

EXPERIMENT - 7

SHIFT REDUCE PARSING

Aim: To implement a program for shift reduce parsing.

Algorithm:

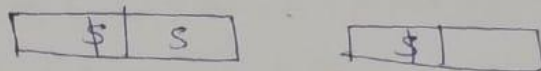
Shift Reduce parser requires two data structures
 → Input Buffer → Stack

Steps: ① Insert \$ at bottom of Stack & right end of input string in input Buffer.

* Shift parser shifts zero or replace more input symbols onto the stack until the handle is on top of stack.

* Reduce parser or replace the handle on top of stack to left side or production.

* Repeat step 3 & step 4 will be repeated until it has detected any error or until the stack includes start symbol(s) and input Buffer is empty i.e. it contains \$.



Program:

```
#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';

```

```

printf("\n Enter the input string\n");

```

```

scanf("%s", &input);

```

```

while (!feof(fp))

```

```

{
    fscanf(fp, "%s\n", temp);

```

```

    t1 = strtok(temp, "→");

```

```

    t2 = strtok(temp, "→");

```

```

    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;

```


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main.c
sr_input.txt

```

1 #include<stdio.h>
2 #include<conio.h>
3 #include<string.h>
4 struct prodn
5 {
6     char p1[10];
7     char p2[10];
8 };
9 void main()
10 {
11     char input[20],stack[50],temp[50],ch[2],*t1,*t2,*t;
12     int i,j,s1,s2,s,count=0;
13     struct prodn p[10];
14     FILE *fp=fopen("sr_input.txt","r");
15     stack[0]='\0';
16     printf("\n Enter the input string\n");
17     scanf("%s",&input);
18     t1=(char *)malloc(50);
19     t2=(char *)malloc(50);
20     t=(char *)malloc(50);
21     while(fscanf(fp,"%s",t1)>0)
22     {
23         strcpy(t2,t1);
24         strcpy(t,t2);
25         strcat(stack,t2);
26         printf("%s\n",stack);
27     }
28     printf("Stack is %s",stack);
29     getch();
30 }

```

```

i*i+i
i
E
E*
E*i
E+E
E
E+
E+i
E+E
E
Accepted
...Program finished with exit code 0

```



```

stack[s] = '\0'; strcat(stack, p[j].p1);
printf("%s\n", stack); j = -1;
}

```

```

if (strcmp(stack, "E") == 0 && i == strlen(input))
{ printf("In Accepted");
  break; }
if (i == strlen(input))
{ printf("Not Accepted");
  break; }
}

```

RESULT: Hence shift reduce parsing is
 successfully executed with the
 above program.