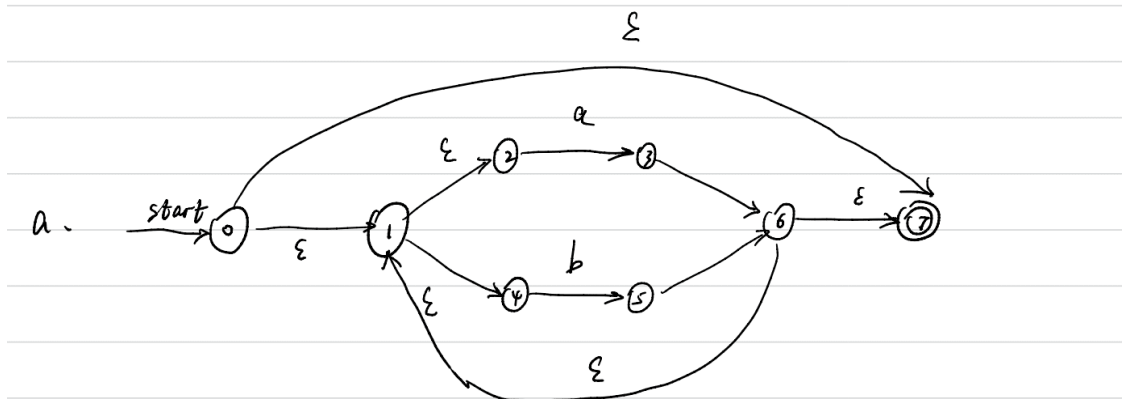


Compilers Assignment: RE-NFA-DFA

10185101210 陈俊潼

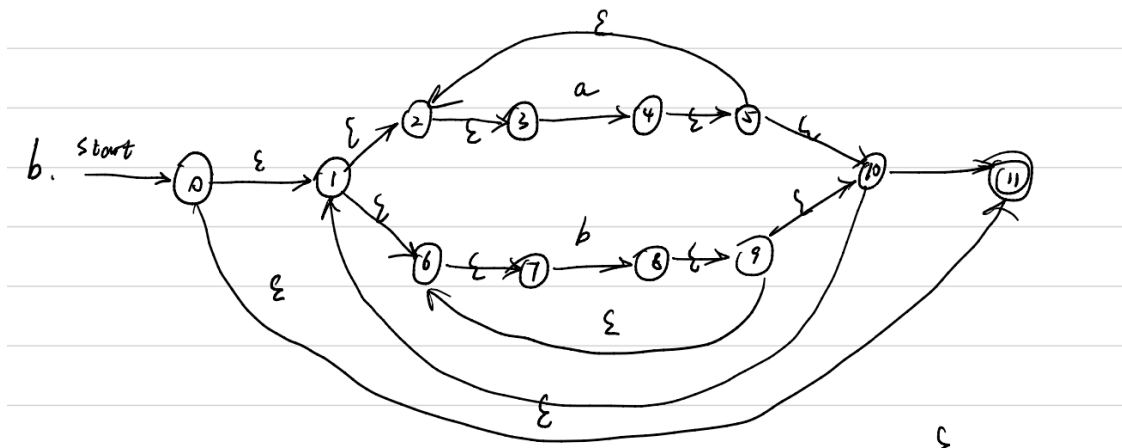
一、使用Thompson构造法为下列正规式构造NFA，写出每个NFA处理符号串“ababbab”过程中的状态转换序列。

