Lab Practice Session # 4

Course Title: Compiler Construction Lab (CSTE-3110)

1. Write a C program to generate three address code.

Sample Input	Sample Output
a = b + c + d - e	t1=b+c t2=t1+d t3=t2-e a=t3
x=a+b*c	t1=b*c t2=a+t1 x=t2

2. **Follow this link to download Bison (Yacc): How to Compile Run LEX YACC Programs on Windows - VTUPulse. Then run the following code:**

Yacc Part

```
%token NUMBER ID NL
%left '+' '-'
%left '*' '/'
%%
stmt : exp NL { printf("Valid Expression"); exit(0);}
;
exp : exp '+' exp
| exp '-' exp
| exp '*' exp
| exp '/' exp
| '(' exp ')'
| ID
| NUMBER
;
%%
int yyerror(char *msg)
{
printf("Invalid Expression\n");
exit(0);
}
main ()
{
printf("Enter the expression\n");
yyparse();
}
```

Lex Part

```
%{
#include "y.tab.h"
%}
```

```
%%
[0-9]+ { return DIGIT; }
[a-zA-Z][a-zA-Z0-9_]* { return ID; }
\n { return NL ;}
.
{ return yytext[0]; }
%%
```

Compiling and Running YACC Programs:

Use the following commands to compile and run the **YACC** program in the Windows environment.

(Note: hello.l is the LEX and hello.y is the program)

```
flex hello.l

bison -dy hello.y

gcc lex.yy.c y.tab.c

a.exe
```

Assignment (Report #3)

1. Write a C program to implement operator precedence parsing.

Sample Input	Sample Output
(d*d)+d$	Precedence input: $<(<d>*<d>)>+<d>$ $<(E*<d>)>+<d>$ $<(E*E)>+<E>$ $E+E$ Precedence Input: $<+>$ E Success

2. Write a YACC Program to recognize a valid variable, which starts with a letter, followed by any number of letters or digits.

3. Write a YACC Program to recognize nested IF control statements and display the levels of nesting.

Submission Deadline: 08/10/2024