

# Shift Reduce Parser

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## Algorithm:

- Shift: This involves moving symbols from the input buffer onto the stack.
- Reduce: If the handle appears on top of the stack then, its reduction by using appropriate production rule is done i.e. RHS of a production rule is popped out of a stack and LHS of a production rule is pushed onto the stack.
- Accept: If only the start symbol is present in the stack and the input buffer is empty then, the parsing action is called accept. When accepted action is obtained, it means successful parsing is done.
- Error: This is the situation in which the parser can neither perform shift action nor reduce action and not even accept action.

## Code:

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
struct prodn
{
    char p1[10];
    char p2[10];
};
void main()
{
    char input[20],stack[50],temp[50],ch[2],*t1,*t2,*t;
    int i,j,s1,s2,s,count=0;
    struct prodn p[10];
    FILE *fp=fopen("sr_input.txt","r");
    stack[0]='\0';
    clrscr();
    printf("\n Enter the input string\n");
    scanf("%s",&input);
    while(!feof(fp))
```

```

{
    fscanf(fp,"%s\n",temp);
    t1= strtok(temp,"->");
    t2= strtok(NULL,"->");
    strcpy(p[count].p1,t1);
    strcpy(p[count].p2,t2);
    count++;
}
i=0;
while(1)
{
    if(i<strlen(input))
    {
        ch[0]=input[i];
        ch[1]='\0';
        i++;
        strcat(stack,ch);
        printf("%s\n",stack);
    }
    for(j=0;j<count;j++)
    {
        t= strstr(stack,p[j].p2);
        if(t!=NULL)
        {
            s1= strlen(stack);
            s2= strlen(t);
            s=s1-s2;
            stack[s]='\0';
            strcat(stack,p[j].p1);
            printf("%s\n",stack);
            j=-1;
        }
    }
    if(strcmp(stack,"E")==0&& i==strlen(input))
    {
        printf("\n Accepted");
        break;
    }
    if(i==strlen(input))
    {
        printf("\n Not Accepted");
        break;
    }
}

```

```
    getch();  
}
```

## INPUT:

```
PROBLEMS 3 OUTPUT DEBUG CONSOLE TERMINAL  
  
Enter the Input String:  
i*i+i  
  
i  
E  
E*  
E*i  
E*E  
E  
E+  
E+i  
E+E  
E  
  
Accepted  
PS C:\Users\athre\Desktop\laabbb> █
```

## Output:

```
Enter the Input String:  
i*i+i  
  
i  
E  
E*  
E*i  
E*E  
E  
E+  
E+i  
E+E  
E  
  
Accepted
```

**Result :** Hence we have verified shift reduce parser.