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编译第十一周作业

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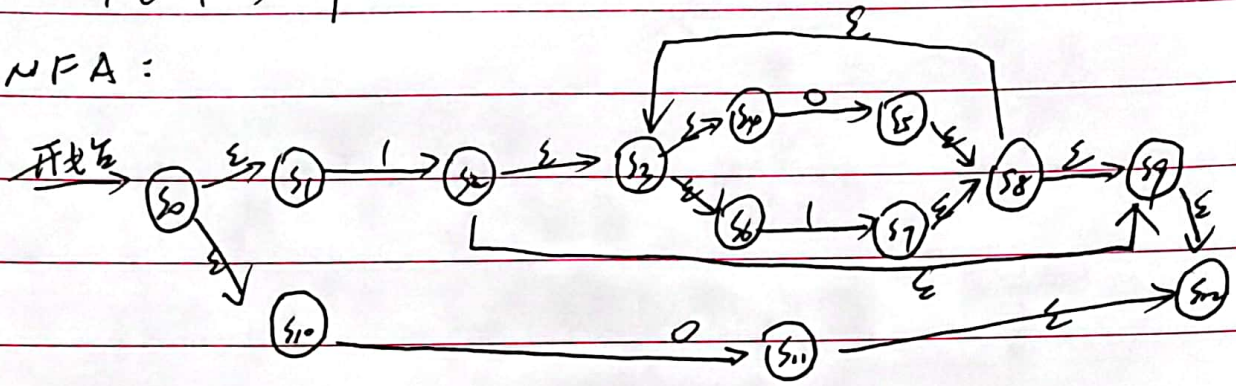
2、 $1(01|1)^*|0$

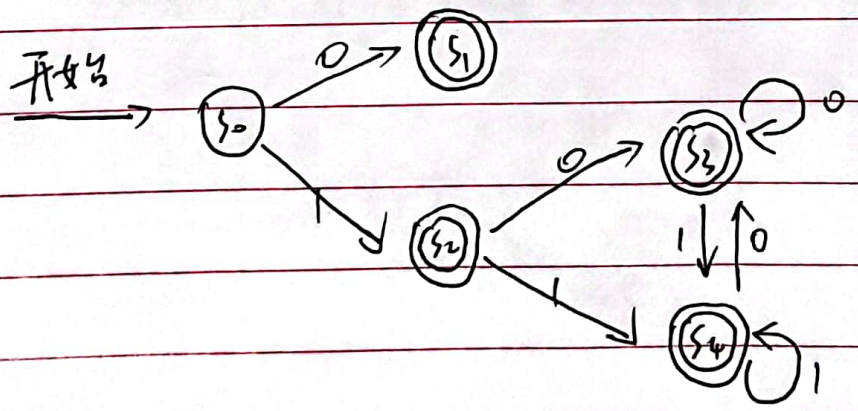
NFA：



确定化：

状态	输入 0	输入 1
$S_0=\{s_0,s_1,s_{10}\}$	$\{s_{11},s_{12}\}$	$\{s_2,s_3,s_4,s_6,s_9,s_{12}\}$
$S_1=\{s_{11},s_{12}\}$	ϕ	ϕ
$S_2=\{s_2,s_3,s_4,s_6,s_9,s_{12}\}$	$\{s_5,s_8,s_3,s_4,s_6,s_9,s_{12}\}$	$\{s_7,s_8,s_3,s_4,s_6,s_9,s_{12}\}$
$S_3=\{s_3,s_4,s_5,s_6,s_8,s_9,s_{12}\}$	$\{s_3,s_4,s_5,s_6,s_8,s_9,s_{12}\}$	$\{s_3,s_4,s_6,s_7,s_8,s_9,s_{12}\}$
$S_4\{s_3,s_4,s_6,s_7,s_8,s_9,s_{12}\}$	$\{s_3,s_4,s_5,s_6,s_8,s_9,s_{12}\}$	$\{s_3,s_4,s_6,s_7,s_8,s_9,s_{12}\}$

