Key #4

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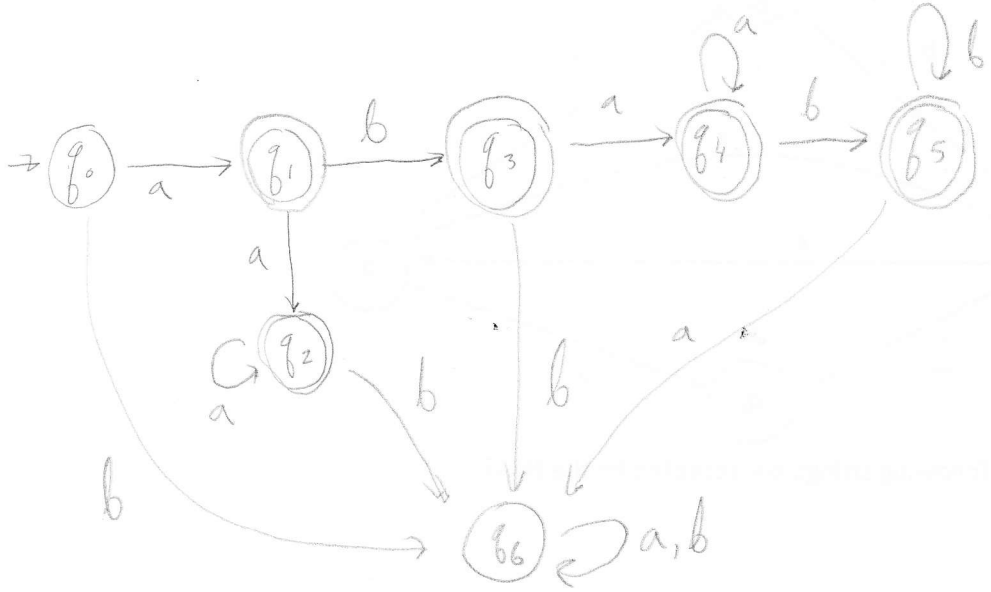
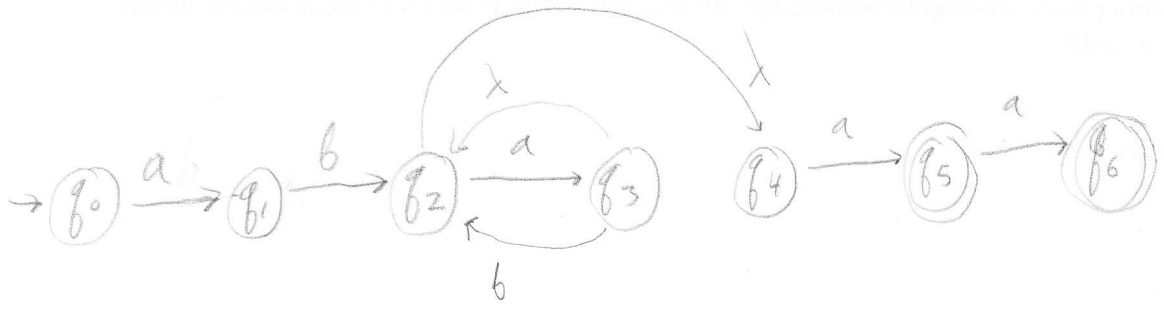
4a) $L(aa^* + aba^*b^*)^* = L(a(a^* + ba^*b^*))$



