# ΑΡΧΕΣ ΓΛΩΣΣΩΝ ΠΡΟΓΡΑΜΜΑΤΙΣΜΟΥ ΚΑΙ ΜΕΤΑΦΡΑΣΤΩΝ


| Συμμετέχοντες |
| --- |
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1.

# Περιγραφή του υποσυνόλου της γλώσσας Python σε BNF

```
<input> ::=
        <newlines>
        | <statements>

<suite>::=
          <stmt_list> NEWLINE
   |    NEWLINE INDENT <statements> DEDENT

<statement>::=
   <stmt_list> NEWLINE
   | <compound_stmt>

<statements>::=
   <statement>
   | <statements> <statement>

<stmt_list>::=
   <simple_stmt>
   | <simple_stmt> ';'
   | <simple_stmt> <simple_stmts>
   | <simple_stmt> <simple_stmts> ';'

<simple_stmts>::=
   ';' <simple_stmt>
   | <simple_stmts> ';' <simple_stmt>

<newlines>::=
        NEWLINE
        | <newlines> NEWLINE

<simple_stmt>::=
        <expression_stmt>
        | <assignment_stmt>
        | <print_stmt>
        | <return_stmt>
        | <break_stmt>
        | <import_stmt>

<expression_stmt>::=
        <expression_list>
```

```
<assignment_stmt>::=
<assignment_stmt_targer_list> <expression_list>

<assignment_stmt_targer_list>::=
   <target_list> '='
   | <assignment_stmt_targer_list> <target_list> '='


<print_stmt>::=
PRINT
| PRINT <expression>
| PRINT <expression> ','
| PRINT <expression> <expressions>
| PRINT <expression> <expressions> ','
| PRINT RIGHT_OP <expression>
| PRINT RIGHT_OP <expression> <expressions>
| PRINT RIGHT_OP <expression> <expressions> ','


<return_stmt>::=
   RETURN
   | RETURN <expression_list>

<break_stmt>::=
   BREAK

<compound_stmt>::=
   <if_stmt>
   | <for_stmt>
   | <funcdef>
   | <classdef>

<if_stmt>::=
   IF <expression> ':' <suite>
   | IF <expression> ':' <suite> ELSE ':' <suite>
   | IF <expression> ':' <suite> <elif_stmt>
   | IF <expression> ':' <suite> <elif_stmt> ELSE ':' <suite>

<elif_stmt>::=
         ELIF <expression> ':' <suite>
   <elif_stmt> ELIF <expression> ':' <suite>

<for_stmt>:
   FOR <target_list> IN <expression_list> ':' <suite>
   | FOR <target_list> IN <expression_list> ':' <suite> ELSE ':' <suite>
```

```
<funcdef>::=
        DEF <funcname> '(' ')' ':' <suite>
        | <decorators> DEF <funcname> '(' ')' ':' <suite>
        | DEF <funcname> '(' <parameter_list> ')' ':' <suite>
        | <decorators> DEF <funcname> '(' <parameter_list> ')' ':' <suite>

<decorators>::=
   <decorator>
   | <decorators> <decorator>

<decorator>::=
   '@' <dotted_name> NEWLINE
   | '@' <dotted_name> '(' ')' NEWLINE
   | '@' <dotted_name> '(' <argument_list> ')' NEWLINE
   | '@' <dotted_name> '(' <argument_list> ',' ')' NEWLINE

<dotted_name>::=
   <identifier>
   | <identifier> <dot_identifiers>

<dot_identifiers>::=
   '.' <identifier>
   | <dot_identifiers> '.' <identifier>

<parameter_list>::=
   STAR <identifier>
   | STAR <identifier> ',' DOUBLESTAR <identifier>
   | DOUBLESTAR <identifier>
   | <defparameter>
   | <defparameter>','
   | <defparameters> STAR <identifier>
   | <defparameters> STAR <identifier> ',' DOUBLESTAR <identifier>
   | <defparameters> DOUBLESTAR <identifier>
   | <defparameters> defparameter
   | <defparameters> def<parameter >','

<defparameter>::=
   <parameter>
   | <parameter >'=' <expression>

<defparameters>::=
   defparameter >','
   | <defparameters> <defparameter >','

<sublist>::=
   <parameter>
   | <parameter >','
   | <parameter ><parameters>
   | <parameter ><parameters> ','
```

```
<parameter>::=
   <identifier>
   | '(' <sublist> ')'

<parameters>::=
   ',' <parameter >
   | <parameters> ',' <parameter>

<funcname>::=
   identifier

<classdef>::=
   CLASS <classname> ':' <suite>
   | CLASS <classname> <inheritance> ':' <suite>

<inheritance>::=
   '(' ')'
   | '(' <expression_list> ')'

<classname>::=
   <identifier>

<suite>::=
   <stmt_list> NEWLINE
   | NEWLINE INDENT <statements> DEDENT



<import_stmt>::=
   IMPORT< module >
   | IMPORT< module >AS <name>
   | IMPORT< module ><modules>
   | IMPORT< module >AS <name> modules
   | FROM <relative_module> IMPORT <identifier>
   | FROM <relative_module> IMPORT <identifier> AS <name>
   | FROM <relative_module> IMPORT <identifier> <import_stmt_identifiers>
   | FROM <relative_module> IMPORT <identifier> AS <name> <import_stmt_identifiers>
   | FROM <relative_module> IMPORT '(' <identifier> ')'
   | FROM <relative_module> IMPORT '(' <identifier> AS <name> ')'
   | FROM <relative_module> IMPORT '(' <identifier> <import_stmt_identifiers> ')'
   | FROM <relative_module> IMPORT '(' <identifier> AS <name> <import_stmt_identifiers> ')'
   | FROM <relative_module> IMPORT '(' <identifier> ',' ')'
   | FROM <relative_module> IMPORT '(' <identifier> AS <name> ',' ')'
   | FROM <relative_module> IMPORT '(' <identifier> <import_stmt_identifiers> ',' ')'
   | FROM <relative_module> IMPORT '(' <identifier> AS <name> <import_stmt_identifiers> ',' ')'
   | FROM< module >IMPORT STAR

<module>::=
```

```
    <identifier>
    |< module >'.' <module>

<relative_module>::=
    <module>
    | <dot_modules>
    | <dots>

<dot_modules>::=
    '.' <module>
    | <dot_modules> '.' module

<dots>::=
    '.'
    | <dots> '.'

<modules>::=
    ',' <module>
    | ','< module >AS <name>
    | <modules> ',' <module>
    | <modules> ','< module >AS <name>

<import_stmt_identifiers>::=
    ',' <identifier>
    | ',' <identifier> AS <name>
    | <import_stmt_identifiers> ',' <identifier>
    | <import_stmt_identifiers> ',' <identifier> AS <name>

<name>::=
    <identifier>


<primary>::=
                <atom>
                | <attributeref>
                | <call>

<call>::=
                <primary> '(' ')'
                | <primary> '(' <argument_list> ')'
                | <primary> '(' <argument_list> ',' ')'


<argument_list>::=
                <positional_arguments>
                | <positional_arguments> ',' <keyword_arguments>
                | <positional_arguments> ',' STAR <expression>
                | <positional_arguments> ',' DOUBLESTAR <expression>
                | <positional_arguments> ',' <keyword_arguments> ',' STAR <expression>
                | <positional_arguments> ',' <keyword_arguments> ',' DOUBLESTAR <expression>
```

```
                    | <positional_arguments> ',' STAR <expression> ',' DOUBLESTAR <expression>
                    | <positional_arguments> ',' <keyword_arguments> ',' STAR <expression> ',' DOUBLESTAR
<expression>
                    | <keyword_arguments>
                    | <keyword_arguments> ',' STAR <expression>
                    | <keyword_arguments> ',' DOUBLESTAR <expression>
                    | <keyword_arguments> ',' STAR <expression> ',' DOUBLESTAR <expression>
                    | STAR <expression>
                    | STAR <expression> ',' DOUBLESTAR <expression>
                    | DOUBLESTAR <expression>

<positional_arguments>::=
   <expression>
   | <expression> <expressions>

<keyword_arguments>::=
   <keyword_item>
   | <keyword_item> <keyword_items>

<keyword_item>::=
   <identifier> '=' <expression>

<keyword_items>::=
   ',' <keyword_item>
   | <keyword_items> ',' <keyword_item>


<expression_list>::=
   <expression>
   | <expression> ','
   | <expression> <expressions>
   | <expression> <expressions> ','

<expressions>::=
   ',' <expression>
   | <expressions> ',' <expression>


<expression>::=
   <conditional_expression>
   | <lambda_form>



<conditional_expression>::=
                    <or_test>
                    | <or_test> IF <or_test> ELSE expression

<power>::=
   <primary>
```

```
   | DOUBLESTAR <u_expr>



<u_expr>::=
   power
   | '-' <u_expr>
   | '+' <u_expr>
   | '~' <u_expr>

<m_expr>::=
   <u_expr>
   | <m_expr> STAR <u_expr>
   | <m_expr> DOUBLESLASH <u_expr>
   | <m_expr> SLASH <u_expr>
   | <m_expr> '%' <u_expr>

<a_expr>::=
   <m_expr>
   | <a_expr> '+' <m_expr>
   | <a_expr> '-' <m_expr>

<shift_expr>::=
   <a_expr>
   | <shift_expr> RIGHT_OP <a_expr>
   | <shift_expr> LEFT_OP <a_expr>

<and_expr>::=
   <shift_expr>
   | <and_expr> '&' <shift_expr>

<xor_expr>::=
   <and_expr>
   | <xor_expr> '^' <and_expr>

< or_expr>::=
   <xor_expr>
   |< or_expr> '|' <xor_expr>

<comparison >::=
  < or_expr>
   | <comparison_operators_or_exprs>

<comparison_operators_or_exprs>::=
   <comp_operator>< or_expr>
   | <comparison_operators_or_exprs> <comp_operator> < or_expr>

<comp_operator>::=
   "<" | ">" | "==" | ">=" | "<=" | "<>" | "!="
   | IS | IS NOT | IN | NOT IN
```

```
<target_list>::=
    <target>
    | <target_list> ',' <target>
    | <target_list> ','

<target>::=
    <identifier>
    | '(' <target_list> ')'
    | '[' <target_list> ']'
    | <attributeref>

<attributeref>::=
                    <primary> '.' <identifier>

<atom>::=
                    <identifier>
                    | <literal>
                    | <enclosure>


<enclosure>::=
                    <parenth_form>
                    | <dict_display>

<parenth_form>::=
    '(' ')'
    | '(' <expression_list> ')'


<dict_display>::=
    '{' '}'
    | '{' <key_datum_list> '}'


<key_datum_list>::=
    <key_datum>
    | <key_datum >','
    | <key_datum ><key_datums>
    | <key_datum ><key_datums> ','


<key_datums>::=
    ',' <key_datum>
    | <key_datums> ',' <key_datum>


<key_datum >::=
    <expression >':' <expression>
```

```
<identifier>::=
   IDENTIFIER

<stringliteral>::=
   SHORTSTRING | LONGSTRING

<longinteger>::=
   <integer> 'l' | <integer> 'L'

<integer>::=
   DECINTEGER | OCTINTEGER | HEXINTEGER

<floatnumber>::=
   POINTFLOAT | EXPONENTFLOAT

<imagnumber>::=
   IMAGNUMBER
```

