Exp 7f : YACC – WHILE

LEX

1. Start
2. %% - rule section
   "while" return WHILE
   [\t\n]
   [0-9]+ return NUM
   [a-zA-Z][a-zA-Z0-9]* return ID
   \"[^\"]*\" return STRING
   "<" return L
   ">" return G
   "<=" return LE
   ">=" return GE
   "==" return EE
   "!=" return NE
   "++" return INC
   "--" return DEC
   "||" return OR
   "&&" return AND
   . return yytext[0]
3. yywrap() retturn 1
4. Stop

YACC

1. Start
2. %token WHILE L G LE GE EE NE INC DEC OR AND ID NUM STRING
3. %% rule section
   while : WHILE '(' cond ')' '{' stmt '}' { print "valid while loop" } ;
   cond : scond | scond AND cond | scond OR cond ;
   scond : nid | nid relop nid ;
   nid : ID | NUM ;
   relop : L | G | LE | GE | EE | NE ;
   stmt : ID '(' STRING other ')' ';' stmt | E ';' stmt | ;
   other : ',' ID other | ',' '&' ID other | ;
   E : ID'='E | E'+'E | E'-'E | E'*'E | E'/'E | E INC | E DEC | nid | '(' nid ')' ;
4. yyerror() to handle error
5. in main() call yyparse()

while – Lex

```
%{
   #include<stdio.h>
   #include "y.tab.h"
%}

%%
"while" { return WHILE; }

[ \t\n]
[0-9]+ { return NUM; }
[a-zA-Z][a-zA-Z0-9]* { return ID; }
\"[^\"]*\" { return STRING; }
```

```
"<" { return L; }
">" { return G; }
"<=" { return LE; }
">=" { return GE; }
"==" { return EE; }
"!=" { return NE; }
"++" { return INC; }
"--" { return DEC; }
"||" { return OR; }
"&&" { return AND; }
. { return yytext[0]; }
%%

int yywrap(){
   return 1;
}
```

while – YACC

```
%{
   #include<stdio.h>
%}

%token WHILE L G LE GE EE NE INC DEC OR AND ID NUM STRING

%%
while : WHILE '(' cond ')' '{' stmt '}' { printf("valid while loop\n"); };
cond : scond | scond AND cond | scond OR cond ;
scond : nid | nid relop nid ;
nid : ID | NUM ;
relop : L | G | LE | GE | EE | NE ;
stmt : ID '(' STRING other ')' ';' stmt | E ';' stmt | ;
other : ',' ID other | ',' '&' ID other | ;

E : ID'='E
| E'+'E
| E'-'E
| E'*'E
| E'/'E
| E INC
| E DEC
| nid
| '(' nid ')'
;
%%

int yyerror(){
   printf("invalid while loop\n");
   return 1;
}
```

```
int main(){
    printf("Enter while loop (press ctrl+D to get output)\n");
    yyparse();
    return 0;
}
```

output