

## Ex – 7: Shift-Reduce Parsing

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### **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", 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$\t%s$\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:**

GRAMMAR is -

$C \rightarrow 0C1 \mid 01$

stack	input	action
\$	010101\$	SHIFT
\$0	10101\$	SHIFT
\$01	0101\$	SHIFT
\$010	101\$	SHIFT
\$0101	01\$	SHIFT
\$01010	1\$	SHIFT
\$010101	\$	Reject

...Program finished with exit code 0

Press ENTER to exit console.

### Result:

Shift reduce parsing has been implemented successfully.