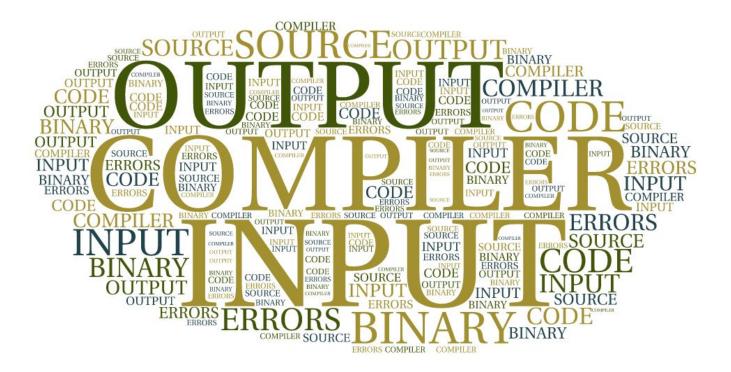# Μεταγλωττιστές 2019

2η εργασία Στ εξαμήνου

Βασιλείου Δημήτρης

30/05/19

Κανόνες Γραμματικής

```
Stmt_list      →      Stmt Stmt_list | .
Stmt           →      id equal Exp |   print Exp.
Exp            →      Term Term_tail.
Term_tail      →      xor Term Term_tail |    .
Term           →      Factor Factor_tail.
Factor_tail    →      or Factor Factor_tail |   .
Factor         →      Atom Atom_tail.
Atom_tail      →      and Atom Atom_tail |    .
Atom           →      lparen Exp rparen |     id |number.
Xor            →      ^
And            →      &
Or             →      |
```

Αποτελέσματα Ελέγχου Συμβατότητας Για LL(1)

Grammar

```
Stmt_list →   Stmt Stmt_list
              | .
Stmt→         id equal Exp
              | print Exp.
Exp →         Term Term_tail.
Term_tail →   xor Term Term_tail
              | .
Term →        Factor Factor_tail.
Factor_tail →or Factor Factor_tail
              | .
Factor →      Atom Atom_tail.
Atom_tail →   and Atom Atom_tail
              | .
Atom →        lparen Exp rparen
              | id
              | number.
```

- All nonterminals are reachable and realizable.
- The nullable nonterminals are: Stmt_list Term_tail Factor_tail Atom_tail.
- The endable nonterminals are: Atom_tail Atom Factor_tail Factor Term_tail Term Exp Stmt_list Stmt.
- No cycles.

First Follow Set Για Μη Τερματιστικά Σύμβολα

---

nonterminal	first set	follow set	nullable	endable
Stmt_list	id print	∅	yes	yes
Stmt	id print	id print	no	yes
Term_tail	xor	rparen id print	yes	yes
Term	lparen id number	rparen xor id print	no	yes
Factor_tail	or	rparen xor id print	yes	yes
Factor	lparen id number	rparen or xor id print	no	yes
Atom_tail	and	rparen or xor id print	yes	yes
Atom	lparen id number	rparen and or xor id print	no	yes
Exp	lparen id number	rparen id print	no	yes

The grammar is LL(1).

Αποτελέσματα Εξόδου parser.py

```
dimitrisg9@DESKTOP-JD0BV0S:/mnt/c/Users/Dimitris/Desktop/uni/ST exam/Metaglotistes/ergasia2$ python3 parser.py
dimitrisg9@DESKTOP-JD0BV0S:/mnt/c/Users/Dimitris/Desktop/uni/ST exam/Metaglotistes/ergasia2$
```