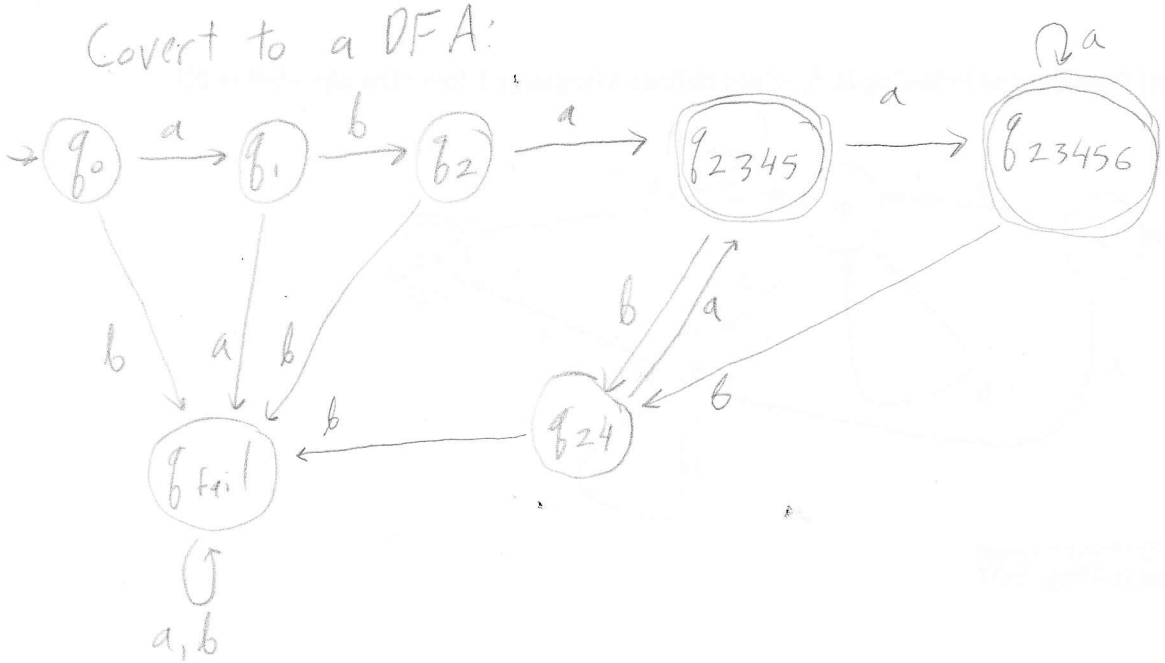
4b) $L(ab(a+ab)^*(a+aa))$

For this I'll begin w/ a generalized NFA



4B) continued

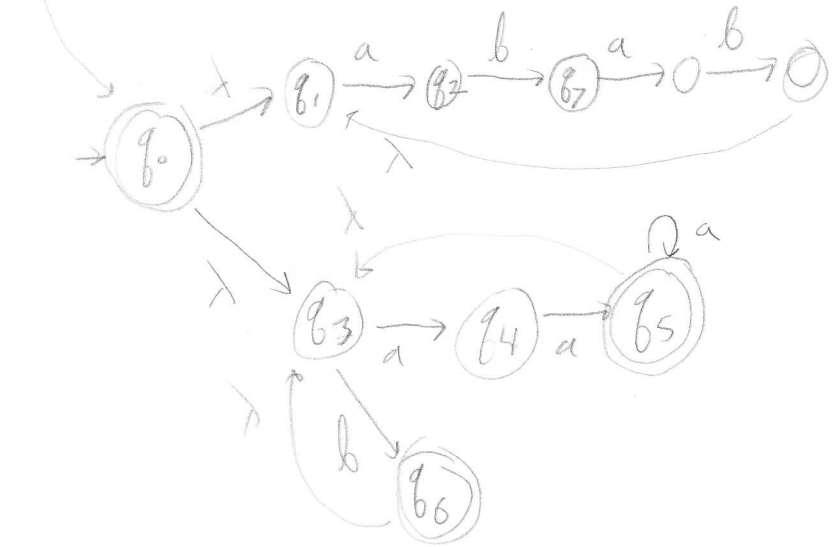
Covert to a DFA:



