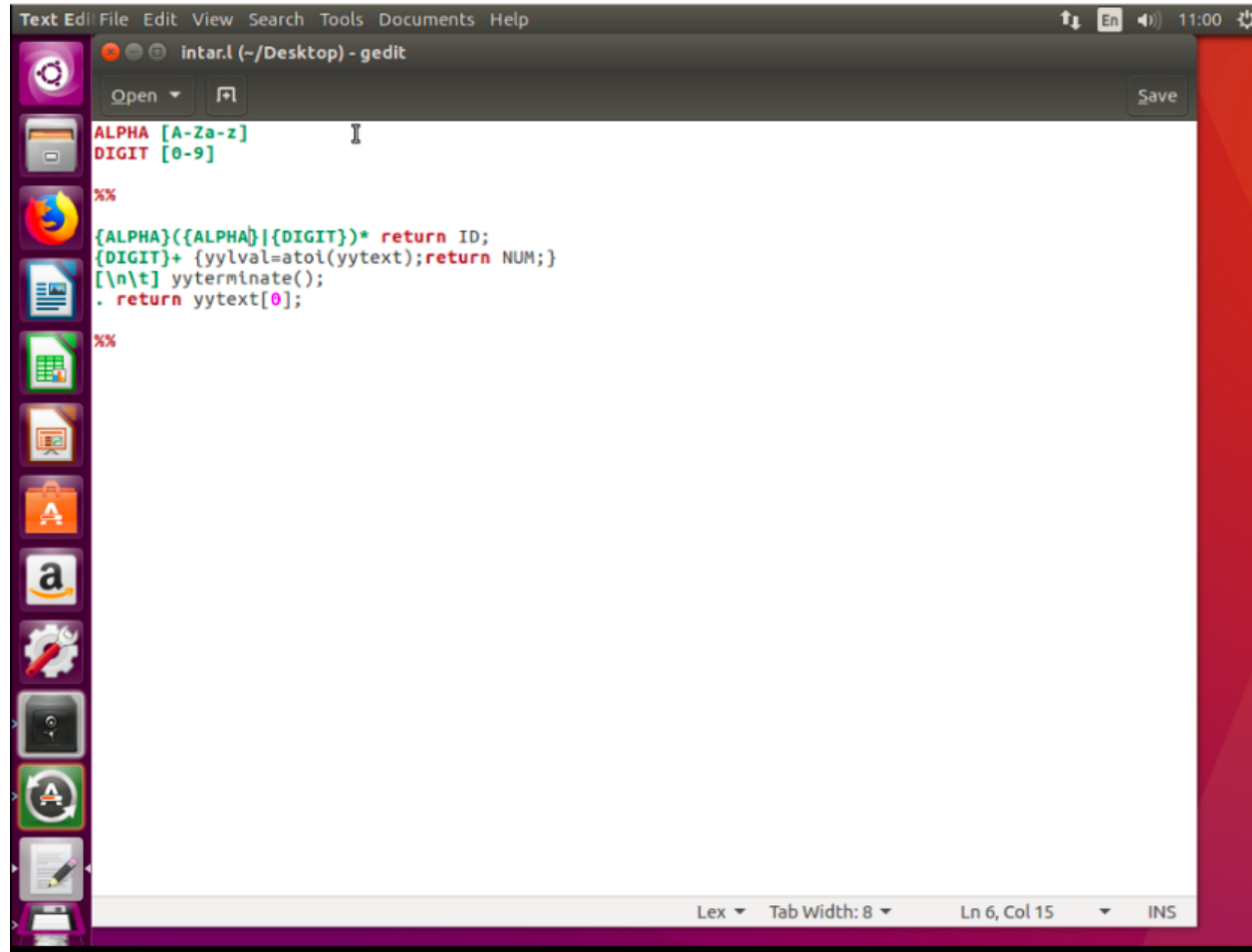


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## LEX PROGRAM - INTERMEDIATE CODE (IC) GENERATOR FOR ARITHMETIC EXPRESSION



