

Regular Expression:

Definition: a set of characters specify a pattern OR a language defining symbols.

Operand: characters from the alphabet, lambda or epsilon, (λ).

Operation:

- Union (|, +) ex: a+b
- Concatenation ex: ab
- Closure * $\rightarrow \lambda$ lambda, epsilon, null
 $\rightarrow 1, 2, 3, \dots, n$

Ex: (a+b)

Words= { a,b }

Ex: (a+b)(a+b)

Words= { aa, ab, ba, bb }

Ex: (a+b)(a+b)(a+b)

Words= { aaa, abb, aba, ... }

Ex: $(a+b)^* = (a+b)^0 (a+b)^1 (a+b)^2 \dots n$

Ex:

language: alphabet (a,b)

All the words must start with b

Sol: $b(a+b)^*$

Ex: $a^* = \{a, aa, aaa, aaaa, \dots\}$

$ba^* \neq (ba)^*$

Ex1: $(b^*+a)^*$?

Ex2:

L: alphabet (a)

all the words odd length?

Ex3:

L: alphabet (a)

all the words even the length?

Ex4:

$\Sigma = \{a,b\}$

1. At least one a

Sol:

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

2. At least two a's

Sol:

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

3. Exactly two a's?

4. At least one a or at least one b?