

PRACTICAL -13

Aim: Write a C program to implement operator precedence parsing.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    char stack[20],ip[20],opt[10][10][1],ter[10];
    int i,j,k,n,top=0,col,row;
    for(i=0;i<10;i++){stack[i]=NULL; ip[i]=NULL;
    for(j=0;j<10;j++){opt[i][j][1]=NULL;}}
    printf("Enter the no.of terminals:");
    scanf("%d",&n);
    printf("\nEnter the terminals:");
    scanf("%s",ter);
    printf("\nEnter the table values:\n");
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            printf("Enter the value for %c %c:",ter[i],ter[j]);
            scanf("%s",opt[i][j]);
        }
    }
    printf("\nOPERATOR PRECEDENCE TABLE:\n");
    for(i=0;i<n;i++){printf("\t%c",ter[i]);}
    printf("\n");
    for(i=0;i<n;i++){printf("\n%c",ter[i]);
    for(j=0;j<n;j++){printf("\t%c",opt[i][j][0]);}}
    stack[top]='$';
    printf("\nEnter the input string:");
    scanf("%s",ip);
    i=0;
    printf("\nSTACK\t\t\t\tINPUT STRING\t\t\tACTION\n");
    printf("\n%s\t\t\t\t%s\t\t\t",stack,ip);
    while(i<=strlen(ip))
    {
        for(k=0;k<n;k++)
        {
            if(stack[top]==ter[k])
            col=k;
            if(ip[i]==ter[k])
            row=k;
        }
        if((stack[top]=='$')&&(ip[i]=='$')){
```

```
printf("String is accepted");
break;}
else if((opt[col][row][0]=='<') ||(opt[col][row][0]=='='))
{ stack[++top]=opt[col][row][0];
stack[++top]=ip[i];
printf("Shift %c",ip[i]);
i++;
}
else{
if(opt[col][row][0]=='>')
{
while(stack[top]!='<'){--top;}
top=top-1;
printf("Reduce");
}
else
{
printf("\nString is not accepted");
break;
}
}
printf("\n");
for(k=0;k<=top;k++)
{
printf("%c",stack[k]);
}
printf("\t\t\t");
for(k=i;k<strlen(ip);k++){
printf("%c",ip[k]);
}
printf("\t\t\t");
}
getch();
}
```

Output:

```

"C:\Users\hp\Desktop\Turbo C++ 3.2\ceaser.cpp\practical13cd.exe"
Enter the no.of terminals:4
Enter the terminals: + * i $

Enter the table values:
Enter the value for + +: >
Enter the value for + *: <
Enter the value for + i: <
Enter the value for + $: >
Enter the value for * +: >
Enter the value for * *: >
Enter the value for * i: <
Enter the value for * $: >
Enter the value for i +: >
Enter the value for i *: >
Enter the value for i i: =
Enter the value for i $: >
Enter the value for $ +: <
Enter the value for $ *: <
Enter the value for $ i: <
Enter the value for $ $: A

OPERATOR PRECEDENCE TABLE:
      +      *      i      $
+   >      <      <      >
*   >      >      <      >
i   >      >      =      >
$   <      <      <      A

Enter the input string: i+i*i$

"C:\Users\hp\Desktop\Turbo C++ 3.2\ceaser.cpp\practical13cd.exe"
Enter the value for $ +: <
Enter the value for $ *: <
Enter the value for $ i: <
Enter the value for $ $: A

OPERATOR PRECEDENCE TABLE:
      +      *      i      $
+   >      <      <      >
*   >      >      <      >
i   >      >      =      >
$   <      <      <      A

Enter the input string: i+i*i$

STACK      INPUT STRING      ACTION
$           i+i*i$           Shift i
$<i        +i*i$             Reduce
$           +i*i$             Shift +
$<+        i*i$              Shift i
$<+<i      *i$               Reduce
$<+        *i$               Shift *
$<+<*      i$                Shift i
$<+<*<i   $                 Reduce
$<+<*      $                 Reduce
$<+        $                 Reduce
$           $                 String is accepted

```