# 2. Περιγραφή της υλοποιημένης γλώσσας σε BNF

<program> ::=

//empty

| <statement_list>

<statement_list> ::=

<statement_list> <statement>

| <statement>

<statement> ::=

<import_stmt>

| <assignment_stmt>

| <if_stmt>

| <for_stmt>

| <print_stmt>

| <funcdef>

| <classdef>

| <call>

| <return_stmt>

| <lambda_form

| <dict_setdefault>

| <dict_items>

<return_stmt> ::=

RETURN

| RETURN <expression_list>

<call> ::=

<primary> LPAR RPAR

| <primary> LPAR <expression_list> RPAR

| <identifier> EQUAL <primary> LPAR  RPAR

| <identifier> EQUAL <primary> LPAR <expression_list> RPAR

<primary> ::=

<identifier>

|<attr_identifier>

<lambda_form> ::=

LAMBDA COLON <expression>

| LAMBDA <parameter_list> COLON <expression>

//---------- Print field ----------

<print_stmt> ::=

PRINT

| PRINT <expression>

| PRINT <expression_list>

| PRINT RIGHT_OP <expression>

| PRINT RIGHT_OP <expression_list>

| PRINT LPAR <call> RPAR

//---------- Assignment field ----------
<assignment_stmt> ::=

<assignment_stmt_targer_list> <expression_list>

|<assignment_stmt_targer_list> <call>

<assignment_stmt_targer_list> ::=

<target_list> EQUAL

| <assignment_stmt_targer_list> <target_list> EQUAL

<target_list> ::=

<target>

| <target_list> COMMA <target>

| <target_list> COMMA

<target> ::=

<identifier>

|<attr_identifier>

|LPAR <target>_list> RPAR

//---------- Import filed ----------
<import_stmt> ::=

IMPORT <module>

| IMPORT <module> AS <name>

| IMPORT <modules> <modules>

| IMPORT <modules> AS <name> <modules>

| FROM <relative_module> IMPORT <identifier>

| FROM <relative_module> IMPORT <identifier> AS <name>

| FROM <relative_module> IMPORT <identifier> <import_stmt_identifiers>

| FROM <relative_module> IMPORT <identifier> AS <name> <import_stmt_identifiers>

| FROM <relative_module> IMPORT LPAR <identifier> RPAR

| FROM <relative_module> IMPORT LPAR <identifier> AS <name> RPAR

| FROM <relative_module> IMPORT LPAR <identifier> <import_stmt_identifiers> RPAR

| FROM <relative_module> IMPORT LPAR <identifier> AS <name> <import_stmt_identifiers> RPAR

| FROM <relative_module> IMPORT LPAR <identifier> COMMA RPAR

| FROM <relative_module> IMPORT LPAR <identifier> AS <name> COMMA RPAR

| FROM <relative_module> IMPORT LPAR <identifier> <import_stmt_identifiers> COMMA RPAR

| FROM <relative_module> IMPORT LPAR <identifier> AS <name> <import_stmt_identifiers> COMMA RPAR

| FROM <relative_module> IMPORT STAR

<module> ::=

<module> DOT <identifier>

| <identifier>

<relative_module> ::=

<module>

| <dots> <module>

| <dots>

<dots> ::=

DOT

| <dots> DOT

<modules> ::=

<modules> COMMA <module>

| <modules> COMMA <module> AS <name>

| COMMA<module>

| COMMA<module> AS <name>

<import_stmt_identifiers> ::=

COMMA <identifier>

| COMMA <identifier> AS <name>

| <import_stmt_identifiers> COMMA <identifier>

| <import_stmt_identifiers> COMMA <identifier> AS <name>

<name> ::=

<identifier>

//---------- Compound_stmt field ----------

//========== If ==========

<if_stmt> ::=

IF <expression> COLON <statement_list>

| IF <expression> COLON <statement_list> ELSE COLON<statement_list>

| IF <expression> COLON <statement_list> <elif_stmt>

| IF <expression> COLON <statement_list> <elif_stmt> ELSE COLON <statement_list>

<elif_stmt> ::=

ELIF <expression> COLON <statement_list>

| elif_stmt ELIF <expression> COLON <statement_list>

//========== For ==========

<for_stmt> ::=

FOR <for_target_list> IN <expression_list> COLON <statement_list>

|FOR <for_target_list> IN RANGE LPAR <expression_list> RPAR  COLON  <statement_list>

| FOR <for_target_list> IN <expression_list> COLON  <statement_list> ELSE COLON <statement_list>

<for_target_list> ::=

<for_target>

| <for_target_list> COMMA <target>

| <for_target_list> COMMA

<for_target> ::=

<identifier>

|LPAR <for_target_list> RPAR

//================================= Function  ================================

<funcdef> ::=

DEF <funcname> LPAR RPAR COLON <statement_list>

|<decorators> DEF <funcname> LPAR RPAR COLON <statement_list>

| DEF <funcname> LPAR <parameter>_list RPAR COLON <statement_list>

| <decorators> DEF <funcname> LPAR <parameter_list> RPAR COLON <statement_list>

<decorators> ::=

<decorator>

| <decorators> <decorator>

<decorator> ::=

PAPAKI <dotted_name> NEWLINE

| PAPAKI <dotted_name> LPAR RPAR NEWLINE

<dotted_name> ::=

<identifier>

| <identifier> <dot_identifiers>

<dot_identifiers> ::=

DOT <identifier>

| <dot_identifier> DOT <identifier>

<parameter_list> ::=

STAR <identifier>

| STAR <identifier> COMMA DOUBLESTAR <identifier>

| DOUBLESTAR <identifier>

| <defparameter>

| <defparameter> COMMA

| <defparameters> STAR <identifier>

| <defparameters> STAR <identifier> COMMA DOUBLESTAR <identifier>

| <defparameters> DOUBLESTAR <identifier>

| <defparameters> <defparameter>

| <defparameters> <defparameter> COMMA

<defparameter> ::=

<parameter>

| <parameter> EQUAL expression

<defparameters> ::=
<defparameter> COMMA
| <defparameters> <defparameter> COMMA

<sublist> ::=

<parameter>

| <parameter> COMMA

| <parameter> <parameters>

| <parameter> <parameters> COMMA

<parameters> ::=

COMMA <parameter>

| <parameters> COMMA <parameter

<parameter> ::=

<identifier>

| LPAR <sublist> RPAR

<funcname> ::=

<identifier>

<//========== Class ==========

<classdef> ::=

CLASS <classname> COLON <statement_list>

| CLASS classname> <inheritance COLON> <statement_list>

<inheritance> ::=

LPAR RPAR

| LPAR <expression_list> RPAR

<classname> ::=

<identifier>

//---------- etc ----------

<dict_items> ::=

<identifier> DOT ITEMS LPAR RPAR

<dict_setdefault> ::=

<identifier> DOT SETDEFAULT LPAR <expression> COMMA <expression> RPAR

<dict_display> ::=

LBRA RBRA

| LBRA <key_datum_list> RBRA

<key_datum_list> ::=

<key_datum>

| <key_datum > COMMA

| <key_datum > <key_datums>

| <key_datum > <key_datums> COMMA

<key_datums> ::=

COMMA <key_datum>

| <key_datums> COMMA <key_datum >

<key_datum> ::=

<expression> COLON <expression>

<expression_list> ::=

<expression_list> COMMA expression

|LPAR <expression_list> COMMA <expression> RPAR

|<expression>

<expression > ::=

<atom>

| LPAR <expression> RPAR

| <expression> PLUS <expression>

| <expression> MINUS <expression>

| <expression> SLASH <expression>

| <expression> STAR <expression>

| <expression> <assignment_op> <expression>

| <expression> <arithmetic_op> <expression>

| <expression> <comparison_op> <expression>

| <expression> logical_op> <expression>

| <expression> <bitwise_op> <expression>

<atom> ::=

<literal>

| <identifier>

| <integer>

| <attr_identifier>

| <dict_display>

| <dict_setdefault>

<literal> ::=

<string>

| <longinteger>

| <imagnumber>

<attr_identifier> ::=

<identifier>

```
        | attr_<identifier> DOT <identifier>

        | <identifier> DOT <identifier>



<stringliteral> ::=
        <shortstring>
        |<longstring>

<shortstring>::=
         <any source character except "" or newline>

longstringitem ::=
         <any source character except '\' '>

imagnumber ::= (floatnumber | intpart) ("j" | "J")

longinteger ::=
         integer ("l" | "L")

integer ::=
         decimalinteger | octinteger | hexinteger

decimalinteger ::=
         nonzerodigit digit* | "0"

octinteger ::=
         "0" octdigit+

hexinteger ::=
         "0" ("x" | "X") hexdigit+

nonzerodigit ::=
         "1"..."9"

octdigit ::=
         "0"..."7"

hexdigit ::=
         digit | "a"..."f" | "A"..."F"


floatnumber ::=
         pointfloat | exponentfloat

pointfloat ::=
         [intpart] fraction | intpart "."
```

```
exponentfloat ::=
        (intpart | pointfloat)
         exponent

intpart ::=
        digit+

fraction ::=
        "." digit+

exponent ::=
        ("e" | "E") ["+" | "-"] digit+

identifier ::=
        (letter|"_") (letter | digit | "_")*

   (where the matched string is not a keyword)

letter ::=
        lowercase | uppercase

lowercase ::=
        "a"|"b"|...|"z"

uppercase ::=
        "A"|"B"|...|"Z"

digit ::=
        "0"|"1"|...|"9"

<assignment_op> ::=

         ADD_ASSIGN
        | SUB_ASSIGN
        | MUL_ASSIGN
        | POW_ASSIGN
        | DIV_ASSIGN
        | MOD_ASSIGN
        | AND_ASSIGN
        | XOR_ASSIGN
        | OR_ASSIGN
        | RIGHT_ASSIGN
        | LEFT_ASSIGN

<arithmetic_op> ::=
        PERCENT
        | DOUBLESTAR
        | DOUBLESLASH

<comparison_op> ::=
```

```
        EQ_OP
        | NE_OP
        | GREATER_THAN_OP
        | LESS_THAN_OP
        | LE_OP
        | GE_OP

<logical_op> ::=
        AND
        | NOT
        | OR
        | IS
        | IN
        | IS NOT
        | NOT IN

<bitwise_op> ::=
        AND_EXP
        | OR_SIGN
        | XOR
        | NOT_SIGN
        | LEFT_OP
        | RIGHT_OP
```

