Compiler Design

Exp–4a Left Recursion

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Branch:- CSE-SE

CODE:

#Left Recursion

n=*int*(input("Enter Number of productions "))

Sym=[]

V=[]

T=[]

P=[]

for i in range(n):

    prod=input("Enter production of the form V->(V U T) ")

    v=prod[0]

    if v not in V:

        V.append(v)

        P.append([])

    ind=V.index(v)

    for j in range(3,len(prod)):

        if(prod[j] not in Sym):

            Sym.append(prod[j])

    lst=prod[3:].split('|')

    for z in lst:

        P[ind].append(z)

for j in Sym:

    if j not in V:

        T.append(j)

print(T)

print(V)

print(P)

l=len(V)

for i in range(l):

    for j in range(i):

        for p in P[i]:

            if(p[0]==V[j]):

                for k in P[j]:

                    P[i].append(k+p[1:])

                P[i].remove(p)

for i in range(len(V)):

    res=V[i]+'->'+P[i][0]

    for j in range(1,len(P[i])):

        res+='|'+P[i][j]

    print(res)

for i in range(l):

    flag=0

    for j in P[i]:

        if(j[0]==V[i]):

            flag=1

            break

    if(flag==1):

        V.append(V[i]+'\'')

        P.append([])

        j=0

        l=len(P[i])

        while(j<l):

            if(P[i][j][0]==V[i]):

                P[len(P)-1].append(P[i][j][1:]+V[i]+'\'')

            else:

                if(P[i]=='ε'):

                    P[i].append(V[i]+'\'')

                else:

                    P[i].append(P[i][j]+V[i]+'\'')

            P[i].remove(P[i][j])

            l-=1

        P[len(P)-1].append('ε')

print(V)

print(P)

for i in range(len(V)):

    res=V[i]+'->'+P[i][0]

    for j in range(1,len(P[i])):

        res+='|'+P[i][j]

    print(res)

OUTPUT:

