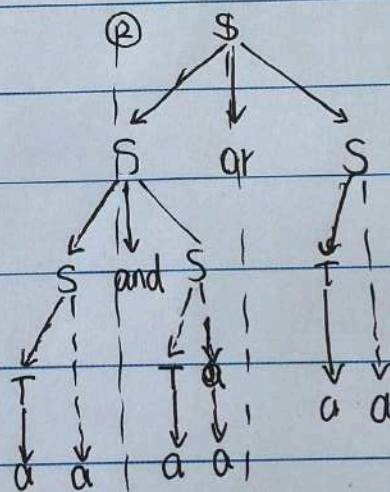


$2 \times 1$  |  $2 \times 2$   
 $\downarrow$  |  $\downarrow$  |  $\downarrow$   
 子树2种 | 2种 | 2种

可与右侧

组合

故共16种



共2种

$$+ \quad \begin{array}{c} 2 \\ \downarrow \\ 2 \text{种} \end{array} \times \begin{array}{c} 2 \\ \downarrow \\ 2 \text{种} \end{array} \times \begin{array}{c} 2 \\ \downarrow \\ 2 \text{种} \end{array} = 16$$