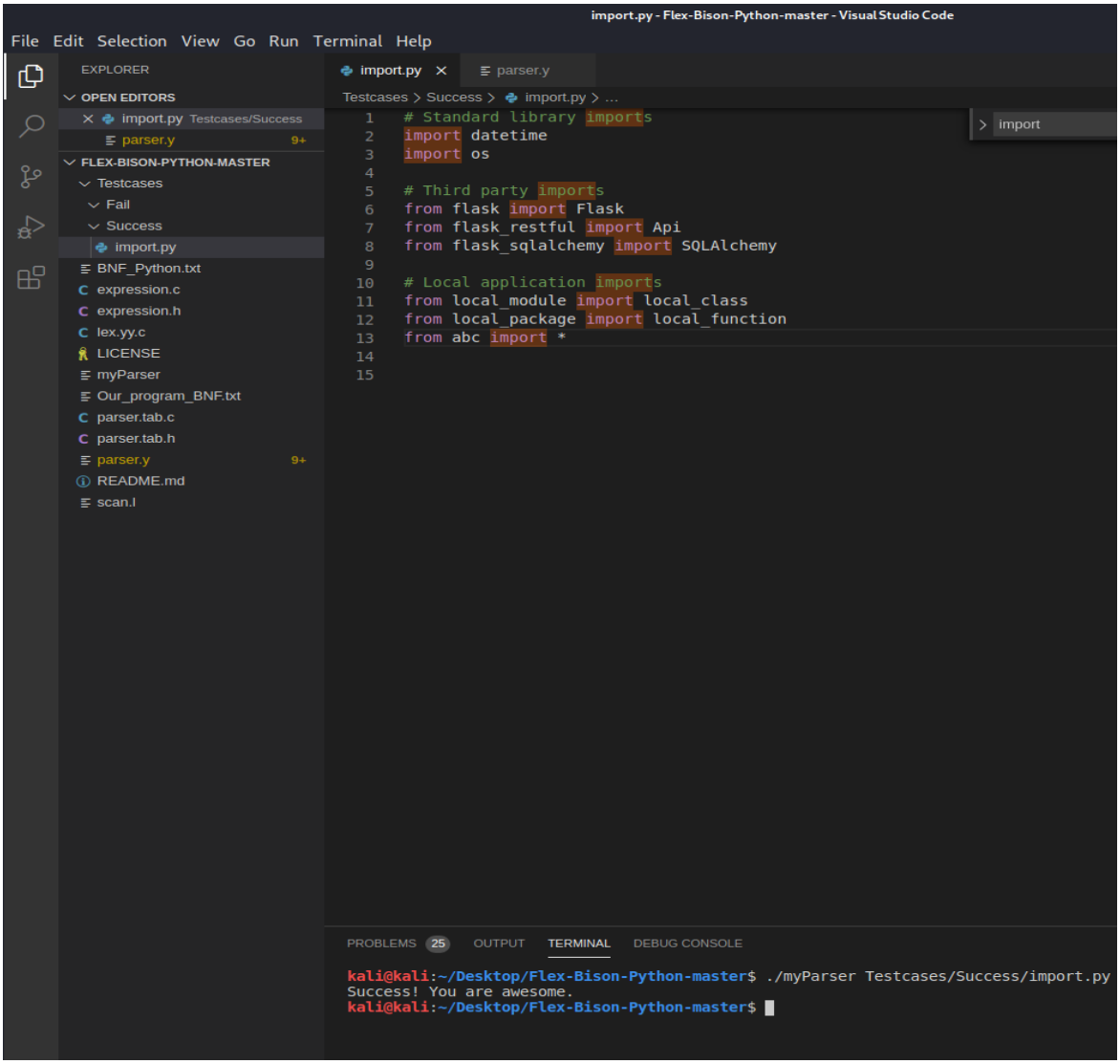
3.

# Αρχεία περιγραφής της γλώσσας, τα οποία δίνονται ως είσοδος στα Flex και Bison

A)

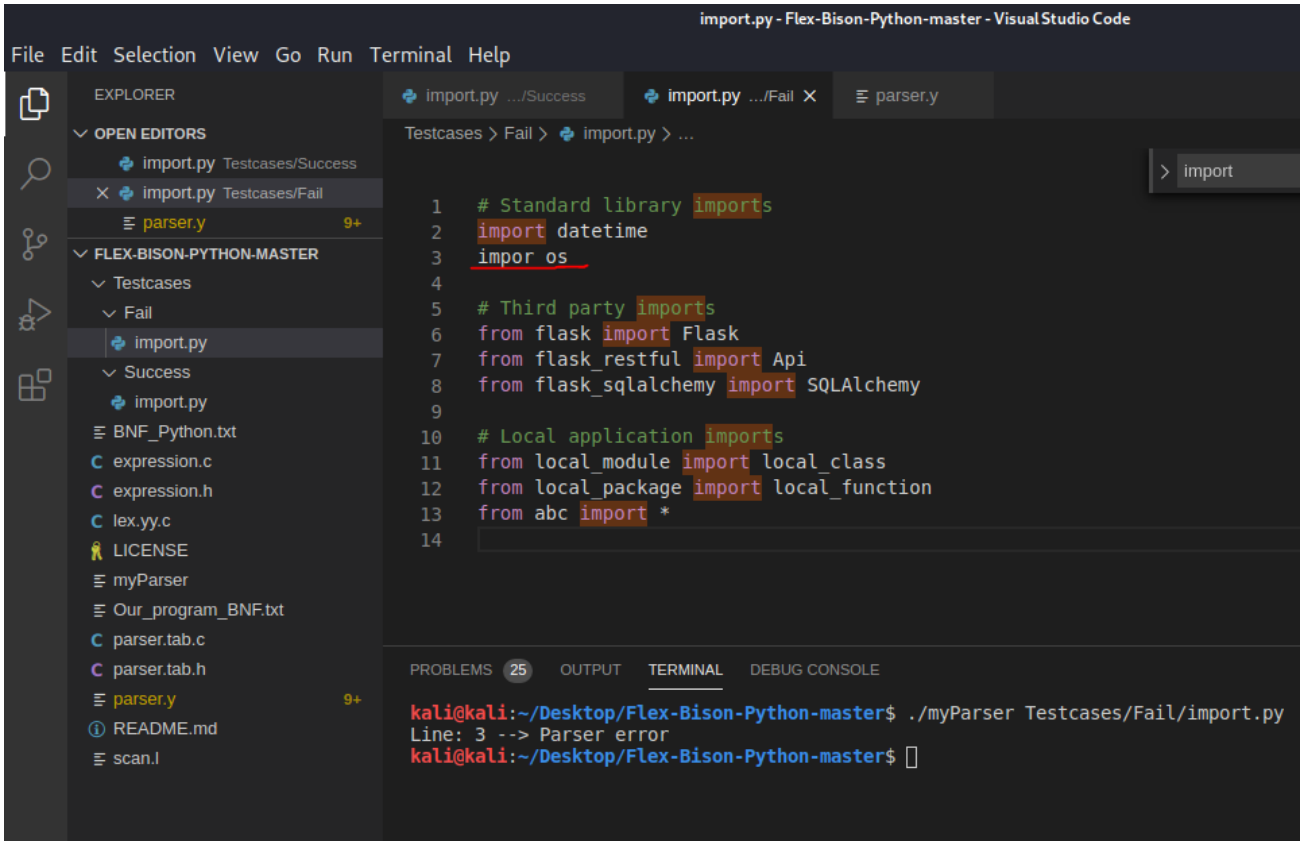
## Εντολή import

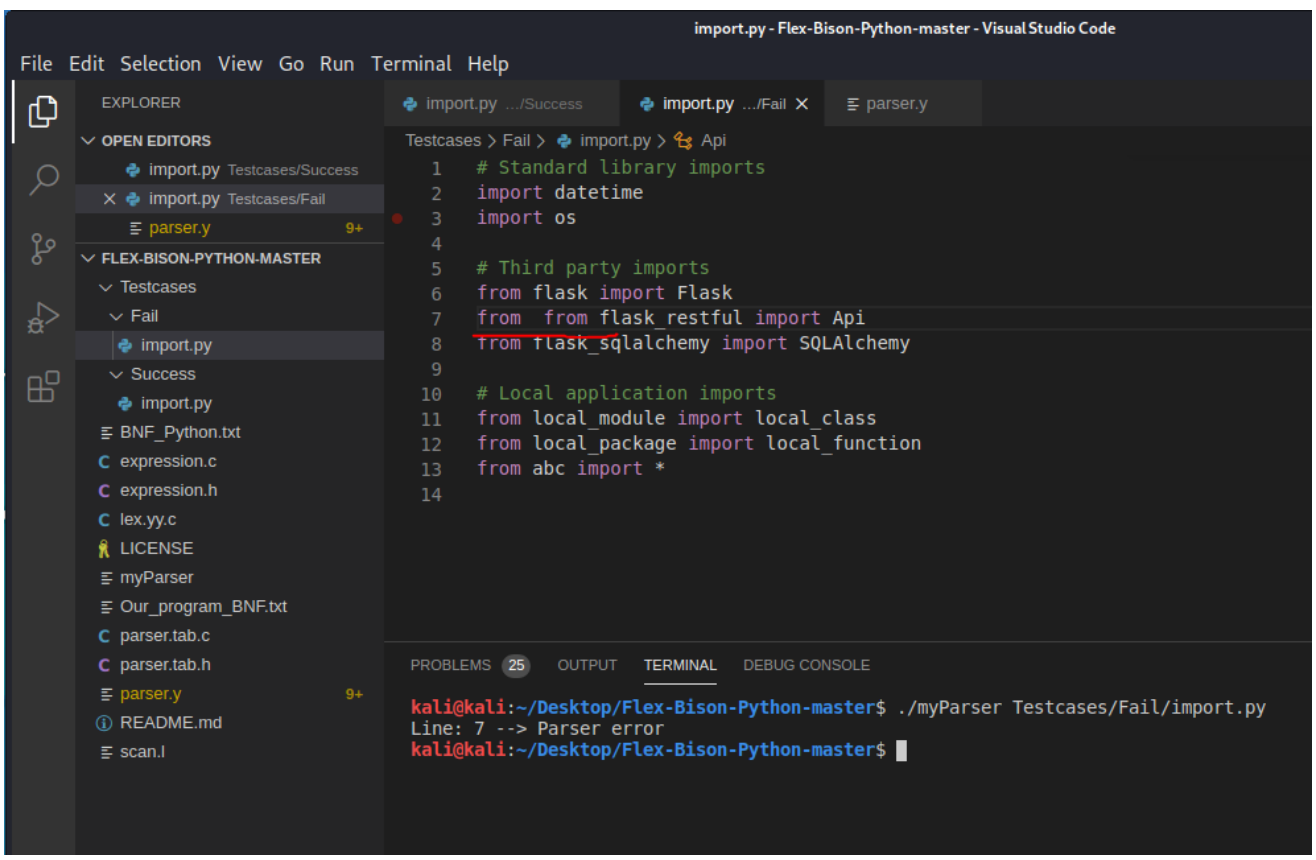
### Επιτυχημένη προσπάθεια:




