Jingbo Wang

1.

The first state and final state is

$\lambda(0) = \{0, 1\}$

$T_D(\{0,1\}, a) = \lambda(T_N(0,a) \cup T_N(1,a))$

$= \lambda(\{\emptyset\} \cup \{2\})$

$= \lambda(\{2\})$

$= \{2\}$

$T_D(\{0,1\}, b) = \lambda(T_N(0,b) \cup T_N(1,b))$

$= \lambda(\{1\} \cup \{\emptyset\})$

$= \lambda(\{1\})$

$= \{1\}$

final state are $\{1\}, \{2\}$

$T_D(\{1\}, a) = \lambda(T_N(1,a))$

$= \lambda(\{2\})$

$= \{2\}$

$T_D(\{1\}, b) = \lambda(T_N(1,b))$

$= \lambda(\{1\})$

$= \{1\}$

$T_D(\{1\}, a) = \lambda(T_N(2,a))$

$= \lambda(\{2\})$

$= \{\{2\}\}$

$T_D(\{1,2\}, b) = \lambda(T_N(2,b))$

$= \lambda(\{\emptyset\})$

$= \emptyset$

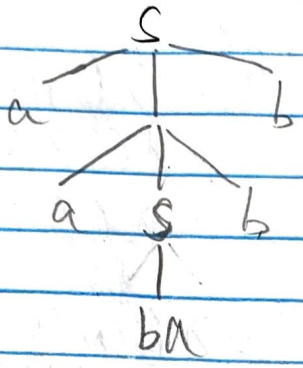
		a	b
S	$\{0,1\}$	$\{2\}$	$\{1\}$
F	$\{2\}$	$\{2\}$	$\emptyset$
F	$\{1\}$	$\{2\}$	$\{1\}$
	$\emptyset$	$\emptyset$	$\emptyset$

		a	b
S,F	0	1	2
F	1	1	$\emptyset$
F	2	1	2
	$\emptyset$	$\emptyset$	$\emptyset$

2. $S \to ba \mid aSb$; aababb

$S \Rightarrow aSb \Rightarrow aaSbb \Rightarrow aababb$

(a)



(b) Yes

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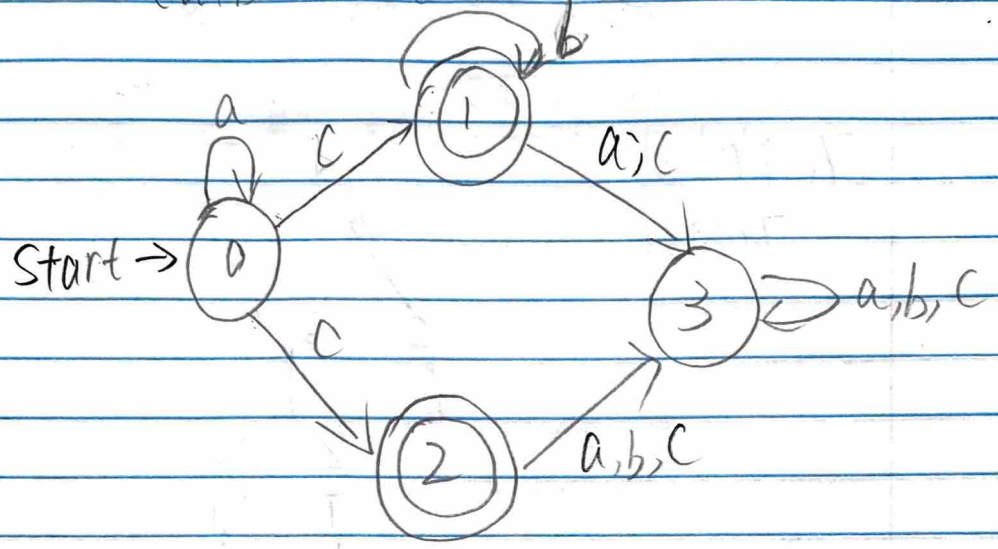
3.

(a) $a^m bb c^n = a^* bb c^*$

(b)

$(a+b)^* bbb (a+b)^*$

4.



5.

$(ab^*)^* a^*$

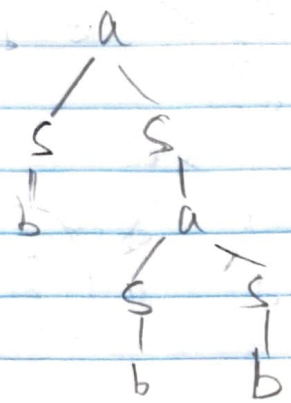
6.

(a) $S \rightarrow aaabbb \mid aSb$

(b) $S \rightarrow ba \mid bbS$

7. babab

Tree 1



Tree 2