test.txt - Notepad
```
a = (1100 AND 0100)
print a
```



```
dimitrisg9@DESKTOP-JD0BV0S:/mnt/c/Users/Dimitris/Desktop/uni/ST exam/Metaglotistes/ergasia2$ python3 parser.py
Traceback (most recent call last):
  File "parser.py", line 131, in <module>
    parser.parse(fp)
  File "parser.py", line 43, in parse
    self.stmt_list()
  File "parser.py", line 48, in stmt_list
    self.stmt_list()
  File "parser.py", line 47, in stmt_list
    self.stmt()
  File "parser.py", line 61, in stmt
    self.expr()
  File "parser.py", line 67, in expr
    self.term()
  File "parser.py", line 84, in term
    self.factor()
  File "parser.py", line 101, in factor
    self.atom()
  File "parser.py", line 118, in atom
    self.match('(')
  File "parser.py", line 37, in match
    self.la, self.text = self.next_token()
  File "parser.py", line 33, in next_token
    return self.scanner.read()
  File "/home/dimitrisg9/.local/lib/python3.6/site-packages/plex/scanners.py", line 94, in read
    self.text, action = self.scan_a_token()
  File "/home/dimitrisg9/.local/lib/python3.6/site-packages/plex/scanners.py", line 138, in scan_a_token
    raise errors.UnrecognizedInput(self, self.state_name)
plex.errors.UnrecognizedInput: '', line 2, char 7: Token not recognised in state ''
dimitrisg9@DESKTOP-JD0BV0S:/mnt/c/Users/Dimitris/Desktop/uni/ST exam/Metaglotistes/ergasia2$
```

test.txt - Note...
```
a = (1100 AND 0100)
print (& a | b)
```
Wind Ln 2, 100%

Αποτελέσματα Εξόδου runner.py

```
dimitrisg9@DESKTOP-JD0BV0S:/mnt/c/Users/Dimitris/Desktop/uni/ST exam/Metaglotistes/ergasia2$ python3 runner.py
1111
1
101
1001
1
1101
110
dimitrisg9@DESKTOP-JD0BV0S:/mnt/c/Users/Dimitris/Desktop/uni/ST exam/Metaglotistes/ergasia2$
```

```
test.txt - Notepad                    —    □    ×
File  Edit  Format  View  Help
b = 0001
c = 0101
d = 1001
print (a)
print (b)
print (c)
print (d)
e = a AND b
z = c OR d
w = a XOR d
print e
print z
print w
```

```
dimitrisg9@DESKTOP-JD0BV0S:/mnt/c/Users/Dimitris/Desktop/uni/ST exam/Metaglotistes/ergasia2$ python3 runner.p
1111
1
101
1001
Traceback (most recent call last):
  File "runner.py", line 144, in <module>
    parser.parse(fp)
  File "runner.py", line 49, in parse
    self.stmt_list()
  File "runner.py", line 54, in stmt_list
    self.stmt_list()
  File "runner.py", line 54, in stmt_list
    self.stmt_list()
  File "runner.py", line 54, in stmt_list
    self.stmt_list()
  [Previous line repeated 5 more times]
  File "runner.py", line 53, in stmt_list
    self.stmt()
  File "runner.py", line 65, in stmt
    e = self.expr()
  File "runner.py", line 76, in expr
    t = self.term()
  File "runner.py", line 90, in term
    t = self.factor()
  File "runner.py", line 106, in factor
    t = self.atom()
  File "runner.py", line 128, in atom
    self.match('IDENTIFIER')
  File "runner.py", line 43, in match
    self.la, self.text = self.next_token()
  File "runner.py", line 39, in next_token
    return self.scanner.read()
  File "/home/dimitrisg9/.local/lib/python3.6/site-packages/plex/scanners.py", line 94, in read
    self.text, action = self.scan_a_token()
  File "/home/dimitrisg9/.local/lib/python3.6/site-packages/plex/scanners.py", line 138, in scan_a_token
    raise errors.UnrecognizedInput(self, self.state_name)
plex.errors.UnrecognizedInput: '', line 9, char 6: Token not recognised in state ''
dimitrisg9@DESKTOP-JD0BV0S:/mnt/c/Users/Dimitris/Desktop/uni/ST exam/Metaglotistes/ergasia2$
```

```
test.txt - Notepad                    —    □
File  Edit  Format  View  Help
b = 0001
c = 0101
d = 1001
print (a)
print (b)
print (c)
print (d)
e = a & b        //YOU HAVE TO USE AND, OR, XOR
z = c | d
w = a ^ d
print e
print z
print w
                              Windows (CF  Ln 9, Col 43  1
```