**Αναγνώριση όλων των τύπων εντολών import και ενημέρωση του χρήστη για την επιτυχημένη προσπάθεια μεταγλώττισης.**

# Αποτυχημένες προσπάθειες:

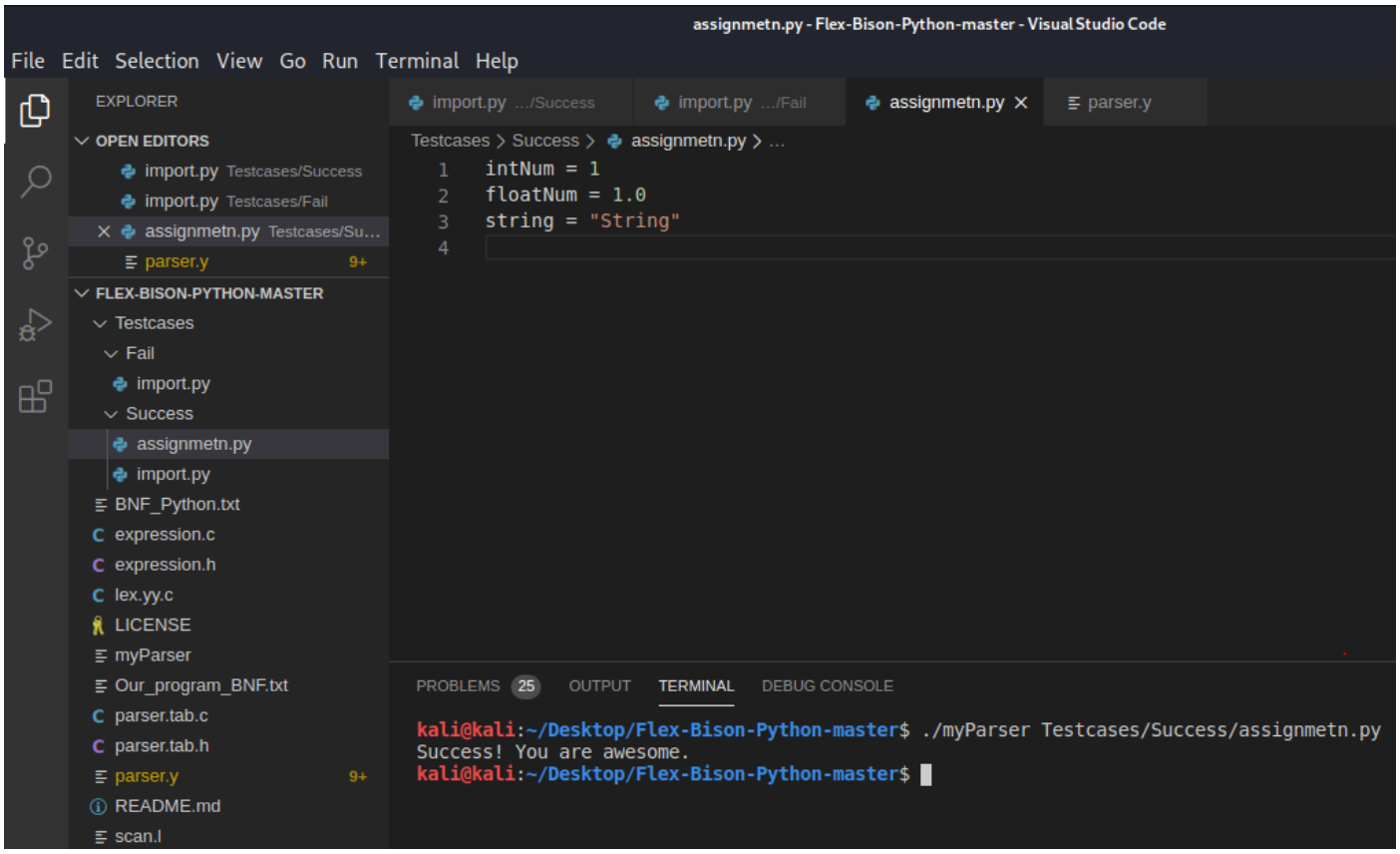


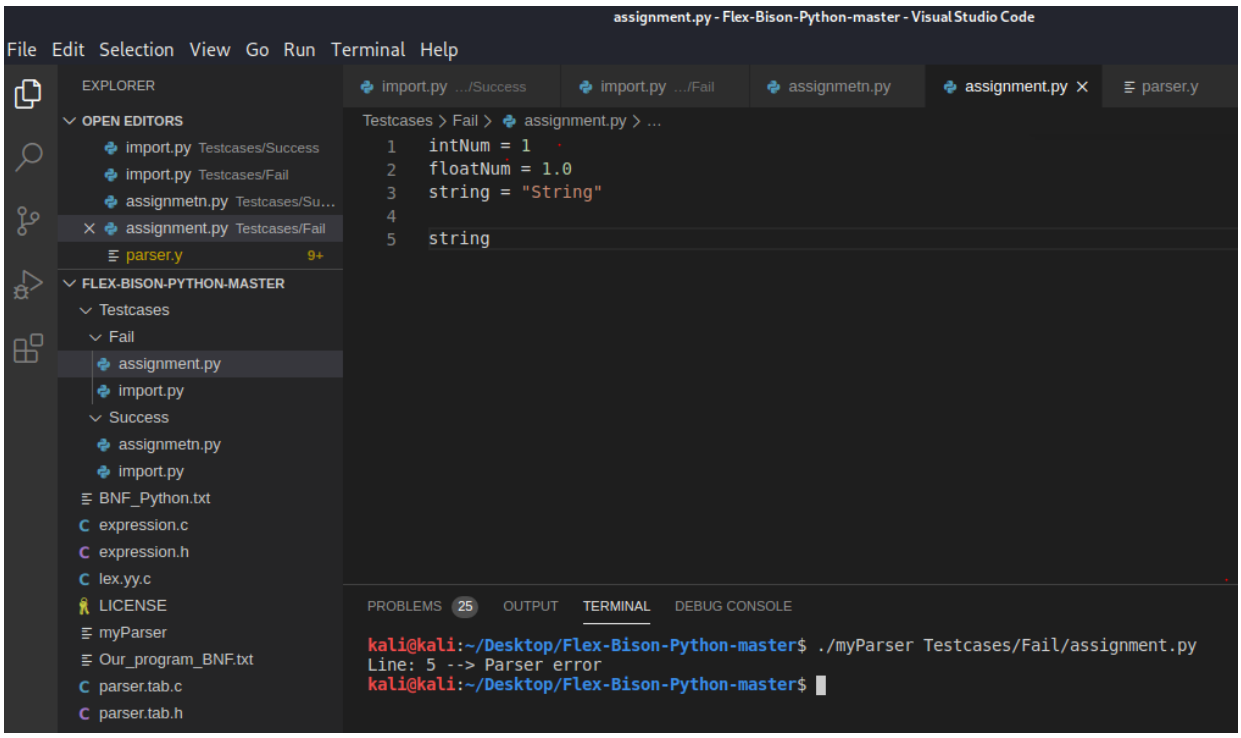
**B)**

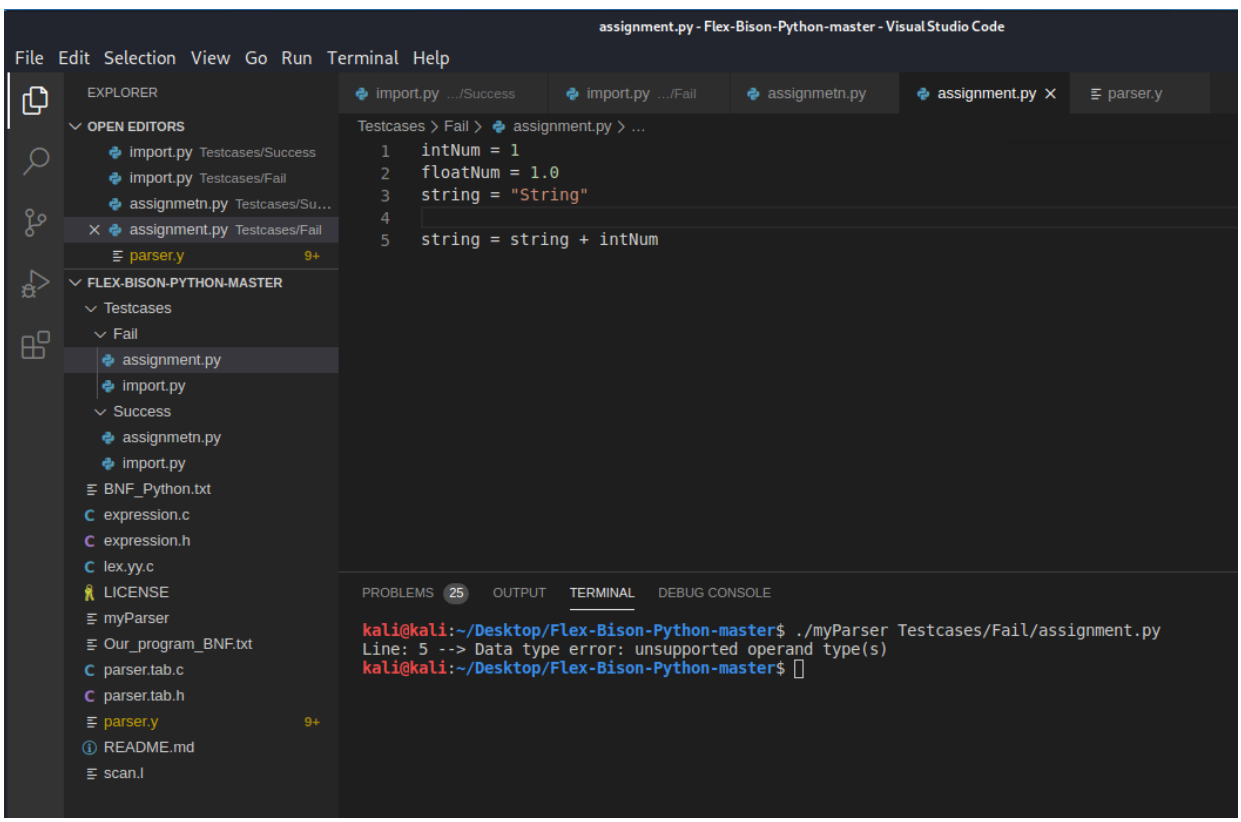
# Αρχικοποίηση μεταβλητών

## Επιτυχημένη προσπάθεια:



# Αποτυχημένες προσπάθειες:



**Γ)**

# Αρχικοποίηση κλάσης και αντικειμένου

## Επιτυχημένη προσπάθεια:

class.py - Flex-Bison-Python-master - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

OPEN EDITORS
- import.py Testcases/Success
- assignmetn.py Testcases/Su...
- assignment.py Testcases/Fail
- class.py Testcases/Success
- class.py Testcases/Fail

FLEX-BISON-PYTHON-MASTER
- Testcases
  - Fail
    - assignment.py
    - class.py
    - import.py
  - Success
    - assignmetn.py
    - class.py
    - import.py
- BNF_Python.txt
- expression.c
- expression.h
- lex.yy.c
- LICENSE
- myParser
- Our_program_BNF.txt

import.py | assignmetn.py | assignment.py | class.py .../Success | class.py .../Fail

Testcases > Success > class.py > ...

```
class Person:
  def __init__(self, name, age):
    self.name = name
    self.age = age

  def myfunc(self):
    print("I am a function in a class")

p1 = Person("John", 36)
p1.myfunc()
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
kali@kali:~/Desktop/Flex-Bison-Python-master$ ./myParser Testcases/Success/class.py
>>  I am a function in a class
Success! You are awesome.
kali@kali:~/Desktop/Flex-Bison-Python-master$
```

# Αποτυχημένες προσπάθειες:

class.py - Flex-Bison-Python-master - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

OPEN EDITORS
- import.py Testcases/Success
- assignmetn.py Testcases/Su...
- assignment.py Testcases/Fail
- class.py Testcases/Success
- class.py Testcases/Fail

FLEX-BISON-PYTHON-MASTER
- Testcases
  - Fail
    - assignment.py
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    - import.py
- BNF_Python.txt
- expression.c
- expression.h
- lex.yy.c

import.py | assignmetn.py | assignment.py | class.py .../Success | class.py .../

Testcases > Fail > class.py > ...

```
1  class Person:
2    def __init__(self, name, age):
3      .name = name
4      self.age = age
5
6    def myfunc(self):
7      print("I am a function in a class")
8
9  p1 = Person("John", 36)
10 p1.myfunc()
11
12
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
kali@kali:~/Desktop/Flex-Bison-Python-master$ ./myParser Testcases/Fail/class.py
Line: 3 --> Parser error
kali@kali:~/Desktop/Flex-Bison-Python-master$
```

class.py - Flex-Bison-Python-master - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

OPEN EDITORS
- import.py Testcases/Success
- assignmetn.py Testcases/Su...
- assignment.py Testcases/Fail
- class.py Testcases/Success
- class.py Testcases/Fail

