

Ονοματεπώνυμο: Κοκολάκη Στυλιανή
ΑΜ: Π2016177

Συντακτικός αναλυτής top-down LL(1). Ανάθεση εντολών σε μεταβλητές και εκτύπωση δυαδικών αριθμητικών εκφράσεων. Όπως : Σειρές 0 έως 1, Αναγνωριστικά ονόματα μεταβλητών, τελεστές λογικής and, or , xor, όλα τα παραπάνω συνδυασμένα με παρενθέσεις σε οποιαδήποτε βάθος.

Κανόνες Γραμματικής

Grammar	
Stmt_list →	Stmt Stmt_list .
Stmt →	id equal Expr 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 →	leftparenthesis Expr rightparenthesis id number.

Some sentences generated by this grammar: {ε, print id, id equal id, print number, print id and id, id equal number, id equal id and id, print id and number, print number and id, id equal number and id, id equal id and number, print number and number, id equal id and id and id, id equal number and number, id equal id and id and number, id equal id and number and id and id, id equal id and number and number, id equal number and id and number, id equal number and number and id}

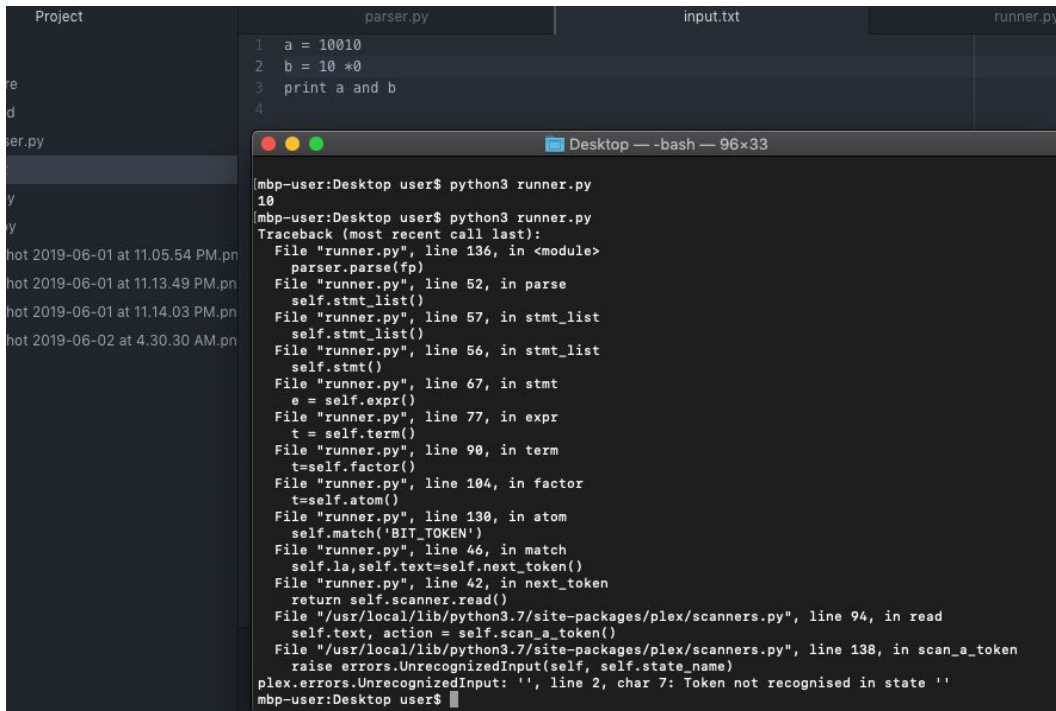
Έγκυρη Συμβατότητα LL(1) - Πίνακας με όλα τα First και Follow sets για όλα τα σύμβολα.

- 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 Expr Stmt_list Stmt.
- No cycles.

nonterminal	first set	follow set	nullable	endable
Stmt_list	id print	∅	yes	yes
Stmt	id print	id print	no	yes
Term_tail	xor	rightparenthesis id print	yes	yes
Term	leftparenthesis id number	rightparenthesis xor id print	no	yes
Factor_tail	or	rightparenthesis xor id print	yes	yes
Factor	leftparenthesis id number	rightparenthesis or xor id print	no	yes
Atom_tail	and	rightparenthesis or xor id print	yes	yes
Atom	leftparenthesis id number	rightparenthesis and or xor id print	no	yes
Expr	leftparenthesis id number	rightparenthesis id print	no	yes

The grammar is LL(1).

