

RGPV PYQs

Q. What is a regular expression?

Solution. The language accepted by finite automata can be easily described by simple expressions called regular expressions.

Let,

Σ denotes the input set.

1. Φ is a regular expression that denotes the empty set.
2. ϵ is a regular expression and denotes the set $\{\epsilon\}$, and it is a null string.
3. For each 'a' in Σ , 'a' is a regular expression and denotes the set (a).
4. If R_1 and R_2 are regular expressions denoting the Languages L_1 and L_2 , respectively, then
 - R_1+R_2 is equivalent to $L_1 \cup L_2$, i.e., union.
 - R_1R_2 is equivalent to $L_1 \cap L_2$, i.e. concatenation
 - R^* is equivalent to L_1^* , i.e., closure.

The R^* is known as kleen closure or closure, which indicates the occurrence of R an infinite number of times.

Some other examples of regular expressions are:

1. $R = a$, i.e., all combinations of a .
2. $R = a^+$, i.e., all combinations of a without a null string.
3. $R = (a+b)$, i.e., strings contain any number of a and b

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