

获得的答案

The language given in the problem is as follows:

$$A = \{a^i b^j c^k \mid i=j \text{ or } j=k \text{ for } i \geq 0, j \geq 0, k \geq 0\}$$

The language A can be split into two languages which are defined as follows:

$$A_1 = \{a^i b^j c^k \mid i, j, k \geq 0, i = j\}$$

and

$$A_2 = \{a^i b^j c^k \mid i, j, k \geq 0, j = k\}$$

Using the language A_1 and A_2 the user can construct a CFG for A_1 and A_2 .

The grammar for language A is the union of grammar of two languages which is defined as follows:

$$S \rightarrow S_1 \mid S_2$$

In the language A_1 the values of i and j are equal so there must be equal number of a's and b's in the language A_1 .

CGF for the language A_1 is as follows:

$$S_1 \rightarrow S_1 c \mid E \mid \epsilon$$

$$E \rightarrow a E b \mid \epsilon$$

Similarly, in the language A_2 the values of j and k are equal so there must be equal number of b's and c's in the language A_2 .

CGF for the language A_2 is as follows:

$$S_2 \rightarrow a S_2 \mid F \mid \epsilon$$

$$F \rightarrow b F c \mid \epsilon$$

Since for generating a string $w = a^n b^n c^n$ using the language A, either S_1 or S_2 can be used.

Therefore, the context free grammar for the language A is ambiguous.