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.lex File→

```
ALPHA [A-Za-z]
DIGIT [0-9]
%%
while            return WHILE;
{ALPHA}({ALPHA}|{DIGIT})*    return ID;
{DIGIT}+         {yylval=atoi(yytext); return NUM;}
[ \t]            ;
\n               yyterminate();
.                return yytext[0];
%%
```


.yacc File→

```
%{
        int yylex();
        int yyerror();
        int main();
        int lab1();
        int lab2();
        int lab3();
        int push();
        int codegen_assign();
        int codegen();
%}
%token ID NUM WHILE
%right '='
%left '+' '-'
%left '*' '/'
%%

S : WHILE{lab1();} '(' E ')'{lab2();} E ';'{lab3();}
;
E :V '='{push();} E{codegen_assign();}
| E '+'{push();} E{codegen();}
| E '-'{push();} E{codegen();}
| E '*'{push();} E{codegen();}
| E '/'{push();} E{codegen();}
| '(' E ')'
| V
```

```
    | NUM{push();}
    ;
V : ID {push();}
    ;
%%

#include "lex.yy.c"
#include<ctype.h>
char st[100][10];
int top=0;
char i_[2]="0";
char temp[3]="t";

int lnum=1;
int start=1;
int main()
{
        printf("Enter the expression : ");
        //yylex();
        yyparse();
}

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

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


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

int lab1()
{
```

```c
        printf("L%d: \n",lnum++);
}

int lab2()
{
        strcpy(temp,"t");
        strcat(temp,i_);
        printf("%s = not %s\n",temp,st[top]);
        printf("if %s goto L%d\n",temp,lnum);
        i_[0]++;
}

int lab3()
{
        printf("goto L%d \n",start);
        printf("L%d: \n",lnum);
}
```

Output→

```
amoddhopavkar@Amods-MacBook-Air Documents % ./a.out                          ]
Enter the expression : while(k=c/s)k=k*c+d;
L1:
t0 = c / s
k = t0
t1 = not k
if t1 goto L2
t2 = k * c
t3 = t2 + d
k = t3
goto L1
L2:
amoddhopavkar@Amods-MacBook-Air Documents % ▮
```