EXPERIMENT 4

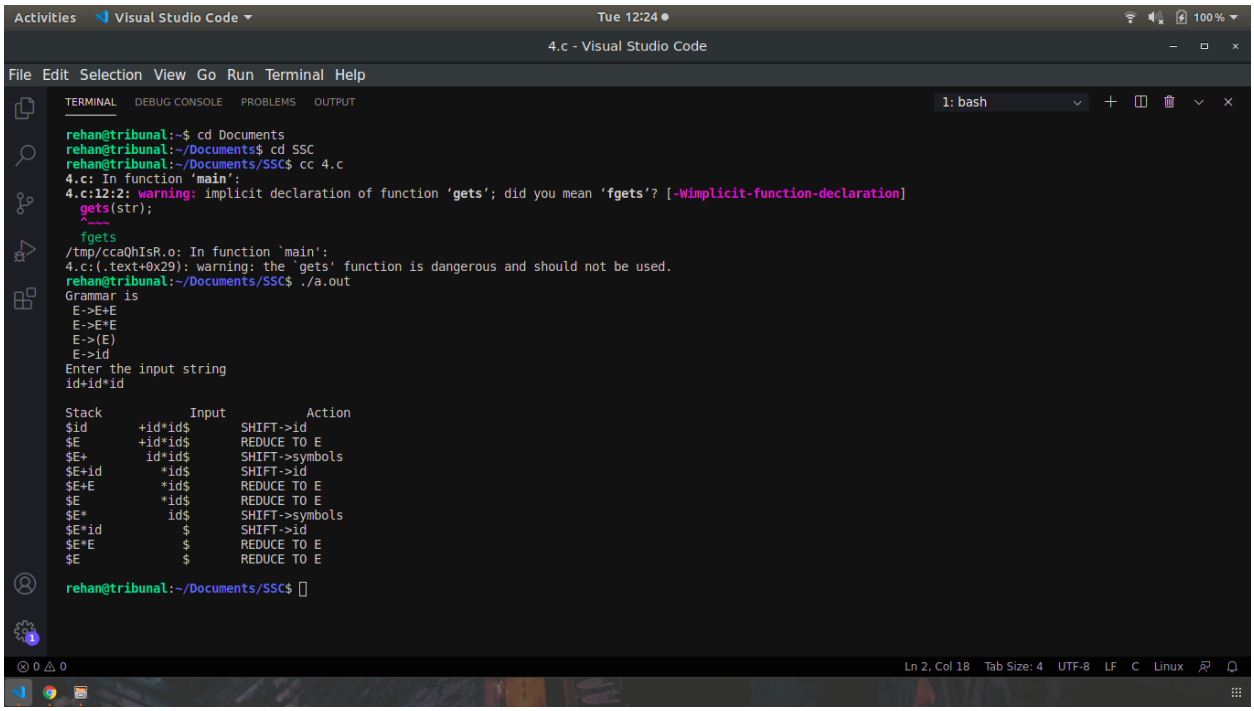
Design, develop and implement YACC/C program to demonstrate Shift Reduce Parsing technique for the grammar rules: E →E+T | T, T →T*F | F, F →(E) | id and parse the sentence: id + id * id.

C PROGRAM:

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

int k=0,z=0,i=0,j=0,c=0;
char str[20], ac[20], stk[20], act[20];

void check();

void main() {
 puts("Grammar is \n E->E+E \n E->E*E \n E->(E) \n E->id");
 puts("Enter the input string");
 gets(str);

 puts("\nStack \t\t Input \t\t Action");
 c=strlen(str);
 strcpy(act,"SHIFT->");
 for(k=0,i=0; j<c; k++,i++,j++){
  if(str[j]=='i' && str[j+1]=='d'){
   stk[i]=str[j];
   stk[i+1]=str[j+1];
   stk[i+2]='\0';
   str[j]=' ';
   str[j+1]=' ';
   printf("$%s\t%s$\t%sid\n",stk,str,act);
   check();
  } else {
   stk[i]=str[j];
   stk[i+1]='\0';
   str[j]=' ';
   printf("$%s\t%s$\t%ssymbols\n",stk,str,act);
   check();
  }
 }

 printf("\n");
}


void check() {
 strcpy(ac,"REDUCE TO E");
 for(z=0; z<c; z++)
  if(stk[z] == 'i' && stk[z+1] == 'd'){
```

```
   stk[z] = 'E';
   stk[z+1] = '\0';
   printf("$%s\t%s$\t%s\n",stk,str,ac);
   j++;
  }
 for(z=0; z<c; z++)
  if(stk[z]=='E' && stk[z+1]=='+' && stk[z+2]=='E'){
   stk[z]='E';stk[z+1]='\0';
   stk[z+2]='\0';
   printf("$%s\t%s$\t%s\n",stk,str,ac);
   i=i-2;
  }

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

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

OUTPUT:


Activities
Visual Studio Code
Tue 12:24
100%
4.c - Visual Studio Code
File Edit Selection View Go Run Terminal Help
TERMINAL DEBUG CONSOLE PROBLEMS OUTPUT
1: bash
rehan@tribunal:~$ cd Documents
rehan@tribunal:~/Documents$ cd SSC
rehan@tribunal:~/Documents/SSC$ cc 4.c
4.c: In function 'main':
4.c:12:2: warning: implicit declaration of function 'gets'; did you mean 'fgets'? [-Wimplicit-function-declaration]
gets(str);
^~~~
fgets
/tmp/ccaQhIsR.o: In function `main':
4.c:(.text+0x29): warning: the `gets' function is dangerous and should not be used.
rehan@tribunal:~/Documents/SSC$ ./a.out
Grammar is
E->E+E
E->E*E
E->(E)
E->id
Enter the 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
rehan@tribunal:~/Documents/SSC$
0 0
Ln 2, Col 18 Tab Size: 4 UTF-8 LF C Linux