

EXP 7 - SHIFT-REDUCE Parsing

Name: - Sai Mohit Ambekar

Reg No: - RA1911031010137

Class: - CSE-IT (L2 Section)

Aim:

To write a program for the implementation of shift reduce parsing.

Problem Statement:

Consider the following grammar:

$C \rightarrow 0C1 \mid 01$

Parse the following input string using shift-reduce parser: 010101

Code:

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

int z = 0, i = 0, j = 0, c = 0;
char a[16], ac[20], stk[15], act[10];

void check()
{
    strcpy(ac, "REDUCE TO E -> ");
    for (z = 0; z < c; z++)
    {
        if (stk[z] == '4')
        {
            printf("%s4", ac);
            stk[z] = 'E';
            stk[z + 1] = '\0';
            printf("\n%s\t%s\t%s", stk, a);
        }
    }
    for (z = 0; z < c - 2; z++)
    {
        if (stk[z] == '2' && stk[z + 1] == 'E' &&
            stk[z + 2] == '2')
```

```

    {
        printf("%s2E2", ac);
        stk[z] = 'E';
        stk[z + 1] = '\0';
        stk[z + 2] = '\0';
        printf("\n%s\t%s\t", stk, a);
        i = i - 2;
    }
}
for (z = 0; z < c - 2; z++)
{
    if (stk[z] == '3' && stk[z + 1] == 'E' &&
        stk[z + 2] == '3')
    {
        printf("%s3E3", ac);
        stk[z] = 'E';
        stk[z + 1] = '\0';
        stk[z + 1] = '\0';
        printf("\n%s\t%s\t", stk, a);
        i = i - 2;
    }
}
return;
}

```

```

int main()
{
    printf("Grammar is:-\nC->0C1|01\n ");
    strcpy(a, "010101");
    c = strlen(a);
    strcpy(act, "SHIFT");
    printf("\nstack \t input \t action");
    printf("\n%s\t%s\t", a);
    for (i = 0; j < c; i++, j++)
    {
        printf("%s", act);
        stk[i] = a[j];
        stk[i + 1] = '\0';
        a[j] = ' ';
        printf("\n%s\t%s\t", stk, a);
    }
}

```

```

    check();
}

check();
if (stk[0] == 'E' && stk[1] == '\0')
    printf("Accept\n");
else
    printf("Reject\n");
}

```

Output:

```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL
Code + - [ ] ^ x

cd "/Users/saimohitambekar/Documents/Class/Compiler Design Lab/EXP 7/" && gcc exp7.c -o exp7 && "/Us
saimohitambekar@sais-MacBook-Air Compiler Design Lab % cd "/Users/saimohitambekar/Documents/Class/Compiler Design Lab/EXP 7/" && gcc exp7.c -o exp7 && "/Use
rs/saimohitambekar/Documents/Class/Compiler Design Lab/EXP 7/"exp7
Grammar is:-
C->0C1|01

stack  input  action
$      010101$ SHIFT
$0     10101$ SHIFT
$01    0101$  SHIFT
$010   101$   SHIFT
$0101  01$    SHIFT
$01010 1$     SHIFT
$010101 $     Reject
saimohitambekar@sais-MacBook-Air EXP 7 %

```

Result:

Shift reduce parsing has been implemented successfully.