Έγκυρα και άκυρα αποτελέσματα εξόδου μετά την υλοποίηση της γραμματικής στο runner.py



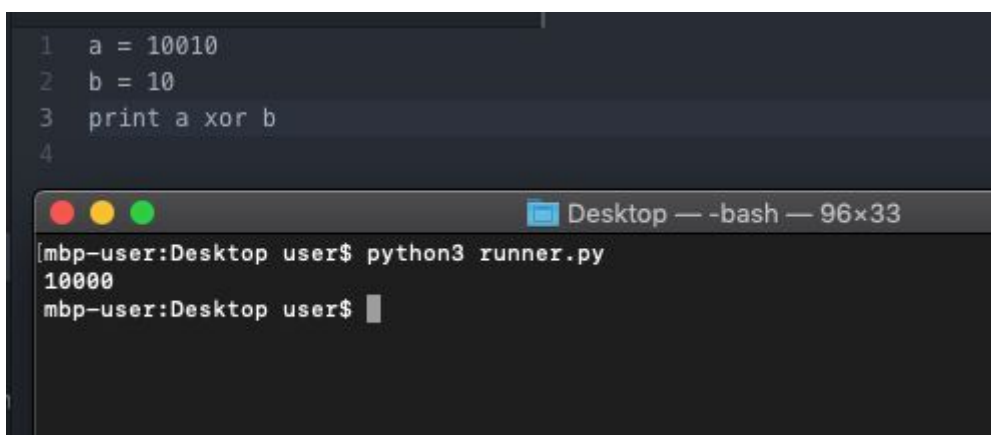
```
Project      parser.py      input.txt      runner.py
1  a = 10010
2  b = 10 * 0
3  print a and b
4

Desktop — -bash — 96x33
mbp-user:Desktop user$ python3 runner.py
10
mbp-user:Desktop user$ python3 runner.py
Traceback (most recent call last):
  File "runner.py", line 136, in <module>
    parser.parse(fp)
  File "runner.py", line 52, in parse
    self.stmt_list()
  File "runner.py", line 57, in stmt_list
    self.stmt_list()
  File "runner.py", line 56, in stmt_list
    self.stmt()
  File "runner.py", line 67, in stmt
    e = self.expr()
  File "runner.py", line 77, in expr
    t = self.term()
  File "runner.py", line 90, in term
    t=self.factor()
  File "runner.py", line 104, in factor
    t=self.atom()
  File "runner.py", line 130, in atom
    self.match('BIT_TOKEN')
  File "runner.py", line 46, in match
    self.la,self.text=self.next_token()
  File "runner.py", line 42, in next_token
    return self.scanner.read()
  File "/usr/local/lib/python3.7/site-packages/plex/scanners.py", line 94, in read
    self.text, action = self.scan_a_token()
  File "/usr/local/lib/python3.7/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 ''
mbp-user:Desktop user$
```



```
Project      parser.py      input.txt
Desktop
.DS_Store
.localized
dionparser.py
input.txt
parser.py
runner.py

Desktop — -bash — 80x24
mbp-user:Desktop user$ python3 runner.py
10
mbp-user:Desktop user$
```



```
1  a = 10010
2  b = 10
3  print a xor b
4

Desktop — -bash — 96x33
mbp-user:Desktop user$ python3 runner.py
10000
mbp-user:Desktop user$
```

parser.py	input.txt	runner
1 a = 10010		
2 b = 10 *0 d		
3 print a and b		
4		

Desktop — -bash — 96x33

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```

2

```
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```

Πηγές για την εγκατάσταση του plex3:

-> Install virtualenvn ubuntu (GitHub Gist)

https://gist.github.com/frfahim/73c0fad6350332cef7a653bcd762f08d?fbclid=IwAR1nZh1VHNA3qIBPVF2lCG1_LCnU6Jho69GOUygCOKXyowP_DJKI4GIRfU8

-> Οδηγίες μαθήματος Μεταγλωττιστές Ιόνιο Πανεπιστήμιο.

<http://mixstef.github.io/courses/compilers/lecturedoc/unit4/module1.html>

Χρήσιμα link για την κατανόηση και υλοποίηση της εργασίας:

->Υλικό μαθήματος

Θεωρία <http://mixstef.github.io/courses/compilers/lecturedoc/unit4/module1.html>

Κώδικας <https://gist.github.com/mixstef/946fce67f49f147991719bfa4d0101fa>

Βοήθημα γραμματικής <http://smlweb.cpsc.ucalgary.ca/start.html>