The screenshot shows a gedit text editor window titled "Intar.l (~/Desktop) - gedit". The editor contains a Lex program for generating intermediate code for arithmetic expressions. The program defines two token types, ALPHA and DIGIT, and uses them in a rule to generate intermediate code. The status bar at the bottom indicates "Lex", "Tab Width: 8", "Ln 6, Col 15", and "INS".

```
Text Edit File Edit View Search Tools Documents Help
Intar.l (~/Desktop) - gedit
Open Save

ALPHA [A-Za-z]
DIGIT [0-9]

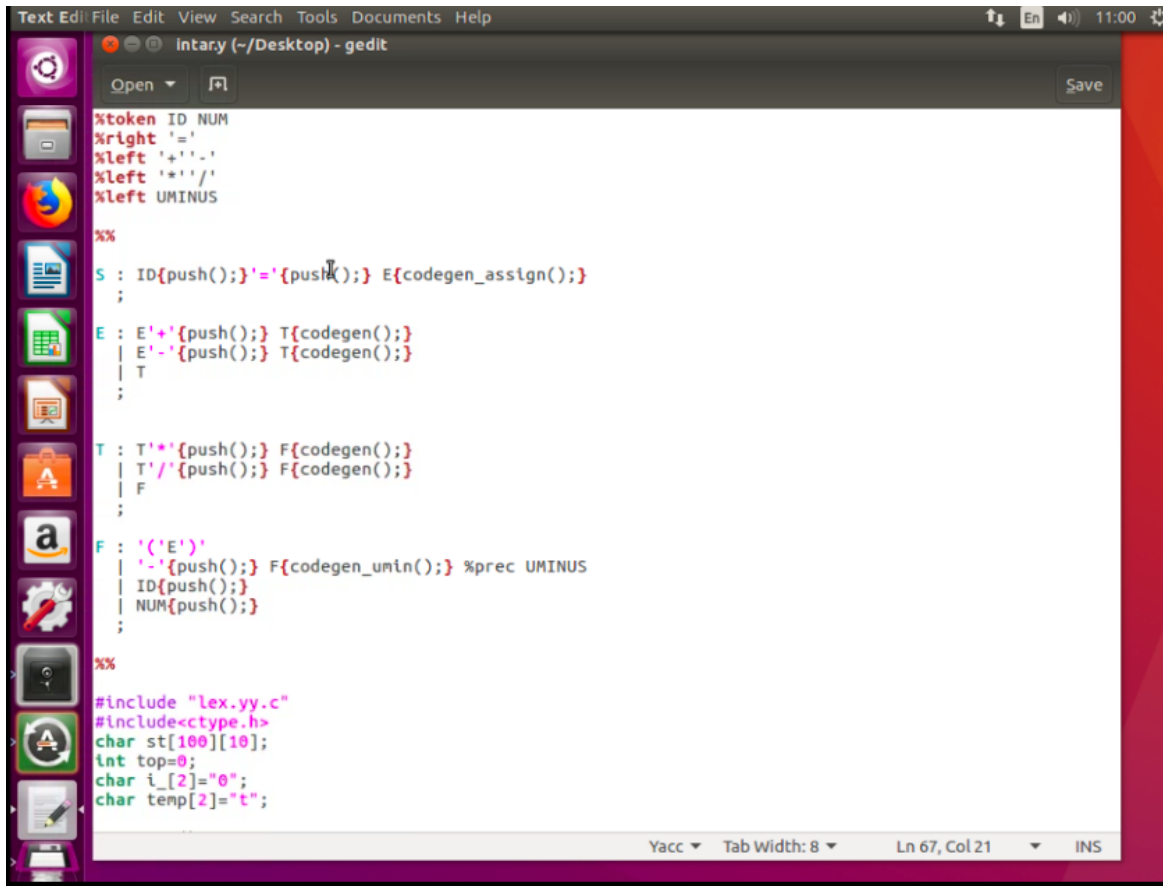
%%

{ALPHA}({ALPHA}|{DIGIT})* return ID;
{DIGIT}+ {yyval=atoi(yytext);return NUM;}
[\\n\\t] yyterminate();
. return yytext[0];

%%

Lex Tab Width: 8 Ln 6, Col 15 INS
```

