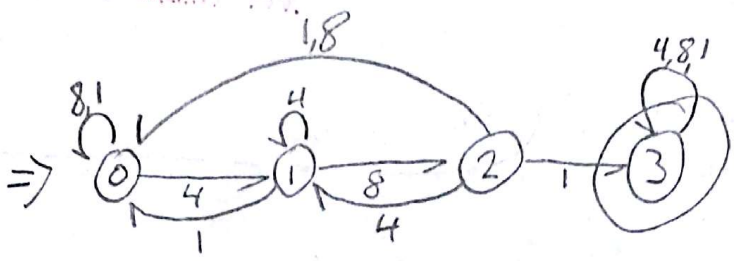
Cahlen Brancheau HW 2
CS331

9)



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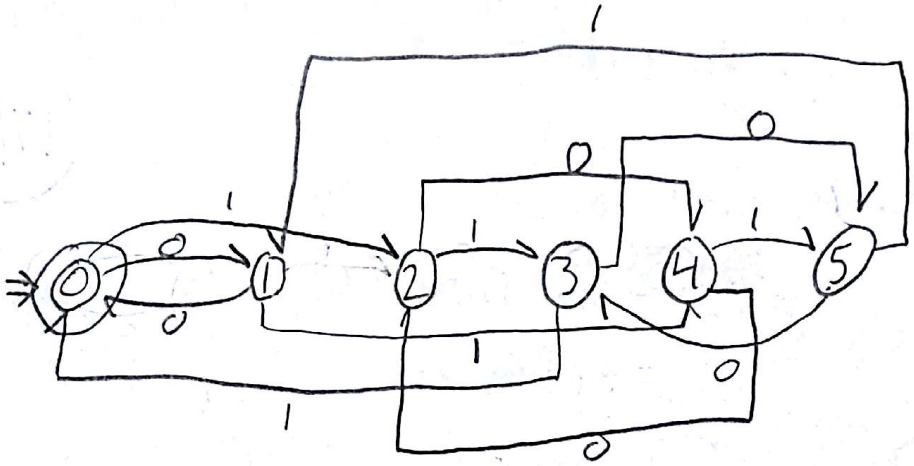
10)



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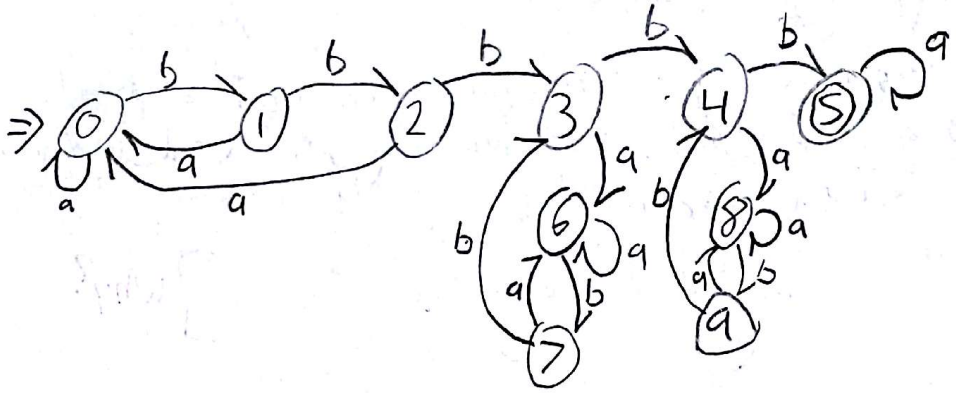
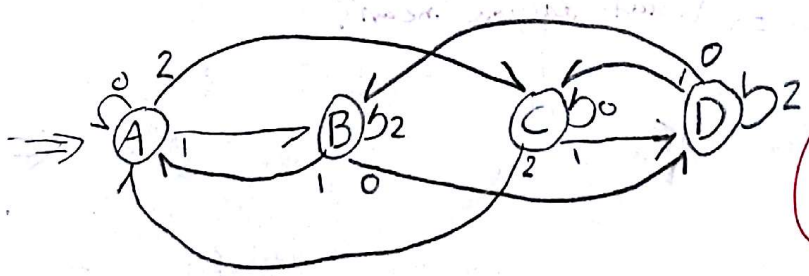
11)



12)



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F = {B, C, D}, too crowded to circle

13)

Not finished?

Basis Step:

If $y = \lambda$ then $\hat{\delta}(q, xy) = \hat{\delta}(q, x\lambda) = \hat{\delta}(q, x)$

Inductive Hyp.:

1) assume $\hat{\delta}(q, xy) = \hat{\delta}(\hat{\delta}(q, x), y)$ for all y.

2) we prove that $\hat{\delta}(q, xya) = \hat{\delta}(\hat{\delta}(q, x), ya)$ for any symbol $a \in \Sigma$.

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Proof:

$$\hat{\delta}(q, xya) = \delta(\hat{\delta}(q, xy), a)$$

$$\overset{\text{I.H.}}{=} \delta(\hat{\delta}(\hat{\delta}(q, x), y), a)$$

$$= \hat{\delta}(\hat{\delta}(q, x), ya) \quad \square$$

14)

The languages must be maximal because if it was a proper subset it would contain the entire tree excluding none.

$\sum_{x \in A} 2^{-|x|} = 1$ would be a contradiction.] Why?

Your proof is not clear to me...

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Therefore any given full prefix free language cannot be a proper subset and has to be maximal on account of the $\leq$. What do you mean?

15) I don't know.

16) I don't know.

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