Project #1. Scanner

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Environment

Ubuntu 18.04.6 LTS

main.c

NO_PARSE와 TraceScan을 True로 바꿔준다.

globals.h

MAXRESERVED를 6으로 바꿔준다.

reserved words에서 THEN, END, REPEAT, UNTIL, READ, WRITE를 제거하고 WHILE, RETURN, INT, VOID로 바꿔준다.

special symbols에 NE, LE, GT, GE, LBRACE, RBRACE, LCURLY, RCURLY, COMMA를 추가한다.

util.c

reserved words에서 바뀐 token들을 바꿔주고, 새로 추가된 special symbols들을 추가해준다.

ASSIGN은 =이 출력되도록 "=₩n"으로 바꿔준다.

Method 1

scan.c에서 state에 INLT, INGT, INNE, INOVER, INCOMMENT_를 추가해준다. 바뀐 reserved words들을 추가해주고, 원하는 기능을 하도록 getToken()을 바꿔준다.

make 명령어를 통해 컴파일하면 cminus_cimpl 실행파일이 생성되는데, 이를 이용하여 결과를 출력한다.

Method 2

cminus.l의 definition section에서 identifier를 바꿔주고, rule section에서 바뀐 reserved words와 special symbols를 반영하여 원하는 기능을 하도록 바꿔준다.

make 명령어를 통해 컴파일하면 cminus_lex 실행파일이 생성되는데, 이를 이용하여 결과를 출력한다.

Result

Method1 test.1.txt

```
lee@lee-VirtualBox:~/2022_ele4029_2018008813/1_Scanner$ ./cminus_cimpl test.1.txt
                                                                                                                                  12: {
TINY COMPILATION: test.1.txt
4: reserved word: int
4: ID, name= gcd
                                                                                                                                  13: reserved word: int
                                                                                                                                  13: ID, name= x
          4: ID,
4: reserved word: int
4: ID, name= u
                                                                                                                                  13: ;
                                                                                                                                  13: reserved word: int
          4: fe,
4: reserved word: int
4: ID, name= v
                                                                                                                                  13: ID, name= y
                                                                                                                                  14: ID, name= x
          5: {
6: reserved word: if
6: (
6: ID, name= v
                                                                                                                                  14: ID, name= input
                                                                                                                                  14: (
           6: == 6: NUM, val= 0
                                                                                                                                  14: )
           6: )
6: reserved word: return
6: ID, name= u
                                                                                                                                  14: ID, name= y
                                                                                                                                  14: =
          o: ID, name= 0
6:;
7: reserved word: else
7: reserved word: return
7: ID, name= gcd
7: (
7: ID, name= v
                                                                                                                                  14: ID, name= input
                                                                                                                                  14: (
                                                                                                                                  14: )
                                                                                                                                  14:
           15: ID, name= output
                                                                                                                                  15: (
                                                                                                                                  15: ID, name= gcd
                                                                                                                                  15: ID, name= x
                                                                                                                                  15: ID, name= y
           7:;
9: }
11: reserved word: void
11: ID, name= main
11: (
11: reserved word: void
                                                                                                                                  15: )
                                                                                                                                 15: ;
16: }
                                                                                                                                  17: EOF
```

Method2 test.1.txt

```
lee@lee-VirtualBox:~/2022_ele4029_2018008813/1_Scanner$ ./cminus_lex test.1.txt
                                                                                                                                                   11: ID, name= main
TINY COMPILATION: test.1.txt
4: reserved word: int
4: ID, name= gcd
4: (
4: reserved word: int
4: ID, name= u
                                                                                                                                                   11: (
                                                                                                                                                   11: reserved word: void
                                                                                                                                                   11: )
                                                                                                                                                  11: ,
12: {
13: reserved word: int
13: ID, name= x
            4: ID, name= u
4: ,
4: reserved word: int
4: ID, name= v
4: )
5: {
6: reserved word: if
                                                                                                                                                   13: ;
                                                                                                                                                   13: reserved word: int13: ID, name= y
            6: (
6: ID, name= v
                                                                                                                                                   14: ID, name= x
            6: ==
6: NUM, val= 0
                                                                                                                                                   14:
                                                                                                                                                   14: ID, name= input
            6: )
6: reserved word: return
6: ID, name= u
6: ;
            6: ;
7: reserved word: else
7: reserved word: return
7: ID, name= gcd
7: (
7: ID, name= v
                                                                                                                                                   14: ID, name= y
                                                                                                                                                   14:
                                                                                                                                                   14: ID, name= input
            7: ,
7: ID, name= u
7: -
                                                                                                                                                   14:
                ID, name= u
                                                                                                                                                   15: ID, name= output
                                                                                                                                                   15:
                 /
ID, name= v
                                                                                                                                                   15: ID, name= gcd
                ID, name= v
                                                                                                                                                   15: ID, name= x
            7: ;
9: }
11: reserved word: void
11: ID, name= main
11: (
11: reserved word: void
11: )
                                                                                                                                                   15:
                                                                                                                                                   15: ID, name= y
                                                                                                                                                   16:
                                                                                                                                                   17: EOF
            13: reserved word: int
```