FLEX-BISON-PYTHON-MASTER
- Testcases
  - Fail
    - assignment.py
    - class.py
    - import.py
  - Success
    - assignmetn.py
    - class.py
    - import.py
- BNF_Python.txt
- expression.c
- expression.h
- lex.yy.c

import.py | assignmetn.py | assignment.py | class.py .../Success | class.py

Testcases > Fail > class.py > ...

```
1  class Person::
2
3    def __init__(self, name, age):
4      self.name = name
5      self.age = age
6
7    def myfunc(self):
8      print("I am a function in a class")
9
10 p1 = Person("John", 36)
11 p1.myfunc()
12
13
```

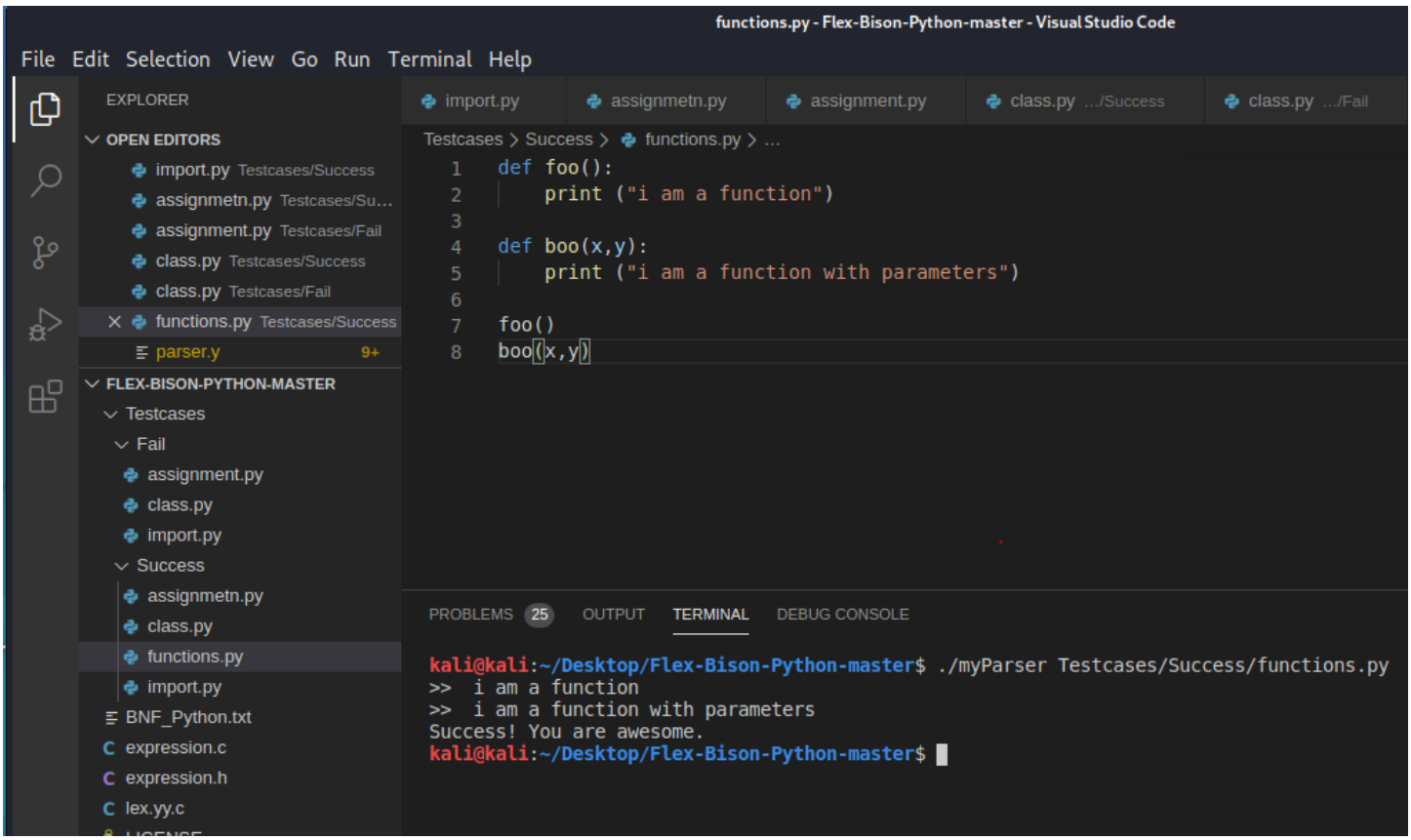
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

```
kali@kali:~/Desktop/Flex-Bison-Python-master$ ./myParser Testcases/Fail/class.py
Line: 1 --> Parser error
kali@kali:~/Desktop/Flex-Bison-Python-master$
```

