CS & IT ENGINEERING

Theory of Computation

Regular Expression Part-1

Finite Automata : DPP 02

DISCUSSION Notes

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01 Question

02 Discussion

Q.1 Which of the following is/are true?

A. $(a^*b^*)^* = (b^*a^*)^* = (a+b)^*$ ✓

B. $(a + \epsilon)^+ = a^+$ ✗ $(a+\epsilon)^+ = a^*$

C. $(a + b)^*(ba)^* = (ab)^*(a + b)^* = (a+b)^*$ ✓

D. $(ab + ba)^* = (ab(ab)^* + ba(ba)^*)^*$ ✓

$(x+y)^*$ $(xx^* + yy^*)^*$

$(x^+ + y^+)^*$

Q.2

Consider the following regular expressions:

(I) $a^*b^* + a^* = a^*b^*$

(II) $(\in + aa^*)(bb^* + \in) = (\varepsilon + a^+)(b^+ + \varepsilon) = a^*b^*$

(III) $b^*a^* + a^*b^* + b^*$

(IV) $aa^+ bb$

Which the following is equivalent to a^*b^*?

a^*b^*

A. (I) and (II) only

B. (I) only

C. (II) and (III) only

D. (I) and (IV) only

Q.3

Which of the following is not correct?

A. $a^*bb^* = a^*b^+$ correct

B. $a^*a^+ = a^+$ Correct

C. $a^+a^+ = a^+$ Not Correct

D. $\phi^* = \in$ correct

Q.4

Regular expression ~~can be~~ is used in:

A. Lexical Analysis ✓

B. Pattern matching ✓

C. String matching ?

D. Syntax analysis ?

Q.5

Consider the regular expression:

regular expression = $a^*b(a + ba^*)^*$ $= a^* b (a+b)^*$

Above regular expression is equivalent to which of the following below regular expression?

Contains 'b'

A. $ba^*(bb)^*$ — ab

B. $ba^*(a + ba^*b)^*$

C. $(b + aa^*b) + (b + aa^*b).(ba^*b + a).(ba^*b + a)^*$

D. $a^*b\ (a + b)^*$

Q.6

Which of the following statement will generate finite language?

A. PDA with finite stack. ≅ Regular language

B. Regular expression without kleene star and kleene plus.

C. Regular expression with unary alphabet.

D. Regular expression with binary alphabet.

a.b

a+ab

a^* Inf set

Q.7

Consider following regular expressions:

[I] $(ab)^*a = a(ab)^*$

[II] $(bb)^*b^* = b^*$

[III] $(b+\epsilon)^+ = b^*$

Which of the following is correct?

A. II and III only.

B. I and II only.

C. All are correct.

D. None of these are correct.

$(ab)^*a = a(ab)^*$

a, aba — aab, a

$(bb)^*b^* = b^*$

$(ab)^*a = a(ba)^*$

a, aba, ... — a, aba, ...

Q.8

Consider the string $\left[(ab)^{10}(ab)^{7}\left((ab)^{3}\right)^{2}\right]$ the length of the string is ____.

20 14 12

46

$(ab)^3 . (ab)^3$

ababab

6 6

$= 46$


THANK YOU GW
SOLDIERS !