a) $(a \mid b)^*$



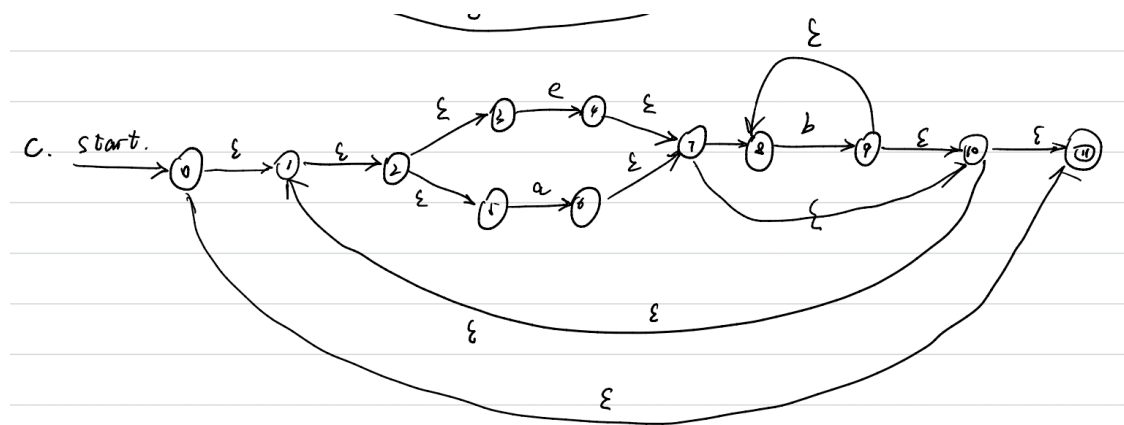
0-1-2-3-6-1-4-5-6-1-2-3-6-1-4-5-6-1-2-3-6-1-4-5-6-7

b) $(a^* \mid b^*)^*$



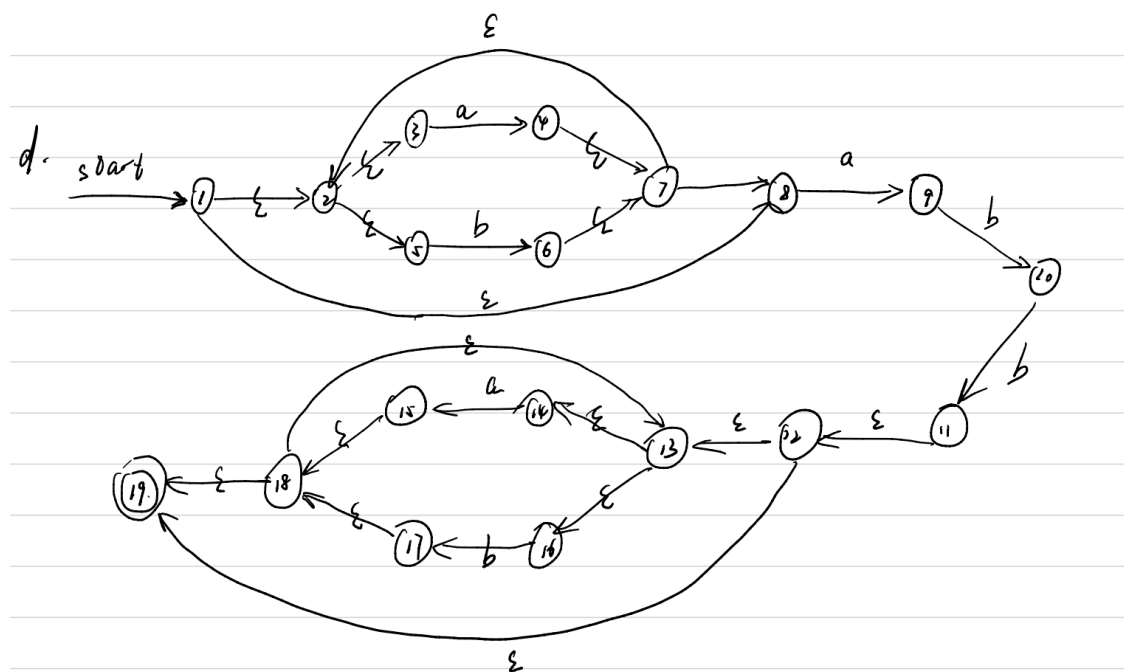
0-1-2-3-4-5-10-1-6-7-8-9-10-1-2-3-4-5-10-1-6-7-8-9-10-1-6-7-8-9-10-1-2-3-4-5-10-1-6-7-8-9-10-11

