Programming Assignment-3
Implementation of left recursion elimination

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Input file contents(input.txt):

```
E->E+T|T
T->T*F|F
F->(E)|id
A->AC|Aad|bd|c
```

Program Code:

```
#include<stdio.h>
#include<stdlib.h>
#include<string.h>
#include<ctype.h>

int main()
{
        char ch, buffer[1000],b[100],str[10][5];
        FILE *fp;
        int i,j=0,s,l,arr[10];
        fp = fopen("input.txt","r");
        if(fp == NULL)
        {
                printf("error while opening the file\n");
                exit(0);
        }
        int k=0;
        while((ch = fgetc(fp)) != EOF)
        {
                buffer[k++]=ch;
        }
        buffer[k]='\0';
        k=0;
        int t=0;
        while(buffer[k]!='\0')
        {
                t=0;
                while(buffer[k]!='\n')
                {
                        b[t++]=buffer[k++];
                }
```

```
    b[t]='\0';
    printf("\n\nProduction: %s",b);
    ch=b[0];
    t=3;
    for(l=3;b[l]!='\0';l++)
    {
        b[l-3]=b[l];
    }
    b[l-3]='\0';
    j=0;
    char *token = strtok(b, "|");
    s=0;
    while( token != NULL )
      {
        strcpy(str[s++],token);
        int len=0;
        while (*token != '\0') {
len++;
token++;
    }
    arr[s-1]=len;
        token = strtok(NULL, "|");
      }
    for(i=0;i<s;i++)
    {
        if(str[i][0]==ch)
            j=1;
    }
    if(j==1)
    {
        printf("\n%c->",ch);
        for(i=0;i<s;i++)
        {
            if(str[i][0]!=ch)
            {
                printf("%s%c\'",str[i],ch);
                if(s-1!=i)
                    printf("|");
            }
        }
        printf("\n%c\'->",ch);
        for(i=0;i<s;i++)
        {
            if(str[i][0]==ch)
            {
                int h=1;
                for(h=1;h<arr[i];h++)
                {
                        printf("%c",str[i][h]);
                    }
                    printf("%c\'|",ch);
                }
            }
            printf("epsilon");
        }
        memset(b,0,strlen(b));
        k++;
    }

    fclose(fp);
    return 0;
}

/*SAMPLE INPUT/OUTPUT

Production: E->E+T|T
E->TE'
E'->+TE'|epsilon

Production: T->T*F|F
T->FT'
T'->*FT'|epsilon

Production: F->(E)|id

Production: A->AC|Aad|bd|c
A->bdA'|cA'
A'->CA'|adA'|epsilon

*/
```