

Exp 17: -Shift Reduce Parsing

Aim: -To Implement a c programming language that calculates the shift reduce parsing using the users input of the equation.

Code:

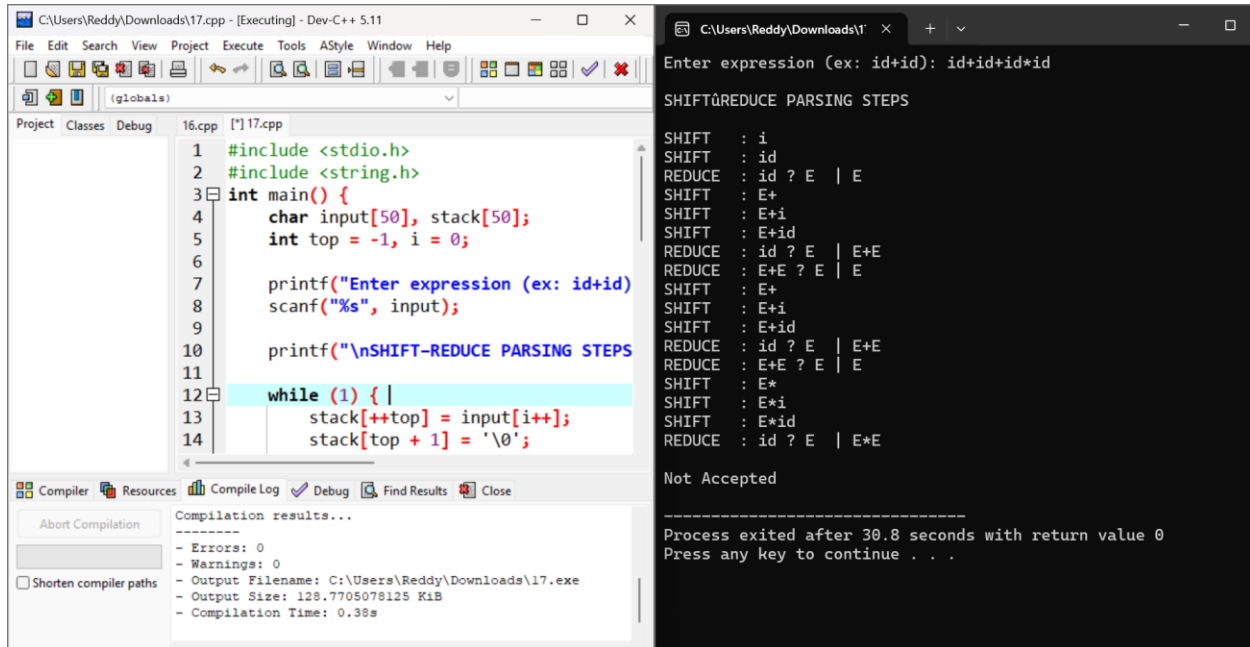
```
#include<stdio.h>

#include<string.h>

int main(){
char input[50],stack[50];
int top=-1,i=0;
printf("Enter expression:");
scanf("%s",input);
while(1){
stack[++top]=input[i++];
stack[top+1]='\0';
printf("\nSHIFT:%s",stack);
if(top>=1&&stack[top]=='d'&&stack[top-1]=='i'){
top-=1;stack[top]='E';stack[top+1]='\0';
printf("\nREDUCE:id->E%s",stack);
}
if(top>=2&&stack[top]=='E'&&stack[top-1]=='+'&&stack[top-2]=='E'){
top-=2;stack[top]='E';stack[top+1]='\0';
printf("\nREDUCE:E+E->E%s",stack);
}
if(i>=strlen(input)&&top==0&&stack[top]=='E'){
printf("\nAccepted\n");break;
}
if(i>=strlen(input)&&top!=0){
printf("\nNot Accepted\n");break;
}
```

```
}  
  
}
```

Output:



The screenshot displays the Dev-C++ 5.11 IDE. The main editor window shows a C++ program named 17.cpp. The program includes `<stdio.h>` and `<string.h>`, and contains a `main` function. It prompts the user to enter an expression, reads it into a buffer, and then prints the expression. A `while` loop is present, which is currently highlighted in blue. The loop contains two lines of code: `stack[++top] = input[i++];` and `stack[top + 1] = '\0';`. The bottom status bar shows the compilation results, indicating that the program compiled successfully with no errors or warnings. The output window on the right shows the execution of the program, which prompts the user to enter an expression. The user has entered `id+id+id*id`. The output window then displays the parsing steps for the expression, showing a sequence of `SHIFT` and `REDUCE` operations. The final output is `Not Accepted`, indicating that the expression is not a valid expression according to the grammar.

```
1  #include <stdio.h>
2  #include <string.h>
3  int main() {
4      char input[50], stack[50];
5      int top = -1, i = 0;
6
7      printf("Enter expression (ex: id+id)
8      scanf("%s", input);
9
10     printf("\nSHIFT-REDUCE PARSING STEPS
11
12     while (1) { |
13         stack[++top] = input[i++];
14         stack[top + 1] = '\0';
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\Reddy\Downloads\17.exe
- Output Size: 128.7705078125 KiB
- Compilation Time: 0.38s

Enter expression (ex: id+id): id+id+id*id

SHIFT-REDUCE PARSING STEPS

```
SHIFT : i
SHIFT : id
REDUCE : id ? E | E
SHIFT : E+
SHIFT : E+i
SHIFT : E+id
REDUCE : id ? E | E+E
REDUCE : E+E ? E | E
SHIFT : E+
SHIFT : E+i
SHIFT : E+id
REDUCE : id ? E | E+E
REDUCE : E+E ? E | E
SHIFT : E*
SHIFT : E*i
SHIFT : E*id
REDUCE : id ? E | E*E
```

Not Accepted

Process exited after 30.8 seconds with return value 0
Press any key to continue . . .