c) $((e \mid a)b^*)^*$



0-1-2-5-6-7-8-9-10-1-2-5-6-7-8-9-8-9-10-1-2-5-6-7-8-9-10-11

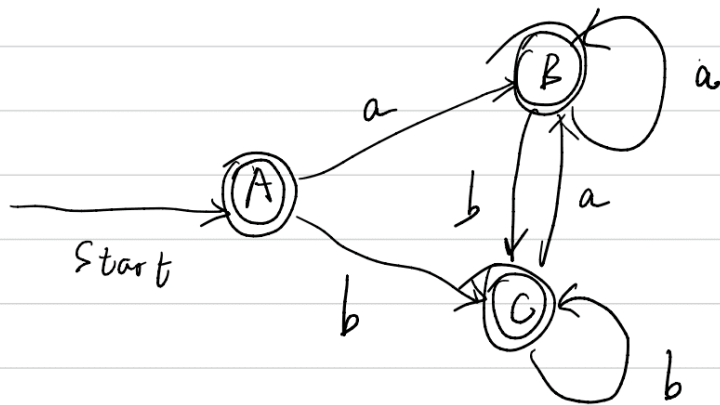
d) $(a \mid b)^*abb(a \mid b)^*$



1-2-3-4-7-2-5-6-7-8-9-10-11-12-13-14-15-18-13-16-17-18-19

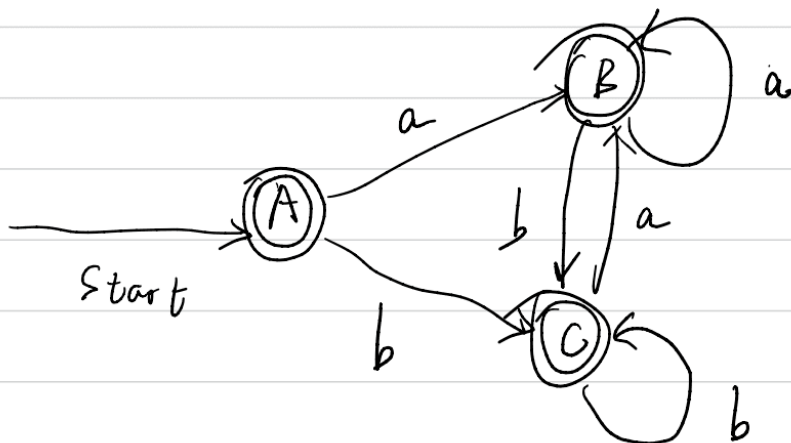
二、利用子集构造法将第一题得到的 NFA 转换为 DFA，同样写出分析符号串 **ababbab** 过程中的状态转换。

a.	NFA State	DFA State	a	b.
	$\{1, 2, 4, 7\}$	A	B	C
	$\{3, 6, 1, 2, 4, 7\}$	B	B	C
	$\{5, 6, 1, 2, 4, 7\}$	C	B	C



