

Q1: m n result

0	0	b
0	1	ba, bab
0	2	baa
0	3	baaa
1	0	abb, bb
1	1	abba, babb
1	2	abbaa, babbab
1	3	abbaaa, babbaba
2	0	bbba
2	1	bbbaa
2	2	bbbaaa
2	3	bbbaaaa

Important Note:

Please remember that you should return your answer at 11/02 (Wednesday) 15:10 and your HW should be handwritten. We will take your HW during the class. After 11/02 15:10, you must upload your HW to moodle. But remember penalty for late submission: 20% per day.

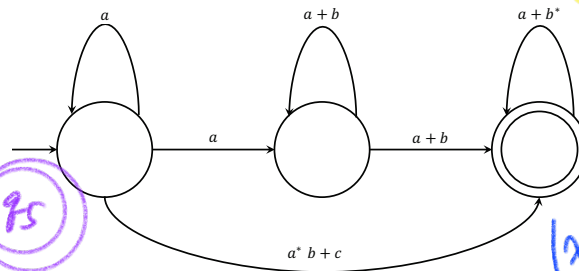
Q1: Find all strings in $L((ab+b)^*b(a+ab)^*)$ of length less than five.

Q2: Find an nfa that accepts the languages $L(aa^*(a+b)^*)$.

Q3: Find a regular expression for the set $\{a^n b^m : (n+m) \text{ is odd}\}$.

Q4: Use the construction in Theorem 3.1 to find an nfa that accepts the language $L(a^*a+ab)$.

Q5: What language is accepted by the following generalized transition graph?



Q9: We guess $L = \dots$

By Pumping Lemma, we can take $w = a^m \cdot b^m \cdot c^m$ and $|w| \geq m$

$|xy| \leq m, y \geq 1 \Rightarrow$ take $y = a^k$

and we take $i=0$ case

$w = a^{m-k} \cdot b^m \cdot c^m$ is not in the language

$\therefore L$ is not regular.

Q10: $w = a^{m^3}$ $|xy| \leq m, y \geq 1 \Rightarrow$ take $y = a^k$

$m < m^3 + k < (m+1)^3 \Rightarrow w$ is not in language

$\therefore L$ is not regular.

Q8: Find a regular grammar that generates the language on $\Sigma = \{a, b\}$ consisting of all strings with no more than two a 's.

Q9: Prove that the following language is not regular.

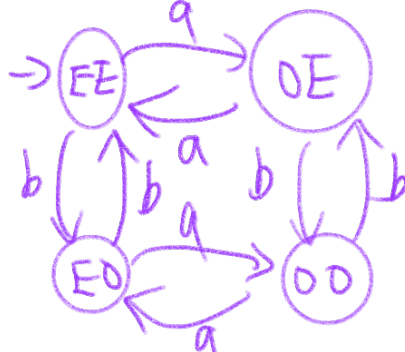
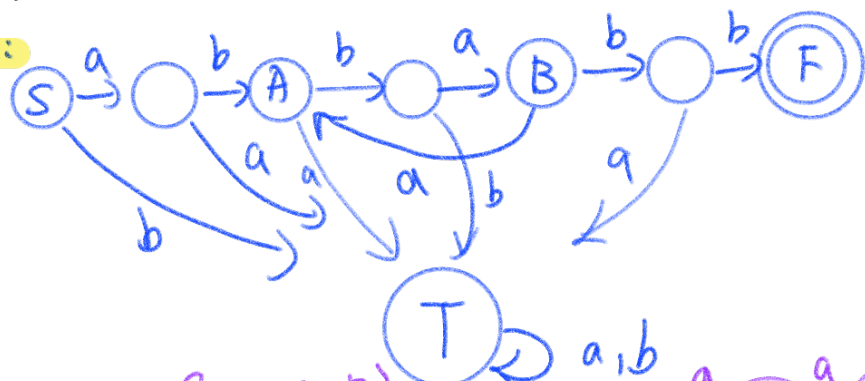
$L = \{a^n b^k c^n : n \geq 0, k \geq n\}$.

Q10: Determine whether or not the following language is regular.

$L = \{a^n : n = k^3 \text{ for some } k \geq 0\}$.

Q6: $a(aa)^*b(bb)^* + \lambda$

Q7:



Q8: $G = (V, T, S, P)$

$S = \{S\}$

$V = \{S, A, B\}$

$T = \{a, b\}$

$P = \{ S \rightarrow bS \mid aA \mid \lambda, A \rightarrow bA \mid aB \mid \lambda \}$

