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SUBJECT

THEORY OF
AUTOMATA

Q1. Keeping in the view Kleens theorem. Proof for any language S?

Ans: $(S^+)^+ = (S^+)^+$
 $S = (a b)$

$S = (a b \text{ aa ab bb ba aaa aab aba abb bbb bba bab baa.....})$

$S^+ = (a b \text{ aa ab bb ba aaa aab aba abb bbb bba bab baa.....})$

$(S^+)^+ = (a b \text{ aa ab bb ba aaa aab aba abb bbb bba bab baa.....})$

The proof is discussed above $(S^+)^+$ give all those values which are concatenation of the string S^+ .

Q2. How many words does S^* will have the lenth of 3,4 and 5 . if $s=(ab ba)$

Design S^* and then write answer on the basis of words S^* ?

Ans:

$S^* = (^ ab ba abab baba baab ababab ababba abbaab abbaba bababa babaab baabba baabab abababab babababa)$

So total words of length 3=0.

Total words of length 4=4.

Total words of length 5=0.

Q3. Fill in the blanks.

1. A dictionary is arranged in **Alphabetical** order.
2. + is called **positive** instances.
3. * is called **kleene** instances.
4. ? is called **zero** instances.
5. A formal language is a game of _____ on paper.
6. ^ is included in **Kleene** closures.
7. **Palindromes/Level** is word whose reverse is equal to itself.
8. **Concatenation** is an operation in which symbols are placed side by side.
9. $\{a b\} = \{b a\}$ for **Reverse matrix** operation.
10. Two word having same symbols in same order are called **same** words.