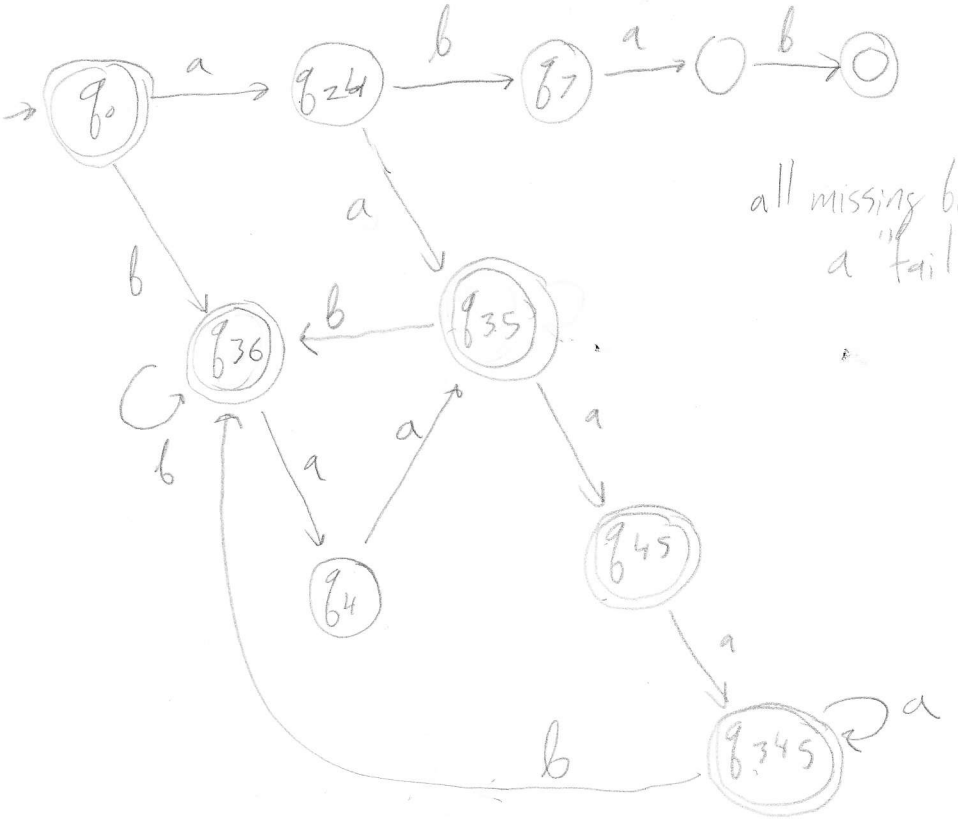
4c) $L((abab)^* + (aaa^* + b)^*)$

can accept λ

Start w/ a generalized NFA



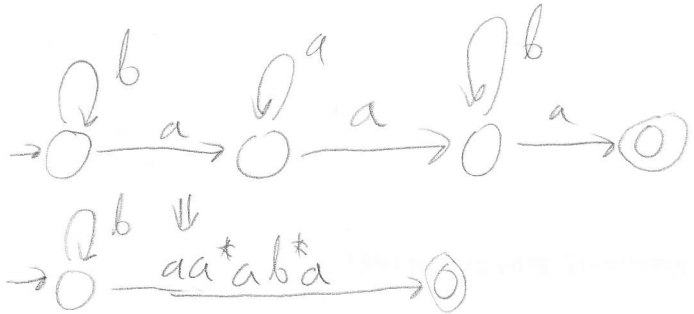
4c) continued
Convert to a DFA



all missing branches go to a "fail" state

8) Answer in the text

10a)



baa^*ab^*a

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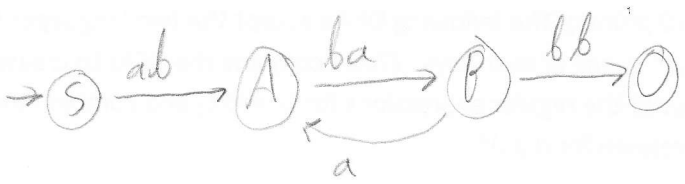
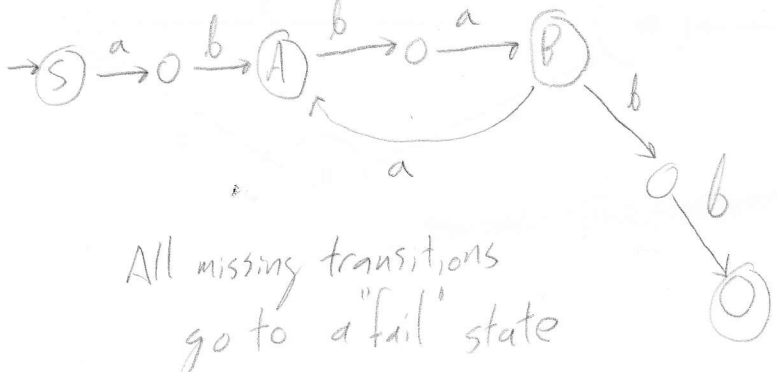
1) $S \to abA$
$A \to baB$
$B \to aA \mid bb$

NFA ⟹





All missing transitions go to a "fail" state

2) $L(aa^*(ab+a)^*)$

$S \to aB$ first a

$B \to aB \mid C$ as many more a's as needed (a^*)

$C \to aC \mid aD \mid \lambda$ — end

$D \to bC$

Just an a — An "ab" via D

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c)

$S \rightarrow BbB$

$B \rightarrow AbA \mid baaB$

$A \rightarrow ab$