AIM:-Left factoring problem Removal

PROCEDURE:-

- Write algorithm to remove left factoring problem
- Generate a program to remove left factoring problem from given grammar rules

Program :-

Left-Factoring.c

```c
#include<stdio.h>

#include<string.h>

char a='a';

void leftfac(char str[],char s1[],char s2[],char s3[]);

void check(char str[])

{
        int i,j=0,k,l,flag=0;

        char s3[20],s1[20],s2[20],s4[20];

        for(k=0;str[k]!='=';k++);

        k++;

        for(i=k;str[i]!='/';i++)

        {
                s1[j]=str[i];

                j++;

        }

        s1[j]='\0';

        //printf("%s\n",s1);

        i++;

        j=0;

        while(i<strlen(str) && str[i]!='/')

        {
                s2[j]=str[i];

                i++;

                j++;

        }

        s2[j]='\0';
```

```c
            i++;
            l=0;
            while(i<strlen(str))
    {
       flag=1;
       s4[l]=str[i];
                    i++;
                    l++;
    }
    s4[l]='\0';
            if(s1[0]!=s2[0])
            {
                    printf("No left Factoring");
            }
            else
            {


        for(i=0;i<strlen(s1) && i<strlen(s2);i++)
        {
          if(s1[i]==s2[i])
          {
             s3[i]=s1[i];
          }
        }
        s3[i]='\0';
        leftfac(str,s1,s2,s3);



            }
}


void leftfac(char str[],char s1[],char s2[],char s3[])
```

```c
{
        int i=0,p=0,l=0;
        char snew[20];
        while(str[i]!='=')
    printf("%c",str[i++]);
  printf("%c",str[i++]);
  printf("%c%c",s3[0],a);
  snew[l++]=a;
        snew[l++]='=';
        for(i=1;i<strlen(s1);i++)
        {
                snew[l++]=s1[i];
        }
        snew[l++]='/';
        for(i=1;i<strlen(s2);i++)
        {
                snew[l++]=s2[i];
        }
        snew[l]='\0';
        a++;
        printf("\n%s\n",snew);
        check(snew);

}

int main()
{
        int i;
        char str[20];
        printf("Enter production: ");
        scanf("%s",str);
        check(str);}
```

Output:

```
Enter production: A=b+a/b+c/b
A=ba
a=+a/+c
a=+b
b=a/c
No left Factoring

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter production: E=s*e/s
E=sa
a=*e/
No left Factoring

...Program finished with exit code 0
Press ENTER to exit console.
```