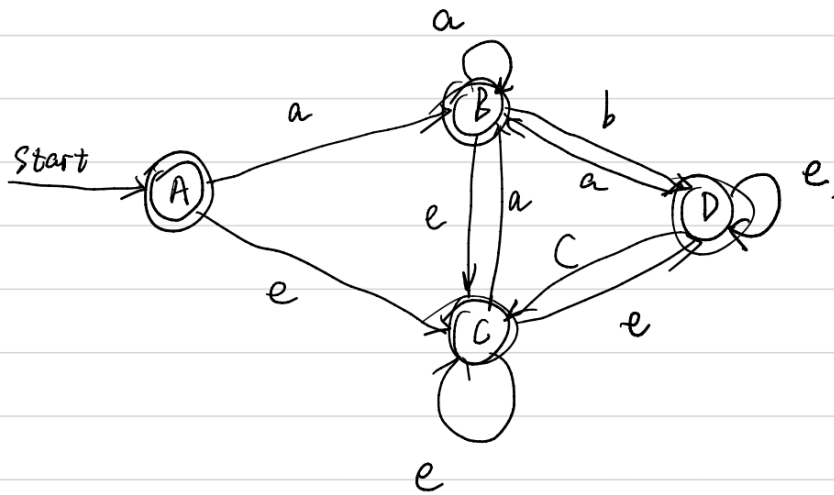
A-C-B-C-C-B-C

b.	NFA State	DFA State	a	b.
	$\{0, 1, 2, 3, 6, 7, 11\}$	A	B	C
	$\{4, 5, 2, 3, 10, 1, 6, 7, 11\}$	B	B	C
	$\{8, 9, 6, 7, 10, 1, 2, 3, 11\}$	C	B	C.



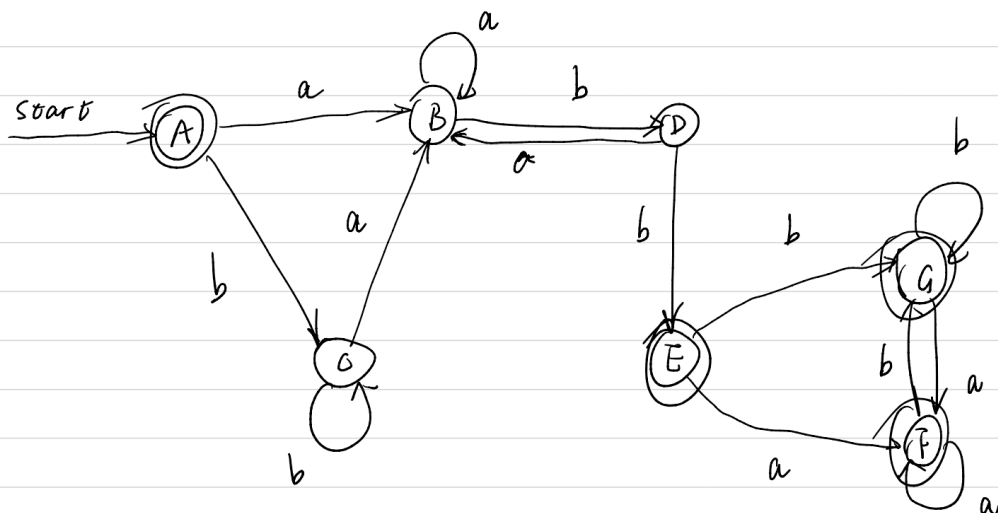
A-C-B-C-C-B-C

c. NFA State	DFA State	a	b	e
$\{0, 1, 2, 3, 5, 11\}$	A	B	C	C
$\{6, 7, 8, 10, 11, 2, 3, 5, 11\}$	B	B	D	C
$\{4, 7, 8, 10, 11, 2, 3, 5, 11\}$	C	B	D	C
$\{9, 8, 10, 11, 2, 3, 5, 11\}$	D	B	D	C



A-B-D-B-D-D-B-D

d. NFA State	DFA State	a	b
$\{1, 2, 3, 5, 8\}$	A	B	C
$\{4, 7, 2, 3, 5, 8, 9\}$	B	B	D
$\{6, 7, 2, 3, 5, 8\}$	C	B	C
$\{6, 7, 2, 3, 5, 8, 10\}$	D	B	E
$\{6, 7, 2, 3, 5, 8, 11, 12, 13, 14, 16, 19\}$	E	F	G
$\{4, 7, 2, 3, 5, 8, 9, 15, 18, 13, 14, 16, 19\}$	F	F	G
$\{6, 7, 2, 3, 5, 8, 17, 18, 13, 14, 16, 19\}$	G	F	G



A-B-B-D-E-G-F-G