## YACC PROGRAM - INTERMEDIATE CODE (IC) GENERATOR FOR ARITHMETIC EXPRESSION



The screenshot shows a gedit text editor window titled "Intary (~/Desktop) - gedit". The editor contains a YACC program for generating intermediate code for arithmetic expressions. The program defines tokens, non-terminals, and productions. The productions include rules for the start symbol S, the expression non-terminal E, the term non-terminal T, and the factor non-terminal F. The code also includes a C preprocessor section with includes and variable declarations.

```
Text Edit File Edit View Search Tools Documents Help
Intary (~/Desktop) - gedit

%token ID NUM
%right '='
%left '+' '-'
%left '*' '/'
%left UMINUS

%%

S : ID{push();} '=' {push();} E{codegen_assign();}
  ;

E : E '+' {push();} T{codegen();}
  | E '-' {push();} T{codegen();}
  | T
  ;

T : T '*' {push();} F{codegen();}
  | T '/' {push();} F{codegen();}
  | F
  ;

F : '(' 'E' ')'
  | '-' {push();} F{codegen_unin();} %prec UMINUS
  | ID{push();}
  | NUM{push();}
  ;

%%

#include "lex.yy.c"
#include <ctype.h>
char st[100][10];
int top=0;
char i_[2]="0";
char temp[2]="t";

Yacc Tab Width: 8 Ln 67, Col 21 INS
```

```
Text Edit: File Edit View Search Tools Documents Help
Intary (~/.Desktop) - gedit

;
E : E'+'{push();} T{codegen();}
  | E'-'{push();} T{codegen();}
  | T
  ;
T : T'*'{push();} F{codegen();}
  | T'/'{push();} F{codegen();}
  | F
  ;
F : '('E')'
  | '-'{push();} F{codegen_unin();} %prec UMINUS
  | ID{push();}
  | NUM{push();}
  ;

%%

#include "lex.yy.c"
#include <ctype.h>
char st[100][10];
int top=0;
char i_[2]="0";
char temp[2]="t";

int main()
{
    printf("Enter the expression:");
    yyparse();
}

int push()
{
    strcpy(st[++top],yytext);
}

++codegen();

Yacc Tab Width: 8 Ln 67, Col 21 INS
```

```
Text Edit: File Edit View Search Tools Documents Help
Intary (~/.Desktop) - gedit

{
    strcpy(st[++top],yytext);
}

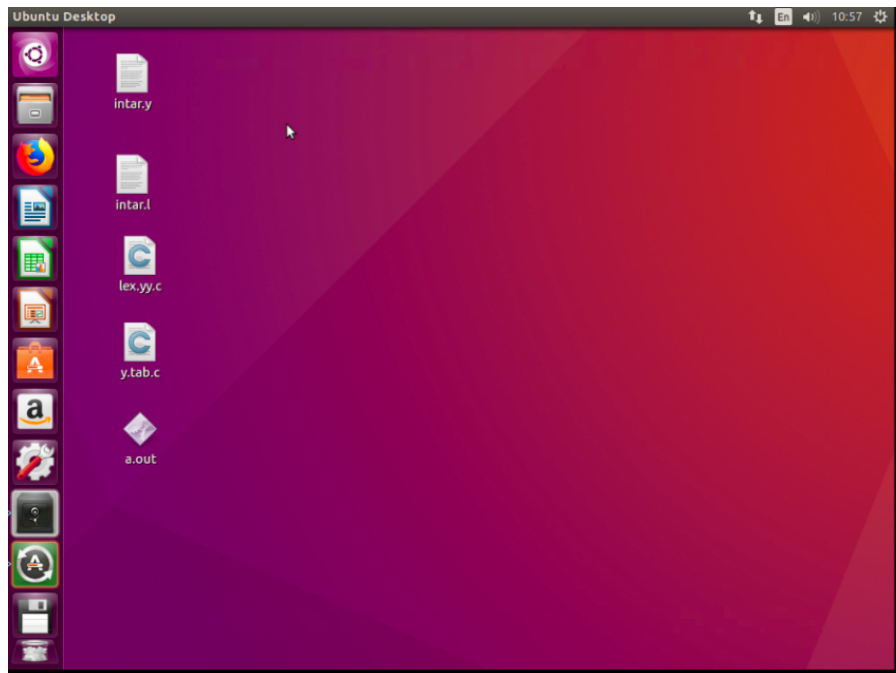
int codegen()
{
    strcpy(temp,"t");
    strcat(temp,i_);
    printf("%s=%s%s\n",temp,st[top-2],st[top-1],st[top]);
    top-=2;
    strcpy(st[top],temp);
    i_[0]++;
}

int codegen_unin()
{
    strcpy(temp,"t");
    strcat(temp,i_);
    printf("%s=-%s\n",temp,st[top]);
    top--;
    strcpy(st[top],temp);
    i_[0]++;
}

int codegen_assign()
{
    printf("%s=%s\n",st[top-2],st[top]);
    top-=2;
}

Yacc Tab Width: 8 Ln 67, Col 21 INS
```

## LEX and YACC PROGRAM FILES



## OUTPUT

```
onworks@onworks-Standard-PC-i440FX-PIIX-1996:~$ cd Desktop
onworks@onworks-Standard-PC-i440FX-PIIX-1996:~/Desktop$ lex intar.l
onworks@onworks-Standard-PC-i440FX-PIIX-1996:~/Desktop$ yacc intar.y
onworks@onworks-Standard-PC-i440FX-PIIX-1996:~/Desktop$ gcc y.tab.c -ll -ly
y.tab.c: In function 'yyparse':
y.tab.c:1124:16: warning: implicit declaration of function 'yylex' [-Wimplicit-function-declaration]
    yychar = yylex ();
                  ^
intar.y:9:6: warning: implicit declaration of function 'push' [-Wimplicit-function-declaration]
    S : ID{push();}'={push();} E{codegen_assign();}
        ^
intar.y:9:6: warning: implicit declaration of function 'codegen_assign' [-Wimplicit-function-declaration]
    S : ID{push();}'={push();} E{codegen_assign();}
        ^
intar.y:12:6: warning: implicit declaration of function 'codegen' [-Wimplicit-function-declaration]
    E : E'+'{push();} T{codegen();}
        ^
intar.y:24:6: warning: implicit declaration of function 'codegen_unin' [-Wimplicit-function-declaration]
    | '-'{push();} F{codegen_unin();} %prec UMINUS
        ^
y.tab.c:1343:7: warning: implicit declaration of function 'yyerror' [-Wimplicit-function-declaration]
    yyerror (YY_("syntax error"));
          ^
onworks@onworks-Standard-PC-i440FX-PIIX-1996:~/Desktop$ ./a.out
Enter the expression:a=(k+8)*(c-s)
t0=k+8
t1=c-s
t2=t0*t1
a=t2
onworks@onworks-Standard-PC-i440FX-PIIX-1996:~/Desktop$
```