

Program Number : 04

18V18CS177

6

C

Question

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Answer

4.C

```
#include <stdio.h>
#include <string.h>
int k=0, z=0, j=0, c=0;
char a[10], ac[20], str[15], act[10],
void check();
void main()
{
    puts ("Grammar is  $E \rightarrow E+E$   $\mid n-E \rightarrow E \& E$   $\mid n$   $E \rightarrow (E)$   $\mid id$ ");
    puts ("Enter input string:");
    gets(a);
    c = strlen(a);
    strcpy(act, "SHIFT →");
    puts ("Stack \& input \& action");
    for (k=0, j=0, i=0; j<c; k++, i++, j++)
    {
        if (a[j] == '(' && a[j+1] == 'id')
        {
            str[k] = a[j];
            str[i+1] = a[j+1];
            str[i+2] = '\0';
            a[j] = ' ';
            a[j+1] = ' ';
        }
    }
}
```



```
printf("\n $ %s \n", str, a, act);  
check();
```

```
}  
else
```

```
{
```

```
str[i] = a[j];
```

```
str[i+1] = '\n';
```

```
a[j] = ' ';
```

```
printf("\n $ %s \n", str, a, act);
```

```
check();
```

```
}
```

```
}
```

```
}
```

```
void check()
```

```
{  
strcpy(a, "REDUCE TO E");
```

```
for (z=0; z<C; z++)
```

```
if (str[z] == ' ' && str[z+1] == 'a')
```

```
{
```

```
str[z] = 'E';
```

```
str[z+1] = '\n';
```

```
printf("\n $ %s \n", str, a, act);
```

```
z++;
```

```
}
```

```
for (z=0; z<C; z++)
```

```
if (str[z] == 'E' && str[z+1] == 'a' && str[z+2] == 'E')
```

```
{
```

```
str[z] = 'E';
```



```

str[z+1] = '\0';
printf("\n $ %s \n + %s \n + %s \n", str, str, str);
j++;
}

```

```

for (z=0; z<3; z++)

```

```

if (str[z] == 'E' && str[z+1] == '+' && str[z+2] == 'E')

```

```

{
    str[z] = 'E';
    str[z+1] = '\0';
    str[z+2] = '\0';
    printf("\n $ %s \n + %s \n + %s \n", str, str, str);
    j = j + 2;
}

```

```

for (z=0; z<3; z++)

```

```

if (str[z] == 'E' && str[z+1] == 'E' && str[z+2] == 'E')

```

```

{
    str[z] = 'E';
    str[z+1] = '\0';
    str[z+2] = '\0';
    printf("\n $ %s \n + %s \n + %s \n", str, str, str);
    j = j + 2;
}

```

Output

\$ gcc 4.c

\$./a.out

Grammar is $E \rightarrow E + E$

$E \rightarrow E * E$

$E \rightarrow (E)$

$E \rightarrow id$

enter input string

id \rightarrow id * id

stack input action

\$id +id +id\$ SHIFT \rightarrow id

\$E +id * id\$ REDUCE TO E

\$E + id * id\$ SHIFT \rightarrow symbol

\$E +id +id\$ SHIFT \rightarrow id

\$E +id * id\$ REDUCE TO E

\$E +id * id\$ REDUCE TO E

\$E +id * id\$ SHIFT \rightarrow symbol

\$E +id * id\$ SHIFT \rightarrow id

\$E +id * id\$ REDUCE TO E

\$E +id * id\$ REDUCE TO E

\$E +id * id\$ REDUCE TO E

```

student@student-virtual-machine:~$ gcc 4.c
4.c: In function 'main':
4.c:10:2: warning: 'gets' is deprecated (declared at /usr/include/stdio.h:638) [-Wdeprecated-declaration]
   gets(a);
   ^
/tmp/ccFxDnoW.o: In function 'main':
4.c:(.text+0x1e): warning: the `gets' function is dangerous and should not be used.
student@student-virtual-machine:~$ ./a.out
GRAMMAR is E->E+E
E->E*E
E->(E)
E->id
enter input string
id+id*id
stack   input   action

$id      +id*id$    SHIFT->id
$E       +id*id$    REDUCE TO E
$E+      id*id$     SHIFT->symbols
$E+id    *id$       SHIFT->id
$E+E     *id$       REDUCE TO E
$E       *id$       REDUCE TO E
$E*      id$        SHIFT->symbols
$E*id    $          SHIFT->id
$E+E     $          REDUCE TO E
$E       $          REDUCE TO E
student@student-virtual-machine:~$

```