**7-2**

代入得：  
A -> Ad | Aae | Abe | ce | f

消除左递归得

A ->ceA’ | fA’

A’ -> dA’ | aeA’ | beA’ | ε

**7-3**

S->(L) | a

L -> SL‘

L’ -> ,SL’ | ε

void L()

{

S(); L’();

}

void L’()

{

if (sym == ‘,’) {

advance();

S();

L’();

}

}

void S()

{

if (sym == ‘(’ ) {

advance();

L();

if (sym == ‘)’ ) advance();

else error();

}

else if (sym == ‘a’) advance();

else error();

}

**7-5**

(1). 存在直接左递归

消除后得:  
S ->AS’

S’ ->:AS’ | ε

A ->BA’

A’->+BA’ | ε

B->bS\* | a

(2).FIRST(S)={ b, a};FIRST(S’)={:, ε}; FIRST(A)={ b, a };FIRST(A’)={+, ε}; FIRST(B)={b, a}

FOLLOW(S)={#, \*}; FOLLOW(S’)={#, \*};FOLLOW(A)={:, \*, #};FOLLOW(A’)={:, \*, #};

FOLLOW(B)={+, :, \*, #};

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | : | + | \* | a | b | # |
| S |  |  |  | S ->AS’ | S ->AS’ |  |
| S’ | S’ ->:AS’ |  | S’ -> ε |  |  | S’ -> ε |
| A |  |  |  | A ->BA’ | A ->BA’ |  |
| A’ | A’-> ε | A’->+BA’ | A’-> ε |  |  | A’-> ε |
| B |  |  |  | B->a | B->bS\* |  |

该文法是LL(1)文法。