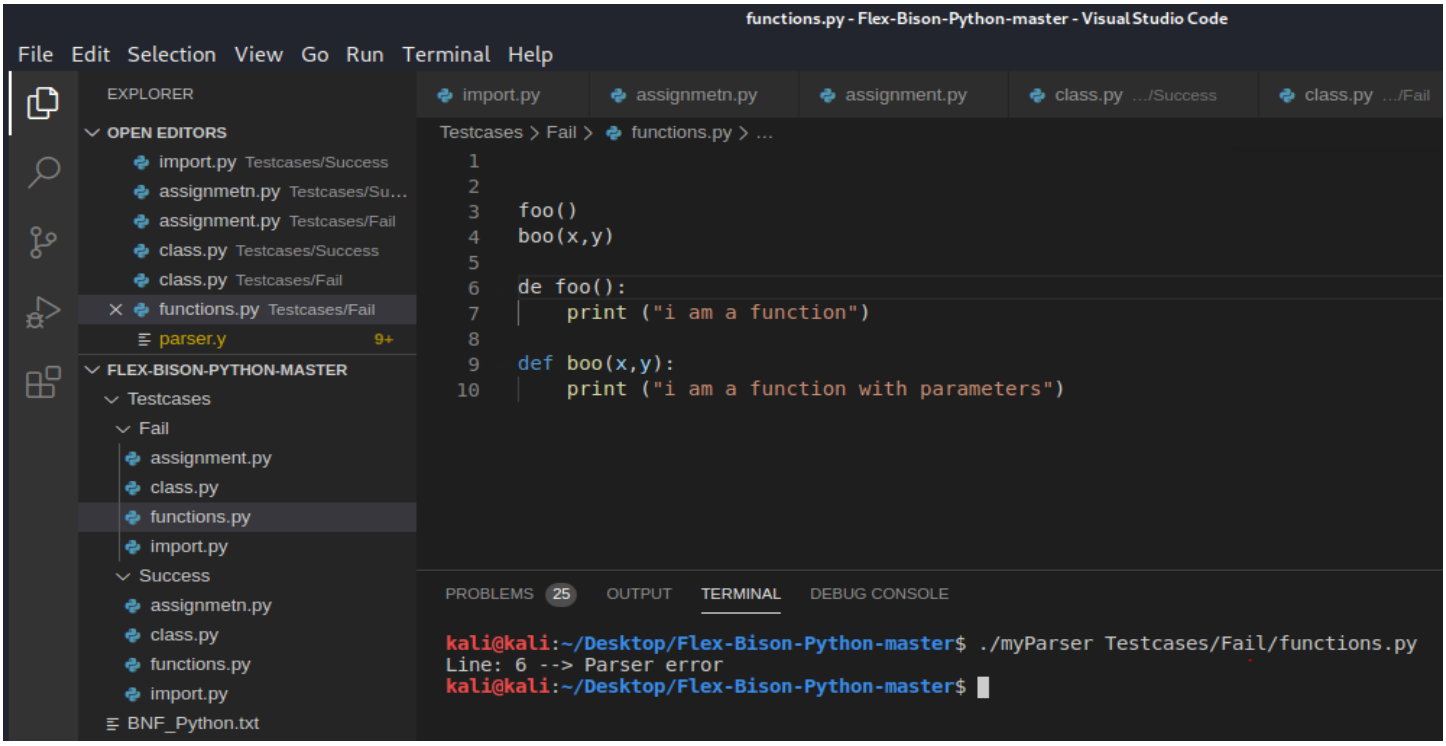
**Δ)**

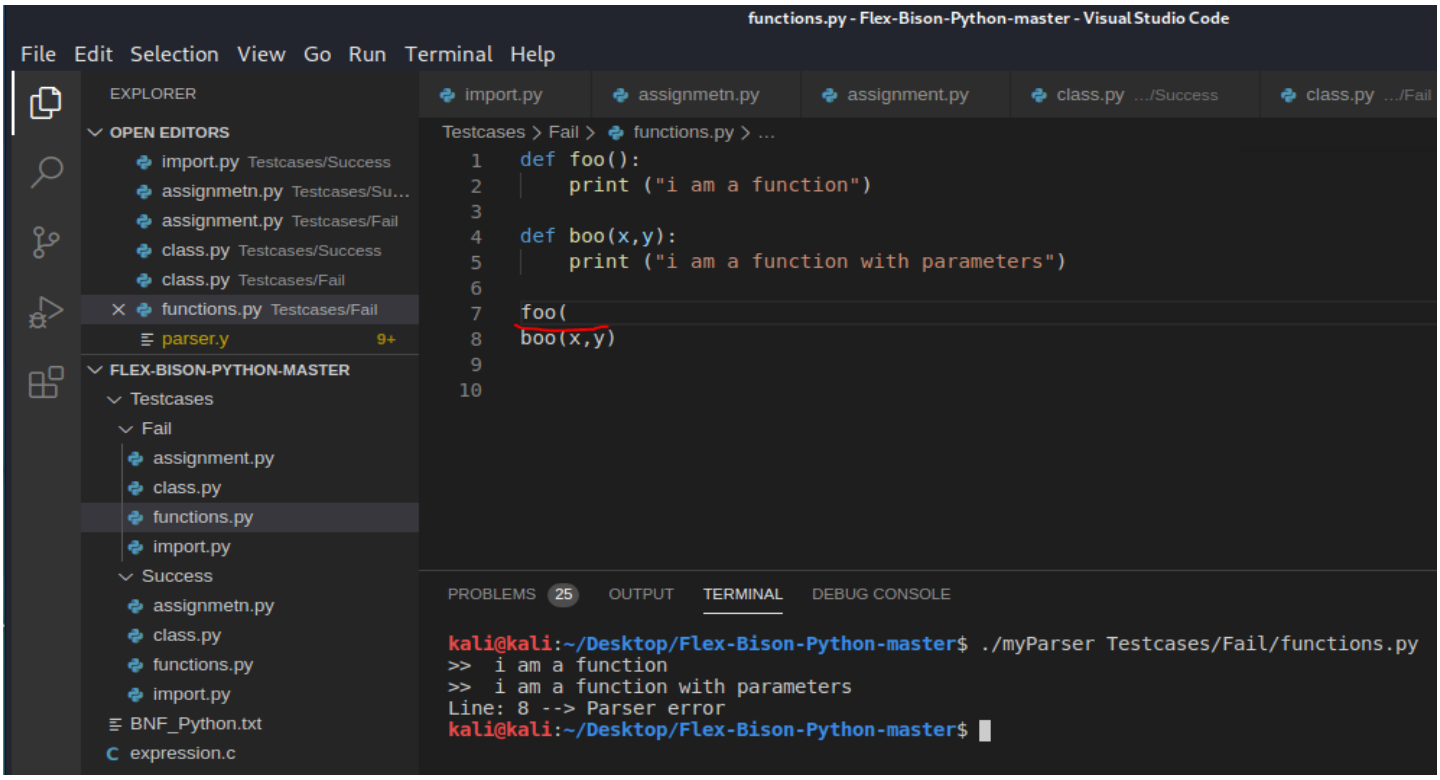
# Ορισμός συνάρτησης και κλήση της

## Επιτυχημένη προσπάθεια:



# Αποτυχημένες προσπάθειες:

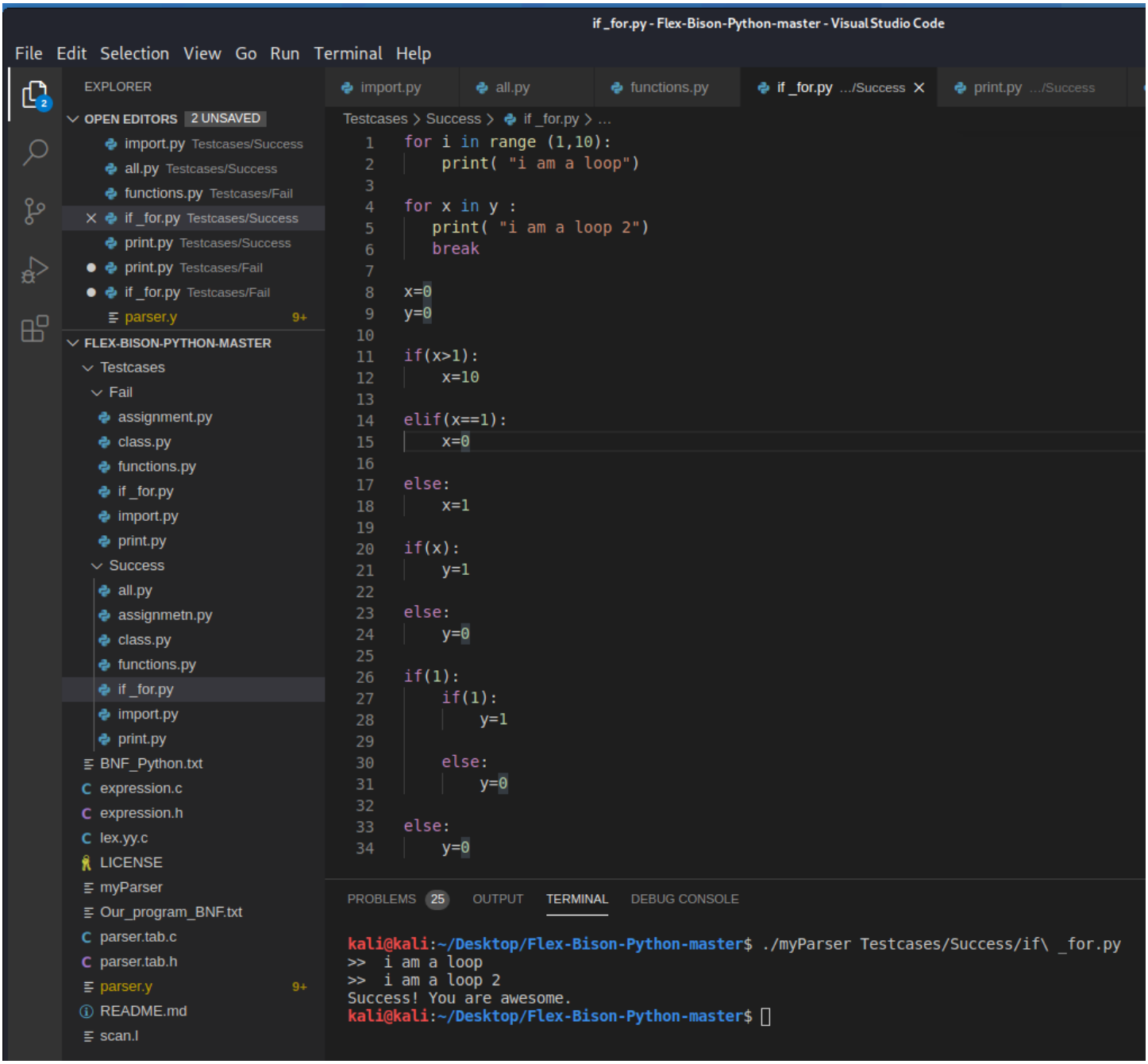


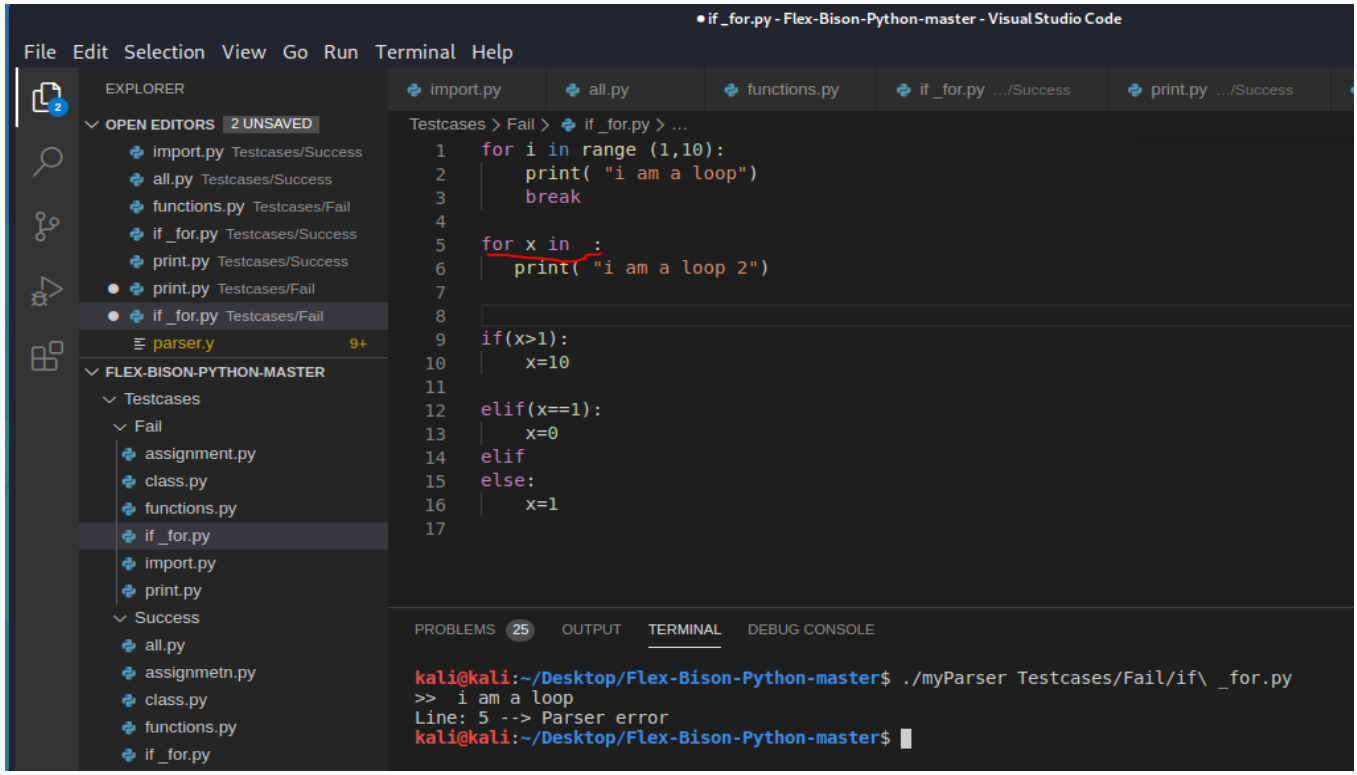
**E)**

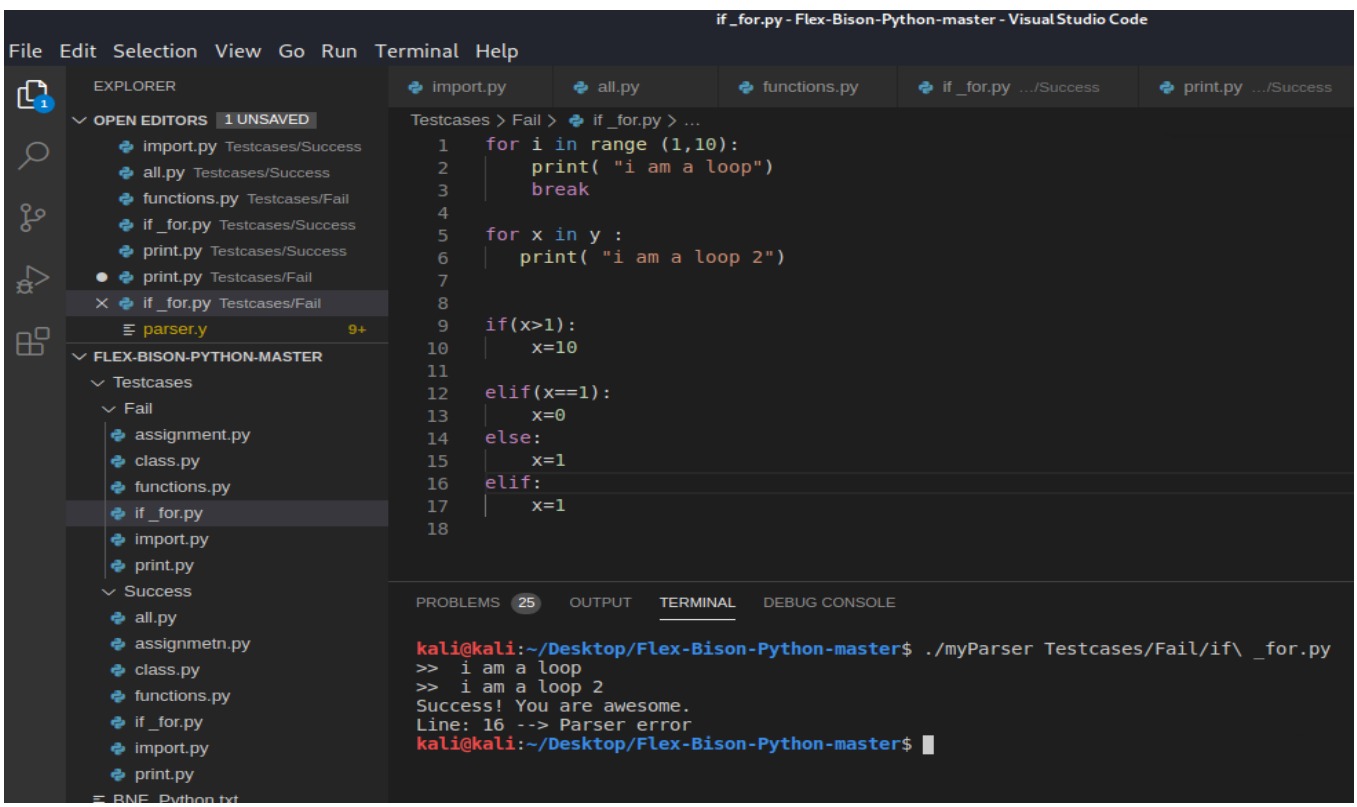
# Εντολές βρόγχου και συνθήκη

## Επιτυχημένη προσπάθεια:

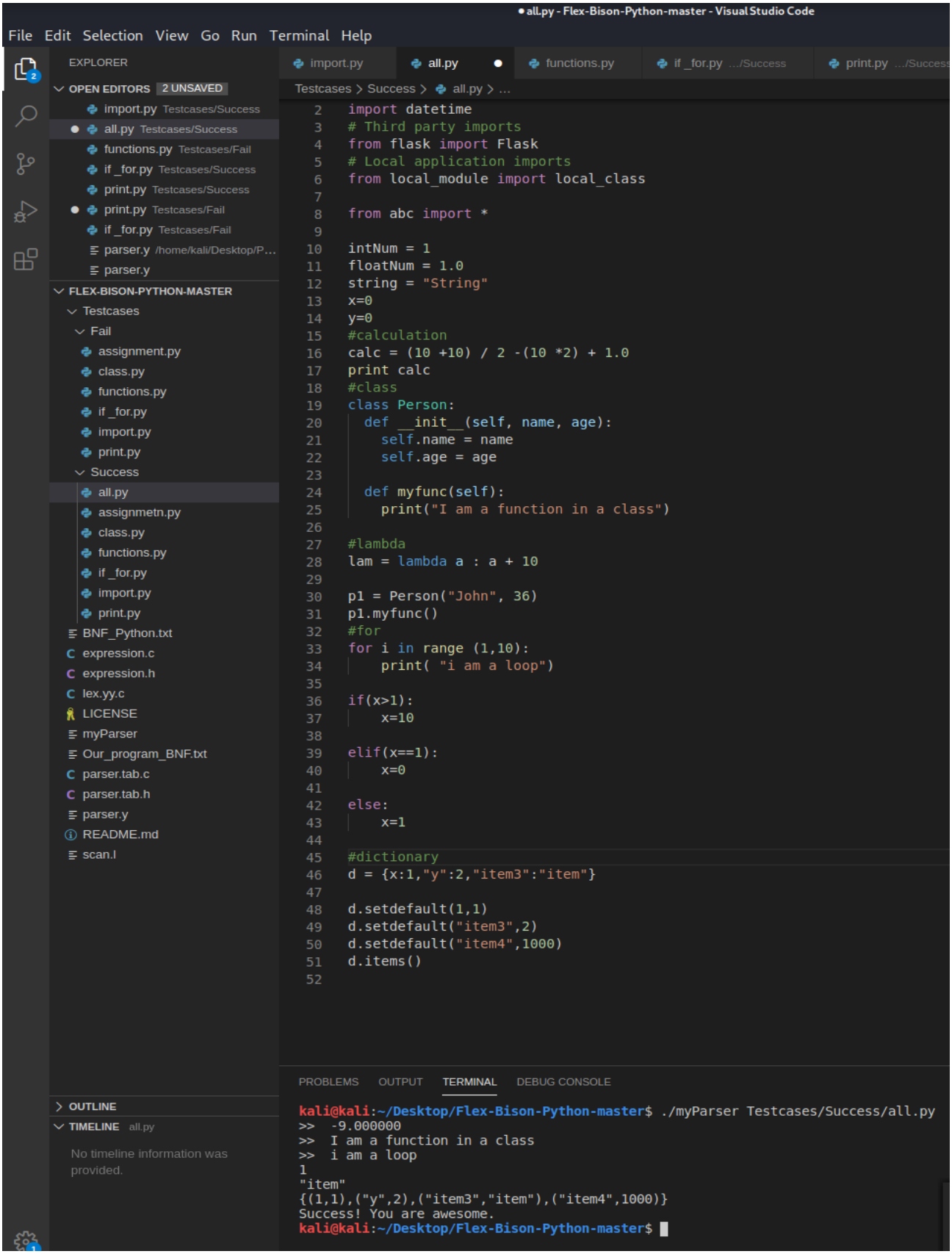


