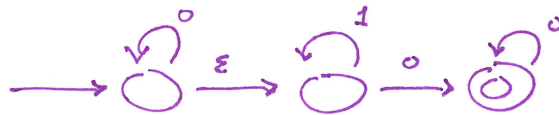


Name: Key

CS301 Q3

1. (/2 pt) Create a NFA recognizing the language described by $0^*1^*0^+$.

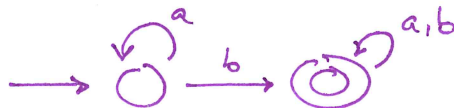


2. (/2 pt) Consider the alphabet $\Gamma = \{a, b, \#\}$. Let A be the language of all strings that begin and end with disjoint $\#\#$ and have no intervening $\#\#$. Give a regular expression that describes A .

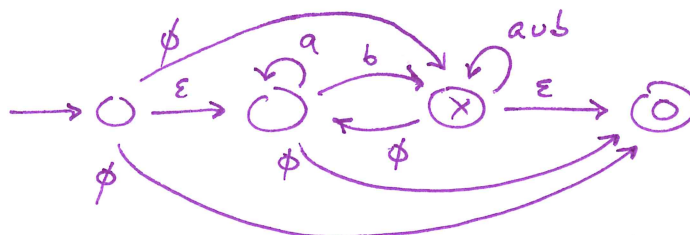
i.e. $\#\#(a \cup b \cup \#a \cup \#b)^*(\# \cup \epsilon)\#\#$
 $\#\#(\quad)\#\#$
 (doesn't contain substring $\#\#$)

3. Let B be the language described by $a^*b(a \cup b)^*$.

- (a) (/2 pt) Create a two-state DFA, M , which recognizes B .



- (b) (/2 pt) Convert M into a GNFA in special form.



- (c) (/2 pt) Choose any non-start and non-accept state in your diagram without a \emptyset -transition to the accept state. Rip that state from the machine and provide the resulting diagram.

NOTE: We're ripping the node w/
 ϵ -transition to accept state.

Resulting GNFA will have
 3 nodes, and exactly
 4 transition arrows. Fill
 them in!

