OKUNROTIFA OLUWASHINA

15.

.(i)length is at most 2:L={∑,a,b,aa,ab,ba,bb}

∑+a+b+aa+ab+ba+bb=(∑+a+b)(∑+a+b)

(ii)language of even length:((a+b)(a+b))\*

L={∑,aa, ab,ba,bb,aaaa,...}

(iii)language starting and ending with the same letter:a(a+b)\*+b(a+b)\*bb

(iv)language starting and ending with a different letter:a(a+b)\*b+b(a+b)\*a

16. Regular expression: Regular expressions can be thought of as the algebraic description of a regular language. Regular expression can be defined by the following rules: Every letter of the alphabet ∑ is a regular expression. Null string є and empty set Φ are regular expressions.

Regular expression identities

1. L + M = M + L

2. (L + M) + N = L + (M + N)

3. (LM)N = L(MN)

4. ∅ + L = L + ∅ = L

5. ?L = L? = L

6. ∅L = L∅ = ∅

7. L(M + N) = LM + LN

8. (M + N)L = ML + NL

9. L + L = L

10. (L∗)∗= L∗

11. ∅∗= ?

12. ?∗= ?

13. (xy)∗x = x(yx)∗

14. The following are all equivalent:

(a) (x + y)∗

(b) (x∗+ y)∗

(c) x∗(x + y)∗

(d) (x + yx∗)∗

(e) (x∗y∗)∗

(f) x∗(yx∗)∗

(g) (x∗y)∗x∗

17. . Symbols used in regular expression

* question mark (?),
* backslash (\),
* period (.),
* caret (^),
* square brackets ([ and ])

18.