# Αποτυχημένες προσπάθειες:



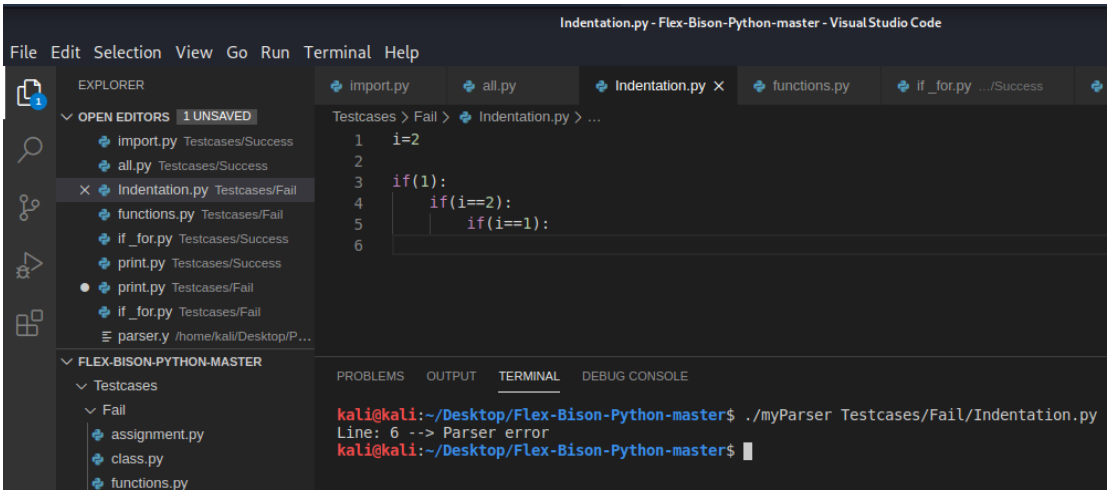



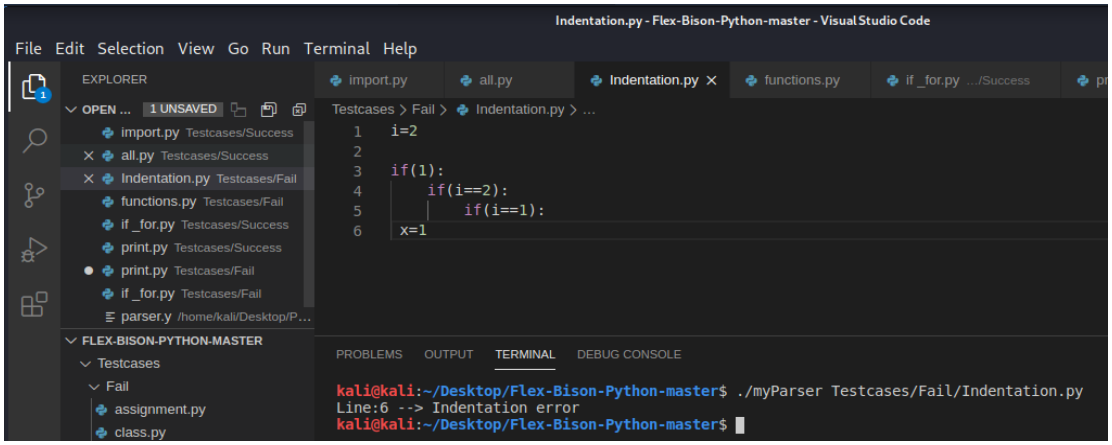
# Αρχείο με πολλαπλές εντολές (Dictionaries και Lambda)

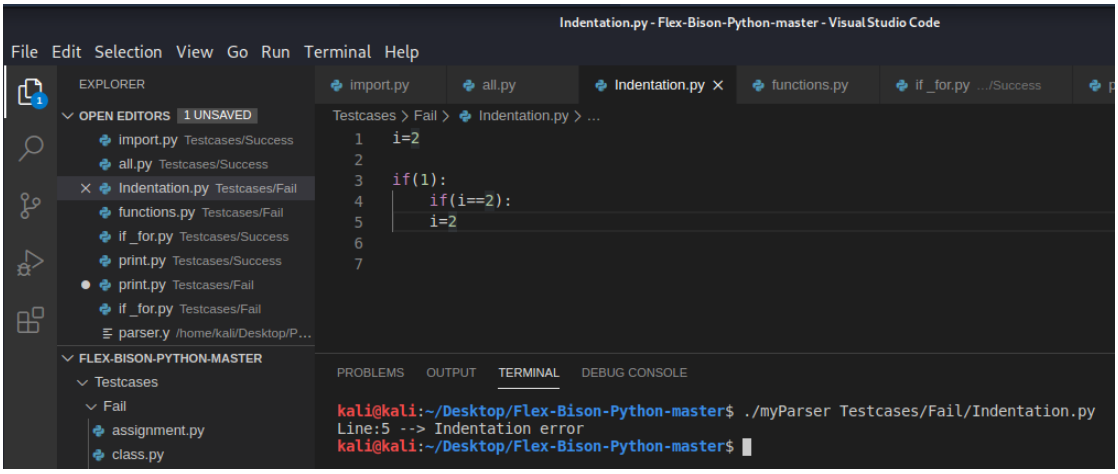


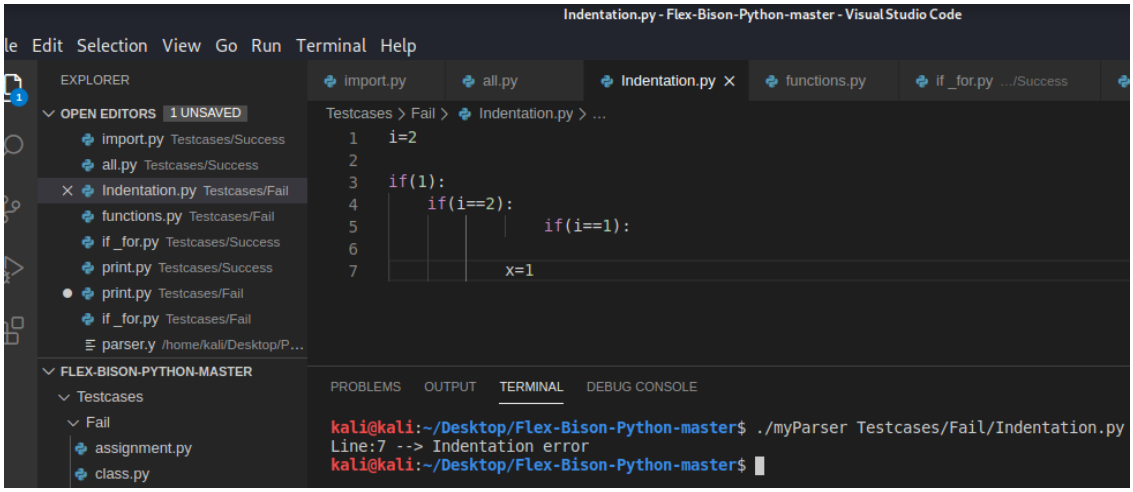
# Python Indentation

Στα προηγούμενα παραδείγματα παρουσιάζεται η σωστή εκτέλεση του indentation στις εντολές if. Παρακάτω αναφέρονται περιπτώσεις που απαιτούν την τύπωση σφάλματος.



