

Μεταγλωττιστές 2019

Προγραμματιστική Εργασία #2

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A) Κανόνες γραμματικής

Enter a grammar:

```
Stmt_list -> Stmt Stmt_list
|
| .
Stmt -> id equal Exp
| print Expr.
Expr -> 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 -> ( Expr ) | id | number.
```

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B) Αποτελέσματα ελέγχου για LL(1) συμβατότητα

| Grammar | |
|---------------|-----------------------------------|
| Stmt_list → | Stmt Stmt_list . |
| Stmt → | id equal Exp print Expr. |
| Expr → | 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 → | (Expr) id number. |

| nonterminal | first set | follow set | nullable | endable |
|-------------|-------------|-----------------------|----------|---------|
| Stmt_list | id print | ∅ | yes | yes |
| Stmt | id print | id print | no | yes |
| Exp | ∅ | id print | no | yes |
| Term_tail | xor |) id print | yes | yes |
| Term | (id number |) xor id print | no | yes |
| Factor_tail | or |) xor id print | yes | yes |
| Factor | (id number |) or xor id print | no | yes |
| Atom_tail | and |) or xor id print | yes | yes |
| Atom | (id number |) and or xor id print | no | yes |
| Expr | (id number |) id print | no | yes |

Γ) Αποτελέσματα εξόδου για έγκυρες μορφές

```
a = 1001
b = 101 XOR 111
c = 1001100 AND 0001001
print (10101 AND 10111 OR 11001 XOR 00001)
print a
print 1 OR 0 XOR 1
print c |
print b
```

```
iliastz@iliastz:~$ cd Desktop/
iliastz@iliastz:~/Desktop$ python3 runner.py
11100
1001
0
1000
10
```

Δ) αποτελέσματα εξόδου για άκυρες εισόδους

```
b = a XOR 111
c = 1001100 AND 0001001
print (10101 AND 10111 OR 11001 XOR 00001)
print a
print 1 OR 0 XOR 1
print c
print b
```

```
iliastz@iliastz:~/Desktop$ python3 runner.py
Traceback (most recent call last):
  File "runner.py", line 133, in <module>
    parser.parse(fp)
  File "runner.py", line 45, in parse
    self.stmt_list()
  File "runner.py", line 49, in stmt_list
    self.stmt()
  File "runner.py", line 60, in stmt
    e=self.expr()
  File "runner.py", line 70, in expr
    func=self.term()
  File "runner.py", line 85, in term
    func=self.factor()
  File "runner.py", line 99, in factor
    func=self.atom()
  File "runner.py", line 123, in atom
    raise ParseRun("perimenw id arxikopoiimeno")
__main__.ParseRun: perimenw id arxikopoiimeno
```