Problem

Convert the following regular expressions to NFAs using the procedure given in Theorem 1.54. In all parts, ∑ = {a, b}.

a. $a(abb)^* \cup b$

b. $a^+ \cup (ab)^+$

c. $(a \cup b^+)a^+b^+$

THEOREM 1.54

A language is regular if and only if some regular expression describes it.

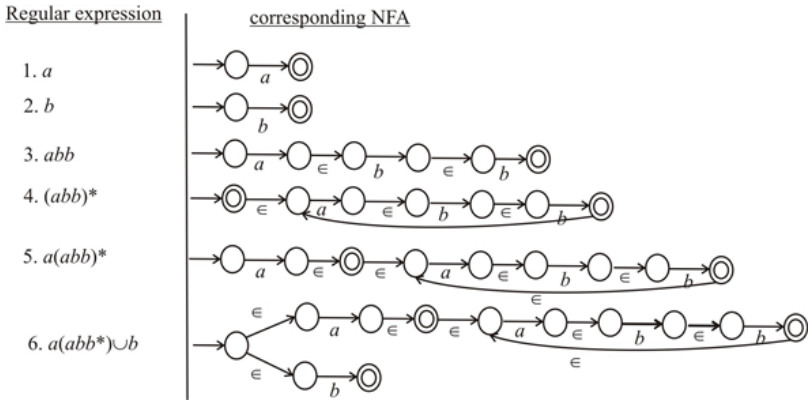
Step-by-step solution

Step 1 of 3

(a) Given regular expression

$R = a(abb)^* \cup b$ over $\Sigma = \{a, b\}$.

Now we have to convert this regular expression into NFA by the following steps.



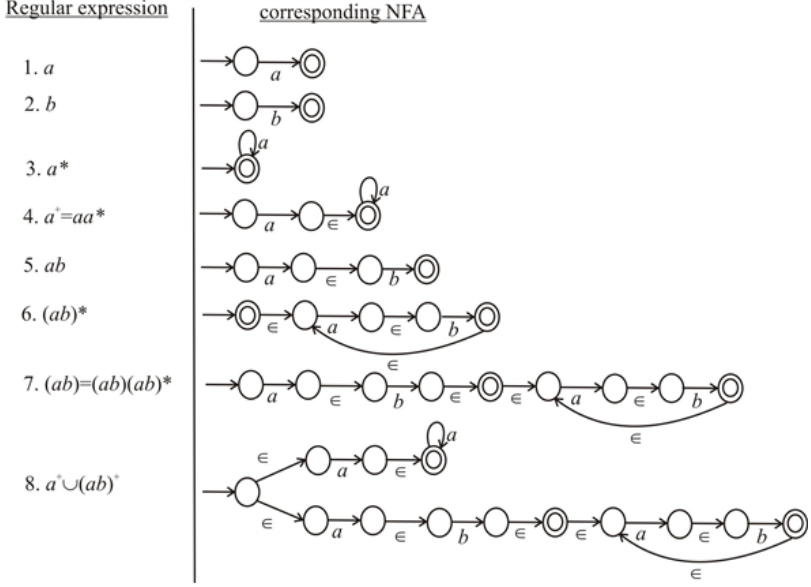
Comments (4)

Step 2 of 3

(b) Given regular expression is

$R = a^+ \cup (ab)^+$ over $\Sigma = \{a, b\}$

Now we have to convert this regular expression into NFA by the following steps.

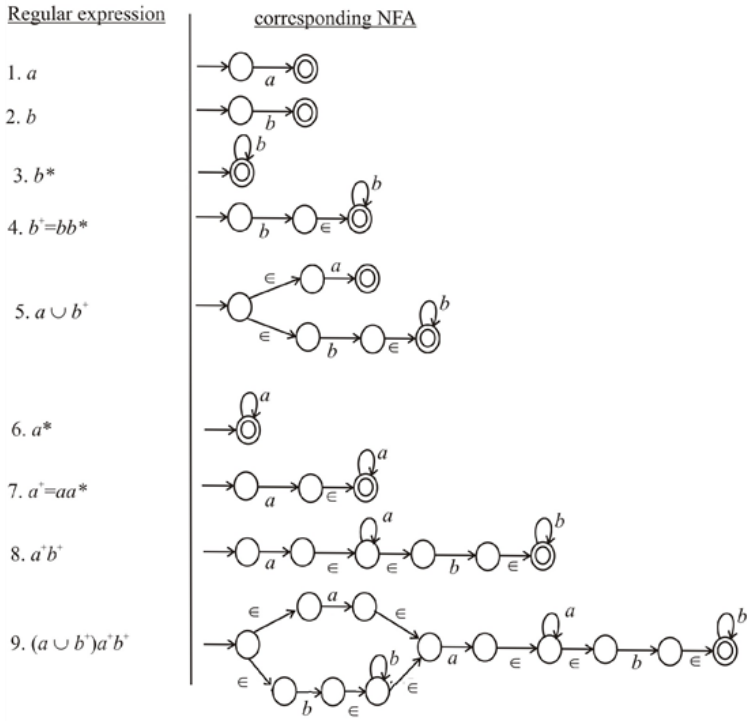


Comment

Step 3 of 3

(c) Given regular expression is $R=\left(a\cup b^{+}\right)a^{+}b^{+}$ over $\Sigma=\{a,b\}$.

Now we have to convert this regular expression R into NFA by the following steps.



Comments (2)