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Ex1:

①	int	...
②	a_3	...
③	a_3	...

<id, int>
<id, a_3>
<id, a_3>
<=> <*> <3>

6 tokens will be generated.

Ex2:

① Prefix: $n+1$

② Proper prefix: $n-1$

③ Prefix of length m: 1

④ Suffixes of length m: 1

⑤ if $m<n$, 1
$m=n$, 0

⑥ $\frac{n(n+1)}{2}+1$

⑦ 2^n

Ex3

① $((\varepsilon|a)^*b^*)^*$ $(a^*b^*)^*$

⇒ the set of all strings consisting 0 or more a's or b's

② $(a|b)^*a(a|b)(a|b)$ ⇒ the set of all strings ending up with aaa, aab, aba, abb and only consisting of a and b

③ $a^*ba^*ba^*ba^*$ ⇒ the set of all strings consisting of 3b and any number of a at any location

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Ex4

① positive → 1|2|3|4|5|6|7|8|9

number → positive | 0

86-755-positive number ... number

repete for 7 times

② $a(a|b)^*b$

③ $N \to b|c|d|f|g|h|j|k|l|m|n|p|q|r|s|t|v|w|x|y|z$

$(a|N)^*(e|N)^*(i|N)^*(o|N)^*(u|N)^*$

Optional

要证明两个语言相等，需要证明该语言中串的集合相等.

$L_1 = L((a^*b^*)^*)$

$L_2 = L((a|b)^*)$

① 证明 $L_2 \subseteq L_1$

$\because a|b \subseteq a^*b^*$

$\therefore (a|b)^* \subseteq (a^*b^*)^*$

$\therefore L_1 \subseteq L_2$

② 证明 $L_1 \subseteq L_2$

$a^*b^* \subseteq (a|b)^*(a|b)^* \subseteq (a|b)^{**}$

$\because (a|b)^{**} = (a|b)^*$

$\therefore a^*b^* \subseteq (a|b)^*$

$\therefore (a^*b^*)^* \subseteq (a|b)^{**} = (a|b)^*$

$\therefore (a^*b^*)^* \subseteq (a|b)^*$

$\therefore L_1 \subseteq L_2$

$\therefore L_1 = L_2.$