Method1 test.2.txt

```
lee@lee-VirtualBox:~/2022_ele4029_2018008813/1_Scanner$ ./cminus_cimpl test.2.txt
lee@lee-VirtualBox:~/2022_ele40

TINY COMPILATION: test.2.txt

1: reserved word: void

1: ID, name= main

1: (

1: reserved word: void

1: )

2: {

3: reserved word: int

3: ID, name= i

3: ;

3: reserved word: int

3: ID, name= x

3: [

3: NUM, val= 5

3: ]

3: ;

5: ID, name= i

5: =

5: NUM, val= 0

5: ;

6: reserved word: while

6: (

6: ID, name= i
                                                                                                                                                                                         11: }
                                                                                                                                                                                         13: ID, name= i
                                                                                                                                                                                         13: NUM, val= 0
                                                                                                                                                                                         13: :
                                                                                                                                                                                         14: reserved word: while
                                                                                                                                                                                         14: (
                                                                                                                                                                                         14: ÎD, name= i
                                                                                                                                                                                         14: <=
                                                                                                                                                                                         14: NUM, val= 4
                                                                                                                                                                                         14:
                                                                                                                                                                                         15: {
16: reserved word: if
                                                                                                                                                                                         16: (
                                                                                                                                                                                         16: ID, name= x
                                                                                                                                                                                        16: [
16: ID, name= i
              6: (6: ID, name= i
6: < 6: NUM
                     reserved word: while
                                                                                                                                                                                         16: ]
16: !=
                                                                                                                                                                                         16: NUM, val= 0
                                                                                                                                                                                         16: )
                                                                                                                                                                                        17: {
18: ID, name= output
                     ID, name= x
                     l
ID, name= i
                                                                                                                                                                                        18: (
18: ID, name= x
                     ID, name= input
                                                                                                                                                                                        18: [
18: ID, name= i
                8: ;
10: ID, name= i
                                                                                                                                                                                         18: ]
18: )
               10: 10, name= 1
10: =
10: ID, name= i
10: +
10: NUM, val= 1
10: ;
11: }
13: ID, name= i
                                                                                                                                                                                         18: ;
                                                                                                                                                                                         19:
                                                                                                                                                                                         20:
                                                                                                                                                                                         21:
                                                                                                                                                                                         22: EOF
```

Method2 test.2.txt

```
lee@lee-VirtualBox:~/2022_ele4029_2018008813/1_Scanner$ ./cminus_lex test.2.txt
TINY COMPILATION: test.2.txt
1: reserved word: void
1: ID, name= main
                                                                                                                         13: ID, name= i
         1: (
1: reserved word: void
                                                                                                                         13: NUM, val= 0
                                                                                                                         14: reserved word: while
         2: {
3: reserved word: int
3: ID, name= i
                                                                                                                         14: (
                                                                                                                         14: ID, name= i
         3: ;
3: reserved word: int
3: ID, name= x
                                                                                                                         14: <=
                                                                                                                         14: NUM, val= 4
          3: [
3: NUM, val= 5
                                                                                                                         14:
                                                                                                                         15: {
         3: ]
3: ;
5: ID, name= i
5: =
                                                                                                                         16: reserved word: if
                                                                                                                         16: ID, name= x
          5: NUM, val= 0
                                                                                                                         16: ID, name= i
          6: reserved word: while
         6: (
6: ID, name= i
                                                                                                                         16: !=
         6: <
6: NUM, val= 5
                                                                                                                         16: NUM, val= 0
                                                                                                                         16: )
                                                                                                                         17:
                                                                                                                         18: ID, name= output
             ID, name= x
         8: ID, name= x
8: [
8: ID, name= i
                                                                                                                         18: (
                                                                                                                         18: ID, name= x
                                                                                                                         18:
         8: ID, name= input
8: (
                                                                                                                         18: ID, name= i
                                                                                                                         18:
          8: ;
10: ID, name= i
          10: ID, name= i
         10: +
10: NUM, val= 1
                                                                                                                         22: EOF
```