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|  | CD LAB ASSIGNMENT |
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|  | AP18110010312 |
|  | cse-E |
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|  | Write a C program to compute the FIRST and FOLLOW functions for all non-terminals in a given grammar G. |
|  | Assume that G is not left recursive. |
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|  | Code: |
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|  | #include<stdio.h> |
|  | #include<math.h> |
|  | #include<string.h> |
|  | #include<ctype.h> |
|  | #include<stdlib.h> |
|  | int n,m=0,p,i=0,j=0; |
|  | char a[10][10],f[10]; |
|  | void follow(char c); |
|  | void first(char c); |
|  | int main(){ |
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|  | int i,z; |
|  | char c,ch; |
|  | //clrscr(); |
|  | printf("Enter the no of prooductions:\n"); |
|  | scanf("%d",&n); |
|  | printf("Enter the productions:\n"); |
|  | for(i=0;i<n;i++) |
|  | scanf("%s%c",a[i],&ch); |
|  | do{ |
|  | m=0; |
|  | printf("Enter the elemets whose fisrt & follow is to be found:"); |
|  | scanf("%c",&c); |
|  | first(c); |
|  | printf("First(%c)={",c); |
|  | for(i=0;i<m;i++) |
|  | printf("%c",f[i]); |
|  | printf("}\n"); |
|  | strcpy(f," "); |
|  | //flushall(); |
|  | m=0; |
|  | follow(c); |
|  | printf("Follow(%c)={",c); |
|  | for(i=0;i<m;i++) |
|  | printf("%c",f[i]); |
|  | printf("}\n"); |
|  | printf("Continue(0/1)?"); |
|  | scanf("%d%c",&z,&ch); |
|  | }while(z==1); |
|  | return(0); |
|  | } |
|  | void first(char c) |
|  | { |
|  | int k; |
|  | if(!isupper(c)) |
|  | f[m++]=c; |
|  | for(k=0;k<n;k++) |
|  | { |
|  | if(a[k][0]==c) |
|  | { |
|  | if(a[k][2]=='$') |
|  | follow(a[k][0]); |
|  | else if(islower(a[k][2])) |
|  | f[m++]=a[k][2]; |
|  | else first(a[k][2]); |
|  | } |
|  | } |
|  | } |
|  | void follow(char c) |
|  | { |
|  | if(a[0][0]==c) |
|  | f[m++]='$'; |
|  | for(i=0;i<n;i++) |
|  | { |
|  | for(j=2;j<strlen(a[i]);j++) |
|  | { |
|  | if(a[i][j]==c) |
|  | { |
|  | if(a[i][j+1]!='\0') |
|  | first(a[i][j+1]); |
|  | if(a[i][j+1]=='\0' && c!=a[i][0]) |
|  | follow(a[i][0]); |
|  | } |
|  | } |
|  | } |
|  | } |
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|  | output: |
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|  | Enter the no of prooductions: |
|  | 4 |
|  | Enter the productions: |
|  | s=aAB |
|  | s=bA |
|  | A=aAb |
|  | B=bB |
|  | Enter the elemets whose fisrt & follow is to be found:s |
|  | First(s)={sab} |
|  | Follow(s)={$} |
|  | Continue(0/1)?1 |
|  | Enter the elemets whose fisrt & follow is to be found:A |
|  | First(A)={a} |
|  | Follow(A)={b$} |
|  | Continue(0/1)?1 |
|  | Enter the elemets whose fisrt & follow is to be found:B |
|  | First(B)={b} |
|  | Follow(B)={$} |
|  | Continue(0/1)?1 |
|  | Enter the elemets whose fisrt & follow is to be found:s |
|  | First(s)={sab} |
|  | Follow(s)={$} |
|  | Continue(0/1)?0 |