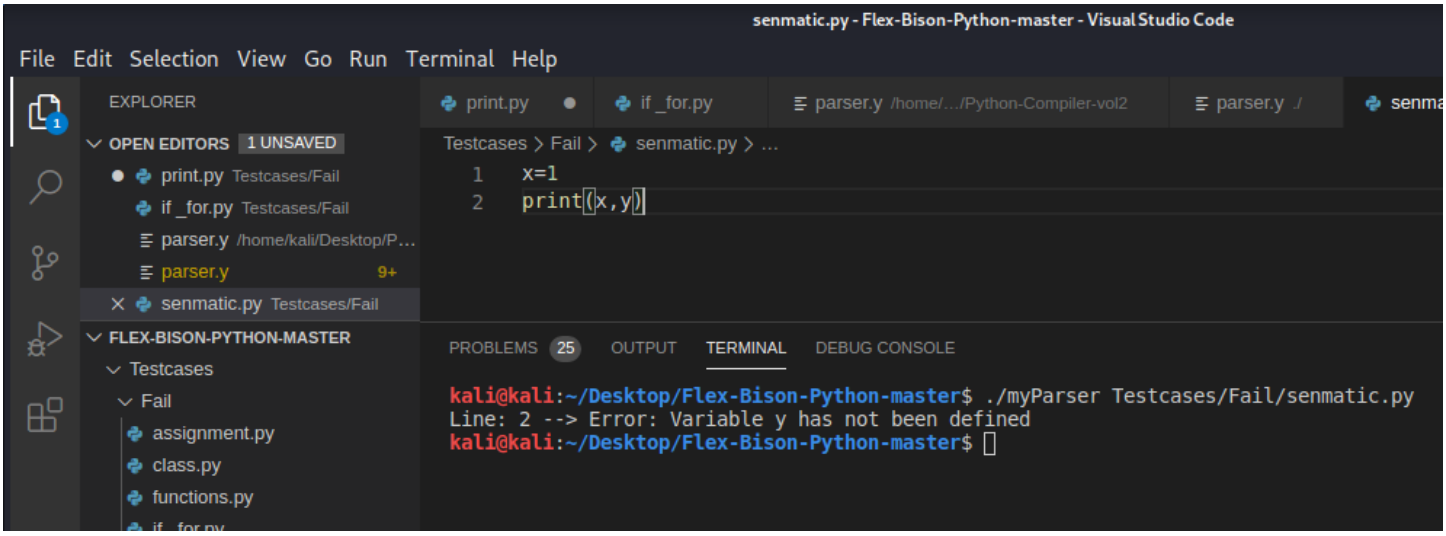



# Παρουσίαση Σημασιολογικής Λειτουργικότητας

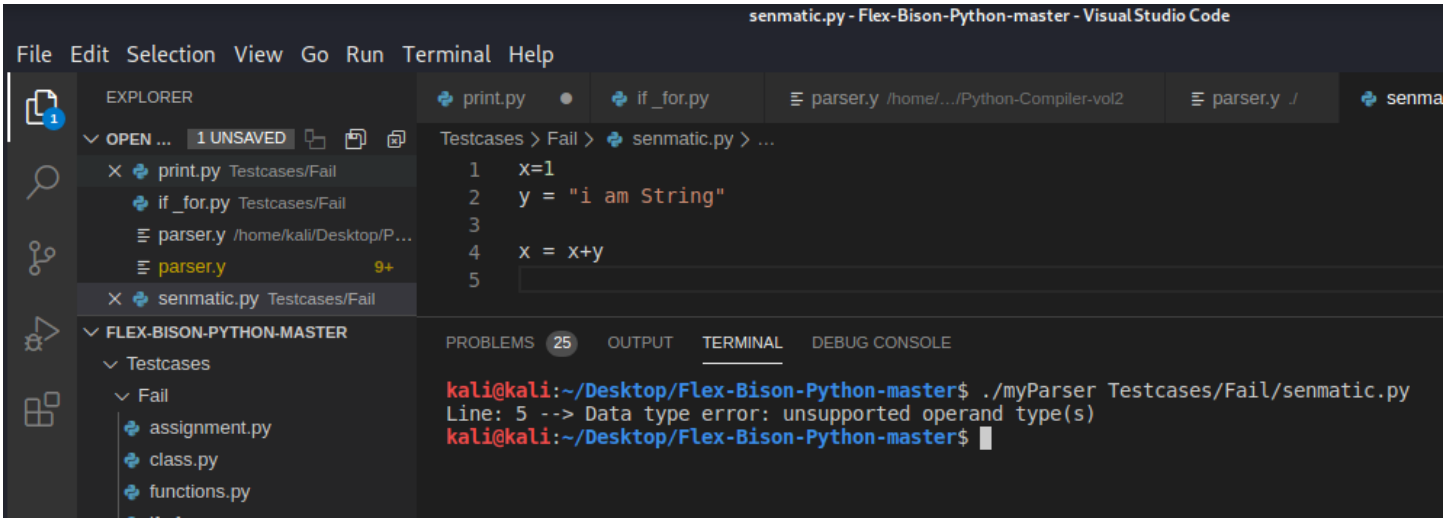
Παρακάτω θα δείξουμε ορισμένες περιπτώσεις που ο compiler υλοποιεί και την σημασιολογική ανάλυση όπως:

Α) Ανίχνευση μη ορισμένων μεταβλητών.
Β) Ανίχνευση πράξεων που δεν επιτρέπονται (πχ. Integer με String).
Γ) Ανίχνευση πράξεων μεταξύ integer και float  και μετατροπή του αποτελέσματος σε τιμή float.

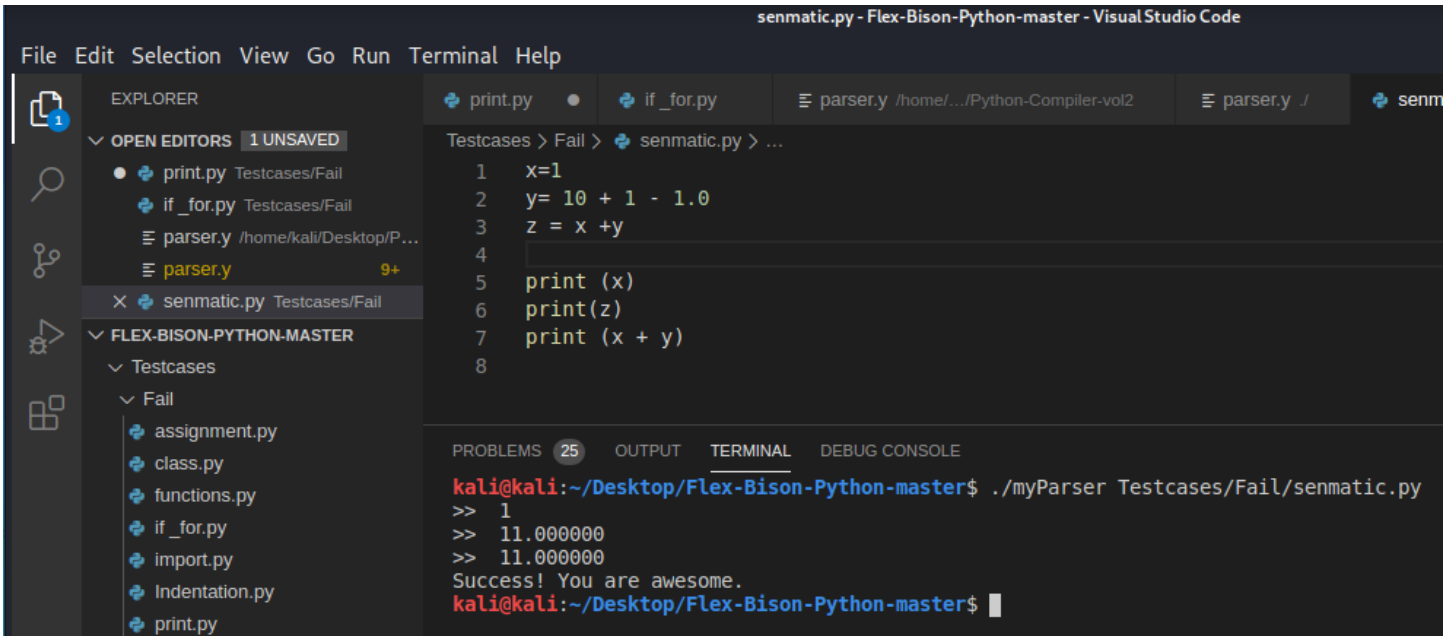
Α)



В)


senmatic.py - Flex-Bison-Python-master - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
OPEN ... 1 UNSAVED
print.py Testcases/Fail
if _for.py Testcases/Fail
parser.y /home/kali/Desktop/P...
parser.y 9+
senmatic.py Testcases/Fail
FLEX-BISON-PYTHON-MASTER
Testcases
Fail
assignment.py
class.py
functions.py
print.py
if _for.py
parser.y /home/.../Python-Compiler-vol2
parser.y ./
senma
Testcases > Fail > senmatic.py > ...
1 x=1
2 y = "i am String"
3
4 x = x+y
5
PROBLEMS 25
OUTPUT
TERMINAL
DEBUG CONSOLE
kali@kali:~/Desktop/Flex-Bison-Python-master$ ./myParser Testcases/Fail/senmatic.py
Line: 5 --> Data type error: unsupported operand type(s)
kali@kali:~/Desktop/Flex-Bison-Python-master$

Г)


senmatic.py - Flex-Bison-Python-master - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
OPEN EDITORS 1 UNSAVED
print.py Testcases/Fail
if _for.py Testcases/Fail
parser.y /home/kali/Desktop/P...
parser.y 9+
senmatic.py Testcases/Fail
FLEX-BISON-PYTHON-MASTER
Testcases
Fail
assignment.py
class.py
functions.py
if _for.py
import.py
Indentation.py
print.py
print.py
if _for.py
parser.y /home/.../Python-Compiler-vol2
parser.y ./
senm
Testcases > Fail > senmatic.py > ...
1 x=1
2 y= 10 + 1 - 1.0
3 z = x +y
4
5 print (x)
6 print(z)
7 print (x + y)
8
PROBLEMS 25
OUTPUT
TERMINAL
DEBUG CONSOLE
kali@kali:~/Desktop/Flex-Bison-Python-master$ ./myParser Testcases/Fail/senmatic.py
>> 1
>> 11.000000
>> 11.000000
Success! You are awesome.
kali@kali:~/Desktop/Flex-Bison-Python-master$

# Διευκρινήσεις σχετικά με τα warnings

```
kali@kali:~/Desktop/Flex-Bison-Python-master$ bison -d parser.y
parser.y:144.9-31: warning: type clash on default action: <nval> != <> [-Wother]
  144 |         LAMBDA COLON expression
      |         ^~~~~~~~~~~~~~~~~~~~~~~
parser.y:145.11-48: warning: type clash on default action: <nval> != <> [-Wother]
  145 |         | LAMBDA lam_parameters COLON expression
      |           ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
parser.y:160.17-21: warning: type clash on default action: <nval> != <> [-Wother]
  160 |                 PRINT
      |                 ^~~~~
parser.y:483.9-17: warning: type clash on default action: <nval> != <> [-Wother]
  483 |         LBRA RBRA
      |         ^~~~~~~~~
parser.y:484.11-34: warning: type clash on default action: <nval> != <> [-Wother]
  484 |         | LBRA key_datum_list RBRA;
      |           ^~~~~~~~~~~~~~~~~~~~~~~~
parser.y: warning: 501 shift/reduce conflicts [-Wconflicts-sr]
parser.y: warning: 157 reduce/reduce conflicts [-Wconflicts-rr]
kali@kali:~/Desktop/Flex-Bison-Python-master$
```

Σχετικά με τα warnings που εμφανίζονται στην γραμμή 144, 145, 160, 483, 484 αφορούν τις περιπτώσεις που ορισμένα τερματικά και μη τερματικά σύμβολα δεν έχουν λάβει τον τύπο δεδομένων “nval” ενώ οι κανόνες που περιέχουν ανήκουν σε αυτό τον τύπο δεδομένων.
Τέλος, για τις προειδοποιήσεις της γραμμής 501 και 157 συμβαίνουν εάν υπάρχουν δύο ή περισσότεροι κανόνες που ισχύουν για την ίδια ακολουθία εισόδου.