Lex and Yacc

An Example—A Simple Calculator

<<Lex_and_Yacc_Example.ppt>>

- This example demonstrates a simple calculator.

1. **`lexyacc_test.l`**
   - Recognize numbers.

2. **`lexyacc_test.y`**
   - Parse the syntax and return the result of addition or subtraction.

```
$ cat lexyacc_test.l

%{
#include "lexyacc_test.tab.h"

extern int yylval;

%}
%%

[0-9]+       { yylval = atoi(yytext); return NUMBER; }
[ \t]    ;                  /* ignore white space */
 \n      return 0;  /* logical EOF */
.        return yytext[0];

%%
```

```
$cat lexyacc_test.y

%{
#include <stdio.h>

%}
%token NUMBER
%%

statement:  expression  { printf("= %d\n", $1); }
            ;
expression: expression '+' NUMBER   { $$ = $1 + $3; }
          |  expression '-' NUMBER   { $$ = $1 - $3; }
          |  NUMBER        { $$ = $1; }
             ;

%%
```

```
main()
{
        yyparse();
}

yyerror(s)
char *s;
{
        fprintf(stderr, "%s\n", s);
}
```

```
$ yacc -d lexyacc_test.y
$ lex lexyacc_test.l
$ cc -o lexyacc_test lex.yy.c lexyacc_test.tab.c -lfl
$ ./lexyacc_test
2 + 4
= 6

$ ./lexyacc_test
2/4
= 2
syntax error
```