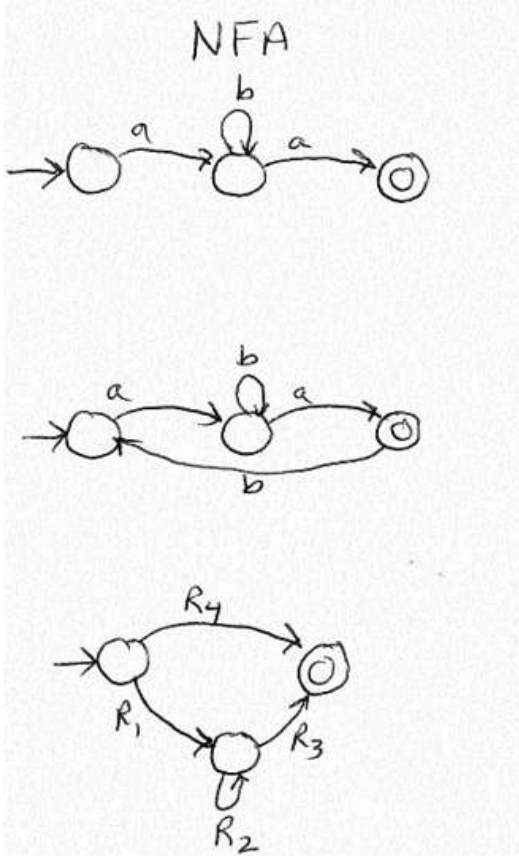


Theory of Computation, CSCI 438 spring 2022

Regular languages describe regular expressions, pg. 69-76, Jan. 31

- Using the algorithm given in class, find a regular expression for the following:



Answers:

First - ab^*a

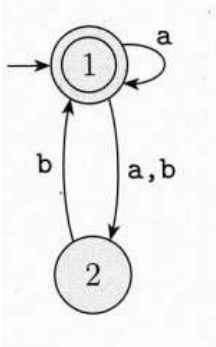
Second - $ab^*a (bab^*a)^*$

Third - $R_1R_2^*R_3 \cup R_4$

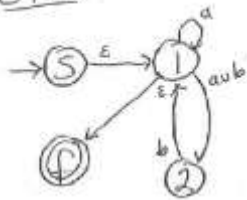
Exercise 1.21 a & b

1.21 Use the procedure described in Lemma 1.60 to convert the following finite automata to regular expressions.

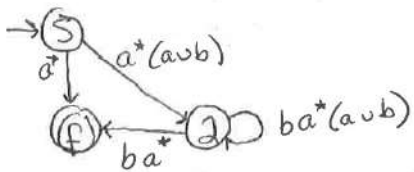
a.



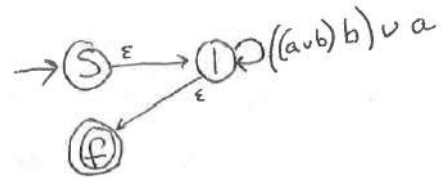
GNFA



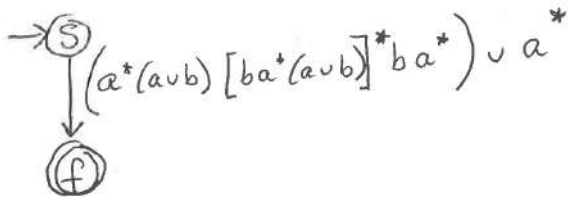
Rip 1 first



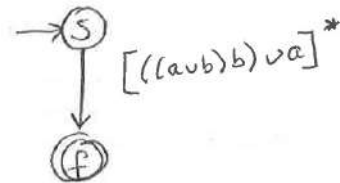
Rip 2 first



Rip 2



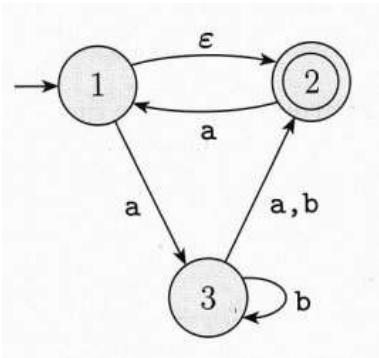
Rip 1



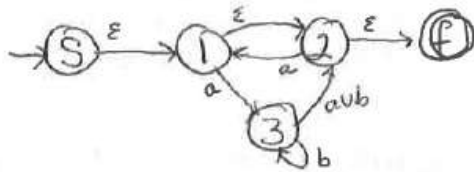
answer: $(a^*(a,b) [ba^*(a,b)]^* ba^*) \cup a^*$

answer: $[(a,b)b \cup a]^*$

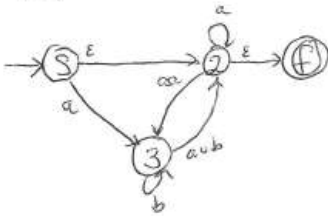
b.



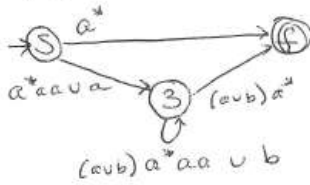
GNFA:



Rip 1 first



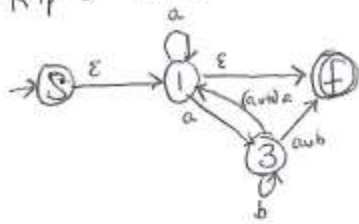
Rip 2



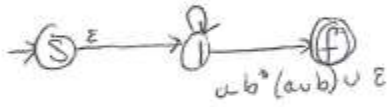
Answer

$$[(a^*aa \cup a)((aub)a^*aub)^* (aub)a^*] \cup a^*$$

Rip 2 first



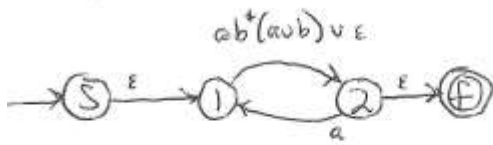
Rip 3 $ab^*(aub)a \cup a$



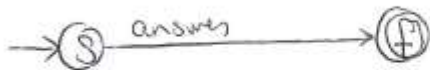
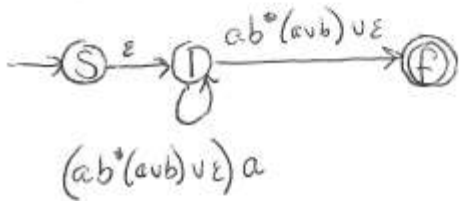
Answer:

$$(ab^*((aub)a) \cup a)^* \quad (ab^*(aub) \cup \epsilon)$$

Rip 3 first



Rip 2



answer

$$\left[(ab^+(a \cup b) \cup \epsilon)a \right]^* (ab^+(a \cup b) \cup \epsilon)$$

①