得到 DFA M：$(\{S_0,S_1,S_2,S_4\},\{0,1\},\delta,S_0,\{S_1,S_2,S_3,S_4\})$



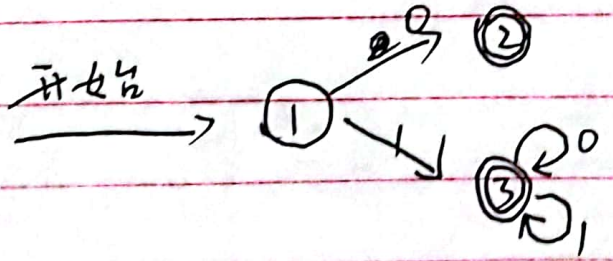
扫描全能王 创建

最小化：

状态	输入 0	1	区号
S_0	S_1	S_2	1
S_1	ϕ	ϕ	
S_2	S_3	S_4	2
S_3	S_3	S_4	
S_4	S_3	S_4	

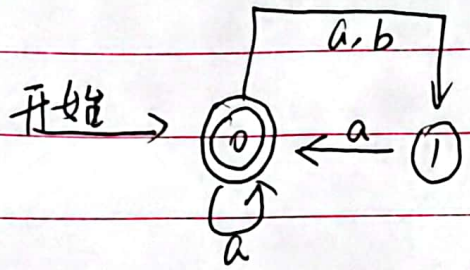
状态	输入 0	1	区号
S_0	S_1	S_2	1
S_1	ϕ	ϕ	2
S_2	S_3	S_4	3
S_3	S_3	S_4	
S_4	S_3	S_4	

得到化简后 DFA $M' = (\{1,2,3\}, \{0,1\}, \delta', 1, \{2,3\})$



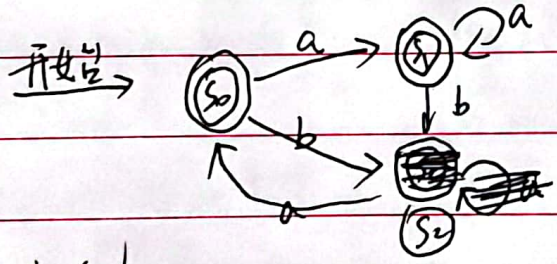
扫描全能王 创建

4、



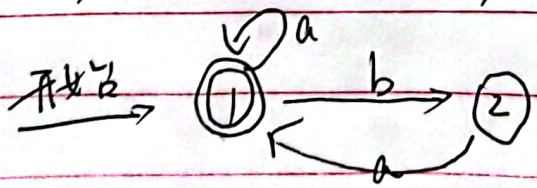
确定化

状态	输入 a	输入 b
S_0	{0}	{0,1}	{1}
S_1	{0,1}	{0,1}	{1}
S_2	{1}	{0}	ϕ



最小化

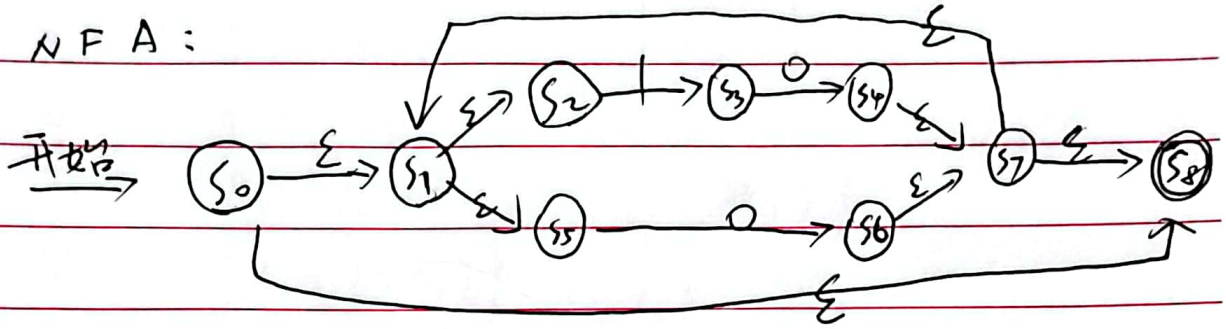
状态	输入 a	输入 b	区号
S_0	S_1	S_2	1
S_1	S_1	S_2	
S_2	S_0	ϕ	2



