

Program:

```
#include<stdio.h>
#include<conio.h>
#include<string.h>

char stk[50],a[50];
int i,j,k,z,c;
void check();

void main()
{
    clrscr();
    printf("Shift Reduce Parsing");
    printf("\n-----");
    printf("\nGRAMMER\n E->E+E\n E->E-E\n E->E*E\n E->E/E\n E->a/b");
    printf("\n\nEnter the input string : ");
    gets(a);
    printf("\n\nStack\tInput\tAction");
    printf("\n$\t%s$\t---",a);
    c=strlen(a);
    for (i = 0,j=0; j < c; i++,j++){
        stk[i]=a[j];
        stk[i+1]='\0';
        a[j]=' ';
        printf("\n$\t%s$\tShift %c",stk,a,stk[i]);
        check();
    }
    getch();
}

void check(){
    for (z=c;z>=0; z--){
        if(stk[z]=='a' || stk[z]=='b'){
            stk[z]='E';
            printf("\n$\t%s$\tReduce E->a/b",stk,a);
        }
    }
    for ( z = c;z>1; z--){
        char ch=stk[z-1];
        if((stk[z]=='E'&&stk[z-2]=='E')&&(ch=='+' || ch=='*' || ch=='/')){
            stk[z-2]='E';
            stk[z-1]='\0';
            stk[z]='\0';
            printf("\n$\t%s$\tReduce E->E%c",stk,a,ch);
            i=i-2;
        }
    }
}
```

```

if(a[c-1]==' '){
    if(stk[0]=='E' && stk[1]=='\0')
        printf("\n$\t%s$\tAccept",a);
    else
        printf("\n%s$\t%s$\tRiject",stk,a);
}
}

```

Sample Input & Output:

```

Shift Reduce Parsing
-----
GRAMMER
E->E+E
E->E-E
E->E*E
E->E/E
E->a/b

Enter the input string : a+b*a

Stack   Input   Action
$       a+b*a$  ---
$a      +b*a$  Shift a
$E      +b*a$  Reduce E->a/b
$E+     b*a$   Shift +
$E+b    *a$    Shift b
$E+E    *a$    Reduce E->a/b
$E      *a$    Reduce E->E+E
$E*     a$     Shift *
$E*a    $       Shift a
$E*E    $       Reduce E->a/b
$E      $       Reduce E->E*E
$       $       Accept

```