Outline

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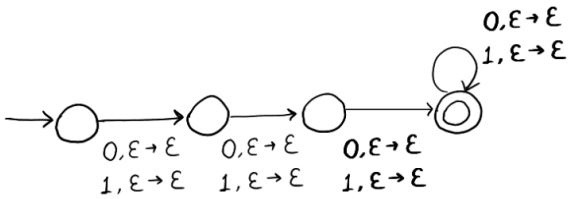
CSE331: Automata and Computability
Quiz 4 SET: A Total Marks: 36
Allocated Time: 30 minutes
Name: **ID:** **Section and Serial:**

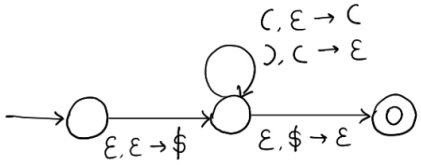
Obtained Marks

Construct Pushdown Automata for the following languages. Each question carries 6 marks.

a) L = {w ∈ {0,1}*: length of w is at least three.} [Hint: Recall what kind of language L is.]



b) L = {w ∈ { (,) }*: w is a valid parenthesis}



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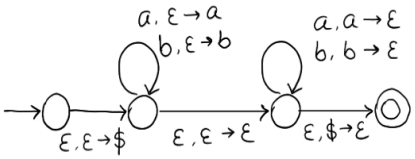
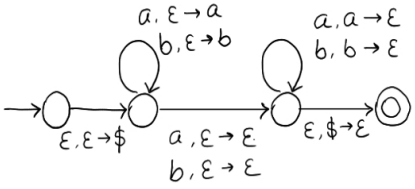
c) L = {w ∈ {a , b}*: w is a even length palindrome} / L = {w ∈ {a , b}*: w is a odd length palindrome}



even Length Palindrome



odd Length Palindrome

1

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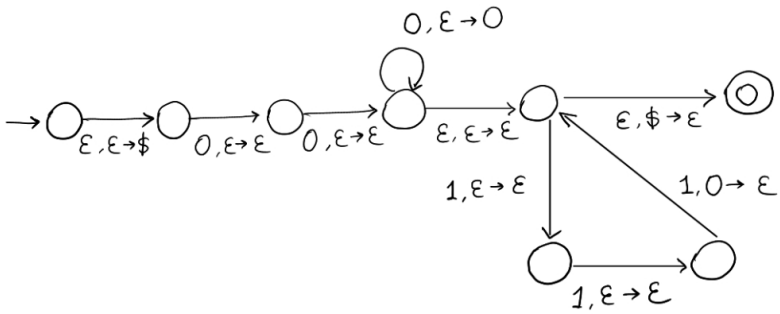
d) L = {w ∈ {0, 1}*: $0^{n+2}1^{3n}$, where n ≥ 0}

$0^{n+2}1^{3n} \Rightarrow 0^2 0^n 1^{3n}$

$n = 0$: 00
$n = 1$: 00 0 111
$n = 2$: 00 00 111 111



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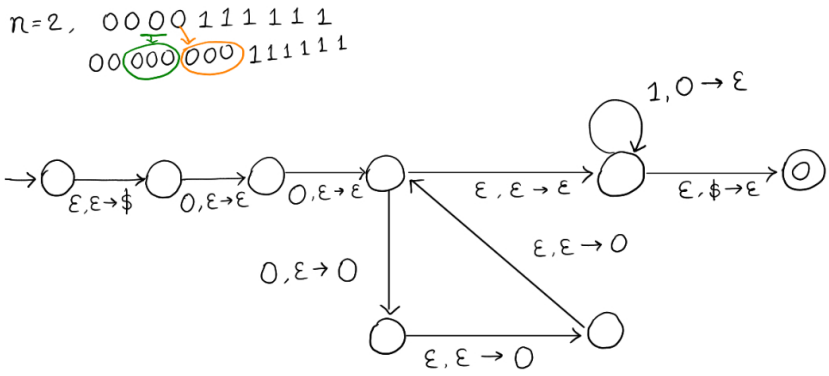
e) L = {w ∈ {0, 1}*: $0^{n+2}1^{3n}$, where n ≥ 0} [Alternate Solution Idea of Qs(c)]



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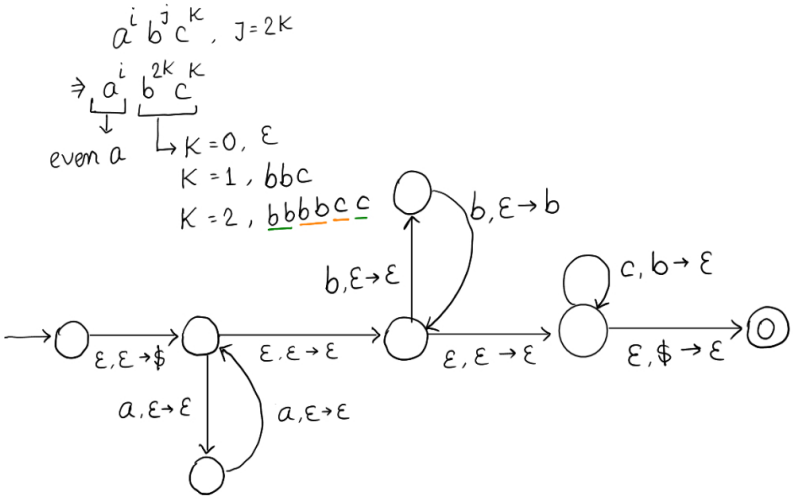
f) L = {w ∈ {a, b, c}*: $a^i b^j c^k$, where i is even, j = 2k and i, j, k ≥ 0 }



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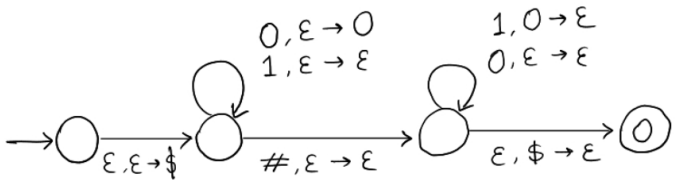
g) Let Σ = {0, 1, #}. L = { w_1#w_2 | number of 0s in w_1 is equal to number of 1s in w_2}



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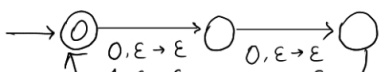
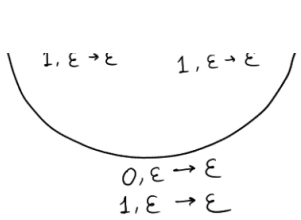
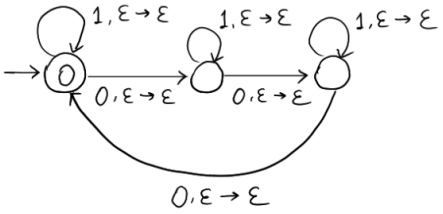
h) L = {w ∈ {0,1}*: length of w is multiple of three} [Hint: Recall what kind of language L is.]





i) L = {w ∈ {0,1}*: number of 0s in w is multiple of three} [Hint: Recall what kind of language L is.]



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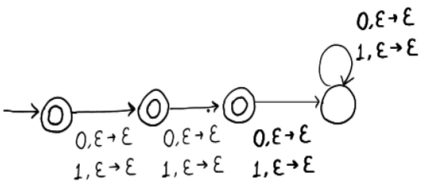
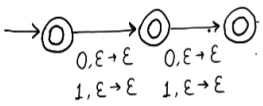
j) L = {w ∈ {0,1}*: length of w is at most two.} [Hint: Recall what kind of language L is.]



Or,



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