扫描全能王 创建

五、由题 写出正则表达式为 $(10|0)^*$

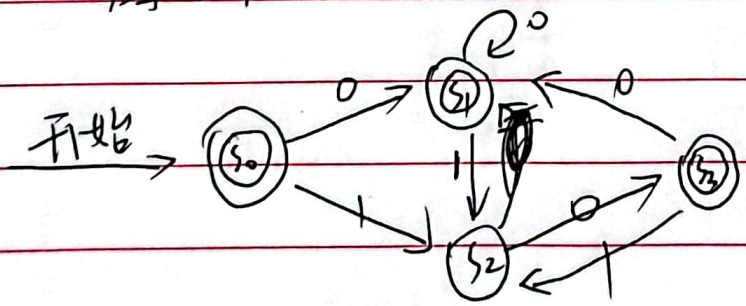
NFA：



确定化：

状态	输入 0	输入 1
S_0	$\{S_0, S_1, S_2, S_5, S_8\}$	$\{S_6, S_7, S_1, S_2, S_5, S_8\}$ $\{S_3\}$
S_1	$\{S_6, S_7, S_1, S_2, S_5, S_8\}$	$\{S_6, S_7, S_1, S_2, S_5, S_8\}$ $\{S_3\}$
S_2	$\{S_3\}$	$\{S_4, S_7, S_1, S_2, S_5, S_8\}$ 终
S_3	$\{S_4, S_7, S_1, S_2, S_5, S_8\}$	$\{S_6, S_7, S_1, S_2, S_5, S_8\}$ $\{S_3\}$

得到 DFA $M = (\{S_0, S_1, S_2, S_3\}, \{0, 1\}, \delta', S_0, \{S_1, S_3\})$



扫描全能王 创建

非终结符	FIRST	FOLLOW
E	{(, a, b, ∧}	{#,)}
E'	{+, ε}	{}
T	{(, a, b, ∧}	{+, #,)}
T'	{(, a, b, ∧, ε}	{}
F	{(, a, b, ∧}	{+, (, a, b, ∧}
F'	{*, ε}	{}
P	{(, a, b, ∧}	{*}

(2) LL(1)分析表

非终结符号	输入符号								
	+	*	(	)	a	b	∧	#
E			E→TE'		E→TE'	E→TE'	E→TE'	
E'	E'→+E							
T			T→FT'		T→FT'	T→FT'	T→FT'	
T'			T'→T		T'→T	T'→T	T'→T	
F			F→PF'		F→PF'	F→PF'	F→PF'	
F'		F'→*F'						
P			P→(E)		P→a	P→b	P→∧	

分析表中不含多重定义元素，因此是LL(1)文法

(3) 对(2)中分析表.

扫描全能王 创建

2、(1)

	FOLLOW集合	FIRST集合
S	{d, a, #}	{a, ε}
A	{a, d, b, e}	{a, ε, d}
B	{b}	{a, e, ε}
C	{g, b}	{f, g, a, ε}

(2)

	FIRST		
aABbcd	{a}	ε	{ε}
Asd	{a, d, }	Sah	{a, }
eC	{e}	Sf	{f, a}
Cg	{g, f, a}		

(3) 对于 M[A, a]，存在 A→Asd 与 A→ε 重定义了，故不为LL(1)文法.

6、(1) 文法不含左递归

(2) 对 A→α, A→β. 有 FIRST(α)∩FIRST(β)=ϕ

(3) 对 A→α, A→β. 若β为ε. 则

FIRST(α) ∩ FOLLOW(A) = ϕ.

扫描全能王 创建

补充题.

(1) $S \Rightarrow iCtSS' \Rightarrow ictiCtS'S' \Rightarrow ictictes$

最后一步可以 $S'S' \Rightarrow \varepsilon S$ 或 $SS' \Rightarrow \varepsilon e S$

有两种不同的推导最左推导. 故为二义性的.

(2)

	FIRST	FOLLOW
S	{i, a}	{e, #}
S'	{e, ε}	{e, #}
C	{b}	{t}

LL(1)分析表

非终结符号	输入字符 i	b	t	e	a	#
S	S→iCtSS'				S→a	
S'				S'→eS S'→ε		S'→ε
C		C→b				

M[S', e] 重定义. 因此不为LL(1)文法.

扫描全能王 创建